ADAPTABLE ARCHITECTURE FOR AN EVOLVING EDUCATIONAL SYSTEM: THE DESIGN OF A FACILITY FOR ADULT BASIC EDUCATION AND VOCATIONAL TRAINING IN THE GREATER WARWICK JUNCTION PRECINCT.

By

Leigh Hartl

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University of KwaZulu-Natal
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DECLARATION

“I hereby declare that this dissertation is my own unaided work. It is being submitted to the School of Architecture, Housing and Town Planning, University of KwaZulu-Natal, Durban, for the degree of Masters in Architecture, and has not been submitted before for any degree or examination at any other University.”

Signed by Leigh Hartl

Date

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Note: All figures and photographs are by the author, except where otherwise acknowledged.

DEDICATION

I would like to thank my mother, sister and friends for your support and encouragement, and Tiaan for your endless love, support, understanding and faith in me.

ABSTRACT

Currently in South Africa there are over 8 million people who have had little or no formal schooling. This has resulted in a large portion of the population that is unable to read and write or participate fully in society. The Adult Basic Education and Training Act of 2000 declares that access to education for adults is a basic human right, and it should therefore be readily available to the population. However, in KwaZulu-Natal there are only a few centres which offer ABET courses, and those that do have mostly not been designed specifically for this function, but are schools and community centres. This has meant that facilities are often inappropriate and inefficient in addressing the needs of the adult learner.

It is in response to the current educational shortage that a Centre for Adult Basic Education and Training for Durban has been proposed. Through this study, key aspects relating to the design of a centre for adult education were examined. These included the response to an urban context, movement in the city and buildings, the quality of the learning environment, and the needs of the adult learner. In order to develop the architecture for a Centre for Adult Basic Education and Vocational Training, these principles were analysed and understood in order to make a meaningful response.

This research examines some of the complex factors which influence the design of a Centre for Adult Basic Education and Vocational Training in Durban in order to provide a centre that provides all the necessary services in one building. Primary and secondary data collection methods were used, in the form of interviews, case studies, a literature review and precedent studies. The research was then used in order to draw up a design brief, resulting in the design of a Centre for Adult Basic Education and Vocational Training.

DEFINITION OF CONCEPTS

ABE: Adult Basic Education: education of adults in the areas of primary knowledge such as literacy and numeracy, of social and life skills, of understanding of community life, necessary to responsible participation in society.

ABET: Adult Basic Education and Training: is available to adults who want to finish their basic education. An outcomes-based programme, ABET aims to provide basic learning tools, knowledge and skills, and provides participants with nationally recognised qualifications.

Adult Learner: "An adult, according to the ABET Act (No. 52 of 2000), is someone aged 15 years and over who is not engaged in formal schooling".

Functional Literacy: is a higher level of literacy that includes the ability to read and write, and basic mathematical numeracy skills, sufficiently advanced to enable the individual to participate fully and efficiently in activities commonly occurring in his/her life that require a reasonable capability of communicating by written language.

Literacy: literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society.

NGO: Non-governmental organisation

Poverty: poverty refers to the lack of choices and opportunities for a tolerable life, and often results in the lack of access to basic human needs - such as food, clothing, shelter, medical care, education and employment.

Vocational Training: the systematic development of the attitudes, knowledge and skill pattern required by an individual in order to perform an employment task or tasks.

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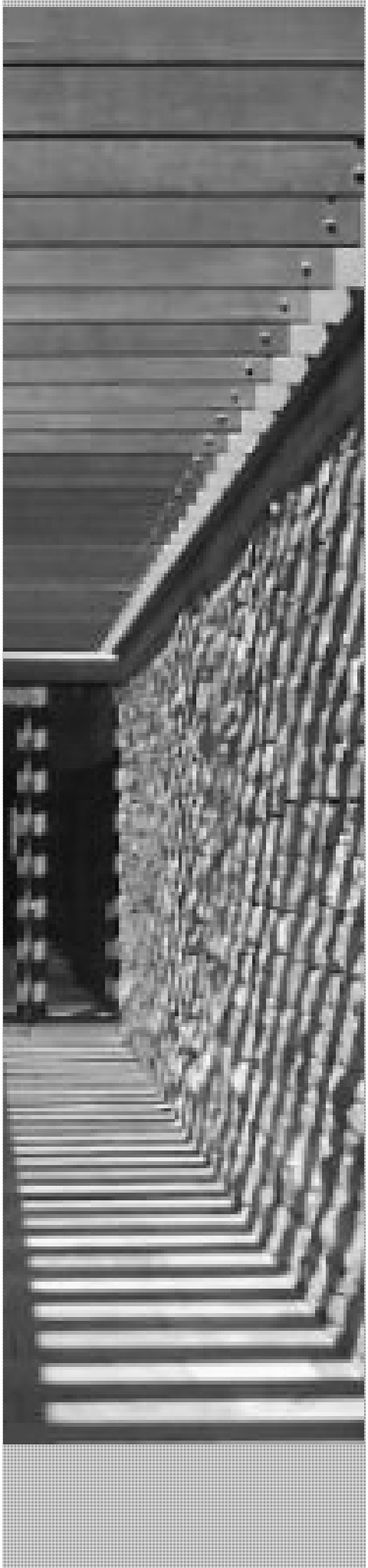
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1

INTRODUCTION



870 000 000

of the world's adults are illiterate

Architecture for Humanity (ed.). (2006). Design Like You Give a Damn. New York: Metropolis Books. P. 248

1. INTRODUCTION

Currently there are over 800 million illiterate adults in the world (UNESCO, 2004: p. 5). In South Africa alone there are approximately 4 million adults who are completely illiterate, and who have never attended structured schooling, as well as another 4 million adults who are functionally illiterate and have no more than a Grade 7 level of schooling (Bergevin, 1967: internet) (See Figs. 1 & 2). This lack of schooling results in an inability to obtain and retain jobs which, in turn, contributes towards increased levels of crime and poverty (Roberts, 2000: p. 23).

Poverty manifests in different ways in different localities and within different groups (Ramarumo, 2001: p. 4). Examples of these manifestations are unemployment, hunger, crime, illiteracy, the lack of infrastructure and the lack of access to basic social services including medical facilities and education. The key to alleviating poverty is education. By improving the quality of and accessibility to basic education one can improve access to jobs, thereby increasing quality of life.

The aim of this research is to propose an architectural intervention in an urban context which will help to alleviate the problems of illiteracy, poverty and crime. This will be done by the creation of a facility which will provide basic adult education, skills and vocational training to a broad base of learners.

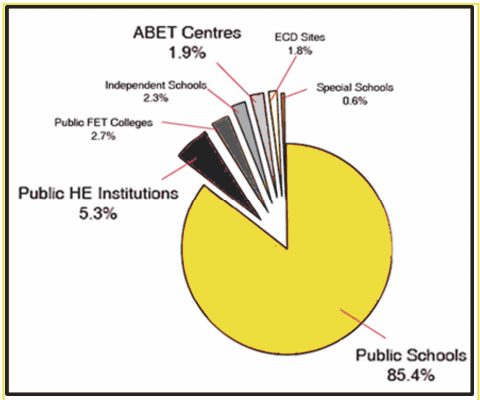


Fig. 1: The diagram above illustrates the small percentage of students enrolled in adult basic education programs in South Africa in 2005 as compared with public higher education institutions, colleges, independent and public schools. The figure of 1,9% indicates amounts to approximately 270 000 learners. The diagram shows that there is public interest in adult basic education and therefore the need for provision of facilities.
(Department of Education, 2005, p. 3).

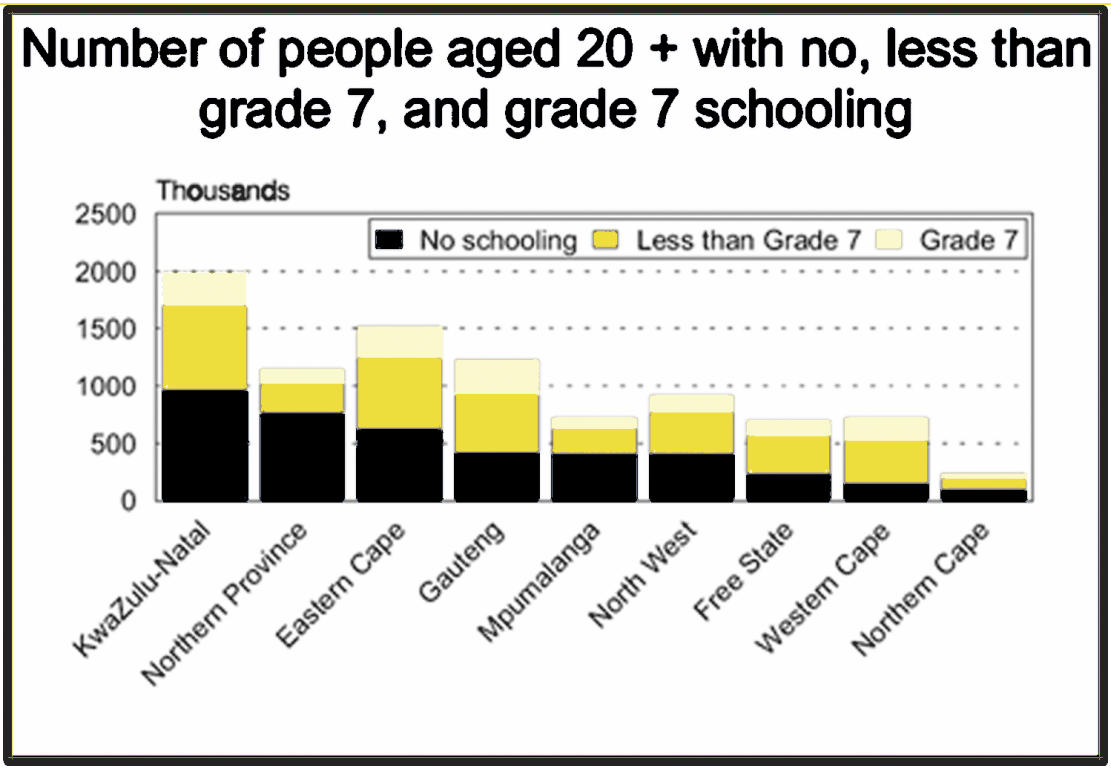


Fig. 2: This graph (Centre for Adult Education, 1999, p. 7). illustrates the number of people over 20 in each province with a grade 7 schooling level or less. It can be seen from the graph that KwaZulu-Natal is the province with the highest number of people with no schooling whatsoever, as well as the largest number of people with less than a grade 7 level of schooling. In KwaZulu-Natal, 23% of the population has no education, placing the province third in the list of the most illiterate provinces in the country (Centre for Adult Education, 1999).

1.1. Defining the Problem and Objectives

1.1.1. Definition of the Problem

South Africa is a country that has been dramatically affected by past policies and inequalities. Fortunately, as time has passed and apartheid has been abolished, the country has, as a whole, made leaps forward in progressing towards a culture of acceptance and equality. However, there are still large sectors of the community which have not yet been reached by essential services such as health care and educational opportunities (UNDP South Africa, 1998). Due to the lack of provision of education in particular, there is a large group of the population that has not had equitable access to education. This has resulted in a gap in the population, leaving many adults without the literacy skills required in order for them to be able to participate fully in their communities.

Policies developed since 1994 have mandated that education is a human right and should be made available to all South African citizens who wish to access it (Adult Basic Education and Training Act, 2000: p. 2). It is now the responsibility of the government, private sector and NGO's to bring education to the people who are most in need as well

as most eager to learn. The question posed here is how best to provide a facility for the provision of adult basic education and vocational training to the people of the local context, namely the city of Durban, and more specifically, the Greater Warwick Junction Precinct.

The question of the provision of an educational facility is a multi-faceted one, and relates to many inter-related elements. While this topic is broad and consists of many different elements, several key factors have been identified that will be discussed in terms of an architectural approach to the problem. The first challenge is to gain an understanding of the current educational situation in terms of the relationship that educational facilities have with the urban realm, how they are located within them, and how they impact the communities which they serve.

The second point of discussion is the more immediate context of the Greater Warwick Junction Precinct and the driving forces which influence and change the precinct. The impact that public transport has on the area will be examined, followed by a more in depth discussion on the concept of movement and the forces causing people to move. This will be followed by a look at some architectural responses to the forces of movement and change on a general level, as well as the psychological need for people to movement. The traditional Japanese house will be investigated as an early example of adaptable, moveable architecture, followed by an investigation into a contemporary example of kinetic architecture by the architect, Steven Holl.

The following discussion aims to look more closely at the campus as a context for educational activities to take place. The role of the campus in the city will be examined, followed by a more detailed discussion on the creation of an effective campus and the elements which may result in the ideal campus within the urban context.

In order to direct the discussion towards a better understanding of adult basic education and vocational training, some basic principles relating specifically to theories of adult education will be discussed. The changing nature of education in general and adult education in particular will be discussed, followed by a discussion regarding the specific nature and needs of the adult learner. The reasons for the need for the establishment of an equitable relationship between the educator and adult learner will be discussed, following which the benefits of the creation of an informal, flexible learning environment will be examined.

Lastly, once an understanding of the basic principles affecting the adult learner and the educational environment has been established, the discussion will move to look at specific teaching methods used in the field of

adult education, the reasons that these methods are favoured, as well as the implications that these methods will have on architecture for adult education.

1.1.2. Objectives

The provision of access to information which is relevant to the community is an important function of an adult education centre. The type of information which should be made available may include information about HIV/AIDS; decreasing child mortality rates; information pertaining to trades, jobs or skills relevant to the community, and so on. One key objective of this project is to make this information available in a manner that is accessible and legible within a building that is not intimidating or condescending, but rather informal, comfortable and equitable.

Skills training sessions provided by the adult education centre strengthen the community's abilities in learning to perform activities, crafts and jobs. Competency in these skills will prepare the individual for improved and varied ways of earning an income. The adult education centre should provide accommodation suitable for the learning of crafts, the facilities for the manufacture of such products, and the sale of the aforementioned products on site. An important objective of this research is to determine how best to create such a platform for the empowerment of the community.

The primary objective of this research is to inform the design of a Centre for Adult Basic Education and Vocational Training in an urban context which will meet the specific needs of its context and users. The secondary objective of this research is to contribute to the current body of information relating to the spatial and qualitative requirements of adult educational facilities.

1.1.3. Key Questions

- What is the current state of the provision of education in the province of KwaZulu-Natal, and how can this situation be improved?
- What impact does the siting of educational facilities have on learning and the community which it serves?
- How can one create a positive learning environment in an urban setting?
- It has been indicated by experts in the field of adult education that education is constantly changing. What are the implications of change for the architecture for education, with particular reference to adult education?
- In what way does educational theory impact on architecture?
- How can the facility provide for the needs of learners and educators with children?
- How can the specific emotional and physical needs of the adult

learner be accommodated in an architectural form?

- How do the commonly accepted teaching methods influence the use of space, and hence the architecture which houses these activities?
- What is the role of colour in the educational environment?

1.2. Setting Out The Scope

1.2.1. Hypothesis

Firstly, it is important to define the term 'literacy'. There are a variety of definitions of literacy, many of which are too narrow to encompass the true meaning of the word. The definition of literacy as it is most commonly understood states the following:

> a literate person is one who can, with understanding, both read and write a short simple statement on his or her everyday life (UNESCO, 2004. p 12).

This definition focuses solely on the technical skills one must obtain in order to be termed literate. However, it fails to acknowledge the broader meaning of literacy. A more appropriate definition is as follows:

> Literacy is the ability to identify, understand, interpret, create, communicate and compute, using printed and written materials associated with varying contexts. Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society (UNESCO, 2004. p 13).

Literacy can be said to be the life skills, including those technical skills of reading and writing, which enable the individual to pursue goals and improve their quality of life through a better understanding of the information available to him/her.

The hypothesis of this research is based on this complete definition of literacy, which assumes that the provision of education enables a community to improve its means and quality of life. The hypothesis, therefore, is that by introducing a Centre for Adult Basic Education and Vocational Training into the urban context of the Greater Warwick Junction Precinct, education can be made more accessible to a large number of potential learners. Easy access to education will encourage more learners to participate in educational activities. This, in turn, will serve to improve learners' access to opportunities, enabling them to improve their abilities, achieve their goals and participate more fully in their respective communities. This is the motivation for the proposal for a facility for adult education in the urban context of Durban, South Africa.

From a philosophical standpoint, the architect has a responsibility to his community to help create environments which are positive and empowering. The proposal of a public building of the nature of an adult education facility acknowledges this responsibility. The building should provide an environment that serves the purpose of education

and empowerment, but further provides the community with a facility with which it can identify, which provides them with a sense of responsibility and ownership, and control over the future of their community.

1.2.2. Importance of the Study

It has already been stated that the problem of illiteracy and lack of skills is rife in South Africa. Further, according to Bergevin (1967: internet), kwa-Zulu-Natal is one of the most affected provinces in the country. There is, therefore, a need to provide a means by which this problem may be tackled.

There are currently initiatives in place whose main objective is to eliminate the problem of illiteracy in our country. One such initiative is the South African Literacy Agency. It aims to improve literacy by:

- mobilising voluntary services in support of a nationwide literacy initiative
- developing training programs for volunteer educators
- designing, developing and procuring reading and resource material
- setting up local literacy units
- establishing and maintaining a database of learners and providers
- servicing the needs of learners and educators (Bergevin, 1967: internet).

By partnering with such an organisation and providing the physical environment for the activities mentioned above to be carried out, the proposed facility for adult education could provide a platform for the improvement of literacy, as well as creating a model for the rest of the country to be employed in their urban settings. The provision of a regional centre for adult education will reach the largest number and variety of users, and therefore be a successful medium for the improvement of regional literacy.

1.2.3. Research Methods

This study is carried out in the city of Durban, located in the KwaZulu-Natal Province of South Africa (See Fig. 1). The research consists of three phases. The first phase involved a literature review of current material in the fields of adult education, literacy, the design of school buildings, campus planning, kinetic architecture and urban design. The literature review also extended to investigate the concept of movement and its impact on the urban fabric and architecture. Finally, the literature review examined the role that colour plays in educational buildings. The objective of this component was to enable the analysis and summary of the relevant information in such a way that may be used in order to formulate guidelines which will serve to inform the architectural design of a facility for the education of adults, both from a planning perspective and a theoretical point of view.

The second phase of the research involved informal interviews conducted with researchers in the field of adult education, educators of adults, and

architects with experience in the design of educational facilities. The purpose of this component was to identify trends in the three different fields in order to inform the research and to develop a conceptual framework on which to base the design of the proposed facility, as well as to gain a first hand understanding of the specific needs and approaches to education and architectural design from individuals directly involved in these processes.

The third phase of the research involved the analysis of existing built works, both local and abroad, which encompass some structural, theoretical and conceptual elements that were highlighted by the literature review and the interviews that were conducted. Precedent studies were conducted on buildings not necessarily of the same building type, but which present specific elements that are relevant to the design of a centre for adult education either in terms of concept, structural systems, spatial arrangements and components, or specific details. The case studies highlight local buildings specifically designed for the education of adults, with particular reference to factors influencing the choice of site, the particular spatial arrangements, conceptual ideas and specific details of learning spaces. The purpose of this component was to illustrate the points made in the research with successful built examples of both local and international origin, as well as to collect qualitative information and spatial data which will be interpreted in order to formulate a brief and schedule of accommodation for the proposed centre.

The culmination of this research will be the development of a detailed design brief, a schedule of accommodation, and the design of a Centre for Adult Basic Education and Vocational Training.

1.3. The Context: The Greater Warwick Junction Precinct

1.3.1. Location

The choice of location is an essential consideration for a facility for adult education. The chosen site should be centrally located in order that it is as accessible as possible to the widest portion of the population. The chosen location must also be easily accessible by means of public transport.

The Greater Warwick Junction Precinct is an urban precinct which is located on the fringe of Durban's inner-city (See Fig. 3). Warwick Junction "is the primary public transport intersection of the city" (Dobson & Skinner, n.d.: p. 1). Here, taxis, buses and trains converge to form one very large, vibrant transport node (See Fig. 4 & 5). The area, on average, accommodates 460 000 commuters per day (Dobson & Skinner, n.d.: p. 1).

"Human settlements have always tended to locate at transport junctions, on a scale directly proportional to the importance of the junction" (Correa, 1989: p. 71). And so it has been in the Warwick Junction Precinct. Here (See Fig. 6), markets developed over time and today this area houses one of the largest informal trade districts in the country, with a minimum of 5000 traders per day (Dobson & Skinner, n.d.: p. 1). This thriving trading district affords the southern part of the precinct with a particular character which can best be described as bustling, vibrant and dynamic.

To the east of this market district lies the Grey Street district. Here is evidence of the physical segregation of racial groups that was enforced during apartheid. This

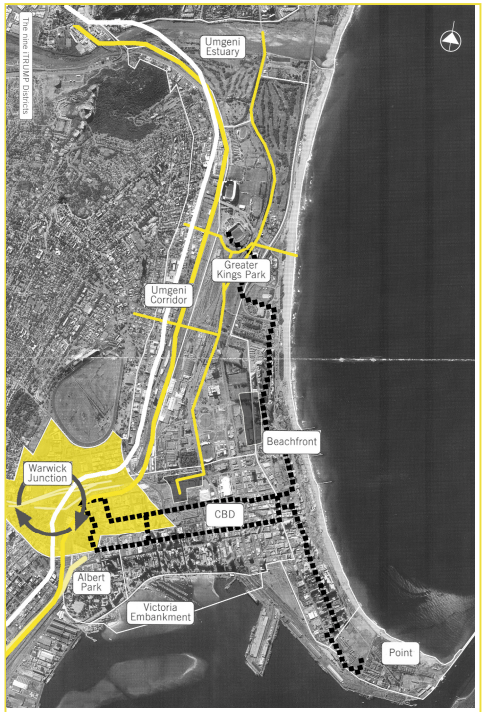


Fig. 3: The Warwick Junction District is centrally located and accessible by means of the "people movers", buses, train and taxis.

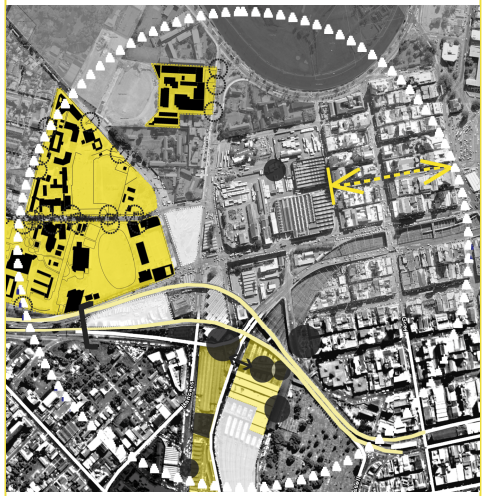


Fig. 4: The Warwick Junction District is characterised by multiple educational facilities and the confluence of three major transport modes, namely buses, taxis and railway. However, within the middle of this junction is a dead-zone with bus sheds and bus parking. This zone is the choice for the site for the proposal. To the ease of the site is Beatrice Road District, an area with a distinctive area which is cut off from the rest of the precinct due to the fact that Beatrice Street is a dead-end. The market zone to the south is cut off from the north by the freeway coming into the city from the east

area is distinctly Indian in its heritage. The Grey Street Mosque is the most significant symbol of this community which consists of a mix of residents and shop owners alike.

To the north west of the precinct is the educational district (See Figs. 7 & 8). This constitutes a conglomeration of educational facilities. These include primary, secondary and tertiary institutions, such as St. Anthony's, Durban Girls Secondary, Sastri College and the Durban University of Technology. The character in this part of the precinct is distinctly different to that of the south. Here, a more sober mood can be observed in the quieter, less peopled streets.

To the east of the educational district is the Beatrice Street district. Here, residential accommodation exists in parallel with the commercial operations of many small businesses. However, it is cut off from the rest of the precinct by the bus depots and vacant plots which bound Centenary Road opposite the educational district, and the potential link from one to the other are severed when Beatrice Street is terminated by one of the large bus sheds.

1.3.2. Identifying the Need

It is generally recognised that there is a need for a higher quality of education in this country. The provision of education and the imparting of knowledge are essential to developing learners' full potential, broadening their competencies, and raising their attainment levels (Hauf, et al, 1971: pp. 1-4). The acquisition of knowledge and skills will empower learners to attain higher levels of satisfaction in their daily lives, improve their work



Fig. 5: Taxi rank to the south of the site



Fig. 6: Market district



Fig. 7: M.L. Sultan Campus, DUT



Fig. 8: M.L. Sultan Campus, DUT.

opportunities, and allow them to become self-sufficient and live more sustainable lives (Hauf, et al, 1971: pp. 1-4).

The most prominent populations occupying the Greater Warwick Junction Precinct are made up of traders and commuters (Dobson & Skinner, n.d.: p. 1). While the commuters begin and terminate their vehicular journey here, most continue on their journey and leave the precinct on foot. For the traders, however, this precinct is their place of work.

The high number of traders makes up a noticeable group and cannot be easily ignored (See Fig. 9). These traders are entrepreneurs and provide a great boost for the economy of the city. It is therefore beneficial to the individuals in question as well as to the community at large if the traders' skills are improved, for they lose business and income due to job specific lack of skills, lack of English language proficiency, and lack of basic literacy and numeracy skills. It can therefore be seen that there exists a local need within the precinct to provide access to literacy and numeracy courses, vocational training of skills such as carpentry, weaving, beading, sewing and cooking, and to provide general educational information with regards to running a small business, with particular focus on the specific context (See fig. 10).

People from rural settings that move to cities in search of better opportunities, jobs and education, are often not equipped with the basic skills required in order to obtain jobs. This results in a population group within the city which is unemployed and unable to improve their own circumstances due to the lack of basic education (Dobson & Skinner, n.d.: pp. 1-2). If the lack of skills and basic education can be addressed within the city context in a manner which is accessible to this immigrant population, it is possible to improve the literacy of the population as well as providing the necessary skills required in order to obtain and retain



Fig. 9: Small entrepreneurial enterprise under the bus shelter

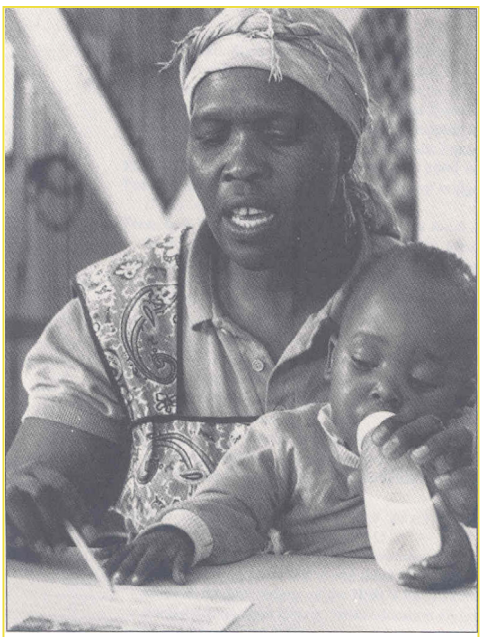


Fig. 10: Mother, learner and weaver, this picture illustrates the multi-faceted nature of the adult learner who fills many roles in life beyond that of full-time learner (Hutton, 1992: p. 8).

jobs in order that the people may be empowered to improve their current circumstances.

Beyond the immediate context of the Greater Warwick Junction Precinct, the need for education does not diminish. The province of kwa-Zulu Natal is one of the provinces worst affected by adult illiteracy (Bergevin, 1967: internet; Department of Education: South Africa, 2006: p. 28). It is essential to the development of democracy, the economy and the individual that this problem be addressed urgently, for a true democracy cannot exist where the people cannot understand their rights and participate in the decisions made regarding their own well-being. It is therefore important, in a province strongly affected by illiteracy, that measures be put in place to improve its people's skills and thereby improve their opportunities for self-empowerment.

However, among the many environments used for teaching, most were not planned specifically for this purpose, but were modified from existing buildings. Furthermore, the design of spaces for education has not, over time, kept up with the development in technologies and teaching methods and theory (Hauf, et al, 1971: pp. 3-6). It is therefore necessary for the development of new, appropriately designed facilities for the education of adults.

The current South African legislation regarding education provides for the provision of education for all citizens regardless of socio-economic status or age (Adult Basic Education and Training, 2000: p. 2). Due to the increased accessibility of education, there is an increase in the enrolment in all sectors of education which has not been met by an increase in the number of facilities to provide this education (Hauf, et al, 1971: p. 3). Therefore, due to the increase in enrolments and a lack of facilities, there is an urgent need for the provision of new educational facilities, and adult education facilities in particular.

Currently we are living in an environment that is highly influenced by technology and the development thereof. With the rapid rate at which technology develops and changes, the technology in use in the workplace is also constantly changing (Imel, 1991: pp. 395-396). Therefore it becomes necessary for employees to have access to education by which they may advance their skills in order to keep apace with technology.

"An adult education system is necessary "to train and retrain workers, to develop human potential, and to reduce some of the inequities associated with race and class" (Imel, 1991: p. 398). It can therefore be seen that the need exists to provide a centrally located facility which is accessible on a regional level, and which provides a multitude of different levels and forms of skills and basic training to adults. The proposed facility

should therefore provide for a range in the population, from the previously uneducated trader to the commercial sector, and everyone in between.

1.3.3. Client and Funding

The financial needs of a facility for adult education should be met out of a variety of resources, both public and private (Hutton, 1992: p. 40-44). The responsibility of funding, planning, organisation, teacher training, methodology, materials and the teaching process may effectively be and currently is shared by the State, by non-governmental organisations (NGO's) or voluntary organisations, and the industrial and commercial sector (Hutton, 1992: p. 40).

"Questions then arise as to whether the situation should continue as it is at present, with fragmented, small-scale NGO's providing literacy classes, or whether training, methods and materials should be more centralised and standardised" (Hutton, 1992: p. 44). It would appear from this statement that it would be a positive action to consolidate the production of learning materials, the training of educators, and the provision of adult education into fewer, more centralised centres which will be more readily accessible to a larger portion of the population. It may therefore be best if the educational centre be funded by the government in partnership with private organisations and subsidised by the activities of the centre.

1.4. Summary and Conclusions

The problem of inadequate education and out of date facilities has been identified as the major focus of this research. The proposal for a Centre for Adult Basic Education and Vocational Training has been identified as one medium through which this problem may be addressed in a proactive way. The objectives that are interconnected with this proposal include:

- to provide access to information which is relevant to the community via the platform of the education centre;
- to identify ways in which the centre may be designed in order to be legible, flexible, informal and comfortable for its users;
- to provide access to skills training

The hypothesis of this research is that by introducing a Centre for Adult Basic Education and Vocational Training into the urban context of the Greater Warwick Junction Precinct, education can be made more accessible to a large number of potential learners, while easy access to education will encourage more learners to participate in educational activities. This, in turn, will serve to improve learners' access to opportunities, enabling them to improve their abilities, achieve their goals and participate more fully in their respective communities. The provision of a regional centre for adult education will reach the largest number and variety of users, and therefore be a successful medium for the improvement of regional literacy.

The study area for this research has been identified as the Greater Warwick Junction Precinct and was chosen for its close proximity to public transport and existing educational facilities, its central location within the city of Durban, the vibrancy of the precinct, the large population which passes through daily, and its accessibility from the residential areas around it. The traders, commuters and immigrants of the area, as well as small, medium and micro enterprises and individual professionals make up the target group of the proposed facility.

While there are adult education centres operating in KwaZulu-Natal, most of these organisations make use of existing facilities which were not originally designed for this purpose. Such centres include schools, halls and community centres. However, these facilities do not usually accommodate the specific needs of the adult learners comfortably, and result in negative learning environments, and therefore learning experiences. Those facilities that do exist have not kept up to date with technological developments or the developments of adult teaching methods and theories, and are therefore out of date and no longer function optimally for this purpose.

The financial needs of the centre, from construction through to day-to-day

running and maintenance costs, should be provided for by the Department of Education as well as private or voluntary organisations.

The following chapters focus on the literature review and theoretical framework on which the design proposal is to be based. The literature review introduces the topic of adult education, defines adult education and the adult learner, discusses the role of an adult education centre in a South African context, and explains the types of courses involved in adult basic education. This will be followed by the theoretical approach, which will introduce principles of urban design, educational, and architectural theories. Discussions will include topics such as the urban setting as the learning environment; movement in city and buildings; the role of campus making in improving the quality of learning environments; the implications of the theory of adult education for the architectural form of educational buildings; the dialogue between teaching methods and the learning environment, and the role of colour in the learning environment.

The fourth chapter will investigate a predetermined case study and a group of precedent studies. Chapter Five is a concluding chapter which will summarise the findings of the preceding chapters. Chapter Six then discusses the site selection and analysis based on the criteria developed based on the preceding. This will be followed, in Chapter Seven, by a definition of the client and the development of the design brief on which the design proposal will be based. Chapter Eight then draws conclusions from the theoretical framework and the case and precedent studies to result in the schedule of accommodation and the development of the initial conceptual base for the proposed building.

2

LITERATURE REVIEW



in South Africa there are approximately

4 000 000

adults who have never attended formal schooling, and a further

4 000 000

adults who have no more than a Grade 7 level of schooling

Bergevin, P. (1967). A philosophy for adult education. New York: Seabury Press.

2. LITERATURE REVIEW

This chapter aims to introduce and define the notion of the adult learner and the topic of adult education. It will aim to define Adult Basic Education and Vocational Training, and will follow with an explanation of the characteristics of the adult learner. The role that adult education centres play in the South African context will be discussed, followed by a brief summary of some of the learning areas of adult basic education, and vocational training subjects which are relevant in the urban context. The final point of discussion for this chapter will reflect on the factors which influence the quality of the learning environment.

2.1. The Definition of the Adult Learner

The adult learner as classified in the Adult Basic Education and Training Act, 2000, is any person over the age of 16 who is not engaged in formal schooling or higher education, and with an educational level of less than grade nine.

2.2. The Definition of Adult Basic Education

Adult basic education refers to all learning programs for adults which cater to levels one to four as rated by the National Qualifications Framework. In this case, level four is the equivalent of the formal grade nine, or the equivalent of nine years of schooling (Adult Basic Education and Training Act, 2000, p. 6). ABE includes two fundamental learning areas, namely Language, Literacy and Communications, and Mathematical Literacy, as well as several core areas which include Natural Science, Human and Social Sciences, Economic and Management Science, and Technology, and elective subjects including Small, Medium and Micro Enterprises (SMME), Tourism, Agricultural Science and Ancillary Health Care (Land, Lyster & Seid, 1999: pp. 5-7).

Adult education is aimed at those adults or persons over the age of sixteen whose current level of skills hinders attempts to attain and retain employment (McNamara & Pike, 1980: p. 31). The skills imparted by adult education encompass communicative, computational and social skills. The aim of adult basic education and training is to increase learners' skills in order to allow adults to become more productive and responsible citizens.

Adult basic education and training often provides an alternative means of education to those adults who have not completed their formal education through primary and secondary education institutions. Adult education is complementary to the formal education system in both the rural and urban contexts. The aim of providing social skills is to make learners adaptable in order that they may cope with the constant change which characterises

our society (McNamara & Pike, 1980: p. 32).

2.3. Characteristics of the Adult Learner

"As the adult person is self-motivated, both his sense of discipline and his value for education are self-generated. The emphasis is, therefore, not on the 'institution' teaching him, (as in education for children who need the discipline of systems and institutions) but rather that the adult is partaking, voluntarily and autonomously, of the activities of the centre. The mood and feeling therefore must be informal, human and responsive to the needs of the adult. The centre must be flexible to the adult learner's wants and needs and not vice versa" (McNamara & Pike, 1980: p. 57).

Adults are psychologically, physically and sociologically more diverse than children, and as such there is no generic adult (Long, 1991: p. 25). Adult learners' ability to learn is influenced by health, prior knowledge and level of skills, and the emotional and mental state of the learners (Long, 1991: pp. 25-36).

The role of the learner in society, for example as learner, worker, parent, as so forth, is another characteristic which makes the adult learner unique. The overlapping roles that learners fill differ from person to person, and often influence the level of participation in learning activities, as well as the motivation for participating in learning activities at all (Long, 1991: p. 33). The variability that arises from the nature of the adult learner results in a diverse learning environment which is influenced by variable experiences, roles, personalities and ideals of the learners.

The variable nature of adult learners brings about the need for an adaptable curriculum which can be adjusted depending on the level of skills of the learners, their past experiences and their future ambitions and motivation for participating in learning activities (Long, 1991: p. 36). This unique characteristic of the adult learner should also be reflected in the built environment. Spaces for adult education should therefore be adaptable and flexible based on the changing needs of the users.

2.4. The Role of a Centre for Adult Basic Education and Vocational Training in the South African Context

In South Africa the institutionalised educational system is clearly defined and inflexible at the primary and secondary levels (Rössing Foundation, 1980: p. 5). The function of a Centre for Adult Basic Education and Vocational Training is to provide an informal alternative educational model for adults. The provision of education at this level is of such a nature that it can be accessed by any motivated adult, and participation is possible regardless of

the level of literacy competence, maturity, race or age. The adult education centre is the platform from which knowledge can be shared and education furthered. The flexible curriculum is adaptable in order to meet the various demands that are inherent in the adult learner. According to McNamara & Pike (1980: p. 30), the purpose of the adult education centre in the African context is:

> to give adults who have for one reason or another not had the opportunity to receive formal education in their youth, the enabling means to increase their social, economic and cultural viability, to help them to adapt to changes in their environment, and to be secure, and to contribute to, their own wellbeing.

The most effective learning environments are those which combine livelihood or vocational training with literacy content which is relevant (Lyster, 2005: p. 7).

One of the most important functions of the Centre for Adult Basic Education and Vocational Training is the provision of information (McNamara & Pike, 1980: p. 30). This function is accommodated in a library or learning resources centre which makes information available in a manner which is relevant to the learners in a medium which is accessible. The library should ideally be used in conjunction with every other learning activity which takes place at the centre.

Social and cultural integration are other important functions of the Centre for Adult Basic Education and Vocational Training (McNamara & Pike, 1980: p. 31). Through the participation of the community, the viability of such a centre can be enhanced. Informal gatherings and chance meetings, which play a large part in the learning experience, should be encouraged and accommodated by the form of the built environment.

2.5. Learning Areas of Adult Basic Education

ABET is divided into learning areas, as opposed to subjects. There are three types of learning areas. These are the fundamental learning areas which form the basis for all other learning activities and encompass language, literacy and communication and mathematical literacy; the core learning areas which are important in establishing a good general and basic knowledge, and the elective learning areas, which are aimed at making ABET relevant and linking it to income generation (Land, Lyster, & Seid, 1999: pp. 5-7).

2.5.1. Language, Literacy and Communication

Literacy focuses on language proficiency and reading skills (McNamara & Pike, 1980: p. 32). This forms an essential component of adult education because language facilitates communication, while reading is an essential skill required for the effective performance of many jobs and daily activities alike. It is also required in

order to be able to access further learning activities and opportunities.

The purpose of this learning area is to enable learners to make meaning, access information and to communicate under a variety of circumstances and in a variety of contexts. All of the eleven official languages are covered in this learning area (Land, Lyster, & Seid, 1999: p. 5).

2.5.2. Mathematical Literacy, Mathematics and Mathematical Sciences

Numeracy is a term which refers to an understanding of the basic computational skills which will enable the learner to perform basic arithmetic calculations relevant to his or her every-day life. Numeracy deals with qualitative issues of time and space, dealing with patterns, problem-solving, and logical thinking in order to understand the world (Land, Lyster, & Seid, 1999: p. 5).

2.5.3. Life Orientation

Life-skills are those problem-solving skills which can be used for the appropriate management of personal affairs (McNamara & Pike, 1980: p. 33). These skills relate to the five social areas of responsibility, these being self, family, leisure, community and work. In other words, life-skills include appropriate behaviours in different circumstances, interpersonal skills, and so on.

Life orientation is intended to help learners to live meaningful lives in a society which is undergoing rapid transformation. Emphasis in this learning area is placed on the practice of positive values, the promotion of human rights, and the promotion of the achievement of the individual learner's potential world (Land, Lyster, & Seid, 1999: p. 6).

2.5.4. Human and Social Sciences

This learning area encompasses history and the human component of geography, and purpose of this learning area is to develop responsible citizens in a culturally diverse, democratic society. The course aims to equip learners with skills which will enable them to make sound judgments and to take appropriate actions which will contribute to the sustainable development of human society (Land, Lyster, & Seid, 1999: p. 5).

2.5.5. Natural Sciences

The study of natural sciences encompasses the physical life, earth sciences and the systematic study of the universe. Both the natural and man-made environments are studied here as a set of related systems. Methods of data collection and analyses encourage critical evaluation in order to develop scientific knowledge (Land, Lyster, & Seid, 1999: p. 6).

2.5.6. Arts and Culture

Arts and culture are seen as integral parts of life which embrace the spiritual,

material, intellectual and emotional aspects of human society. Culture refers to not only expression through the arts but also modes of life, behaviour patterns, heritage, knowledge and belief systems (Land, Lyster, & Seid, 1999: p. 6).

2.5.7. Economic and Management Sciences

Economic and management sciences are fundamental in preparing the learner to understand the importance of reconstruction, development and economic growth in order to establish a sustainable future. This learning area includes business economics, economics and accountancy (Land, Lyster, & Seid, 1999: p. 6).

2.5.8. Technology

The purpose of this learning area is to encourage the use of knowledge, skills and resources to meet human needs, and to recognize and solve problems by investigation, designing, developing and evaluating products, processes and systems (Land, Lyster, & Seid, 1999: p. 6).

2.5.9. Small Medium and Micro Enterprises

This learning area has been developed to cater for the large percentage of unemployed adults who are unlikely to be able to find employment within the formal sector (Land, Lyster, & Seid, 1999: p. 7). Skills obtained through this learning area will enable learners to engage in entrepreneurial activities and run and manage small businesses.

2.6. Vocational Training

Vocational training focuses on job skills which are geared to give the learner necessary basic skills which will equip them to participate in further high technology training courses as well as to take advantage of self-employment opportunities and gain access to better jobs (McNamara & Pike, 1980: p. 33). The role of vocational training is to develop skills (Brunette, 2006: p. 54). It should be relevant to the needs of the community and the country as a whole. Vocational training should not be based on a rigid curriculum, but should rather be flexible. The aim of vocational training is to counter unemployment and prepare learners for the labour market (Brunette, 2006: p. 58). Learners should therefore be taught to be self-sufficient through self-employment, as the learning of practical subjects enables learners to find and create employment (Brunette, 2006: p. 58; p. 114). Vocational education is therefore the connecting link between academic learning and industry (Brunette, 2006: p. 80).

Vocational training promotes the “hands-on transformation of materials into products, emphasises current industrial practice rather than traditional

craft skills, though it can overlap" (Brunette, 2006: p. 130). The learning spaces for vocational training are usually equipped with industrial equipment and the facilitators have specialised training. Learners may also be involved, through the vocational training courses, with industry through apprenticeship in order to gain practical experience. Here, education links learners and facilitators with preparation for work and an economically viable future (Brunette, 2006: p. 130).

The courses which can be made available vary according to local needs, and may include practical subjects such as building, woodwork and dressmaking, bricklaying, plastering and painting, electricity, fitting and turning, metalwork and welding, motor mechanics, panel beating and spray painting, woodwork and technical drawing (Brunette, 2006: p. 39; p. 66).

Additional vocational training skills may be less practical, but relevant to the aims of self-sufficiency and economic viability. These skills may include computer literacy, accountancy skills and business management skills, as well as crafts such as beading, baking, catering or cooking, sculpture, and so on. Ultimately the courses involved in vocational training should aid the learner in becoming self-sufficient and enabled to find or create sustainable employment.

2.7. Summary and Conclusions

The architecture for adult education should reflect the ideals of the educational model and the unique qualities of adult learners (Rössing Foundation, 1980: p. 5). A Centre for Adult Basic Education and Vocational Training should therefore be of an appropriate scale, must be welcoming and comfortable, and should be un-intimidating to the learners

A centre for adult education and vocational training is influenced by the constant change that occurs within the centre as well as within society at large. Constant fluctuations in numbers and changes of type of courses call for flexibility of the built environment (McNamara & Pike, 1980: p. 57). This is further influenced by the informal nature of courses which can be greatly benefited by the creation of flexible learning spaces by means of kinetic elements such as swing walls, removable room dividers, and so on.

The following chapter, the Theoretical Approach, will discuss theoretical topics related to adult education which will influence the development of design concepts and criteria on which the design proposal will be based.

3

THEORETICAL APPROACH



when a new, planned building rises in the slum-be it a public toilet or a sewing co-operative-it immediately becomes a monument. it was conceived by an architect, it indicates things are changing: people understand they now have the right to what was only available in the so-called “formal city”

Architecture for Humanity (ed.). (2006). Design Like You Give a Damn. New York: Metropolis Books. P. 218

3. THEORETICAL APPROACH

3.1. The Urban Setting as Learning Environment

Critical to the success of any education facility is its location (Smit & Hennessy, 1995: p. 7). An unsuitable location will result in a facility that is fragmented, inequitable and inappropriate to the needs of South Africans.

Currently the planning strategy for the locating of schools determines that schools should be evenly distributed within residential areas (Smit & Hennessy, 1995: pp. 9-10). This strategy is based on the concept of community. However, it has been said that:

> …the physical construct of 'community', and the idea of locating facilities within the neighbourhood units, constrains and restricts the opportunities of children in disadvantaged areas. In order to maximise the opportunities for the upliftment of the poor, it is clear that they should, in fact, be exposed to as much of the outside world as possible. (Smit & Hennessy, 1995: p. 25).

This statement is applicable to the adult learner as well. If confined to one's community and the experiences of that community, one may never be exposed to the wide variety of learning experiences available beyond that community.

There are benefits and disadvantages to the current principles of school locations. Positive aspects of community schools include the fact that all learners can be within walking distance; the creation of a community with the school as the focal point of community activities; a safe learning environment where the education received is done so within a known community where strong social ties exist; and community involvement and participation in the running of the schools and the educational processes (Smit & Hennessy, 1995: p. 46).

The disadvantages for schools located within isolated communities are significant. The catchment area of such schools is usually limited and inflexible.



Fig. 11: This is the typical design of most schools in South Africa currently. Schools tend to be mass produced using industrialised building methods. The design of these schools is inflexible and inappropriate to the real needs of an educational facility. This layout is also space consuming and therefore very costly (Smit & Hennessy, 1995: p. 11).

Therefore, when the demographics of the residential area change to include more or less learners, schools will often become either overcrowded or remain only partly utilised, depending on this fluctuation. The introverted nature of the community and the residential area tends to be the same in the schools (Smit & Hennessy, 1995: p. 48). Learners are therefore not exposed to the outside world, and their education is thus limited. Within poor communities, the learning environment is often insufficient due to low investment by parents, whereas the level of education in wealthier areas is usually higher.

Another disadvantage is the dispersal of funds which occurs when there is a large number of small schools. This results in all the small schools having limited resources (See Fig. 11). This spread-out nature of schools currently also results in the wastage of valuable land and the breaking up of the urban fabric by the dispersal of open spaces (Smit & Hennessy, 1995: p. 26). By consolidating more small schools into larger, centrally located schools, this wastage can be minimised, learners may be exposed to a wider level of opportunities, the provided facilities will be more fully utilised, and a larger amount of relevant facilities may be provided at one facility, rather than the current state in which the facilities are scattered among the many small schools.

Smit and Hennessy (1995: p. 38) propose an alternative to the current methods of locating schools in South African urban areas, termed “clustering” (See Figs. 12 & 13). Clustering implies the locating of groups of educational facilities at the intersections of primary routes within mixed use

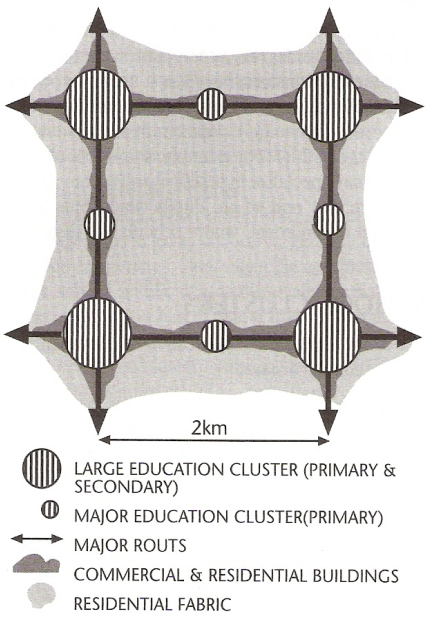


Fig. 12: The diagram illustrates a conceptual framework for the placement of schools along four main roads. Large educational clusters are located at road intersections with smaller primary education clusters located halfway between. The location of these schools is calculated with reference to acceptable walking distances to schools for primary and secondary school children (Smit & Hennessy, 1995: p. 52).

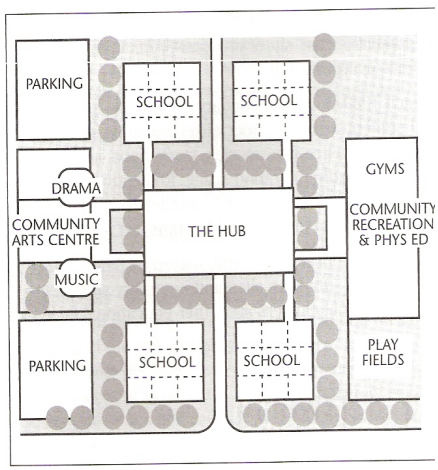


Fig. 13: This diagram illustrates the conceptual layout of an inner city secondary school cluster of four schools with a shared school hub comprising hall, resource centre, and science laboratories (Smit & Hennessy, 1995: p. 40).

areas, making them accessible by public transport. Clustering of units, in such a way that facilities may be shared, is more cost effective than building large numbers of small educational units, each with their own specialised facilities. By sharing facilities, the fuller use of these specialised facilities is ensured, as opposed to these facilities being used only for a small percentage of the day in small, isolated educational cases. Furthermore, due to the sharing of facilities, the running and building costs of these specialised spaces are reduced. Also, due to the relatively much larger catchment areas of these clusters, the educational facilities are much less susceptible to the local demographic changes that occur over time (Smit & Hennessy, 1995: p. 38).

By clustering educational facilities together, the following principles are put into practice: densification and compaction; mixed land use; accessible location; pedestrian and public transport emphasis; integration of communities; maximum freedom of choice; an holistic view of education; the sharing of facilities with the community; the sharing of facilities between educational facilities; as well as the increase in the specialisation of educational facilities (Smit & Hennessy, 1995: pp. 49-50).

Densification is a positive side-effect of this model as there is currently a trend of sprawl which is wasteful of land and expensive to service and access. By choosing a site which is centrally located and accessible by means of public transport, the accessibility to the facilities is increased, making them available to a much wider user base. This is key in an environment where there are so many uneducated people in a country where the constitution desires to make basic education readily available to all those who desire it.

The integration of communities is an important role of the educational facility (See Fig. 14). This exposes the learner to a wide variety of experiences and exposes them to people with varied ways of living and thinking, and may, in turn, encourage a greater level of acceptance within the broader community.

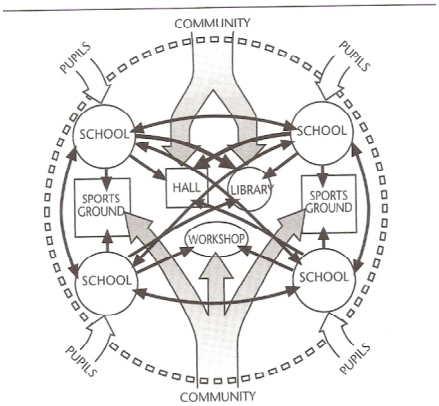


Fig. 14: This diagram illustrates the relationships that will exist between the various functions of a school cluster, namely schools, hall, library, sports fields and workshops (Smit & Hennessy, 1995: p. 59).

The clustering of educational facilities is a positive action as it allows for the specialisation of these facilities. This allows for the development of adult

education centres, vocational training centres, specialised technical universities, trade schools, and so on. The reason that this is a positive development is that it allows each centre to have specialised equipment and facilities which would be unaffordable if there were too many centres offering the same courses.

3.2. Movement in City and Buildings

Movement cycles in the city can be classified as directed movement, purpose movement, multi-directional movement, and psychological movement (Cook & Chalk, 1972: p. 21). The patterns set up by the different movement cycles break up the city into distinct precincts. The Greater Warwick Junction Precinct is one such precinct which is clearly distinguished from the rest of the city.

While the city is ever-changing in its details, influenced by the constant movement in the city and developments made in technology and society, the outline of the city remains stable (Lynch, 1979). Elements of more permanence, although not entirely immune to change, include roads, railway lines and zones demarcated through town planning, as well as natural elements such as rivers, mountains and oceans.

3.2.1. Transportation Confluence

The Greater Warwick Junction Precinct is the site of the confluence of the three major transportation modes of the city of Durban (Figs. 15 & 16). Here, bus, rail and taxi converge and result in a dynamic interchange where people are constantly moving and being moved. This confluence results in a naturally occurring market district occupied daily by thousands of traders and nearly half a million commuters (Dobson & Skinner, n.d.: p. 1). There are therefore countless movement paths into and out of the area, be they pedestrian or vehicular, which influence and shape the urban fabric through which they travel.



Fig. 15: The map shows the main vehicular transport routes in and out of the Greater Warwick Junction Precinct illustrated in yellow, and the freeway interchange in blue. Also illustrated are the train, bus and taxi interchanges in orange and the pedestrian walking distance of 750m radius

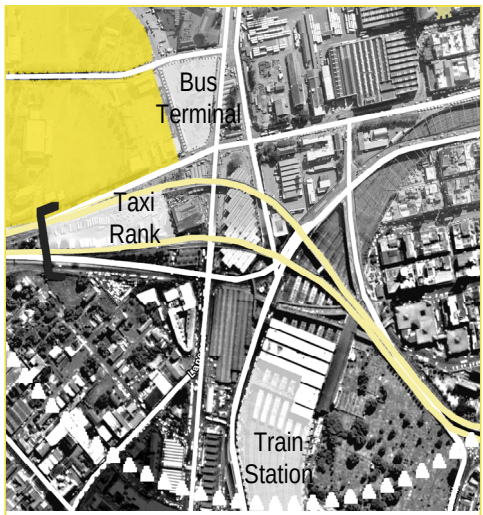


Fig. 16: In the Greater Warwick Junction Precinct is the confluence of three major transportation modalities in the city of Durban, namely rail, bus and taxi.

3.2.2. Why People Move

Human movement is governed by the biological factors which enable the body to produce a kinetic response to stimulation. In order for the body to respond to external stimulation, there are bones, joints and muscles which work in unison to create movement. Age, sex, height, weight, and fitness determine the duration and speed of movement (Cook & Chalk, 1972: p. 21). People move for a variety of reasons in order that they may achieve certain goals or obtain access to certain commodities.

"Movements … serve to carry things or people from places where they are not needed or do not wish to be, to places where they are needed or do wish to be" (Bowlby, 1977: p. 135). The journeys which people make may involve the purposes of pursuing work, carrying out shopping, or for recreational purposes. In the context of the Greater Warwick Junction Precinct, many thousands of commuters move into the area daily in pursuit of work, opportunities, commodities, and education. This movement influences the spatial pattern of the city as it defines, over time, the distribution of land uses depending on what is being moved and why (Bowlby, 1977: p. 131-135). In the Greater Warwick Junction Precinct, the spatial pattern is defined by the confluence of the three main transport modes and the movement of people into this precinct for the purposes of work, education and recreation. It is also influenced by the entrepreneurial act of job creation within the vicinity of the transport nodes which carry the people to and from the city. This can be seen in the physical development of the area which is characterised by an informal trade district in the direct vicinity of the transport nodes; the accretion of educational facilities; and the location of some key service facilities such as hospitals and fire stations.

The patterns of movement that are responsible for this urban development are a changing, ephemeral influence on the urban fabric (See Fig. 17). Over time, movement patterns change as a result of new developments and opportunities. The urban fabric, in turn, will once again respond to the changing movement patterns, resulting in a cyclic relationship between movement and urban form. In order for this change to be facilitated, there must be a certain amount of adaptability inherent in the urban fabric. If the fabric remains stagnant, then the opportunity for



Fig. 17: The construction of a new flyover near Old Dutch Road and the proposed consolidation of the campuses of DUT are just two examples of future developments which will result in changing patterns of movement and use in the area.

advancement is hindered.

3.2.3. Kinetic Architecture

"Charles Darwin has suggested that the problem of survival always depends upon the capability of an object to adapt in a changing environment" (Zuk & Clark, 1970: p. 4). As demonstrated above, the urban fabric should possess this quality of adaptability in order to survive the changing demands on it. So, too, must the individual buildings which make up the urban fabric have an inherent ability to modify function and accommodation in order to avoid becoming obsolete.

The shapes and forms of architecture which are developed serve the purpose of meeting physical, spiritual and social needs. However, place creation exists primarily as an extension of changing cultural needs, resulting in the need for constantly changing architecture (Zuk & Clark, 1970: pp. 4). There is, inherent in current building practice, a tendency to build static architecture fit only for a single predetermined function, while the changing needs of building users are ignored, resulting in discomfort and often, obsolescence.

Architecture has typically, historically, been seen as enduring, and the perseverance of the structure a symbol of the monumental nature of an empire and their great cultural achievements (Zuk & Clark, 1970: pp. 4-7). This ideal still has influence on architects of the current day, and therefore means that little consideration is given for the possibility that in the future, a building may be altered, expanded, moved or demolished. This static nature of buildings inhibits the ability to accommodate different capacities and functions over time. It is therefore possible for a building to become obsolete.

Forms, be they natural or man-made, develop as a response to pressures or needs (See Fig. 18). Generally, in architecture, this set of pressures is complex and difficult to resolve, but in order to create a successful environment form has to respond to these needs and the changes that take place regarding them (Zuk & Clark, 1970:p. 4; Chermayeff & Alexander, 1966: p. 117). It can therefore be seen



Fig. 18: The interior of the "Naked House" in Tokyo has a sparse interior with mobile rooms which can be relocated depending on seasons, time of day or immediate need. The tops of the rooms are also accessible, providing extended living room. The space is divided by means of curtains and movable panels. (Schwartz-Clauss, 2002: p. 18)

that, as external forces and internal needs of a facility change, so the forms which contain those needs and functions must adapt in response.

The forces and needs which act upon form are many and diverse. Today, our complex and rapidly changing society requires responses to several kinds of layers of changing needs (Zuk & Clark, 1970: p. 5-7). The result of this dynamic society acting upon form should, ideally, result in dynamic architecture as a response.

One central concern of the Modern movement, according to Schwartz-Clauss, (2002: p. 12) was:

> to increase the dynamic qualities of the home environment, whether by means of flexible floor plans with flowing room sequences that were adaptable to a variety of uses, or with the help of multi-functional interior objects (See Fig. 19).

However, Venturi (1977: p. 34) suggests that:

> The multifunctioning room is a possibly truer answer to the Modern architect's concern with flexibility. The room with a generic rather than a specific purpose, and with moveable furniture rather than moveable partitions, promotes a perceptual flexibility rather than a physical flexibility, and permits the toughness and permanence still necessary in our building. Valid ambiguity promotes flexibility (See Fig. 20).

The reasons for this desire for flexibility and adaptability is largely due to the need to adapt to the changing nature of the family structure over time, the need for freedom, and to create a sense of ownership and personalisation of one's living environment (See Fig. 19). This is particularly evident in the case of temporary residents, as explained by Kronenburg (2002: p. 20) who states that "temporary residents instinctively want to move the furniture, need to move the furniture and anything that helps them feel at home". In this manner the temporary resident creates a place for himself by the placement of his own possessions within the environment in order to symbolise his own presence and occupation of the space.

The above example suggests that individuals require a dwelling that is adaptable according to their changing needs, hence according to Kronenburg (2002: p. 21) a building with a "degree of adaptability, flexibility and capacity for change".



Fig. 19: The interior of Rietveld's 'Schroeder House' is divisible by sliding panels. The panels articulate the spaces when the need arises but when there is no need for separation the whole house is open and free in plan (Schwartz-Clauss, 2002: p. 29).

In the case of architecture for education, the need for the adaptability of facilities increases. Education is, by its nature, influenced by many changing forces over time (Hiemstra & Brockett, 1994: pp. 20-22). The needs and practices of education change as the social, economic, and industrial climates change, demographics fluctuate, technologies advance, and the desire to deliver better quality education to a broader base of learners increases. Further, as the theory of education develops and adapts to incorporate new ideas about practice and educational climate, or learning environment, the methods for delivering education develop and change. This will result in a change in spatial requirements to house these changing teaching methods (See Fig. 21).

In the adult education context, it is essential that the learners using an educational facility feel comfortable, respected, accepted and supported (Knowles, n.d.: pp. 46-47). An environment which encourages a spirit of mutuality between the learners and educators can be enhanced by the existence of adaptability and choice. When the opportunity exists for the learner to personalise the learning environment, a sense of ownership and responsibility is created, making the learner feel more at home in the

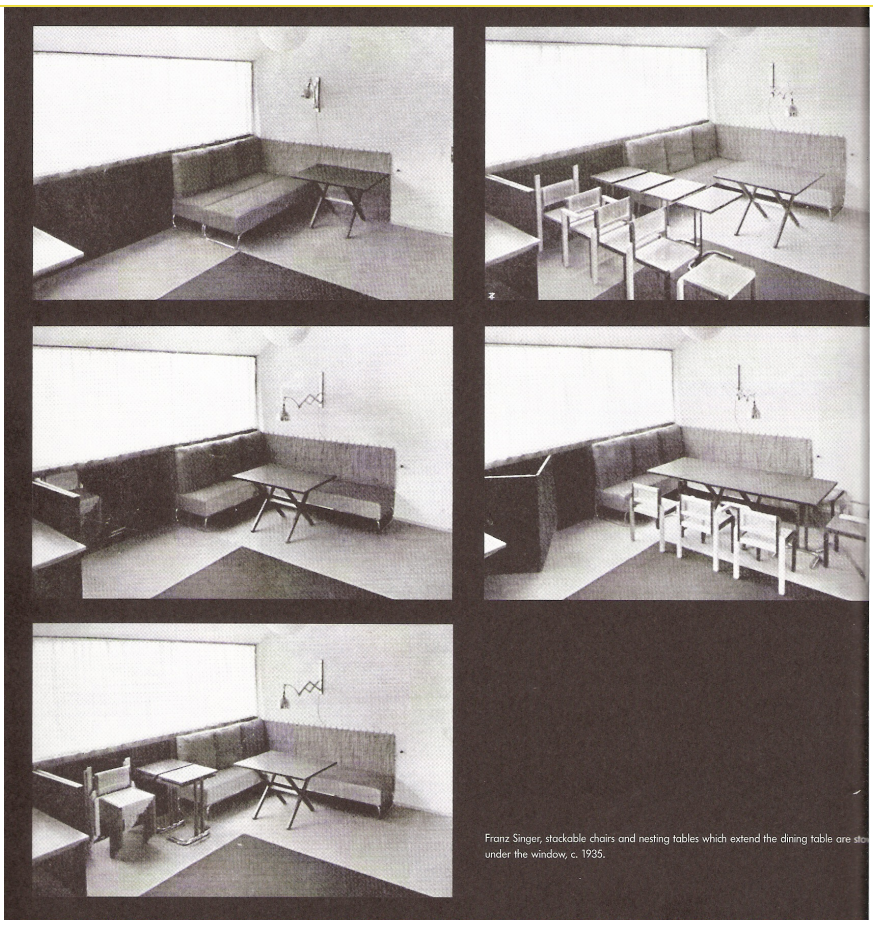


Fig. 20: These stackable chairs and nesting tables by Franz Singer can be stowed away under the window when not in use. Incrementally, the nesting tables can be un-stacked to extend to make up the dining room table (Schwartz-Clauss, 2002: p. 102)

learning environment and therefore more readily able to learn.

Kinetic architecture is essentially a type of architecture which can accommodate change (Zuk & Clark, 1970: p. 9).

> We define kinetic architecture as buildings, or building components, with variable location or mobility and/or variable geometry or movement (Fox & Yeh, 2000: p. 2).

Kinetic architecture is ideal in situations where rapidly changing needs need to be accommodated.

> An adaptable space effectively responds to the requirements of any human activity from habitation, leisure, education, medicine, commerce and industry. Adaptability may range from multi-use interior re-organisation to complete structure transformability to difficult site and programmatic response (Fox & Yeh, 2000: p. 3).

This adaptability can be accommodated by means of a number of different elements which employ a variety of kinetic mechanisms. Kinetic elements include doors, windows, shutters, and temporary or retractable roofs, lifts, rotating signs, folding or moving partitions, folding steps, collapsible furniture, amongst others (Zuk & Clark, 1970: p. 29-32).

The kinetic element which is of the most interest to this research is the moveable partition, which is increasingly common in office buildings and schools, where the arrangements of the rooms are subject to frequent changes. These moveable partitions are non-load bearing. It is therefore a requirement that the structure form long spans which result in a floor area free from structural supports (Zuk & Clark, 1970: p. 61). This free plan allows for the free location of the partitions anywhere within the demarcated area.

With the constant change inherent in the spaces which accommodate moveable partitions, the changing needs for lighting, electricity, ventilation, air conditioning and communication

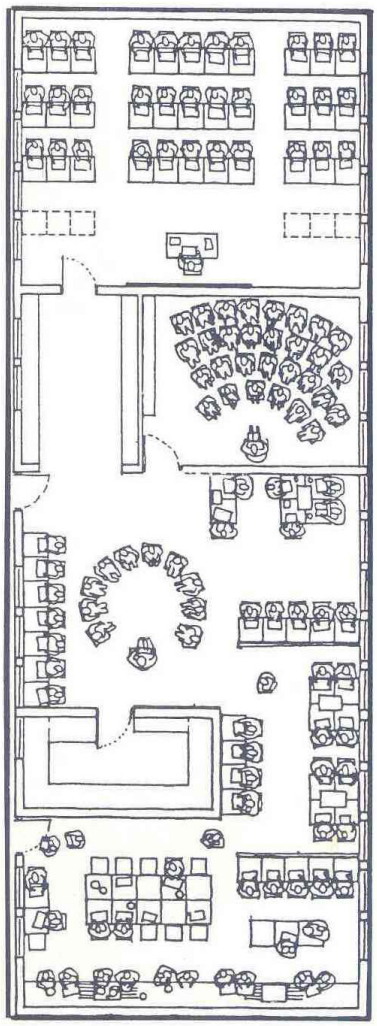


Fig. 21: This plan illustrates a modular classroom which can be modified to suit different teaching methods. However, this model is still relatively static as the room dividers are semi-permanent and classrooms can only be modified during vacations or weekends (Criticos & Thurlow, 1987: p. 22).

require an interstitial space, either above the ceiling or below the floor, which is sufficient to accommodate these services.

3.2.4. Psychological Considerations of Flexibility

Just as the environment, architecture and the urban fabric change, so too does the human.

> With change already inherent over the course of life owing to biological processes, people live in an environment marked by transformation, an environment in constant motion with change as the defining characteristic of human existence (Flade, 2002: p. 224).

This way of life can be impeded by inappropriate, static architecture which does not allow for flexible living to occur. By adapting one's environment to meet one's needs, comfort and a sense of ownership is established (See Fig. 22).

According to Flade (2002: p. 226), appropriation is the "active influence of the individual on his or her environment - … the efforts of those encircled by monotonous architecture to personalise their immediate surroundings". Through the appropriation of one's surroundings by moving, manipulating and personalisation of spaces, a differentiation between the individual and 'others' occurs. For example, the regular meeting of a group at a certain location makes a space significant to that group, and the use of the space becomes a means of communication. By personalising and occupying a space, the message that is communicated is that of an individual or group's intention, identity and aspirations.

The extent to which this communication is effective is dependent on the opportunities available to the occupant. The environment must therefore allow for the adjustability or flexibility required by the user or group of users. The ability of a space to be modified can result in a comfortable, stimulating space (Flade, 2002: p. 223). This ideal can be extended into the learning environment. In order to create an environment that is conducive to learning, it should be comfortable, equitable and flexible. In creating the opportunity for individual or groups of learners to 'appropriate' their learning environment, they are not only expressing their needs, desires and



Fig. 22: This room by Michael Hollander has moveable levels which allow the user to adjust his living space depending on his needs (Schwartz-Clauss, 2002: p. 222).

expectations, but are also able to learn from others through this group activity.

3.2.5. The Tradition of the Japanese House

The tradition of the Japanese house is discussed here in order to gain an understanding of how cultural traditions and societal norms influenced the development of a kinetic architecture. In this example the structure of society affects greatly the design of the house belonging to a traditional Japanese family. In understanding the development of this tradition and the effects of culture and society on buildings, it is intended that this will inform a contemporary development of similar principles which can be applied to the similarly scaled learning spaces within the educational building, which demand adaptability. Further, the Japanese house is included here in order to examine the adaptability of the spaces created within and how this may be achieved. The way in which day- and night-time functions are accommodated in a single space is of particular interest to this discussion, as similar principles can be applied to the multi-purpose learning spaces within educational buildings.

The interior of the Japanese house is simple, with small rectangular rooms divided by light-weight moveable screens (See Fig. 23). The framework of the house is arranged with reference to these sliding partitions, as well as to the modular mats which cover the floors of the house (Morse, 1983). Rooms arranged linearly may be divided or opened up as the need arises, resulting in one large reception room suitable for accommodating guests, or three or four small rooms divided for sleeping.



Fig. 23: The Japanese house is characterised by sliding panels which are put in place when smaller spaces are needed, such as rooms for sleeping. When the family is receiving guests the panels are slid away to open up the space and invite guests in (Krstic, 1998: p. 10).

"Family in building ... is man's individual and universal architectural image, it expresses the personality of family; as universal image, it substantiates the ethics and concepts of society" (Engel, 1964: p. 221). If the ethics and concepts of society are evident in residential architecture, then it is necessary to understand these ethics and concepts in order to understand the nature of that architecture. The question here is: in what way does the structure of society call for the flexible architecture of the traditional Japanese house?

According to Engel (1964: p. 222), there are four characteristics of the Japanese family, namely: "disregard of the individual, absolutism of the head of the house, right of primogeniture, and subordination of the female". These are the major factors that have been influential in defining the pattern of the Japanese house.

The social order and underlying ethics of medieval Japan valued the strength of the group over the importance of the individual (Engel, 1964). Also, the head of the house was regarded according to his ability to preserve the family rather than for his inherent traits. The prevailing attitude of the Japanese society was the indifference towards the individual in favour of the family unit. Lastly, the woman in the Japanese house is regarded as subordinate to man. She is obliged by society to obey her father until married, her husband for the term of his life, and her son after the passing of her husband (Engel, 1964).

Another influential factor which has an influence on the structure of the Japanese house is the manner of living. The manner in which a family lives is largely reflective of the social principles which define the family structure. The manner of living consists of many practices, but there are a few specific actions which have significant influence on architectural form. These include the "height of sitting and sleeping, importance of bathing, esteem for visitor, and complexity of domestic work" (Engel, 1964: p. 225).

In the Japanese house, the levels for sitting, standing and lying refer to a single base level (Engel, 1964). This impacts on the placement of windows (See Fig. 24). Since standing is viewed as improper, except when moving from one place to another, and lying down only occurs when sleeping, the eye-

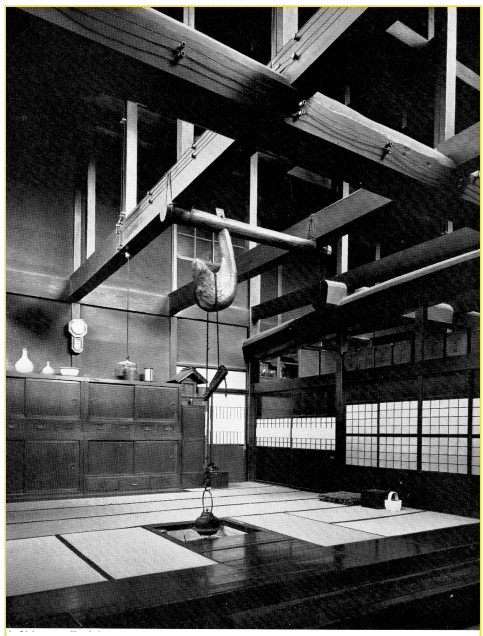


Fig. 24: The window level of the Japanese house is determined by the eye level which is generated from the sitting position which is assumed for most activities (Itoh, 1972: p. 50).

level position that remains the only one which is influential on the architecture of the house is that of the sitting person (Engel, 1964). It is customary for Japanese people to squat (rather than sit on chairs) in their homes, either directly on the floor or on a cushion, having a very visible effect on the architecture of the house. Room sizes are smaller than comparable rooms from elsewhere in the world due to the absence of furniture, and this in turn allows the space to be modified to contain any function, depending on the need. Due to the fact that only one eye-level reigns, the interior is greatly affected. All elements of the interior, and even some of the gardens, are orientated to the sitting posture (Engel, 1964).

The multi-functionality of the living rooms has also had an effect on the choice of materials used for the floor (Engel, 1964). The floors have to be comfortable for sitting and lying, while being durable enough to weather the constant use of the floor. Thus the straw mats which cover the rough timber floors have been developed.

Due to the flexible nature of the living habits of a Japanese household, the need for storage space for bedding developed. This need has resulted in the development of closets which can be closed by sliding panels (Engel, 1964). These same sliding panels are moved around during the course of the day to define the different spaces and divide rooms into sleeping areas at night.

The Japanese house further reflects the structure of the family with the lack of expression of the presence of the woman in the house (Engel, 1964). The spaces traditionally used by women and in which her daily tasks take place, such as the kitchen, are sorely neglected spaces which are sparsely furnished in a manner barely suitable for the accomplishment of the tasks required of her.

It can be seen that the social structure of the Japanese family and the manner in which they live has a direct impact on the architectural form of the house. The need for a multi-functioning space which serves many purposes is the most dominant factor that has shaped the internal arrangement of space. The flexibility of space has been the catalyst for the further developments which enhance to a further degree the adjustability of the house. The development of sliding screens which act as room dividers, cupboard doors and weather barriers, has been a result of the flexible manner of living of the Japanese family.

The development of the Japanese house can be interpreted into a philosophy that is applicable to current times. As the rate of change in all aspects of human life rapidly increase, the need for adjustable environments increase. The promotion of adjustable

architecture will provide environments which can meet the demands of users, even as these demands are continuously changing. This will result in a more enduring architecture which is responsive to the input of the individual as well as social order and ethics of the greater society.

3.2.6. Steven Holl on "Hinged Space"

From 1983, Steven Holl Architects started to experiment with what they termed "hinged space" (Kronenburg, 2002: p.56). "Hinged space" is generated by walls that "participate" in interactive environments. By manipulating the separators and surfaces of the space, spaces can be re-ordered according to the specific needs that arise at the time. Movable walls with corners and surfaces that may be folded and rotated result in blank canvases that can be personalised by the occupant of the space.

The dynamic nature of these mobile architectural elements becomes a canvas with which the occupant can interact, expressing their needs and desires. As spatial needs change, diurnally or over longer periods of time, the space is allowed to change accordingly, in a way that is determined by the occupant. The freedom of expression inherent in such an element encourages the user to identify with the space and use it more efficiently than the usual, static architecture allows.

In his Housing in Fukuoka, Japan (See Fig. 25 & 26), Holl puts the principle of "hinged space" into practice on a large scale. "the underlying concept of the layout of the houses is multi-functionality, so characteristic of Japanese house, where movable screens, cabinets and pivoting panels adapt the configuration of the house to suit the season, the weather or the time of day" (Cerver, 1997: 149-152). The development consists of 28 dwelling units arranged around four water courts. The idea of the project is to contain as much variety as possible in ideal spaces for the various facets of urban life. Privacy is contrasted with community, visual connections with enclosures, and public life with semi-public life. "The best way to inhabit this residential block is by moving freely



Fig. 25: Steven Holl's "hinged spaces" are articulated by moveable walls which pivot and slide. In the open position, the residential unit is open plan with a large, light living area. When closed, the walls define bedrooms. These can be arranged depending on the season, time of day or change in family size and needs (Schwartz-Clauss, 2002: p. 57).

around its different ambiences as often as required" (Cerver, 1997: 149-152).

The architecture here is designed as a mechanism which, as the Japanese house does, facilitates the requirements of life rather than imposing its own conditions on the occupant. This ideal extends into the living units themselves. Screens and moveable walls are hinged, folding or sliding and can be moved around by the occupants. This opportunity for the adaptation of the living unit by the user gives each unit a sense of individuality, and instils in the occupant a sense of individuality. By creating an interactive living environment Holl has created a residential development that allows for the manifestations of societal ideas and individual aspirations to be reflected by the spaces themselves, and not purely by the furnishings which occupy the spaces.

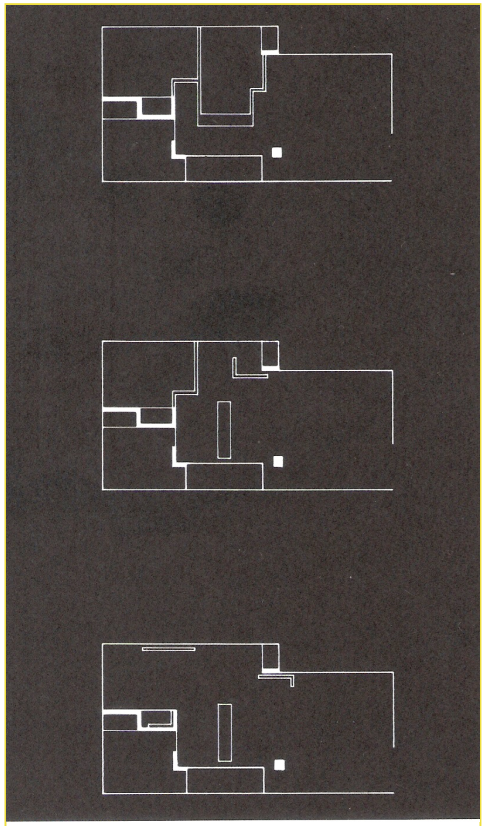


Fig. 26: Plans of one of the units in the Fukuoka, Japan, show the various options available to the resident for different spatial arrangements (Schwartz-Clauss, 2002: p. 57).

3.3. The Role of Campus Making in Improving the Quality of Learning Environments

The creation of a quality learning environment is dependant on the provision of the appropriate facilities in an environment that is conducive to the adult learning process. The campus may be seen as an autonomous element of the urban fabric, with its own character and identity with which users and passers-by can identify. There are several elements which make up the positive campus. The elements of key importance to the specific context are the centre, the edge, landscaping, and the campus as a symbol.

3.3.1. Creating the Campus Centre: An Identity for Education

According to Edwards (2000: p. vii.), the elements which make up a university are not only the buildings and the landscape, but also

> by people and activity…That is why urban space and urban landscaping are so important to university identity. Enclosure, route, gateway, promenade and vista are essential qualities in campus place making.

The elements mentioned above are the tools which are available to the architect and urban designer for planning a

campus. Due to the fact that the learning environment is part of the learning experience, the buildings and environment need to be silent teachers (Edwards, 2000: pp. 46-47). The buildings and environment of the campus should provide a stimulating setting which is challenging and at the same time comfortable and casual.

In a campus setting, it is important that the centre or focus of the campus be well defined (Edwards, 2000: pp. 46-47). It is essential that a campus have an identity with which users and passers-by can identify. The centre of the campus should act as a landmark which is a locating device in the urban context, with which city dwellers associate, be it even on a sub-conscious level. In the city, where the skyline is dominated by tall imposing buildings, the efficacy of the landmark is ever more important. Defining the centre of a campus requires that certain key buildings act as landmarks (Edwards, 2000: pp. 47-50). A sense of place, which is critical to creating a positive learning environment, can be created by the placement of these landmark buildings (Edwards, 2000: pp. 46-47). The formation of external spaces that will result form a key component of the identity of the campus as a whole. A landmark is not necessarily created by a tall building (Edwards, 2000: pp. 47-48). The centre of the campus may be signalled by a single element which catches the eye or punctuates the skyline. In the urban context the punctuation of the skyline further improves the role of the landmark as a distance marker.There are two distinct functions that the landmark should perform. The first is that of a symbol of the university on campus (Edwards, 2000: p. 50). The landmark building should epitomise the philosophy and mission of the institution. The second role of the landmark is that it acts as an external reference point in the broader cityscape (Edwards, 2000: p. 50). By punctuating the skyline or being notable in some other way by which it may easily identified, passers by can identify immediately with the identity of the campus, even when viewed from some distance away.

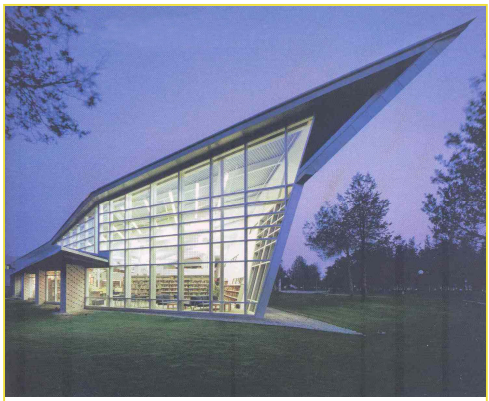


Fig. 27: View from the main entrance of the new Learning Resources Centre at Loyalist College, Ontario (Jen, 2005: p. 29).

An example of the use of a landmark building to great effect is the new Learning Resources Centre at the Loyalist College, Ontario (See Fig. 27 & 28). The building is a highly visible landmark situated directly opposite the main entrance to the campus. “The soaring roof and entire wall of glazing form a light-filled and welcoming focal point for the campus that creates a previously and curiously absent

unambiguous entrance to the complex" (Jen, 2005: p.29). Its transparent nature is welcoming and serves to fuel the imagination, while symbolising an enhanced learning environment. The high-tech facility provides students with access to up-to-date digital and print media equipment and tools, fulfilling the deals of this campus, giving it a 21st century image which is offset against the harsh concrete of the existing building (Jen, 2005: p.29).

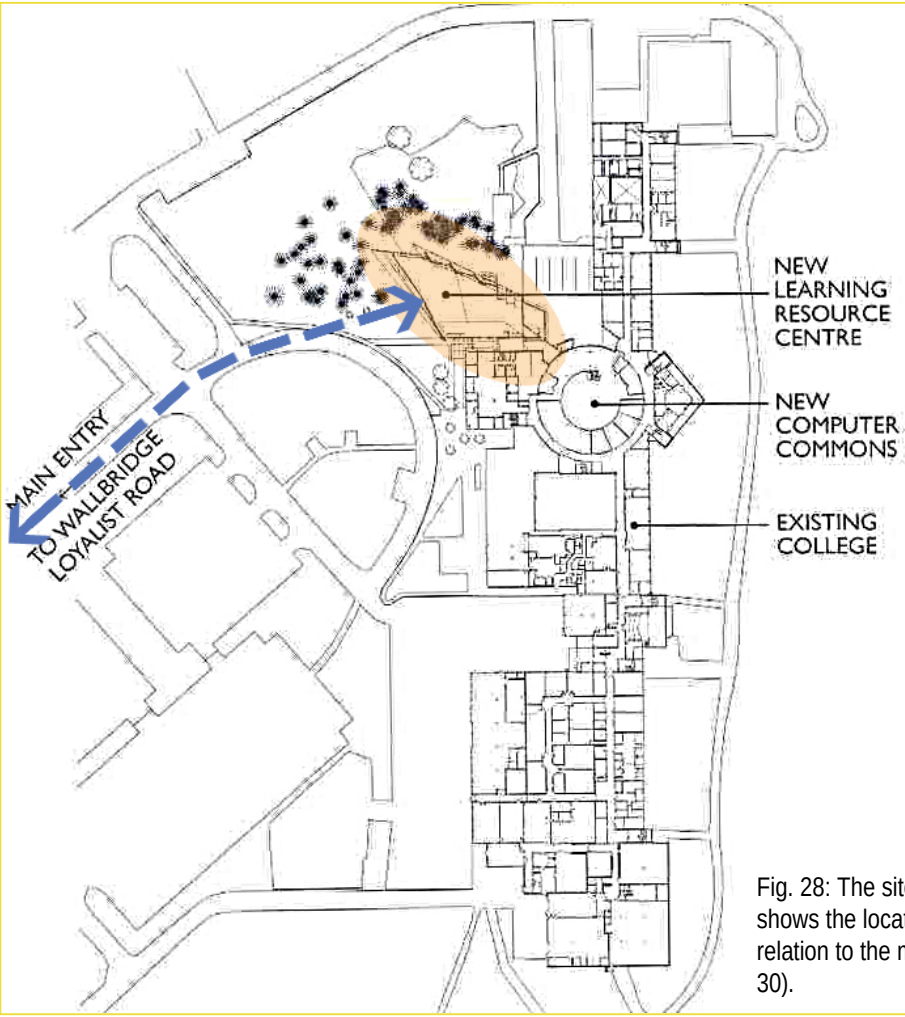


Fig. 28: The site plan of the Loyalist College shows the location of the new building in relation to the main entrance (Jen, 2005: p. 30).

3.3.2. Defining the Edge: Incorporating the Campus into the City

The campus, in any context, be it suburban or urban, is a distinct district in itself (Edwards, 2000: pp. 50-54). The edge which defines the district as separate from the surrounding environment must be clearly distinguishable. When this definition is unclear, the public realm may tend to leak into the space of the campus, thereby decreasing the integrity of the character of the campus. Conversely, when the interface is well defined, it will be respected by the public. The clarity of the interface affects the resilience of an environment, allowing the public realm to retain its character while the domain of the campus is free to change as necessary beyond the interface (Dewar & Uytenbogaardt, 1977: p. 55).

This edge which is necessary to the clarity of the campus may be defined by employing a number of mechanisms. These may include planting, buildings themselves, security gates, encircling roads, and so on (Edwards, 2000: pp. 51). Due to the urban context, security is of greater concern than in a suburban setting, therefore requiring strong physical enclosure. However, the use of walls and fences tend to inhibit the links that could potentially be made between the campus and the city (Edwards, 2000: pp. 50). The best edges are those perceived edges which are not necessarily physical boundaries. However, due to the obvious need for security, there needs to be a balance struck between these two requirements.



Fig. 29: Barragan's use of a visually permeable barrier subtly defines this courtyard while maintaining the physical barrier and visual connectivity (Zanco, 2002: p. 228).

There are two types of barriers which can be used either individually or together in order to define an edge. These are the physical barrier (See Fig. 29), the visual barrier (See Fig. 30) and the combination of these two types of barrier into a single composition. The function of the physical barrier is simply to form some form of obstruction to inhibit movement, while the function of the visual barrier is to conceal the view into a space for reasons of privacy (Gibberd, 1970: p. 90). While physical barriers only define boundaries, the visual barrier has the ability to define space by forming enclosure. By employing a combination of physical and visual barriers, it is possible to secure a site for security reasons while maintaining visual links to the urban context. This use of barriers will thereby define clearly the campus while reinforcing the relationship between urban context and campus and maintaining the threshold between the two.

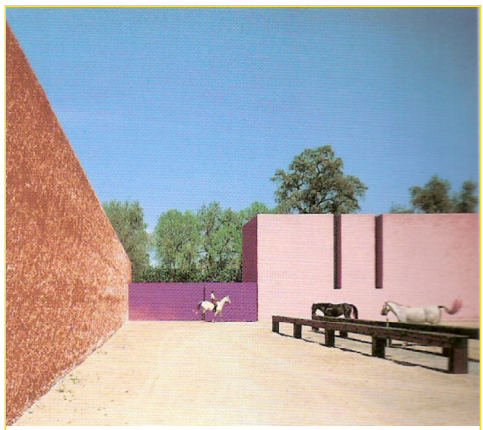


Fig. 30: Luis Barragan's use of colour and planes define a court which is open to the sky with a sense of space, yet it is defined and confined by visual barriers (Zanco, 2002: p. 228).

3.3.3. Landscape as a Tool for Integration

The use of landscaping in its many forms may be used in such a way as to integrate the buildings and external spaces into a single, imageable whole (Edwards, 2000: pp. 54-56). It may also, if used effectively, reinforce a sense of the academic district. Typically, the landscape of a campus consists of three elements: trees, gardens and paved quads, and can be used to create large external rooms (Edwards, 2000: pp. 54-56). Within the urban context, the use of planting can establish a green island in the predominantly concrete setting of the city which will help in creating an identity of the campus which is discernable from a distance by the public at large (See Fig. 31).

In order for there to be a connection between the buildings of a campus and the landscape, there needs to be a transition between the semi-private realms of the building to the public realm of the garden (Edwards, 2000: pp. 54-56). The use of hard landscaping can be employed to create continuity between indoors and the exterior, as well as to create a visual link between buildings themselves. The appropriate arrangement of seats, plant containers and flower beds, lamps and lighting, and signage all impact on the quality of the outdoor room.

3.3.4. Symbolism and the Educational Building

When a new building is erected in the city, it is seen as a symbol for regeneration. New buildings can therefore acts as catalysts for change in the surrounding areas. They also provide the opportunity for new links to be created to the existing infrastructure, public transport systems and the city fabric. It is the responsibility of the designer to acknowledge the existing systems and create within these structures continuity and contrast between the old and the new (Edwards, 2000: p. 59).



Fig. 31: The public square created by the Whitby Public Library building and landscaping acts as a public meeting space while pedestrians wait to catch buses and taxis. Here, there is no physical barrier defining the edge, but the domain of the square can be easily understood (Chodikoff, 2006, p. 27).

The library building is the most important building on a campus. It is the heart of the learning environment where the knowledge and wisdom is housed (Edwards, 2000: p. 78). Essential to the location of the library are centrality and accessibility. As the symbol of the activities of the learning environment, the library should have a prominent form which draws attention to it and the activities housed within. The building should have access which is protected from the elements, should have a flexible internal layout, room for outward expansion, as well as a combination of

both open volumes and private study spaces (Edwards, 2000: p. 78-79).

The campus of the University of Nottingham (See Figs. 32 & 33) by Sir Michael Hopkins was conceived as a collection of pavilions in the park (Fawcett, 2000: p. 41). The elegant pavilions are all associated with a lakeside promenade which becomes the mechanism which links the scheme and the individual pavilions together. The teaching spaces face west and south-west, overlooking the lake, while post-graduate residences hug the edge of the lake. The informal park is contained by the placement of several teaching pavilions (Fawcett, 2000: p. 42). The library is a free-standing inverted conical element which floats within the lake. The setting apart of the library from the rest of the teaching spaces is symbolic of the importance of the library to the university, and its central location highlights this fact by making it accessible from all sides of the campus simultaneously. It is important in an educational facility, as it is in any public facility, that the building which houses these educational functions be clearly understood by its users. It is essential that the learners, on entering an educational building, feel at ease and can comfortably find their way through the building without feelings of anxiety. The functions and locations of primary functions of the building should be easily identifiable at first glance, or should be clearly pointed out by appropriate signage which is clear and vivid.

Legibility refers to “apparent clarity” (Lynch, 1979: p. 1-5), or the ease with which the parts of a whole can be recognised and organised into a coherent pattern.

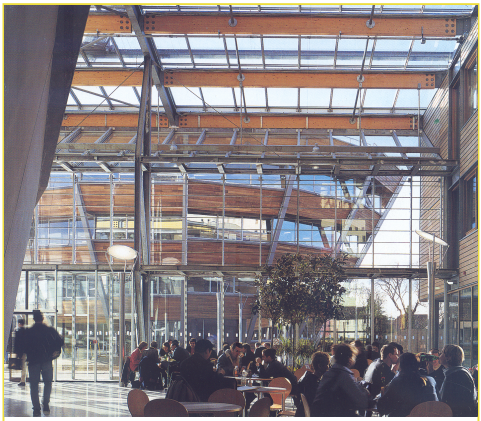


Fig. 32: The library at the new Nottingham University Campus, visible from almost anywhere on campus, is a symbol of the educational activities of the university (Fawcett, 2000: p. 43).



Fig. 33: The campus of the Nottingham University is an imageable whole linked by the elements of the landscape: the lake, lawns and paved walkways creation visual cohesion between the separate elements of the composition (Fawcett, 2000: p. 44).

Certain elements of a building may become immediately recognisable by distinctive attributes such as colour, shape, motion, light, sound, touch, or kinaesthesia (Lynch, 1979: p. 1-5). The

presence of such elements in an educational facility is appropriate as they act as beacons which direct the users of the facilities to the primary spaces of that facility. This is especially important in a situation where some of the users of the facility may not be able to read conventional signage. The use of imagery or other easily identifiable symbols is of key importance in directing users to where they need to be. The presence of such elements will result in a clear image which will allow the users to move about quickly and easily while avoiding confusion.

A further benefit of a clear environmental image is that it instils in the users of a facility a sense of emotional security (Lynch, 1979: p. 1-5). This is a vital factor in the establishment of a learning environment which is conducive to learning.

Vosko (1991: p. 30), in his checklist for the analysis of space attributes (see Appendix III), suggests criteria for the analysis of learning environments. One such criterion relates to the signage of the educational facility. Signage should be clear, indicating both functions and direction. He also suggests that the "location of emergency exits and clear directions to them" are important in an educational facility. To reiterate this point, Hiemstra (2001: p. 1: see Appendix II) suggests that "Adequate signage to direct learners to appropriate sites" is an important feature to note in the assessment of adult education facilities. This goal can be achieved using symbolic architectural gestures in combination with graphic signage in order to make clear to the user the paths of the building and the location of the functions along these paths.

3.4. The Implications of the Theory of Adult Education for Architectural Form of Educational Buildings

The learning environment is the environment in which learning takes place. This environment can be understood to consist of two separate, interdependent elements, namely the physical and the psychological environments (Knowles, n.d.: pp. 46-47; Galbraith, 1991: pp. 16-18). A learning environment that is conducive to adult learning must consist of elements which create positive responses from adult learners on both a psychological and physical level. This can only be achieved when the specific needs of the adult learner are considered.

The adult learner brings to the classroom a number of factors that do not occur in the child or adolescent learner. Adult learners tend to be self-directing, possess a readiness to learn, are voluntarily entering the educational activity, and are internally motivated (Long, 1991: pp. 23-24). The environment in which adults are placed in order to learn should accommodate

these unique qualities which adults possess, in order that they be able to focus on the learning materials at hand. Due to the fact that adults each have their own life experiences, there may be a large amount of variability within a group of adults. The variety may be physiological, psychological, and sociological (Long, 1991: pp. 28-36). This variability requires a flexible learning environment which can respond to the needs of the individual and the group.

In order to create a positive environment, furniture and equipment should be adult-sized and comfortable (See Fig. 34). The arrangement of furniture within the room should be informal in order that it reinforces the relationship between the learner and the educator, which should be one of respect and equality. There are several sources (Galbraith, 1991: p. 17; Vosko, 1991: internet) which suggest that the learning environment requires adequate lighting and acoustic provisions, natural ventilation, appropriate temperature settings, availability of refreshments, designated smoking areas, and an absence of distracting sounds from outside.

In order for a learning environment to be conducive to learning, it should be one that puts the adult learner at ease (Galbraith, 1991: p. 17; Gravett, 2001: p. 32). According to Gravett (2001: p. 32), a learning environment that is conducive to learning is an environment that is "positive, challenging, respectful, and engaging. Such an environment encourages risk-taking, but learners feel psychologically safe. This implies that the learning and the learning environment should evoke positive emotions, such as interest, enthusiasm and enjoyment."



Fig. 34: The provision of comfortable and appropriate places in which the adult learner can feel comfortable ad at ease is paramount to establishing a positive learning environment (Taggart, 2006: p. 42).

In the psychological environment appropriate to the adult learner, there will be a mutual relationship between the educator and the learner. This environment encourages freedom of expression and is friendly and informal. In such an environment the adult learner feels respected and valued as unique individuals (Knowles, n.d.: p. 47, 57).

The needs of the adult learner should be considered in terms of both the physical and psychological environments. The manifestation of these needs should be visible in the architectural form which is derived from an understanding of the principles of adult education.

3.4.1. The Ephemeral Nature of Education

The pattern of educational facilities is influenced by the educational policy adopted by the Department of Education (Mills & Kaylor, 1972). This policy, in turn, is influenced by the changing demands placed upon it. The changing nature of education and thereby the facilities which accommodate it are caused by a variety of factors. These factors include the movement of the population, the new developments that occur within industries and technologies, and the demands in certain sectors for skilled labour (Mills & Kaylor, 1972). It can therefore be seen that the design of a centre for adult education and vocational training must be adaptable in order to accommodate these changing needs for a fluctuating number of students, a change in curriculum and specialisation.

The changing nature of the educational system and its practices is influenced by several external factors. These can be grouped into technological changes, economic and political changes, learning theory changes, organisational changes and sociological changes (Hiemstra, 2002: internet). With each change comes a reaction in the field of adult education.

A sharp increase in the number of learners engaging in adult educational activities is one influencing factor that is causing change to adult education. This has resulted from the need for continuous retraining, this in turn brought about by the rapid advancements in technology. In order to accommodate the rise in enrolments, new and specialised educators are needed, new instructional techniques need to be developed, and additional resources for reaching adult learners will be required (Hiemstra, 2002: internet).

Within the scope of vocational training, there should always be a close relationship between the demands of industry and the curriculum of the centre (Mills & Kaylor, 1972). As the needs of industry change, so the curriculum should adjust to meet the new demands. This may result in the changing of courses on offer, increasing or decreasing student intake, and adding or subtracting courses. This modification will result in the change in the accommodation required by the centre. It is therefore essential that the design of the centre provides the opportunity to react to the changing demands by modifying the spaces provided in terms of scale and function.

3.4.2. Accessibility: The Nature of the Adult Learner

The accessibility of adult education opportunities as well as how equitably all groups within the adult population are served by these opportunities is a key question which arises in the discussion of the provision of education to adults (Imel, 1991: p. 397).

Many of the adult learners attending adult basic education or vocational training have not participated in educational activities for a great length of time, and their past experiences of schooling are often negative, being based on primary education received in an authoritarian manner that is typical in the schooling of children. According to Hiemstra (2002: internet) “the fear of the new, uncertainty of pushing back boundaries, and remembrance of past learning failures or unsatisfactory experiences also can affect the adult engaged in learning”. There is therefore often a sense of trepidation sensed by the adult learner on re-entering the educational system for the first time.

Due to these emotional boundaries that may inhibit the adult learner, it is necessary to establish an environment which aims to counter the feelings of trepidation felt by the adult learner. A learning environment that is familiar, comfortable, welcoming and sympathetic to the adult learner is essential in order for learning to take place without inhibitors such as fear and anxiety. This environment consists of two equally important components: the physical and the emotional. While it is the responsibility of the adult educator to create the appropriate emotional learning environment from the very first meeting with the learners, it is the responsibility of the designer to address these concerns in terms of the built form.

The physical environment can address the needs of the adult learner in a number of different ways. By employing colour, texture, and furniture that in a composition create a light, comfortable and informal physical setting, this may be achieved.

3.4.3. Equality: Democracy and Education

The need for an environment of equality in the adult educational sector arises, too, from the nature of the adult learner. The adult learner brings to the learning environment a wealth of experiences from life and previous learning activities. If a learner feels that his or her ideas are undermined or are not respected, the learner will not have a positive learning experience. It is therefore important that the personal experiences and problems of the individual be respected. A learning environment in which discrimination of any kind occurs is not a successful climate for effective learning.

It is the responsibility of the adult educator to encourage an emotional learning environment which is respectful of learners and educators, but there is also the opportunity that the physical environment reinforce an climate of equality. This can be done by encouraging learners and educators to mix and converse freely, to interact casually, and to meet informally and accidentally. There must therefore be

no opportunity for segregation of learners and educators.

The notion of an equitable environment can be extended into all facets of adult education (Galbraith, 1991: p. 3-22). In the planning of methods and curriculum, the adult learner should be included in order to establish a mutually accepted program. Also, learners should be involved in the identification of their own learning needs, be given the opportunity to formulate their own objectives, encouraged to identify resources and to devise strategies for the use of those resources to accomplish those objectives (Galbraith, 1991: p. 5).by including the adult learner in the entire process of their educational activities, they are encouraged to take responsibility for their learning activities and will feel respected and appreciated in knowing that their input is of importance to the overall education process.

3.4.4. Informality: Educator/Learner Relationships

The psychological climate which is established from the outset of any educational program should be "supportive, challenging, friendly, informal, open, and spontaneous" (Galbraith, 1991: p. 17). The need for the establishment of an informal learning environment is to reinforce the qualities of accessibility and equality already discussed. The establishment of a climate that is informal is far more conducive to creating a democratic, accessible learning environment than would be a formal environment.

The educator should engage in dialogue and negotiation with the adult learner (Gravett, 2001: p. 27-37). Dialogue and negotiation encourage learners to express their needs, thoughts, ideas and reservations regarding the learning process as well as specific course material. However, the learning process is inhibited when the learner feels stressed, anxious or threatened. It is therefore necessary to establish an environment that is "democratic, open, collaborative, challenging, but non-threatening" (Gravett, 2001: p. 32). An effective way to address this challenge is to establish an informal environment in which learners feel comfortable enough to express their thoughts and ideas without fear of judgement from peers or educators. An informal environment encourages the users to participate fully and therefore gain the most from the learning experience.

3.4.5. Flexibility: The Changing Needs of Adult Learners

In his checklist for analysing the learning environment (see Appendix II), Hiemstra (2001: p. 1) suggests that the learning spaces should provide for flexibility of use and arrangement. The need for the flexibility of the adult learning centre arises from several factors. Firstly, there is a variation in the teaching materials and techniques used by educators (Hauf et al., 1971: p. 28). This variation arises as new instructional methods develop and change over time, and when the use of

a variety of teaching aids and materials are used in order to achieve a variety of learning goals.

Secondly, a characteristic that is common to adult education courses is the large fluctuation in class size (Hauf et al., 1971: p. 28). Due to external factors, it is common in adult education that class sizes fluctuate. This means that the group sizes constantly changes and therefore the spaces required to teach these groups from week to week may vary. It is also necessary to provide flexible spaces to accommodate individual study, small seminar groups, and large lectures (Hauf et al., 1971: p. 28-29). These spaces will be used during the duration of the course at different times in order to best address the specific learning goals at the time, as each teaching method caters for different end goals.

Lastly, there is the need for the provision for growth and future developments (Hauf et al., 1971: p. 28). The face of education is constantly changing in terms of teaching methods, educational theory and equipment and technology employed. It is important that the educational facility be adaptable to these changes so that it can continue to educate in a progressive manner. This will only be possible when the physical environment is able to accommodate new technologies and teaching techniques.

Flexibility can be accommodated in two different ways. Firstly, this may be achieved by allowing for the change of size and function of spaces (Hauf et al., 1971: p. 29). This will mean that furniture can be easily rearranged, and the spaces may be divided or consolidated into one large space, depending on the needs of the specific group and educator.

By providing spaces with partitions, they may be used flexibly according to the needs of the group or individual. There are four types of partitions that allow for a varied level of flexibility. The four types are: operable, demountable, block or framed, and glass or curtain partition (Hauf et al., 1971: p. 30-32). The choice of partition will be influenced by factors such as cost, the time required for their placement and removal, the sound transmission value of each material, and the design limitation of each (Hauf et al., 1971: p. 30). In spaces where it is necessary to provide the most flexibility, light-weight, movable screens are likely to be the most effective. These types of screens and partitions require only a few minutes to rearrange the spaces between lessons. The use of heavier materials which require more time to install may only be appropriate where there is a change in course and therefore space requirements from term to term or semester to semester. this type of partition may be installed on weekends or during vacations, but is not appropriate where there are only a few hours or minutes between lessons.

The second manner in which flexibility may be achieved is to provide for the flexible use of space (Hauf et al., 1971: p. 30). This method allows occupants to move from one space to another, depending on the requirements of the teaching session, the teaching methods to be employed and the end goal to be achieved. There is therefore a need to provide a variety of space types, capacities and equipment which may be accessed in a flexible manner by the occupants.

When undertaking to design multi-functional spaces, there are several factors which need to be borne in mind. It is important that the primary function of the space is always apparent, and that in the space every occupant can see and hear all the information that is being presented. Each learning space should be considered individually in terms of the appropriate type of display to be used, the number of occupants, the acoustics of the space, and the lighting, ventilation and comfort levels (Hauf et al., 1971: p. 33-34). Lastly, the design of support spaces such as lobbies, preparation areas, and so on, should be as carefully considered as the learning spaces themselves.

3.5. The Dialogue between Teaching Methods and the Learning Environment

The teaching methods which are employed for the education of adults will influence the architecture of the spaces designed to accommodate these different techniques. The most commonly used methods include lecture, discussion, simulation, seminar, demonstration, case study, forum, panel, symposium, and computer-aided

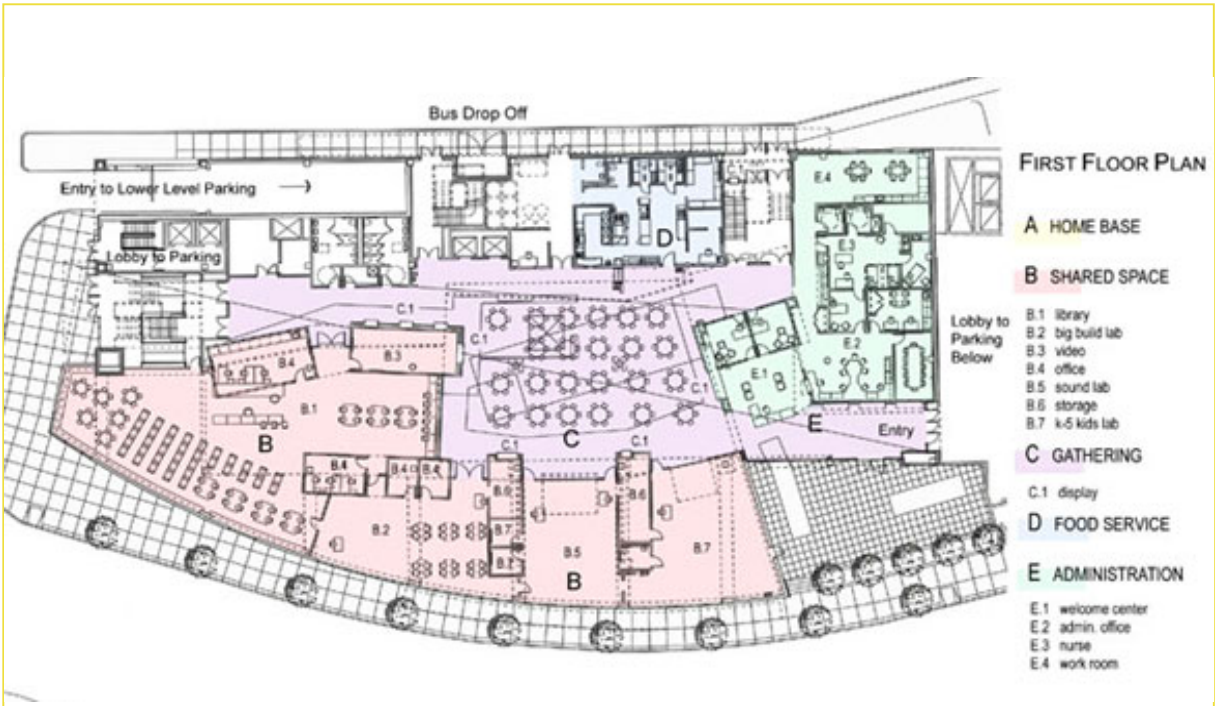


Fig. 35: This plan illustrates a high school in which teaching methods other than lecture are employed. This can be seen in the teaching spaces, highlighted in pink, which are variable sizes and are arranged differently according to the teaching method in use in each space (Gonchar, 2007: Internet).

instruction. Each of these teaching methods caters for different learning goals, different group sizes, and different relationships between the educators and the adult learner, and may be employed by the same educator with the same group in order to achieve different educational goals at different times.

3.5.1. The Lecture and the Lecture Room

The lecture is an instructional method of teaching which is commonly employed by adult educators. The lecture is, however, an appropriate method of instruction for specific objectives only. It is not appropriate to teach motor skills, but is appropriate when it is necessary to provide a framework for learning activities and further study; to identify and explain difficult concepts; to demonstrate the relationship between previously learned material and new material to be covered, and to inspire an audience to further inquiry. The lecture is able to accommodate medium to large groups of learners due to the one directional nature of the verbal communication of instruction (Farrah, 1991: pp. 164-171).

In order for lectures to be successful, the lecture room needs to be of an appropriate size with an appropriate seating arrangement, seating between fifty and two hundred and fifty people, and must be equipped with the audio-visual equipment and teaching aids necessary for instruction (Edwards, 2000: p. 112). Of key importance here is that the seating is arranged in order to accommodate adults in a way that is not cramped or uncomfortable, as may be true for the facilities of schools which double as adult education facilities after hours (See Fig. 36). Further, the acoustics of the lecture room must be such that external noise is excluded, and the speaker must be audible to all learners from all locations within the room. The projection of digital information, as well as all other visual teaching aids, must be visible from any location within the room (Farrah, 1991: p. 173).

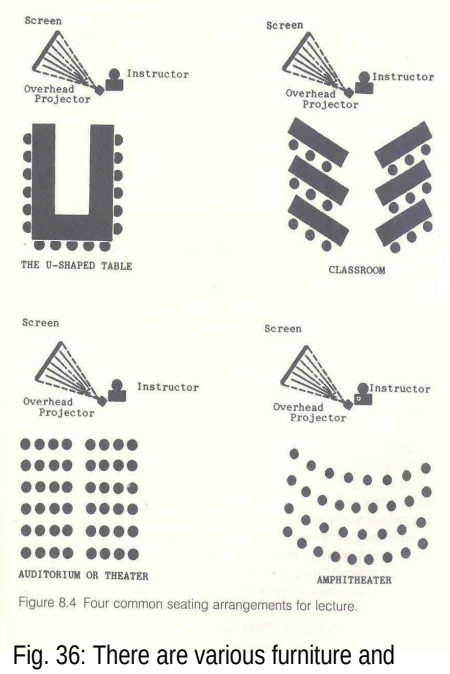


Fig. 36: There are various furniture and room layouts which are appropriate for conducting lectures (Galbraith, 1991, p. 175).

3.5.2. Discussion: the Why's and How's of Discourse

The method of discussion is one which has democratic associations, as it is inclusive and participatory, while placing the educators and learners in a relationship of equality (See Fig. 37). The discussion is an effective teaching method used to expose learners to different perspectives on issues, to

assist learners to see the world as others see it, and to introduce the learners to elements of a complex issue (Brookfield, 1991: p. 192). Groups may vary from two to three people, to groups as big as six or twelve people seated at a circular table or seated in a circle in such a way that encourages face-to-face communication with the instructor and all of the learners (Gravett, 2001: p. 48).

3.5.3. Case Study: An Interactive Method

The case study method of instruction is appropriate in providing a platform for experimental learning. It allows the learners and educator to draw on past experiences and it is participatory. “At its core is the concept of learning from and through experience.” (Marsick, 1991: p. 225). Through the medium of the case study, the real world may be simulated in a safe environment. The application of the case study may be to orient learners to a new profession, organisation or social world. The case study is appropriate both for the teaching of literacy and vocational skills, as well as to develop technical skills (Marsick, 1991: p. 229).

The arrangement of the room for case study is largely influenced by the number of people in the group (See Fig. 37). The ideal setting would be a main activity room with separate “breakout rooms”. The activity room may be arranged by seating people in groups around tables, or by employing a herringbone layout of furniture. This layout allows all students to see one another and facilitates group interaction. The separate breakout rooms will be used by small groups from the class for discussions about the topic. Also necessary in the breakout spaces are flipcharts – one per group – and a flipchart and projector in the main room in order that more than one idea may be discussed simultaneously (Marsick, 1991: p. 234).

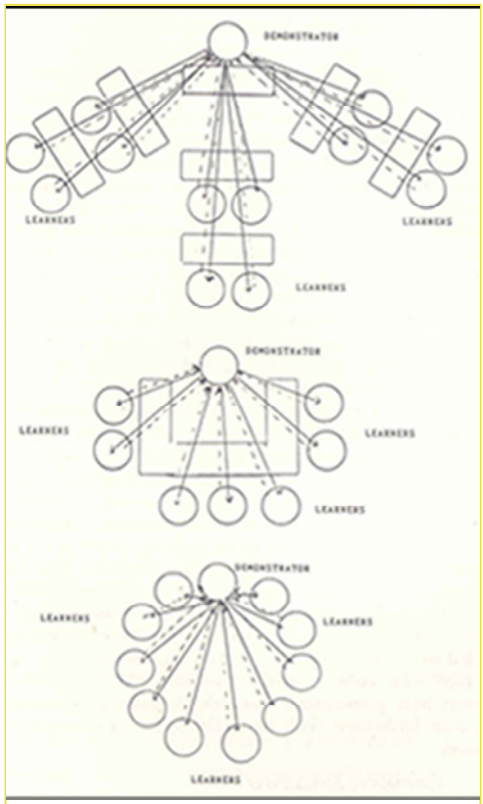


Fig. 37: The case study is an interactive method of teaching which allows learners and educators to draw on their past experiences in order to solve problems based on relevant material (Galbraith, 1991, p. 235).

3.5.4. Demonstration and Simulation: Learning by Doing

“The principles of adult learning stress ‘the role of experience, freedom to make judgements, and responsibility for the consequences of choice and action.’” (Gilley, 1991: p. 261). Through experiential learning, adults may develop the ability to learn in a self-

directed manner. Demonstration and simulation are methods base on the principles of experiential learning (Gilley, 1991: p. 161).

The purposes of a demonstration include arousing the interest of learners and directing attention to a particular skill which is to be learned. It allows for the economical use of time, materials and equipment as the demonstration is performed by the educator and observed by the learners.

For a demonstration to be useful the room must be laid out in such a way that all learners are able to observe the demonstration (See Fig. 38), while at the same time be close enough to observe the details and components (Gilley, 1991: p. 270-271).

Unlike demonstrations, simulation allows the learner to become involved in the learning process directly, practicing the skills that are demonstrated simultaneously by the educator. The most common techniques of simulation include any methods which provide a dramatic representation of reality (Gilley, 1991: p. 272).

3.5.5. The Forum, Panel and Symposium: Methods for Presentation

The forum, panel and symposium are methods of facilitation which boast both social and educational advantages. While, in the context of education, these methods are facilitation tools, they are methods commonly practiced in a broader context as tools which are essential to the preservation of democracy (Sisco, 1991: p. 284-285).

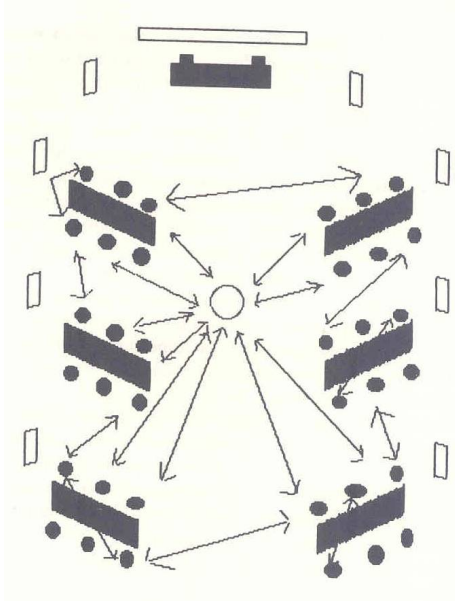


Fig. 38: Demonstration and simulation allow the learner to practice a skill or at least observe it from close quarters. This method teaches by doing (Galbraith, 1991, p. 271).

A forum is an open discussion which is carried on between one or more resource persons and an entire group. This is used particularly effectively when groups of twenty-five or more learners meet in order to discuss information or opinion. The forum, while remaining semi-formal, is directed by a moderator (Sisco, 1991: p. 288).

The forum may be used as a follow-up to a lecture used to clarify and explore in formation given previously. It may also be used in order to promote free and open audience participation, or to identify community needs and interests, or it may be used to stimulate broad based discussion among and between

the audience and the resource person (Sisco, 1991: p. 289).

The layout of the room for a forum usually includes a stage on which the moderator and resource person are seated (See Fig. 39). They are provided with a table and microphones if necessary. The audience are seated facing the stage in concentric semi-circles in order to promote maximum discussion. If there are no seating facilities as described, learners may be seated around tables of approximately twelve people, also to promote discussion (Sisco, 1991: p. 291-292).

A panel is a small group of three to six persons who sit around a table in the presence of an audience in order to discuss purposefully a topic in which all present have specialised knowledge. The panel is usually an informal event which may last for up to an hour. It, too, is guided by a moderator whose role it is to start and sustain the discussion. In a panel discussion there is no direct audience participation. The panel may be most effectively used when the goal is to bring a number of different points of view to view before an audience (Sisco, 1991: p. 285).

The layout of a room accommodating a panel should place the panel members facing each other in order to promote conversation (See Fig. 40). The moderator should be seated nearby in order to guide the discussion. Due to the nature of the panel, the audience is located in a way that is appropriate for observance only (Sisco, 1991: p. 285).

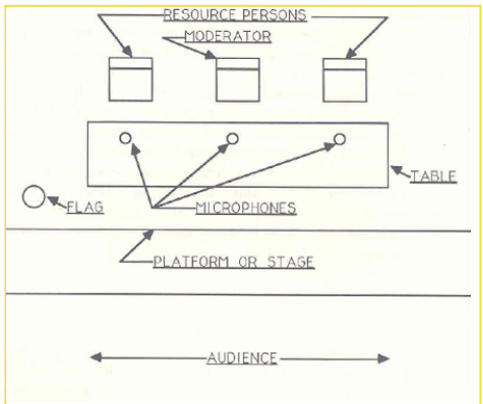


Fig. 39: A forum is an open discussion which is carried on between one or more resource persons and a group (Galbraith, 1991, p. 292).

A symposium is a series of presentations given by two to five persons of notable authority and competence on different aspects of the same theme. The symposium is formal in nature due to the format of presentations. Once the presentations are complete there will be questions from the audience. The total running time of a symposium is typically between sixty and ninety minutes. The symposium is most effective in presenting several points of view on a single theme, and may be used to help

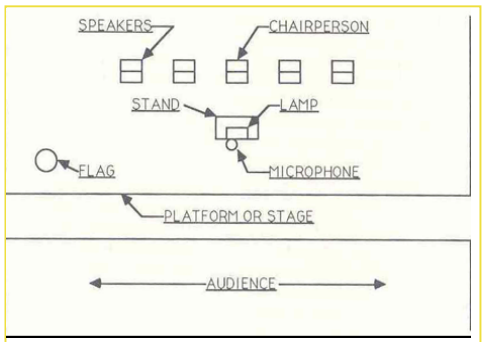


Fig. 40: The symposium is formal in nature due to the format of presentations (Galbraith, 1991, p. 300).

learners to understand how the related parts of a topic can contribute to the topic as a whole (Sisco, 1991: p. 285).

The room for a symposium should have a podium for presentation to be used by the chairperson and speakers. This room has a formal layout to reinforce the formal nature of the presentation. The speakers at the podium are directed towards an audience, which is located in such a way as to observe the presentations (Sisco, 1991: p. 285). The design of the room should take into consideration the fact that questions from the audience may be asked, and therefore the acoustics should accommodate multi-direction verbal communication.

3.5.6. Computer-Enriched Instruction: The Role of Technology

The use of computers in education allow for the provision of individually tailored programs, flexibility, self-directed and interactive learning, self-diagnosis and self-study (Lewis, 1991: p. 307).

Computers can be integrated into the learning environment by their placement in classrooms, learning resource centres and computer laboratories. The exact placement of the computer facilities within an educational setting will influence the usage pattern (Lewis, 1991: p. 319).

The placement of computers in a learning facility should allow for their use at varying times of the day, facilitate group work and flexibility. It is important that the placement of computers do not reinforce their assumption that they are isolating devices. The typical placement of computers in laboratories tends to isolate users from the activities of the classroom as well as from each other (Lewis, 1991: p. 320).

The use of computers in learning resource centres places the instructional resources in a location that is central for easy access by learners and educators alike. The learning resources centre is also flexible to allow for the use by individuals or entire classes. However, it is more appropriate for individuals and small groups than large ones (Lewis, 1991: p. 321).

3.5.7. What is Vocational Training?

"Adult literacy, an essential element in overall development must be closely linked to economic and social priorities, and to present and future manpower needs" (Hutton, 1992: p. 32). Vocational training aims to provide the learner with skills that will allow them to join the skilled or semi-skilled labour force. The goal of vocational training is to educate the learner in the theoretical and practical facets of a given skill and to "impart the competencies necessary to practice a skilled occupation within a structured course of training" (Brunette, 2006: pp. 191-192). The skills gained should be relevant to the context and should be found lacking in the area.

Due to the changing nature of industries and technologies, the need exists to constantly maintain the curriculum for vocational training in response to the changes that are occurring. The provision of training in basic skills provides the learner with the opportunity to further his/her training and improve skills either through on-the-job training or further training at another training centre (See Fig. 41-43). At the vocational training centre basic skills are to be learned in order to provide a platform for further, more specialised training to become accessible.

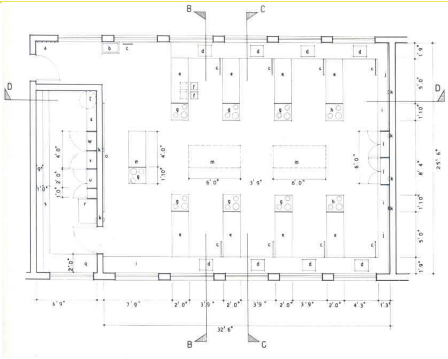


Fig. 41: Standardised cooking classroom for teaching of cooking skills that can be used to improve access to opportunities. (Housecraft High Schools, 1965: p. 2)

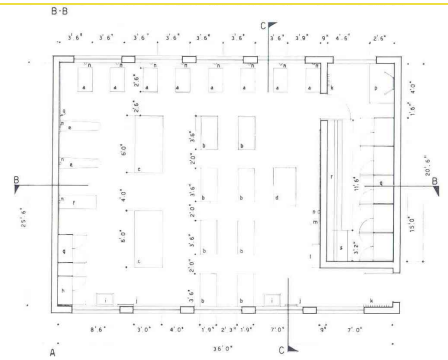


Fig. 42: A standardised dressmaking classroom which offers facilities for cutting, sewing and ironing. (Housecraft High Schools, 1965: p. 6)



Fig. 43: The interior of one of the workshops at the John A. Brink Technical Trades and Technology Centre (Taggart, 2006: p. 42).

3.6. The Role of Colour in the Learning Environment

"Colour is not the property of objects, spaces or surfaces; it is the sensation caused by certain qualities of light that the eye recognises and the brain interprets (See Fig. 44). Therefore, light and colour are inseparable, and, in the design of the human habitat, equal attention must be devoted to their psychological, physiological, visual, aesthetical, and technical aspects" (Mahnke & Mahnke, 1987: p. ix). According to Mahnke & Mahnke (1987: p. 3) and Goete (1973: p. 305), both colour and light impact on our psychological reaction to a space, and may even influence our psychological well-being.

When the brain is stimulated by an external factor, a reaction is triggered to deal with the incoming information (Mahnke & Mahnke, 1987: p. 3). Colour therefore impacts on a person's reaction to a space or object. Different colours will also trigger different types of reactions due to the amount of stimulation received as a result of the varying wavelengths of colour (See Fig. 45). Colours such as red, which have longer wavelengths than green and blue, are more stimulating than are those with shorter wavelengths. However, the monotonous use of a single colour, be it more or less stimulating, will result in under-stimulation and therefore a negative reaction to that space or object.

Over- or under-stimulation due to too much complexity or monotony will result in physical reactions in the human body. These reactions may include changes in pulse and breathing rate, blood pressure, muscle tension as well as psychiatric reactions (Mahnke & Mahnke, 1987: pp. 3-4). All of the above reactions result in a distracted observer. In order to avoid this type of reaction to spaces and objects, it is important that a balance be reached between creating interest and avoiding monotony or over-stimulation. This may best be achieved with colour variety, and with changing degrees of brightness, temperature, and strength of colour.



Fig. 44: The colour in this internal street is a subtle product of light passing through coloured glazed panels, rather than by the application of colour to surfaces. This results in a dynamic environment which changes according to the lighting conditions and time of day (Edwards, 2000, fig. 12).

Each different colour generates a common reaction amongst most people (Mahnke & Mahnke, 1987: p. 4). Red, orange and yellow are exciting, stimulating colours while green, blue

and purple are relaxing and subduing. When used a balanced combination, a positive environment can be created.

The use of colour also has an effect on the perception of size of a space. Warm and luminous colours with high levels of light produce a “centrifugal” action, directing attention outwards (Mahnke & Mahnke, 1987: p. 16). This effect is conducive to cheerfulness, muscular effort and action, while at the same time making a space feel smaller if used in excess (See Fig. 46). The use of cooler colours with lower levels of illumination produce a “centripetal” effect, directing attention inward and creating spaces conducive to concentration (Mahnke & Mahnke, 1987: p. 16). The use of lighter colours gives the sense of a space being larger as they seem to recede (See Fig. 47). These basic principles can be used to distinguish between spaces for higher energy activities and those which are more focussed on calm and concentration.

The location of colour within a space can also have an effect on the room’s character. In different locations, colour may be perceived differently and therefore the reactions to the stimuli will vary (Mahnke & Mahkne, 1987). It is the use of an understanding of these principles in the design of a colour scheme that space can be manipulated to conform with improve the atmosphere for specific functions (See Appendix IV).

In an educational situation, the school’s physical environment is vital in influencing the learning situation (Galbraith, 1991: p. 17; Gravett, 2001: p. 27; Knowles, n.d.: p. 46-47). It is therefore essential to employ colours



Fig. 45: This library makes use of a neutral palette throughout, which is then offset by strong accents in the informal reading areas to result in a dynamic, warm library, thereby eliminating the institutional air typical of many public libraries (Chodikoff, 2006, p. 28).



Fig. 46: Centrifugal space: This warm and sunny foyer is inviting and sets the mood on entering the hotel (Loisium Hotel in Langenlois, 2007: p. 224).

that are appropriate to this type of function. The correct use of colour will result in an environment that is conducive to learning while also promoting mental stimulation. As noted by Mahnke & Mahnke (1987: p. 82), “studies have shown that a functionally and thoughtfully planned school interior facilitates learning new subject matter and improves scholastic performance.” While this statement is made with particular reference to schools for children, the basic principles remain relevant and applicable to adult education circumstances as well.

It is recommended by Mahnke & Mahnke (1987: pp. 28-83) that the use of cooler hue of beige, pale green, light green and blue-green are the most effective for learning spaces. The wall that is faced by the learners should be treated in a different colour to the rest of the room. This serves the function of relaxing the learners’ eyes when they look up from concentrated work, while also providing contrast between the display materials and teaching aids (Mahnke & Mahnke, 1987: p. 83). The use of pale and light green is recommended for libraries as it creates a passive effect which enhances concentration. For coffee shops and cafeterias, warm colours are preferable, with medium to dark textured floors and warm lighting.

In rooms equipped for the teaching of domestic arts, crafts and trade skills, luminous hues are recommended. In auditoria, where the areas are relatively large, colours with a high reflectance are suggested (See Fig. 48).



Fig. 47: Introspective space: The use of cooler colours in the rest-room of the spa of Steven Holl’s Loisium Hotel results in a restful atmosphere (Loisium Hotel in Langenlois, 2007: p. 224).

3.7. Summary and Conclusions

The third chapter of this research aimed to identify and discuss theoretical concepts and approaches to the design of educational facilities with particular reference to adult education. By investigating the role that the educational facility plays in the urban context, a new approach to choosing the location of new schools can be developed, incorporating the principles put forward here. The benefits of 'clustering' (Smit & Hennessy, 1995) outweigh the negative aspects of this idea. By clustering educational facilities, land use and sprawl can be reduced, and costs can be economised by sharing the expensive facilities between more facilities. This allows for the specialisation of each facility, which will then allow for accommodation of a specialised centre for adult education. The clustering of educational facilities also benefits communities by exposing them to a larger number of outside influences from which they can learn.

The Greater Warwick Junction Precinct is the transportation confluence of Durban's CBD. The constant movement of traders and commuters in and out of the area has a great effect on the precinct. The pattern of urban development changes over time as a response to the movement of goods and people. The architecture in the precinct, therefore, should be adaptable to the changes occurring in the urban fabric. Further, the methods, theories and needs of education are constantly developing and changing. The educational facility should therefore be able to accommodate this change. Flexibility can be accommodated either by allowing for adaptation of spaces, or by flexible programming which allows users to select specific spaces according to the specific

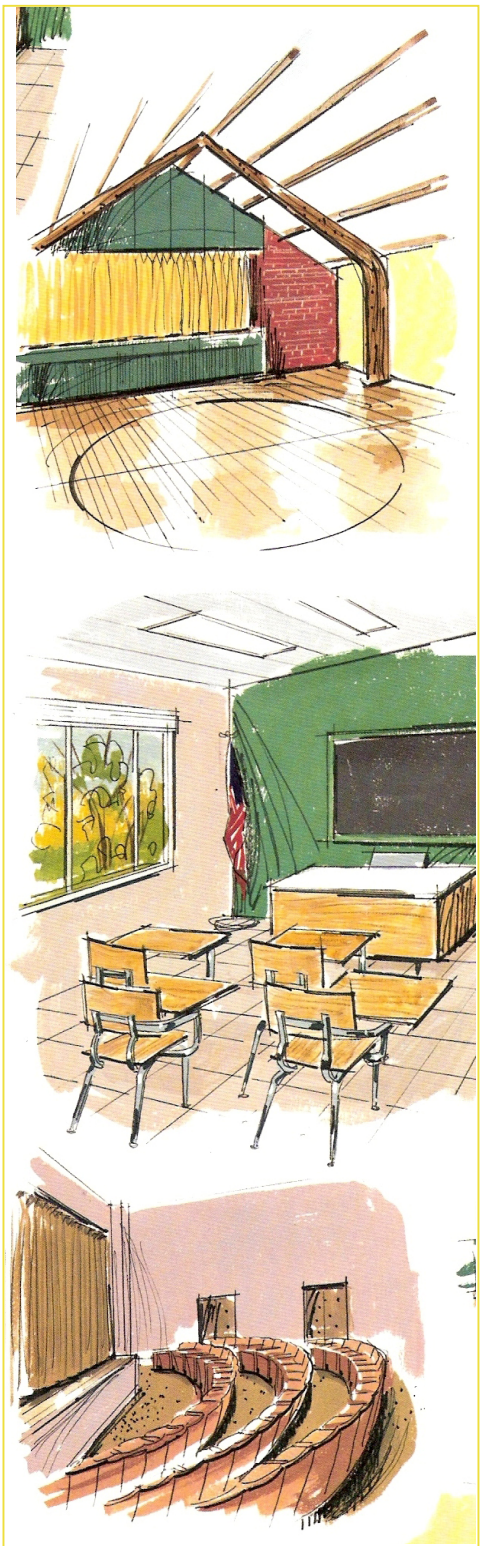


Fig. 48: The above illustration suggests possible colour combinations for educational facilities based on the known psychological effects of colour (Birren, 1969: p. 63).

educational goals and teaching methods to be used at a particular stage of the educational experience.

Kinetic architecture allows for the adaptation of spaces by employing kinetic elements in the design of the educational facility. Such elements which allow for the flexible use of space may include doors, windows, shutters, and temporary or retractable roofs, lifts, rotating signs, folding or moving partitions, folding steps, and collapsible furniture. The traditional Japanese house, derived from cultural and social practices, is an early example of kinetic architecture.
Steven Holl has developed an idea of 'hinged space' in residential buildings which is a facet of kinetic architecture, in which he employs moveable walls of different sizes, shapes and colours to demarcate space. These panels can be repositioned according to the users' specific needs according to changes in family size, time of day or season.

The role of the campus in the urban context is twofold. Firstly, the campus is to act as an external reference point that can be easily recognised by passers by, and with which its users can identify. Secondly, the role of the campus is to act as a symbol of the educational mission of the institution or country. Primary factors which make the campus into a positive learning environment include the buildings themselves, the landmark element, the landscaping, and the legibility brought about by the effective use of signage and symbolism.

The theories of adult education impact on the spatial arrangement of a centre for adult education. By acknowledging the ephemeral nature of education, one can more effectively provide adaptable and flexible facilities to accommodate change. The creation of a positive learning environment, both physical and emotional, is essential to contributing to the efficacy of the learning process. Essential in the creation of a positive learning environment are flexibility, informality, accessibility, legibility, and equality. All of these qualities can be reinforced by the architecture of the learning spaces, by means of colour, texture, furniture and spatial arrangements.

The teaching methods used by the educators are specific to the needs of the adult learner. The authoritarian lecture is used less frequently than in other educational activities, and interactive methods are more preferable to both learner and educator. Methods of teaching include the group discussion, case study, seminar, demonstration, and so on. The different spatial arrangements required for these methods each to be used effectively will differ between methods, therefore resulting in the need either for a variety of space types or the availability of adaptable spaces which can be customised to different spatial

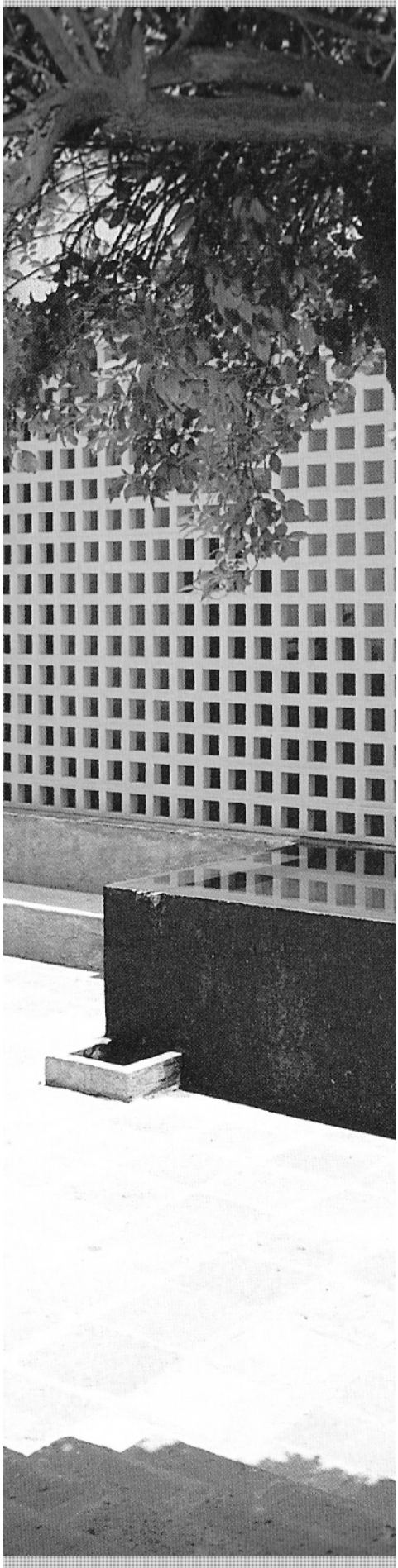
arrangements for different teaching methods.

Colour plays a significant role in our experiences of space, the use of appropriate colours, in good combinations with enough variety, can create a learning environment that in comfortable, stimulating and conducive to learning. The use of cooler hues is recommended for learning spaces and learning resources centres, while breakaway spaces, eating areas and discussion spaces can be brighter in hue, and rooms equipped for the teaching of domestic arts, crafts and trade skills should have luminous hues.

The conclusions drawn from the previous chapters may now be used in order to evaluate built examples, both local and international, with reference to these findings. The following chapter contains precedent studies, which are qualitative evaluations of international examples of buildings which employ some or all of the characteristics discussed in the previous chapters. The precedent studies will be followed by case studies which look at local examples of educational buildings which can be evaluated more thoroughly, while considering the previous discussions, as well as pertinent issues such as response to climate and choice of site, client organisation, and the theoretical approach that the architects took in designing the facilities. The precedent and case studies will aim to inform the derivation of a design brief as well as a detailed schedule of accommodation.

4

PRECEDENT STUDIES AND CASE STUDIES



Literacy involves a continuum of learning in enabling individuals to achieve their goals, to develop their knowledge and potential, and to participate fully in their community and wider society

UNESCO. (2004). The Plurality of Literacy and its Implications for Policies and Programmes. [Internet]. France: United Nations Educational, Scientific and Cultural Organization. p. 13.

4. PRECEDENT STUDIES AND CASE STUDIES

4.1. Precedent Studies

4.1.1. Introduction

The precedent studies have been chosen in order that a certain set of criteria may be examined. These criteria include the use of flexible teaching spaces and kinetic architectural elements; innovative classroom and teaching space design; positive learning environments; response to an urban context; entry sequence and spatial relationships of different functions, and the transition from the urban scale to the human scale. Also of interest in the precedent studies are the breakaway spaces and the provision of flexibility, informality and comfort.

4.1.2. Precedent Study 01: Integrated Learning Centre, Beamish-Munro Hall, Queen's University, Kingston, Ontario, B + H Architects

4.1.2.1. Introduction

This is the Integrated Learning Centre at the Beamish-Munro Hall to the Queen's University, Ontario. The building incorporates innovative technologies and classroom design approaches to support the Engineering Faculty's mission which aims to bridge the gap between theory and the practical application of engineering.

The building is an infill project, inserted between two existing buildings on the campus. The building consequently only has two elevations, providing limited light and ventilation. Additional light and natural ventilation is provided for by means of clerestory lighting in the form of glazed saw-tooth roofs (See Figs. 49 & 50). To further help the situation, the ceiling is coated in a highly reflective material which reflects light into the building, thereby further improving the quality of light.

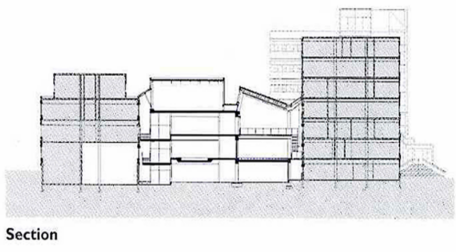


Fig. 49: The section through the new addition to the Queen's University shows the atrium which is a light tower, reflecting light into the space which has a limited number of windows due to its infill nature (Jen, 2005: p. 17).



Fig. 50: The photograph illustrates the central atrium which is ringed by flexible teaching spaces and is naturally illuminated by the clerestory windows of the saw-tooth roof. The teaching spaces can be closed in for private lectures or opened into an interactive learning space relating to the people moving through the spaces adjacent to the teaching space (Jen, 2005: p. 17).

4.1.2.2. Innovative Classroom Design

The facility is focused around a central atrium space which is overlooked by the teaching spaces. These are not typical classrooms, but rather “teaching plazas” which are defined by sliding partitions which, when opened, allow the passer-by to share in the activities within. The visual connectivity so created is the main element which reinforces the mission of the faculty.

Being a faculty of engineering, the building here is viewed as the educator. Structure is therefore exposed in order that the technologies in play may be seen and understood by its students. Measures taken to educate students on energy-efficient design principles include the use of a “green wall”, planted with plants which both cool and purify the air; flow-reducing taps and low-flush toilets have been incorporated; generous overhangs protect the western wall, and the choice of glazing prevents excessive heat gain in summer and loss in winter, thereby reducing the requirement for air conditioning. Overall, the environment created is one that is a rich and stimulating educational scene (Jen, 2005: pp. 16-18).

4.1.2.3. Entry Sequence and Spatial Relationships

The building has four entry points into the building from outdoors, as well as links through the building to the two adjacent existing buildings. The main

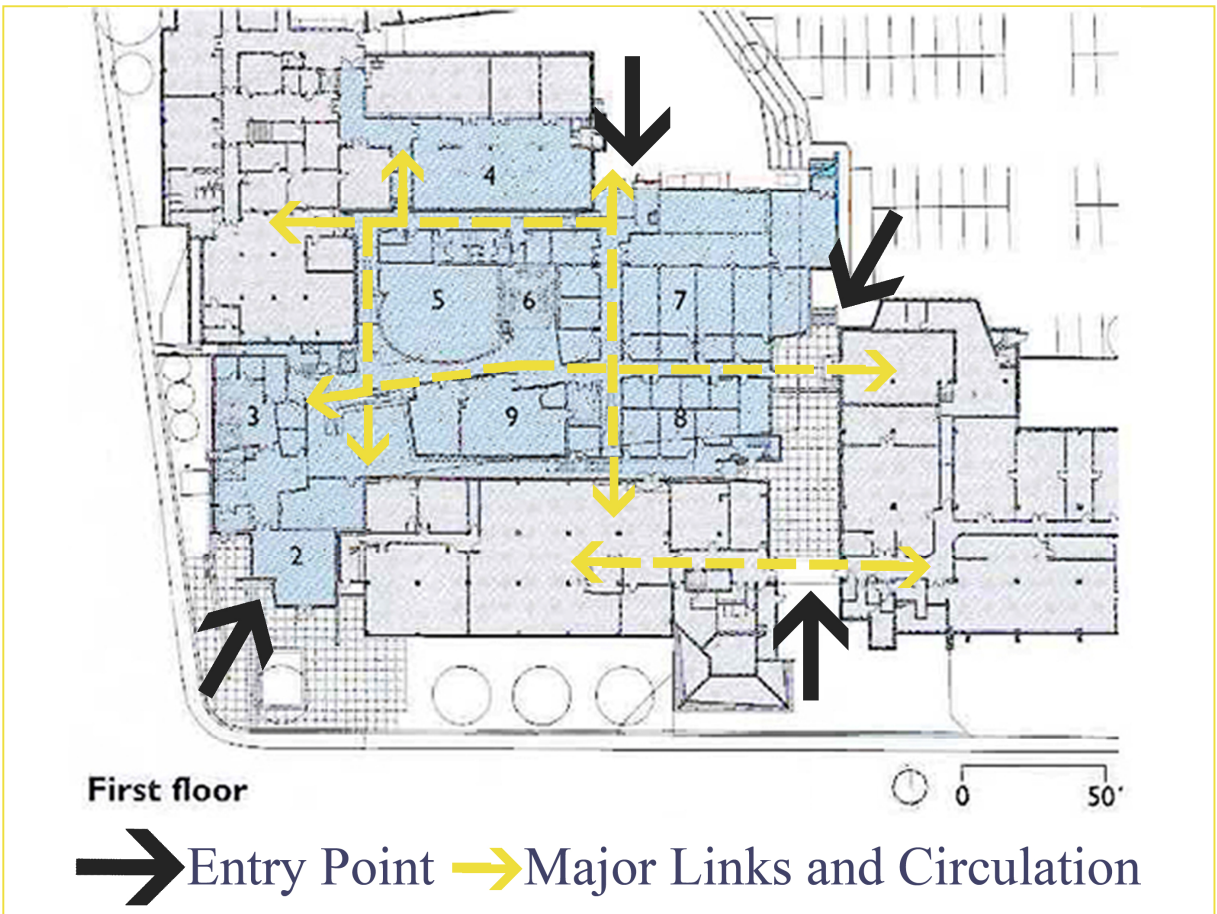


Fig. 51: Plan of the Learning Centre which has been inserted between tow existing buildings as a new link and focus of the University (Jen, 2005: p. 17).

entrance to the front of the building is a transition from the small quad into an entrance lobby (See Fig. 51). From here the form and angles of the interior spaces direct the user towards the main focal points of the facility, namely the prototype workshop, the design studio and the multi-media rooms. The main circulation paths which link the existing facilities to the new encompass these major functions, resulting in the formation of a central atrium onto which teaching spaces open.

4.1.3. Precedent Study 02: John A. Brink Technical Trades +Technology Centre, College of Caledonia, Prince George, British Columbia, McFarlane Green Architecture + Design

4.1.3.1. Introduction

The College of New Caledonia offers a wide range of courses, including university credit, technical, vocational and general interest programs. The main campus is located in an area on the outskirts of the town, an area characterised by “big-box” retail shops and other vehicle-related functions. The new addition to the College is located in an old warehouse which used to be the iconic headquarters of a large tyre manufacturing company. The budget for the renovation was limited, requiring the innovative use of materials by the architects.

4.1.3.2. Entry Sequence and Spatial Relationships

The building is entered via one of two entrances, either from the car park area or from the main entrance. The main entrance acknowledges the students approaching from the main campus (See Fig. 52), and simultaneously provides a comfortable transition from the urban scale to a more human scale.



Fig. 52: The main entrance to the new technical training building creates a link between the existing campus and the new teaching facility (Taggart, 2006).

The building is planned with the major functional spaces arranged around simple circulation areas (See Fig. 53). These are afforded additional light by the addition of roof lights. The class rooms “borrow” light from the corridor by means of glass display cases, designed for the purpose of illumination as well as for the display of student work or other relevant objects.

4.1.3.3. Flexibility, Informality and Comfort

The orderly layout of the building allows for a flexible adjustment of spaces as the needs of the College change over time. The noisy spaces are located away from the quieter teaching spaces and are separated by noise buffers of stores and services.

In the centre of the building are the lounge, the cafe area and gallery. Their arrangement is informal to encourage

interaction between students and faculty members. The cafe is a free-standing object which, as a timber element, is symbolic of the teaching which takes place at the College.

The flexible design of this College encourages the interaction between students and faculty, creating a sense of equality which encourages adults to learn (Taggart, 2006).

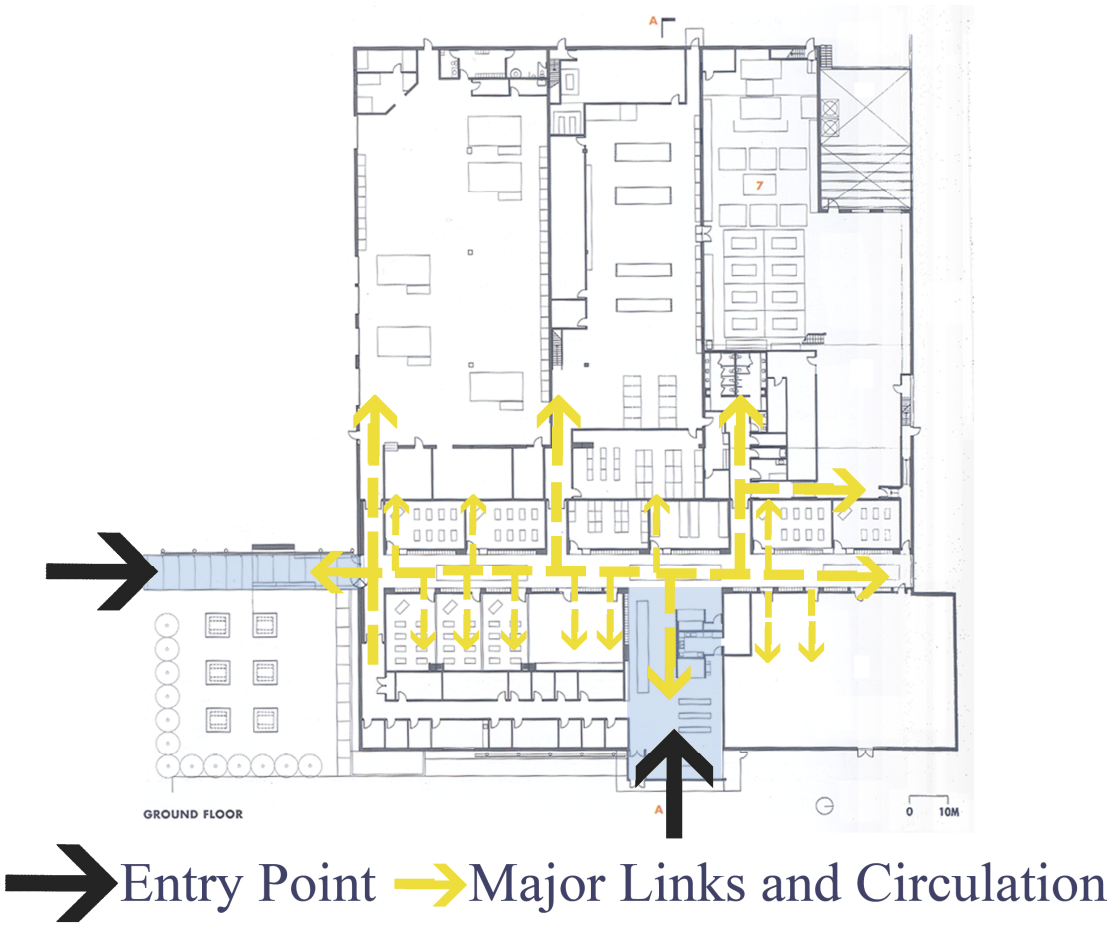


Fig. 53: The floor plan shows the technical training spaces which are located opposite from the general teaching spaces (Taggart, 2006).

4.1.4. Precedent Study 04: Whitby Public Library and Civic Plaza, Whitby, Ontario, Shore Tilbe Irwin & Partners

4.1.4.1. Introduction

The new library for Whitby, Ontario, is located on a hill overlooking the town. The site is bounded on the north by a busy four-lane arterial road and another busy arterial to the west (Chodikoff, 2006: pp. 26-30). The building is set back from the street in order to accommodate a civic plaza which is of an appropriate scale for the population of this town. The street to the east was closed off in order to allow for the connection to be established between the two historic buildings over the street. This resulted in the creation of a south-facing landscape which serves as a quiet forecourt which screens the car park from passing vehicles to the south (See Fig. 54).

4.1.4.2. Entry Sequence and Spatial Relationships

The civic plaza is defined by the forms



Fig. 54: The landscaped forecourt on the southern edge of the site acts as a connecting mechanism between the library and the two heritage buildings across the street (Chodikoff, 2006: p. 29).

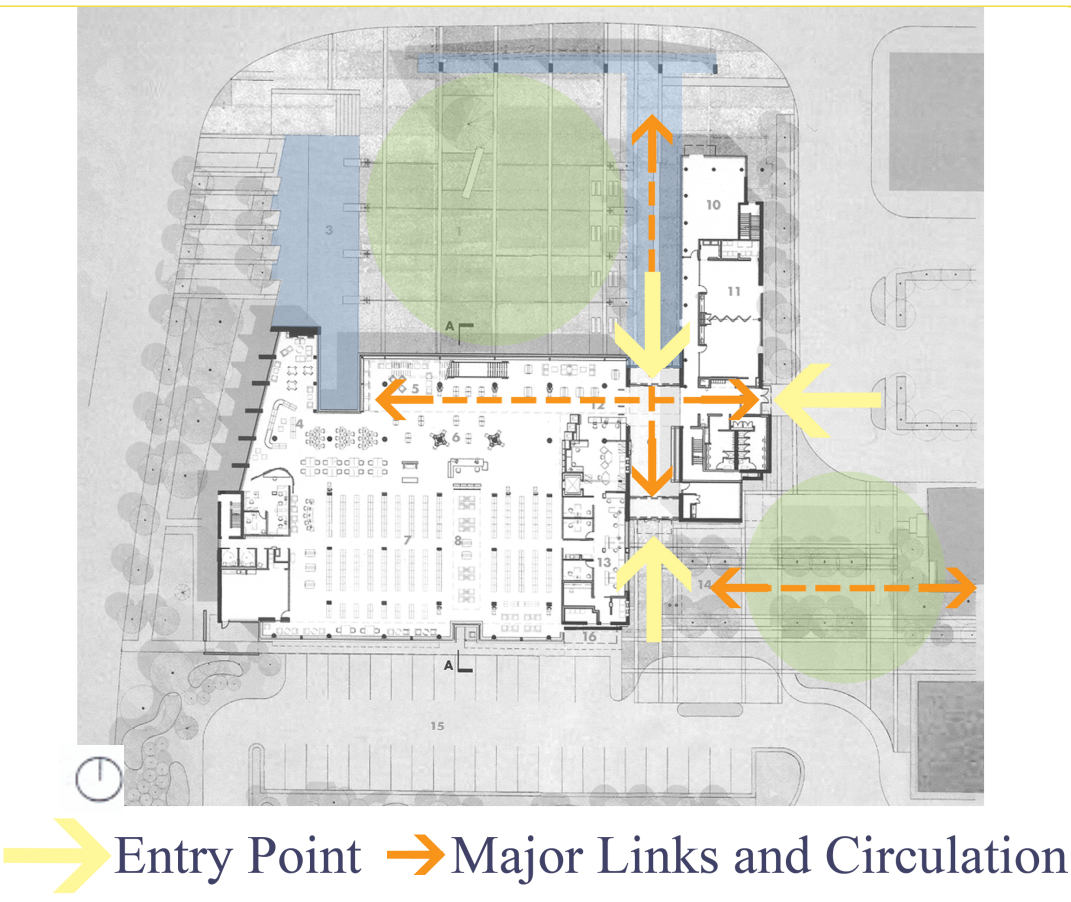


Fig. 55: The floor plan shows the Whitby Public Library and Civic Plaza which is defined on two sides by the library itself, and on the other to by a water feature and an urban 'filter' (Chodikoff, 2006: p. 30).

of the two-storey building (Chodikoff, 2006: pp. 26-30). The narrow form of the eastern building intersects the deeper volume of the southern building to form the main entrance at this intersection. In this way the entrance is clearly signalled as the pedestrian is drawn passed the low narrow building into the entry foyer. The transparency of the library creates a dialogue between the inside and outside, relating the informal reading spaces to the civic plaza (Chodikoff, 2006: pp. 26-30). The eastern edge of the plaza is activated by the functions contained in this building, including community meeting rooms, offices and a café. The west is defined by a water feature located to take advantage of the one metre drop at this point.

The main entrance to the library is a human scaled lobby, and it is located at the intersection of the different functions of the library, between the library, meeting rooms and archives (See Fig. 55). The central circulation spine doubles as the location for popular literature and informal reading space. Towards the south, in a transition of noisy to quieter spaces, are the reading rooms, study carrels and research facilities.

4.1.4.3. Flexibility, Informality and Comfort

The meeting rooms, situated in the narrow building to the east of the plaza, are multi-purpose spaces which can be used for the meeting of various size groups. While the perimeter structure is fixed, the internal wall dividing the two meeting rooms is a folding-sliding wall which folds back to connect the two rooms for large groups, or can be closed for smaller meetings.

The library itself is a column and beam structure which spans a 7,5m grid in either direction. This configuration allows for free floor plates which can be configured in a multitude of different ways as needs may arise and demands may change.



Fig. 56: The civic plaza is defined on two sides by the new library buildings, and on the north by the gateway which is intended to shelter such activities as informal trade stalls (Chodikoff, 2006: p. 29).

4.1.4.4. Transition from the Urban Scale to the Human Scale

The transition between the public realm of the street to the internal realm of the library begins on the northern side of the plaza. Here, a ‘gateway’ (See Fig. 56) intended for market stalls or other civic activities is located (Chodikoff, 2006: pp. 26-30). The gateway is a canopy which defines the ‘urban filter’, which is the point at which the pedestrian transitions from the scale of the busy main road to a calmer, intermediate scale before entering the library.

4.1.5. Precedent Study 03: Ideas Circus, Theoretical Proposal, Archigram

4.1.5.1. Introduction

The “Ideas Circus” proposed by Archigram in 1969 is a proposal based on the theoretical framework advocated by the same group. This theoretical framework supports the need for expendable architecture, or architecture that becomes obsolete. Following on from this idea developed the concept of adaptable and mobile architecture epitomised by projects such as the Walking City, and the Gasket Homes of 1965 (Cook & Chalk, 1972: p. 100-101).

4.1.5.2. Flexibility

The Ideas Circus was proposed as a link which would fill the communication gap between various educational institutions by providing mobile display and documentation facilities which can move from one institution to the next in an exchange of knowledge. The Ideas Circus consists of a standard package of vehicles that contain all the equipment necessary to set up seminars, conferences, exhibitions, lectures or displays (See Fig. 57). The

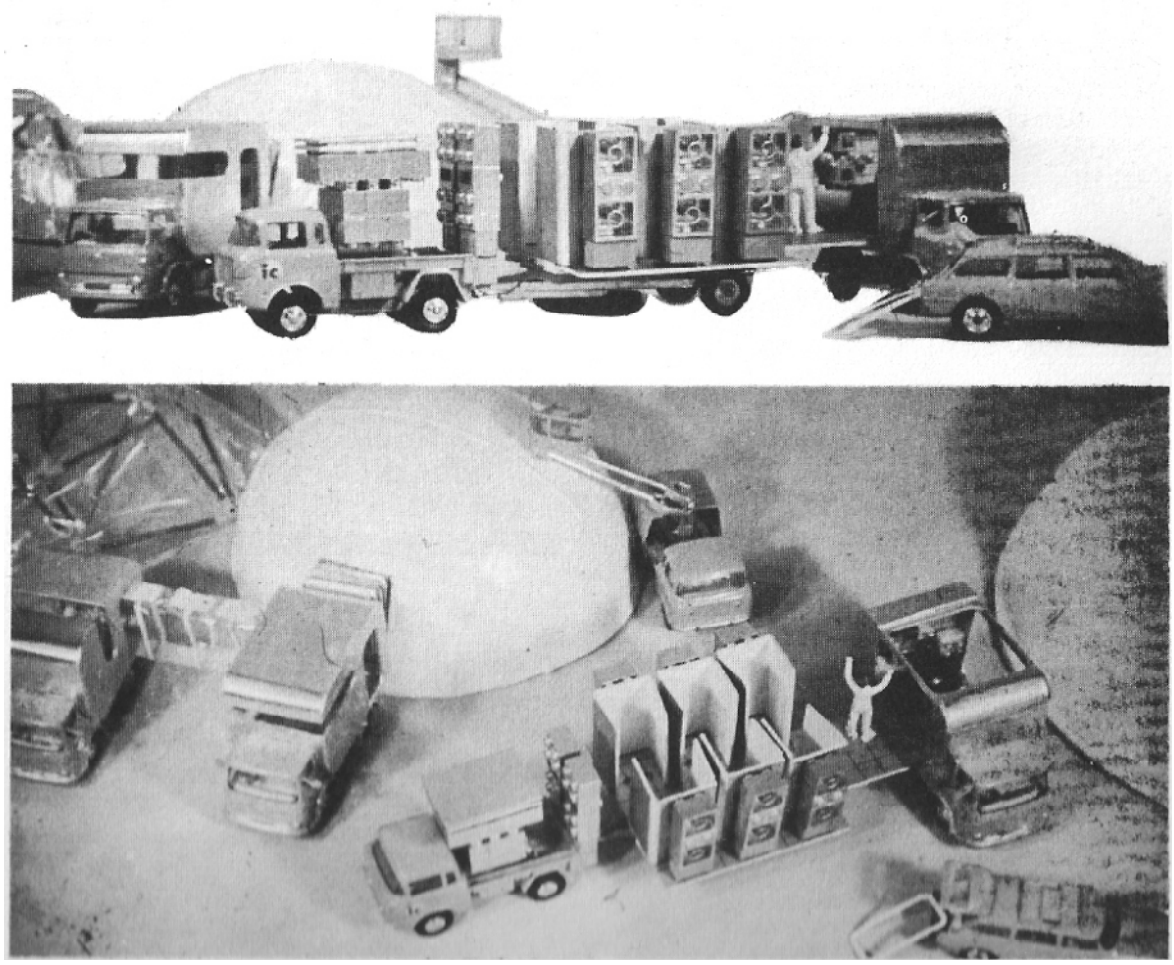


Fig. 57: Photographs of the model for the Ideas Circus, showing the trucks carrying the modular units which contain all the necessary equipment to set up lectures, seminars and exhibitions (Cook & Chalk, 1972: p. 101).

facility can be attached to or housed within an existing building, or can function as a stand-alone unit. The Ideas Circus will circulate between major provincial centres where it will be able to tap into the resources of universities in order to acquire documentation, films of lab experiments, and so on (Cook & Chalk, 1972: p. 100-101).

The Ideas Circus is presented here as an extreme example of mobile facilities for educational purposes. However, it is possible to learn from the principles of the Ideas Circus and put them to use in a more practical sense. In a centre for adult education, the development of new knowledge constantly demands for changes in curriculum, theories about teaching adults, and the methods employed in order to do so. It would therefore be beneficial to accommodate for this change by means of flexible facilities which can be adapted over a short period of time in order to accommodate the changing needs of the users. Seminars, classes, lectures, discussions and exhibitions can be conducted in spaces which are defined by adaptable furniture and partitions which also act as storage to house the equipment needed for the various methods of teaching, based on the principles of the Ideas Circus.

4.2. Case Studies

4.2.1. Introduction

The case studies have been chosen as they are centres which have been purpose-designed as adult education facilities. This means that they are appropriate for analysis as they contain the specific facilities necessary for a centre or adult education. As the case studies are closer to home and more relevant to the South African context than the international examples, the analysis of these facilities is a more in depth study, focusing on general and specific factors ranging from the general location, building type, client, site and response to climate, to accommodation, structural form and theoretical discourse which underpins the overall designs.

4.2.2. Case Study 01: Rössing Foundation's Adult Education Centre, McNamara & Associates

4.2.2.1. Introduction

The centre, designed by Kerry McNamara and Associates for the Rössing Foundation of Namibia, was originally planned for 300 students. The role of the centre was to provide instruction in languages, literacy training, and commercial courses, with the later inclusion of health, hygiene and nutrition. There is also vocational training on offer, including courses on welding, electrical wiring and other such practical skills. The centre is equipped with both communal and resource facilities in order to accommodate all sectors of society.

4.2.2.2. General Location

The Adult Education Centre is located between Khomasdal and Katukura, Windhoek, in central Namibia.

4.2.2.3. The Building Type

This building is an Adult Education Centre. It has been designed according to very specific criteria in order to create an environment that is conducive to learning. "The physical environment (for learning) should encourage adults to participate. Facilities should be as attractive and comfortable as possible" (Galbraith, 1991, p.16). The learning environment should be arranged to allow face-to-face communication between the learners and with the facilitator, thereby increasing participation and enhancing the learning experience. It is crucial that the physical environment also has good lighting and ventilation, colourful décor, appropriate room temperature, the provision of a public address system where necessary, the availability of refreshments, designated smoking areas, as well as appropriate acoustic treatment to exclude distracting outside sounds (Galbraith, 1991).

4.2.2.4. The Client

The Rössing Foundation was established by Rössing Uranium in order to support the residents of the mining towns of Namibia. The Foundation supports the community in all aspects of life, providing funding for

education, health, recreation and culture, orphans and other vulnerable children, skills development and empowerment initiatives, and the training of small-scale miners in literacy and skills in order that they can make small businesses profitable and sustainable. The Foundation's four main objectives are to further the education of Namibians in order to improve the national productivity; to encourage the creation of opportunities to use their education; to promote the improvement of living conditions of all Namibians, and to participate in any activity which will benefit Namibia and its inhabitants (Rössing Uranium, 2008: internet).

The Rössing Foundation is actively involved in the improvement of education at school level and beyond, providing extra reading classes for high school learners as well as providing literacy and computer literacy courses to adults through their Adult Education Centres. They are also involved in teacher training (Rössing Uranium, 2008: internet).

4.2.2.5. The Site

The building makes use of the positive aspects of the site to great advantage. The fall across the site is followed by the levels of the building, therefore requiring little excavation. By following the contours in respect of verticality, the mass of the building is broken down into smaller parts of a more human scale. The building also follows the contours in plan. The individual units of the modular system are arranged to follow the contours while maintaining their north-south orientation. The stepping back of these units creates interest in the breaking-up of what would otherwise be long, monotonous rows of classrooms (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

4.2.2.6. Accommodation

The public space provides communal facilities which give the facility a richness of activity. A bus shelter, drinking fountain, public telephone, seating and lighting are provided where one wall of the public space is indented and sculptured (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

The assembly area is the focus of the scheme. This area has an informal, human character which sets the tone for the rest of the scheme, and provides access to the administration, library, social centre and many of the classrooms. The continuous passage of pedestrians through this area is what gives life to the space. This is one of the most important parts of the scheme as this is where there people come together for conversation, where learning can continue, and where ideas are exchanged in a multi-cultural environment (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

The administration is adjacent to the assembly and arrival area. It penetrates through the assembly hall and the main stairway, creating a strong visual connection to the public pavement beyond the entrance, thereby emphasising the importance of its role in enhancing the legibility of the centre (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

The social centre of the scheme consists of a multi-purpose hall which is entered through an informal foyer. The foyer of the hall links both to the assembly area as well as directly to the parking area to the east (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

The tea kitchen and canteen form an addition to the hall foyer and have the potential to be developed further to serve the hall, foyer and assembly areas. In the future, it may be developed to serve meals of the residents of the dormitory accommodation as well as serving the groups attending the activities of the centre (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

The three educational spines are the Academic, Technical and Commercial facilities. The original modules are adjacent to the assembly area and are aimed at focusing on subjects such as

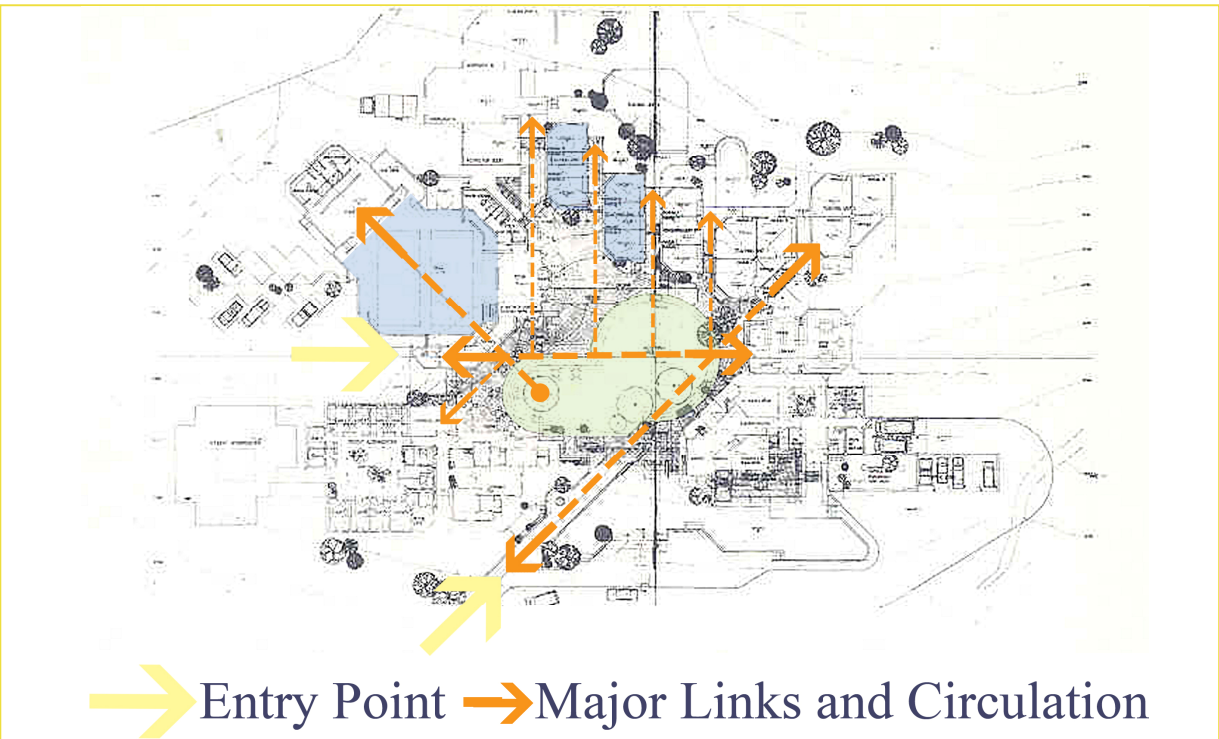
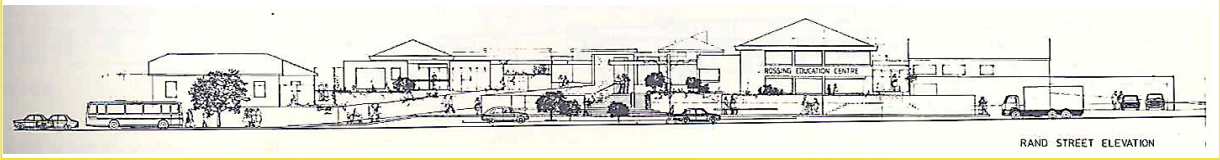


Fig. 58 & 59: The site plan of the Rössing Foundation Centre for Adult Education shows the modular classrooms to the top of the plan which can be added to as the need arises. The central portion of the plan highlighted in green is the assembly area which acts as the main gathering space and pedestrian thoroughfare.



language and literacy (See Figs. 58 & 59). As more modules are added and the centre expands, the new spaces will be geared for teaching more basic skills. Therefore the more fundamental skills are immediately catered for in close proximity to the hub of the scheme. When the need arises for the centre to expand, or funds become available, the spines will extend to include further skills such as nutrition for children, or the instruction in building trades (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

The technical workshops are accommodated on the south facing slopes of the site. A flat roof provides the shelter and flexible floor space below necessary for the activities of the workshops. The mass of this roofed area is broken down in scale as it steps down to follow the contours. At these steps at roof level are clear roof sheets which take advantage of the south light to naturally illuminate the space below while connecting the staggered roofs in a single structure (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

There is a small amount of single-quarters dormitory accommodation which will allow learners from outlying districts to attend their courses while excluding the need for travel to and from the venue for the duration (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

4.2.2.7. Structural Form

The structural form of the building was designed for expansion. The modular form of the classrooms allows for the initial construction of only 10 or 12 classrooms, with the ability to add more as time passes, the need arises and funds become available. At the outset the modular units will consist of framing columns and a roof which will provide shade and shelter. As funds may be made available the addition of screen walls will be possible to enclose the space or merely provide shelter form the wind and rain (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

The technical training area is also designed to meet the financial constraints of the moment, while providing the shelter necessary as well as the flexibility required by such a facility. The typical requirements of a technical workshop are a roofed area and a flexible floor area. The roof and floor plates step down the slope 3 or 4 times to follow the fall of the site. Where the roof steps, clear south-facing roof sheeting allows for the natural illumination of the workshop floor below (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

4.2.2.8. Theoretical Discourse

The psychological climate, as opposed to the physical, of an adult learning centre should be supportive, challenging, friendly, informal, open and spontaneous (Galbraith, 1991). In order

to establish this environment of informality and mutual respect, the centre responds to these needs through its architecture.

It is important that adult learners are received in an environment that is not intimidating or condescending. Adult learners returning to the classroom for the first time in many years will experience a level of anxiety during this period. These anxieties include worries about whether or not one will be able to keep up or learn at all, or relate to a fear of trying to balance current commitments with the new challenge of learning (Sisco, 1991). The physical learning environment can have a strong impact on learners, easing this anxiety by making environments informal and inclusive.

In order to make the environment one of inclusion, as opposed to exclusion, the relationship between street and site is open and welcoming, inviting visitors into the centre to explore freely. This is achieved by extending the public realm of the street out into the site, thereby allowing the general public to participate in the learning experience (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

In order to break down the sense of alienation one may feel on approaching such a centre, the organisation of the centre is informal, allowing the free movement of users through the various spaces. There are no formal, axial relationships between the different spaces, or formal spaces usually associated with an axial layout. The connections between the various functions are casual and encourage the uninhibited movement from one to the next (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

It is important that learners feel comfortable in the learning environment. Clear legibility of the building makes this objective more easily obtainable. Clear, unobscured signage of room names and numbers, fire escapes and unobstructed paths of movement are simple factors which improve the ease with which the users may experience a building (Vosko, 1991: internet).

In order to obtain legibility of the scheme, the entrance to the centre is clearly identifiable without removing all interest or surprise. The central arrival and assembly area is clearly linked to the public pavement area which extends into the site. This central arrival area, in turn, relates strongly to the rest of the elements of the scheme. Arranged around the arrivals area are the administration, social facilities, and the three educational spines (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

A sense of place is created by imposing the contours of the land onto the building itself, requiring it to step down

and making the user constantly aware of the sloping nature of the site. The buildings are staggered in order to allow views to open up to the pedestrian in motion. The modular units of the building are also staggered vertically in accordance to the contours in order to break down the volume of the structure. The line of the building is therefore broken up both horizontally and vertically (Adult Education Centre, Namibia, for Rössing Foundation, 1982: p. 61).

In facilities for adult education, flexibility is key, not only in allowing for future growth to occur as the need arises and finances become available, but also in allowing for the adaptable use of the facility according to the specific requirements of individuals or groups. In order to achieve this, the building is composed of modular units which make up the whole. Initially, the units consist only of supporting structure and roof. Later, as the need arises, the partitions are added where needed to shield from the sun and rain, or to enclose completely the spaces for which this became necessary.

4.2.2.9. Conclusion

The Rössing Centre for Adult Education is therefore a responsive architecture which accommodates the functions necessary for such a facility to be successful. It is also sensitive to the nature of the adult learner and breaks down in scale to respond to the human scale. The sequence of entry and the relationships between the various functions result in the creation of an environment that is comfortable and informal. Adaptive use is made possible by the modular system of construction, which allows for the addition of additional teaching spaces as the need arises. However, these modules in themselves are of a fixed dimension and therefore not adaptable. The use of moveable furniture in these spaces does, however, replace a certain degree of flexibility of use.

4.2.3. Case Study 02: Cross Media Centre, Moren Williams Lotter Forsythe Inc

4.2.3.1. Introduction

The Cross Media Training Centre, established by the Printing Industries Federation of South Africa in 1993, is situated in the light industrial area of Honeydew, Roodepoort, and is the only college of its kind in the Southern Hemisphere (Why Cross Media?, 2007). It is a non-profit organisation which is wholly owned by the Printing Industries Federation of South Africa, and is funded by them and SETA (Sector Educational Training Authority) in order to train currently unemployed learners (Printalk, 2006).

The scheme, designed by Moren Williams Lotter Forsythe Inc., is focused on a circular "village green" and walkway, around which are arranged six buildings, each housing a different function of the training facility (See Fig. 60). In total the campus is 11000m^2 and is able to cater for 470 students (Printing Industry College, Honeydew, 1993).

Training is across a range of 4 trades and the courses fall into 2 major categories, namely Desktop Publishing

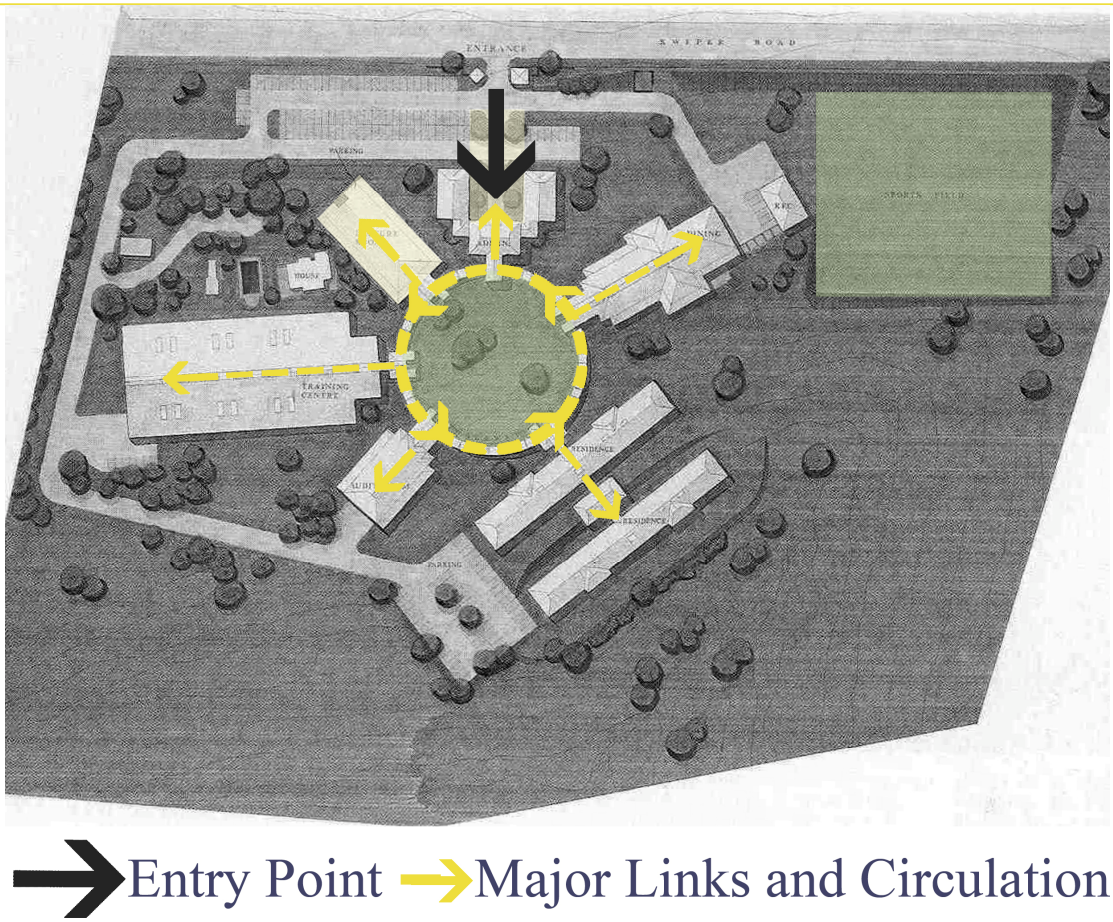


Fig. 60: The site plan of the Cross Media Training Centre illustrates clearly the radial plan of the scheme, with central circular courtyard in the middle and main entry from the north (Printing Industry College, Honeydew, 1993: p. 75).

and Print Technology. The appropriate facilities for each broad category are housed in a single wing of the facility, the technical training facility, while other courses are conducted in the classroom wing (Why Cross Media? 2007). Part-time, evening, short courses, and distance learning are also available at or through the facility (Cross Media Course Handbook, 2008).

Further, the facility offers a range of conference facilities which generate additional income through rental of these facilities. The centre has on offer 30 en-suite rooms, 2 family rooms, conference and training rooms, pub and braai area, 340 seat auditorium, 3 boardrooms, classrooms, kitchen and dining rooms, and a quiet group room for workshops (Cross Media Course Handbook, 2008).

4.2.3.2. General Location

At the time of construction of the centre the Honeydew area was a rural consisting mainly of small-holdings (Country Style for Hi-Tech Campus, 1993: pp. 74-77). Now, 15 years on, the area is being developed and there is light industrial activity to the south and east. To the north is the main arterial, Beyers Naude Drive, beyond which re more small-holdings. To the west are small-holdings which are rapidly being bought up and redeveloped into dense low-rise housing schemes.

4.2.3.3. The Building Type

The Printing Industries Training College is an integrated campus designed to facilitate the training of technical skills required in the field of print media. It houses, each in a separate building on campus, all the facilities necessary for this training (See Fig. 61).



Fig. 61: The technical training centre houses high-tech printing equipment in a large, industrial-type space which provides sufficient natural light

The requirements of a technical training college are much the same as those of an adult education centre, with the added requirements of the technical facilities such as the machinery, photographic equipment and computer training centre.

4.2.3.4. The Client

The Printing Industries Federation of South Africa is a non-profit organisation which was the client which commissioned the construction of the Cross Media Training Centre.

4.2.3.5. The Site

The site is in the once semi-rural area of Honeydew, Roodepoort, which is zoned for light industrial and is now being developed as such. To the north of the site is the main arterial road which leads west towards Krugersdorp and east towards the city. The ring road is accessible at two points located

about 5km from the site, one to the north-east and one to the south-east. To the east is a natural stream, which flows past the site to the south. There is a dramatic fall across the site of almost 20m (Printing Industry College, Honeydew, 1993: pp. 74-77).

The location of the building allows the entrance to relate strongly to the lane by which it is accessed, while maintaining privacy from the busier street which bounds it to the east. The sports fields separate the buildings physically from this street. This set-back from the street was initially coincidental to the semi-rural setting, but now helps to separate the building from its newly developed light industrial neighbours. From within the site, one is oblivious to the surrounding dense development, and the rural atmosphere is maintained.

The entrance to the scheme is axial, creating a sense of formality. However, once through the foyer area into the "court", there is a relaxed, informal atmosphere that is conducive to learning. The imposed geometry so evident in plan is not imposing in experiencing the space, but rather inviting and casual.

4.2.3.6. The Response to Context

The Cross Media Training Centre draws from the Highveld vernacular to influence the design. However, it is not a simple copy of the steel-roofed, veranda-style house of red facebrick. There is a complexity of scale in the



Fig. 62: Aerial photograph of the site illustrates the lane on the right hand side by which the centre is entered, as well as the light industrial construction at top right that was beginning shortly after the completion of the facility itself (Country Style for Hi-Tech Campus, 1993: pp. 6).

scheme which is brought together in a cohesive whole by the linking mechanism of the circular undulating walkway (See Fig. 62). The large volumes of the technical training block, the dining room and the auditorium are linked by means of this walkway to the smaller, more domestic scale of the teaching block and residential accommodation.

This scale is also appropriate to the context of semi-rural, medium sized farmhouses and narrow dirt lanes which surround the area. Fifteen years after construction, despite the development of light industry around the site, the building has maintained its character and still relates to its site. The intermediate scale of the larger buildings acts as a gradual change in scale between the factories, themselves and the farmhouses beyond.

The method of construction is also considerate of the context. The solid mass of the brickwork acts as effective thermal mass, absorbing the heat during the day and dissipating it to the sky in the evenings when the temperature drops.

All the buildings make use of the principle of the traditional veranda (See Fig. 63). In the front of each building, in the entrance portico is a seating area which is shaded by the high roof and provides pause areas for students and facilitators alike (See Fig. 64). Between these seating areas are planters with dense vegetation to further shade and cool the air. The walkway leading up to these spaces, while covered, is not always effective as it becomes slippery in the driving rain.

Due to the radial arrangement of the buildings, their orientation does not best suit the climate or context. The north-west orientation of the residential block seems to be coincidental rather than deliberate. Only the technical training



Fig. 63: The teaching block is flanked on both sides by covered walkways which provide shade and a secondary outdoor teaching space in hot, dry weather



Fig. 64: The built-in seats provide convenient, covered outdoor seating for the students and educators. Informal gathering is encouraged and this seating provides the perfect opportunity for this to occur.

block is oriented north and may take advantage of the south light by means of roof lights.

4.2.3.7. Accommodation

The secure campus is entered through a gated entrance which is overseen by a guardhouse and security guard on duty 24 hours a day. Beyond to the right are the staff and visitors' parking, and the main entrance is straight ahead. The reception is in the administration building which accommodates college facilities and offices, as well as additional offices for staff of the Printing Federation (See Fig. 65).



Fig. 65: The centrally located reception desk is welcoming in the light, airy foyer which is lit by large glazing panels on the entrance and courtyard sides.

Beyond the administration building is the covered walkway which opens out onto the circular gardens (See Fig. 66). To the north-west of the administration building is the teaching block. This is made up of two rows of classrooms serviced by a central duct. The two rows of classrooms are identical, but have been furnished differently according to the specific needs of the facilitators and learners. In the northern row of classrooms, the original flexible space has been divided minimally, resulting in one large, long classroom and two smaller seminar rooms. The classroom is furnished in the traditional way, with rows of desks down the length of the room on either side, and with a central aisle for the facilitator to move through the ranks of students. The smaller seminar rooms are furnished differently to the classrooms in order to better facilitate the activities occurring within. Opposite the window wall is a whiteboard and other teaching aids, and the desks and chairs are arranged in a U-shape facing it. This arrangement allows for demonstration to occur at the



Fig. 66: The covered walkway links the different buildings into a single radial composition so that no single building is excluded from the activities of campus

front of the room, as well as group interaction and discussion to occur. However, this room is not limited to this particular use only. The furniture is moveable and can therefore be rearranged to suit other purposes such

as role play, small group discussions, tests, and so on.

The second row of classrooms has been divided in the typical school fashion. The six classrooms are approximately 6 metres deep and 7, 5 metres wide, and all the furniture within is arranged in straight rows of two desks on either side of a central aisle. While this arrangement appears to be rather rigid, the dividing walls are drywall and may be easily moved between terms or overnight, according to special needs that may arise.

Further to the west and continuing along the circular walkway is the 3550m^2 technical training facility (Country Style for Hi-Tech Campus., 1993). The training facility incorporates a machinery area, which is a large industrial-type shed which is naturally lit by means of clear roof sheeting which occurs at the apex of the steel roof structure (See Fig. 67). Additional lighting is provided by fluorescent lights where necessary.

The technical training facility also incorporates smaller spaces such as the screen-printing room, photographic section and the computer training rooms (See Fig. 68). The computer rooms are high-tech and are supplied with air conditioning, internet connection and the facilities which make projection possible.

To the south west is the auditorium. The auditorium is used by the centre for teaching large groups, and is also available to the public for hire as a conferencing venue (See Fig. 69). It is used by small to medium businesses to conduct lectures and staff training. The auditorium is mechanically ventilated and artificially lit. The lack of natural ventilation and light is primarily the result of accommodating the other essential requirements of an auditorium. In order to make visibility acceptable for the viewing of digitally presented media, the space must be very dark and therefore prohibits the use of windows, be they opening or not.



Fig. 67: The technical training centre is an independent wing of the centre which houses printing equipment as well as training rooms for screen printing and computer courses.

Further along the walkway is the residential accommodation which can house some 270 students (Country Style for Hi-Tech Campus., 1993: pp. 74-77). The accommodation is made up of double rooms with the space divided



Fig. 68: Facilities are top of the range computers which provide both for the specialised industry training as well as basic computer literacy training.

for privacy by dividing walls. The rooms are spacious and well lit by large windows which face north-west and south-east. There are large trees surrounding the residences and so no further shading devices have been employed to these windows. The need for the residences arises from the fact that the facility is located on the outskirts of the suburbs and is not very accessible by public transport. It is, however, accessible from the nearby residential areas and informal settlements by car, taxi or by foot.



Fig. 69: the large auditorium is used by the students for large group gatherings as well as being rented out for corporate functions and other similar events.

4.2.3.8. The Structural Form

The complex employs two different structural systems. Due to the time constraints (the project was completed in 7 months), the buildings that were critical for completion by the beginning of the new year were constructed of framing steel with facebrick infill. The other buildings are of load-bearing brickwork (Printing Industry College, Honeydew, 1993: pp. 74-77). All the roofs are metal with steel truss systems (See Fig. 70).

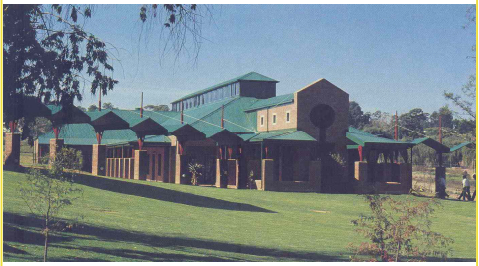


Fig. 70: View of the canteen from the park-like setting of the circular, enclosed square.

The walkway roof is a complex structure within the relatively simple structure of the scheme (See Fig. 71). The major challenge arose from the fall across the site of 5m. The buildings are all entered at natural ground level, therefore requiring that the walkway follow the contours and tie into the entrance portico of each building. In order to achieve this, the roof is made up of a series of cantilevered undulating roofs which are suspended from tall steel masts by means of steel cables.



Fig. 71: The covered walkway links the different buildings into a single radial composition so that no single building is excluded from the activities of campus

In the dining hall and technical training block, the steel structure of the roofs is expressed and exposed. This allows for the natural illumination of both areas, and the

natural ventilation and cooling of the dining room by means of glass louvers in the clerestory roof lights (Printing Industry College, Honeydew, 1993).

4.2.3.9. Theoretical Discourse

In order to make the facility visually pleasing and physically comfortable, a country site was selected. The building has been sited deep in the site and is buffered from the street by the playing fields and large trees (See Fig. 72). The environment has been further improved by the central garden which is planted with many trees to create a tranquil setting for the high-tech functions which occur within the building.

To further reiterate the cohesive nature of the scheme, a limited palette of colours has been used, creating a unity across the scheme. The scheme blends thus into it's naturally surroundings.

4.2.3.10. Conclusion

While the clustering of the buildings around this planted "common" creates a visually cohesive scheme, it does not complement the legibility of the scheme as a whole. The circular arrangement is confusing. Adding to this frustration, the entrance porticoes to each of the buildings look very similar, making it difficult to identify where exactly on the site one is at first glance. However, the signage is clear, easing this situation a little.



Fig. 72: The covered walkway links the different buildings into a single radial composition so that no single building is excluded from the activities of campus

4.3. Summary and Conclusions

Spatial and Accommodation Organisation

The Integrated Learning Centre at the Beamish-Munro Hall to the Queen's University is an infill project which is fitted in between two existing buildings. This arrangement calls for compact planning over three floors. However, the planning is clear and directional, indicating with the use of angled walls the direction of movement. John A. Brink Technical Trades and Technology Centre is a project which recycles an old industrial 'box-type' building into a vocational training centre. The entrance is clearly demarcated, continuing an existing path which links it to the rest of the campus and the urban context. This path continues through the building, so there can be no confusion as to directional movement. All the teaching spaces are arranged adjacent to this linear axis. The orderly layout of the building allows for the flexible adjustment of spaces as the needs of the College change over time. The noisy spaces are located away from the quieter teaching spaces and are separated by noise buffers in the form of stores and services.

The main entrance to the Whitby Public library is a human scaled lobby, and it is located at the intersection of the different functions of the library, between the library, meeting rooms and archives. The circulation space is a spine off of which different function branch. The noisier activities are located near to this spine, and the quieter spaces furthest away, thereby establishing a spatial hierarchical arrangement.

In the case of the Rössing Foundation Adult Education Centre and the Cross Media Centre, the accommodation is arranged in a radial pattern around a centrally located open space. However, the arrangement of the Rössing Foundation Adult Education Centre the arrangement is clear and legible, with room to expand on the modular structure, while the Cross Media Centre's circular arrangement in finite, with very little room to expand. It is also confusing and disorientating. Circulation paths of the Rössing Foundation Adult Education Centre are clearly legible and serve as connecting mechanism which tie the whole composition together. The Cross Media Centre is inwardly focused onto the central commons, while the Rössing Foundation Adult Education Centre, although radially planned, is extroverted and inclusionary of the public.

Positive Learning Environments

Positive learning environments are created in all the schemes using different mechanisms. The most effective are those which are inclusionary and involve the users in the learning process. The mechanism employed by the Integrated Learning Centre at Queen's University is twofold.

Firstly, the building acts as the educator from which students can learn. Secondly, the learning activities are made communal by the application of kinetic panels which fold away to include the passer-by in the activities of the learning spaces, thereby activating interest.

The John A. Brink Technical Trades and Technology Centre is a positive learning environment as it aims to involve the educators and learners in communal activities by placing the café in a central location. The informal nature of this space encourages informal interaction and continued learning. The use of a central spine serves to link all the teaching space along a common path. The transparent display booths allow for inclusion of the passer-by as they pause to observe the activities within the learning spaces. The flexible layout allows for adaptable use of the spaces which is a key factor in creating a positive learning environment.

The Rössing Foundation Adult Education Centre is a positive learning environment which is able to grow over time according to the increasing and changing needs of its users. The central gathering place is accessed from all of the rooms located around it, resulting in a cohesive environment in which all the learners can feel included at all times. In contrast, Cross Media Centre's 'commons' is of too large a scale to have the same effect. There is little connection from one activity to the next across the commons or along the walkway, and the scale is overwhelming and disorienting. However, the use of local materials and traditional verandas, as well as natural daylighting and ventilation do create a pleasant internal learning environment.

Innovative Classroom Design

The classrooms of the Integrated Learning Centre at Queen's University open onto a common atrium which links all of these learning spaces together. The provision of sliding partitions which can be opened as required, allows for the flexible use of the spaces. When open, the classrooms include the passer-by in the learning activities, and when privacy is needed for tests or when noise levels become too high in the atrium, the classrooms can be closed. The central atrium makes use of clerestory lighting to naturally light the atrium and adjacent classrooms by reflecting light into the space.

Flexibility, Informality and Comfort

Flexibility is achieved in a number of different ways in the various examples considered here. There are two primary methods for achieving flexibility. In the Cross Media Centre and the John A. Brink Technical Trades and Technology Centre, the structure is rigid, with infill walls which can be adapted to different needs as they arise. However, these walls are semi-permanent and can only be adapted over a period of weeks or months. The Rössing Foundation Adult Education Centre is modular, and can therefore have standard units added to

it over time as the demand for more space arises.

The Integrated Learning Centre at the Queen's University, flexibility is available more immediately. Here, moving panels screen the learning 'plazas' when the need arises. Alternately, the panels may be left open so that there is interaction between passers-by and the learners. In this way knowledge is shared freely between different groups of learners and educators. This visual continuity reinforces the mission of the college and allows for flexible use according to different demands by the learners and educators.

The Ideas Circus is a mobile educational facility which aims to extend the facilities of a given centre for a short period of time. Here, the modules contain all the equipment required for seminars, lectures and workshops and can be set up and removed quickly. The benefits of this system are that it is far-reaching, and is used as supplementary to existing facilities.

Response to Urban Context

The Integrated Learning Centre at the Queen's University is an infill project between two existing buildings on an existing university campus, and as such has to respond to this context. Firstly, the building fills the gap between the two existing buildings completely and creating an indoor atrium while enclosing the space between the street and the public open space. Despite this apparent barrier, a clear circulation route through the building has maintained the link between the front and back of the buildings. The building also, in itself, acts as a linking mechanism between the two existing buildings.

The John A. Brink Technical Trades and Technology Centre is an addition to an existing urban campus, with the main campus building located across the street. A linear path extends from the direction of this main building into the heart of the building, with an entrance portal at the main entrance to modify the scale between the urban and the more private realm of the centre. Adjacent to this entrance portal is a small public square which is used by the students at lunch time and during breaks between classes. A secondary axis terminates on the main breakaway space, thereby bringing learners and educators together in a single gathering space.

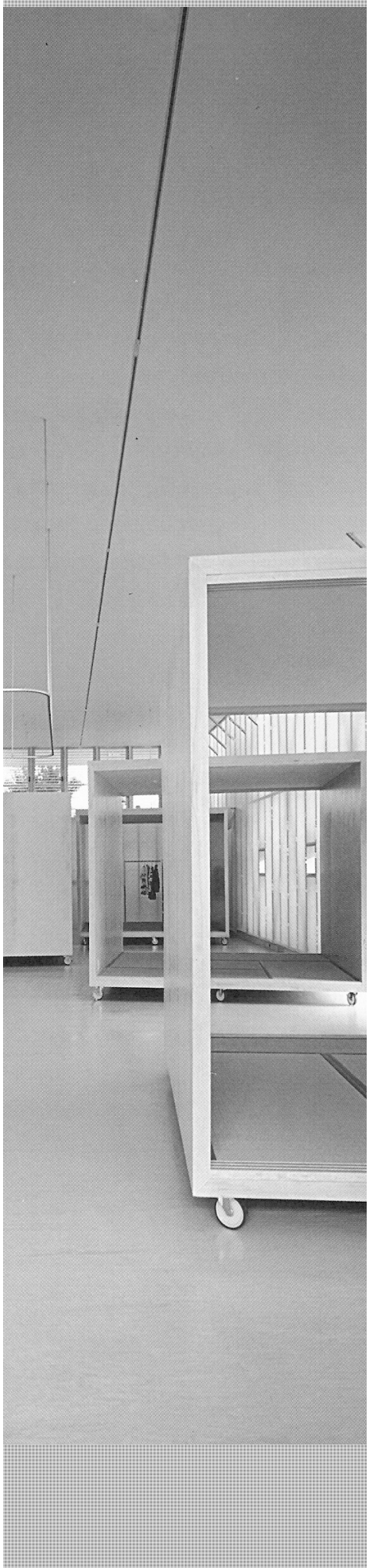
The Whitby Public Library and Civic Plaza engage responds sensitively to the context. The fast pace of the arterial routes are acknowledged by the use of 'urban gateways' and water features which modify the scale from the street into the plaza. The historical buildings in the context are acknowledged with the closing of the eastern street and the creation of a secondary forecourt which links the old and the new. The narrow eastern wing acts as a marker which directs the pedestrian to the entrance of

the building, thereby eliminating confusion.

Both the Rössing Foundation Adult Education Centre and the Cross Media Centre are located on greenfield sites. Here, the concern has been more focused on the response to natural climate. The layout of the modular plan of the Rössing Foundation Centre follows the topography of the site, while the Cross Media Centre, with its radial plan, adjusts its walkways to follow the fall across the site, thereby avoiding steps into the various wings of the complex.

5

CONCLUSIONS AND RECOMMENDATIONS



the multifunctioning room is a possibly truer answer to the modern architect's concern with

flexibility

Venturi, R.(1977).Complexity and Contradiction in Architecture. 2nd ed. London: The Architectural Press. p. 34

5. CONCLUSIONS AND RECOMMENDATIONS

This chapter is a review of the information put forward by this research, and as a result of the research aims to suggest an appropriate architectural response for the design of a new Centre for Adult Basic Education and Vocational Training in the Greater Warwick Junction Precinct, Durban.

The research carried out has shown that some of the main aspects to consider in the design of the above mentioned facility are:

- Appropriate site selection
- Movement and clarity
- Flexibility and adaptability
- Appropriate response to urban context
- Skills training
- Funding
- Resolution of form through technology, materials and colours

The correct choice of site is vital to the optimum functioning and accessibility of the proposed centre. Factors to be considered are:

- Availability of land
- Access by public transport
- Access via pedestrian routes
- Central location
- Proximity to existing educational facilities
- Access to water and electricity supply
- Orientation
- Image, character and identity

Due to the peculiar nature of the adult learner, care should be taken to create an environment that is equitable, informal, accessible, comfortable and flexible. Key to the achievement of this goal is to design a building that is clear and simple, with understandable movement routes as well as signs and architectural gestures that can be easily understood as images rather than written signposts.

A flexible and adaptable learning environment also serves to accommodate the needs of the adult learner. In feeling empowered in the learning environment through the availability of choice, where the learners can personalise the learning spaces depending on their changing needs, the adult learners are freed from preconceptions of what learning and learning environments are and can in this way be enabled to concentrate on the learning activities. The sense of ownership and individuality brought about through the personalisation of space results in the learner feeling more at ease and comfortable, and therefore more readily able to learn.

It has been determined that a pre-existing urban educational district is appropriate for the location of a Centre for Adult Basic Education and Vocational Training. It is therefore important that an appropriate response to this urban context be resolve. This should include the clear definition of the different realms and scales on the chosen site, as well as the provision of

public and private facilities which are relevant to the context. The appropriate response should be informed by a detailed site analysis leading to an understanding of the context.

Beyond the initial concern for literacy, it is necessary that the centre contain facilities which can be used for skills training courses that are appropriate to the user population. These skills should enable the learner to improve their access to opportunities, and may include skills such as cooking, dress-making, first-aid, wood-working, and crafts, as well as entrepreneurial skills, computer literacy and English language proficiency. Bearing in mind the context of the Greater Warwick junction Precinct and the lower market district, these types of skills can empower the local learners to improve their business opportunities and access to jobs.

Funding is a concern for the day-to-day running of educational facilities. For this reason it is suggested that durable materials be used which require little maintenance, especially in the very high-traffic areas. Due to the problems of funding, it is also suggested that the facility include some mechanism for income generation. This may include the inclusion of shops and coffee shops, as well as meeting and lecture rooms and open-plan areas which can be let out to the public for conferences, meetings and exhibitions.

Due to the requirement for flexible and adaptable spaces, an appropriate technology and materials are essential to the design of a Centre for Adult Basic Education and Training. Long spans with free floor plates are required to facilitate this required flexibility. As much as is possible, natural lighting and ventilation should be employed during the day in order to moderate the indoor climate and minimise additional costs incurred through air conditioning and electric lighting. The choice of materials should be appropriate in terms of durability and minimal maintenance, while bearing in mind the psychological effects of colour and the appropriate application of colour to the learning environment.

6

SITE SELECTION AND ANALYSIS



adult literacy, an essential element in overall development must be closely linked to economic and social priorities, and to present and future manpower needs

Hutton, B. (1992). Adult Basic Education in South Africa: Literacy, English as a Second Language, and Numeracy. Cape Town: Oxford University Press. p. 32

6. SITE SELECTION AND ANALYSIS

6.1. Introduction

The purpose of this chapter is to analyse and select an appropriate site for the proposed facility. Site selection criteria will be explained, and three sites will be compared with regard to these criteria in order that one appropriate site may be identified. Once the site for the proposal has been selected, a detailed analysis of this site will consider zoning, land use, figure ground patterns, new proposals, micro-climate and movement patterns in order to inform the development of an urban design proposal. The conclusion of this chapter will result in the formulation of a detailed schedule of accommodation and the identification of the main design concepts which will influence the design of the proposed Centre for Adult Basic Education and Vocational Training.

6.2. Site Selection

Site selection has been limited to the urban area in and around Durban's CBD. The decision was made due to the need for a centrally located and accessible site. The CBD of the city is the area most heavily serviced by public transport, and is therefore the most accessible part of the city via taxi, rail and bus. Secondly, the limitation of site to within the urban areas was placed due to the population density of the city, which means that a facility located within this region will be accessible by a much broader user base within the region, as opposed to the fairly limited reach of a centre located within a rural or suburban context.

Three sites were initially identified as possible choices for the development of an adult education centre:

- Site A: Centenary Road, Greater Warwick Junction Precinct, Durban
- Site B: Queen Street, Durban CBD
- Site C: Hoy Park, Old Fort Road, Durban

The main selection criteria are:

- Availability of land
- Access by public transport
- Central location
- Proximity to existing educational facilities
- Restrictions

Secondary considerations for site selection include:

- Access to water and electricity supply
- Orientation
- Image, character and identity

§ Availability of land

This criterion will determine whether there is an availability of land, in other words, to what extent demolition will need to be carried out on each site. The less site works which will be required before construction can begin, the more appropriate the site.

§ Access by public transport

Access to the site via public transport is vital to the centre for adult education. This criterion will evaluate to what extent the site can be accessed by public transport. This will be done by

considering whether or not bus and taxi drop-off is possible on the site. If there are no drop-off possibilities, the walking distance from the nearest taxi and bus ranks will serve as the criterion for assessment. The site which is located closest or most efficiently to access public transport will be the best choice.

§ Central location

The most central location should result in the most accessible site by the greatest number of people arriving from a large variety of locations.

§ Proximity to existing educational facilities

This criterion will aim to determine the site which may best be used to insert an educational facility into an existing

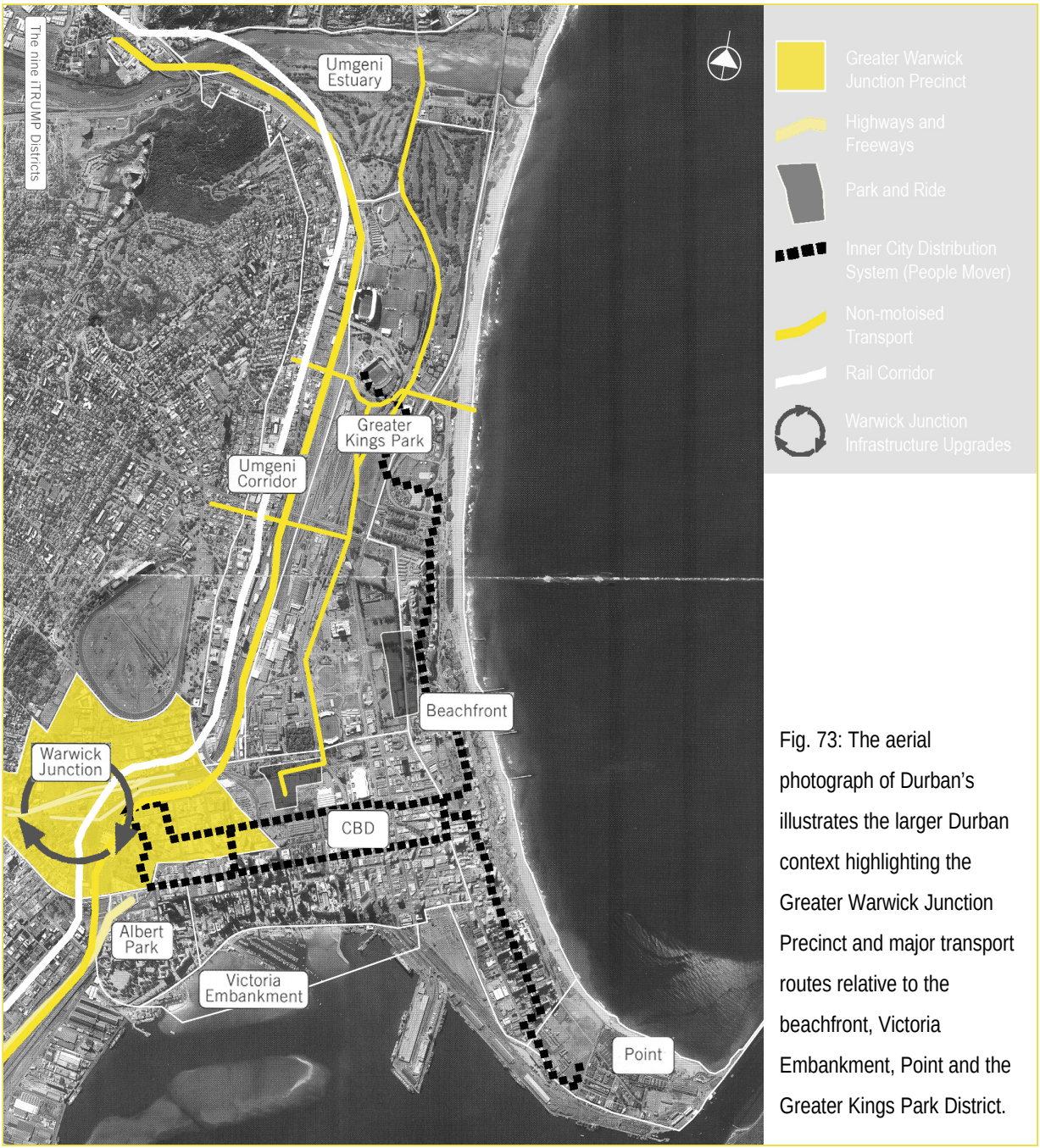


Fig. 73: The aerial photograph of Durban's illustrates the larger Durban context highlighting the Greater Warwick Junction Precinct and major transport routes relative to the beachfront, Victoria Embankment, Point and the Greater Kings Park District.

educational district in order to reinforce the district, based on the principles of 'clustering' discussed in Chapter 3. Visual, pedestrian and vehicular links will be considered here.

§ Restrictions

Restrictions of the site which will hinder or negatively impact the development of a centre for Adult Basic Education and Vocational Training will be identified here. Access, surrounding context, orientation and access to services will determine the best site for a centre for adult education.



Fig. 74: The aerial photograph of Durban's CBD and surrounds highlights three sites, Site A, Site B and Site C, which were considered in terms of the criteria laid out in the above discussion.

6.2.1. Site A: Centenary Road, Greater Warwick Junction Precinct, Durban

Site A is located within the Greater Warwick Junction Precinct, on the corner of Centenary Road and Carlisle Street.

§ Availability of land

On the site are a few small prefabricated and brick buildings which are occupied by small businesses. There is the possibility of relocating these small businesses to different premises, and the removal and re-use of the small prefabricated buildings should be a relatively small operation. The remainder of the site is currently used as a bus stop, and has therefore been graded. This means that earthworks can minimised.

§ Access by public transport

The site falls within the Greater Warwick Junction Precinct, and as such is located very near to the confluence of the three major means of public transport within Durban's CDB. Here, the bus terminal, train station and taxi rank are all within walking distance from the site. Carlisle Street is a quiet street which will allow for bus and taxi drop-off at the site. This site is ideal for its accessibility in all respects.

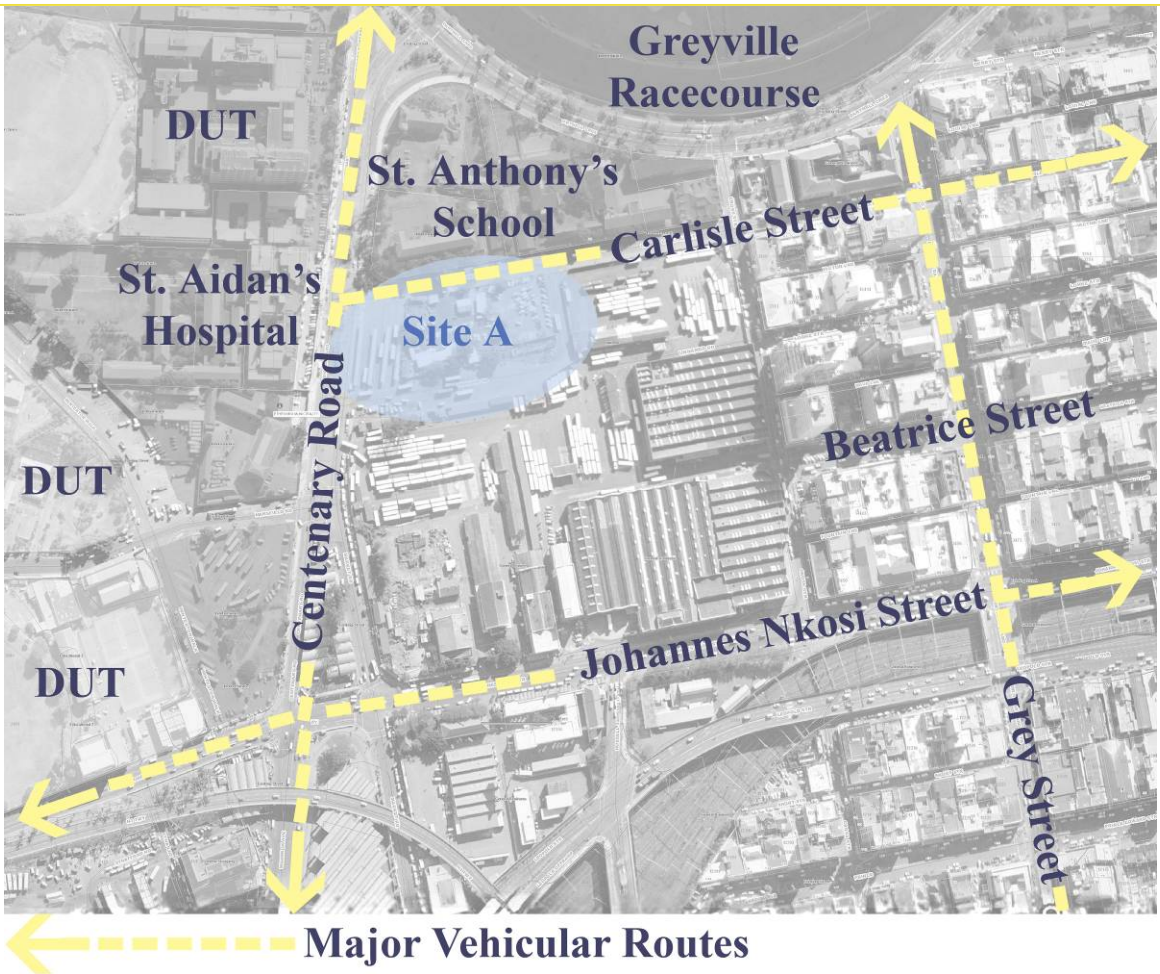


Fig. 75: Aerial photograph of Greater Warwick Junction Precinct in relation to major vehicular routes and landmarks.

§ Central location

This site is centrally located, close to public transport, Durban's CBD and other educational facilities. There are a number of public roads leading into the area, making this site accessible from a variety of different directions.

§ Proximity to existing educational facilities

Site A presents a 'hole' in the urban fabric. Here, there is very little activity in contrast to the vibrancy of the rest of the precinct. To the north and west of the site are numerous schools and educational facilities which form a comprehensive educational district. The insertion of another educational facility here would result in the reconciling of the gap in the urban fabric, as well as the extension of the existing educational district. This will therefore strengthen the integrity and inherent character of the district.

§ Restrictions

The site is in an area which may be perceived as being an unsafe environment. This may discourage the public from using the facilities. However, with the insertion of a new building and the regeneration of the surrounding area, there is a possibility for the improvement of the conditions in the district, and thereby public perception of the environment.

§ Overall Assessment

Site A has good potential for the development of a Centre for Adult Basic Education and Vocational Training. The site is serviced and relatively flat, requiring little demolition and site works. The need for the relocation of existing functions may be problematic. The site is highly accessible by both pedestrians and people making use of public transport or private vehicles. By locating the facility here, the centre may form part of a district, and avoid being a stand-alone building in an isolated context.

6.2.2. Site B: Queen Street, Durban CBD

Site B is located between Queen Street and Commercial Road in Central Durban. The Department of Education and Training is located here, and there is a possibility that a link may be created between this building and the proposed centre for adult education.

§ Availability of land

This site is located in Central Durban, in the busy CBD. The area is heavily built up and there is therefore no open land. This means that an existing building would need to be demolished in order to make room for the proposed new centre. The extra cost attached to demolition is an undesirable factor.

§ Access by public transport

Being in the centre of Durban's CBD, this site can be easily reached by taxi and bus. It is located within walking distance from the nearest bus terminal. However, the streets are busy and narrow and do not promote an atmosphere of safety for the pedestrian.

Further, the surrounding public roads are one-way streets, making the site more difficult to reach than is practical.

§ Central location

Site B is centrally located within Durban's CBD. This makes it an appropriate site as it is accessible by public road. The central location means that it may be reached by many people. However, the one-way streets make it less accessible than Site A.

§ Proximity to existing educational facilities

The only educational facility nearby Site B is the building for the Department of Education and Training. If a link could be created between the two in order to share administration and other facilities, this may be a positive factor. However, there are no schools or universities nearby, which limits the sharing capacity brought about by clustering. As opposed to Site A, there is no distinguishable educational district here into which a proposed centre for adult education could be absorbed.

§ Restrictions

Like Site A, this site may be perceived as being unsafe. There is also no room to provide public open spaces or

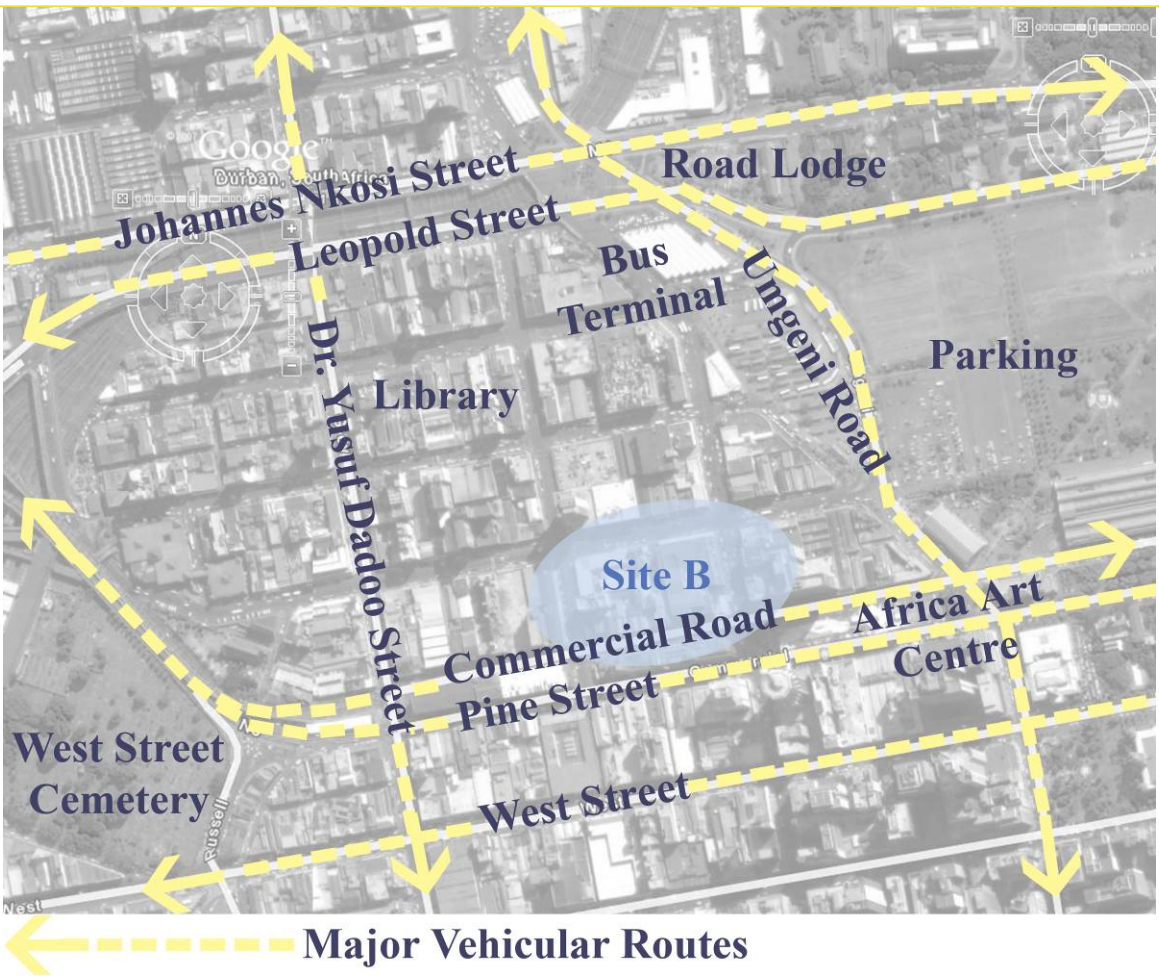


Fig. 76: Aerial photograph of Durban's CBD in relation to the major vehicular routes and important city elements.

outdoor teaching spaces, with the exception of balconies. This limits the opportunities for creating a positive learning environment. Noise is also at a high level here, which will need to be considered in the overall design of the facility. There is no space available for parking on the site.

§ Overall Assessment

Site B is not an ideal site for the development of a Centre for Adult Basic Education and Training. The site is located well in terms of accessibility by various means of transport, as well as centrality. The site will be accessible from a number of different directions by people coming from all over the city. However, there is little room to service the site, and the dense nature of the site means that there will not be opportunity for greening of spaces. Overshadowing by high surrounding context will not impact positively on the learning environment. The institutional nature of the Department of Education and Training adjacent to the site may also have a negative impact on the learning environment.

6.2.3. Site C: Hoy Park, Old Fort Road, Durban

Site C is located in Hoy Park, adjacent to UNISA. This site has been identified for this reason, as there is an opportunity for the clustering of educational units here.

§ Availability of land

The proposed Site C is a sports ground with tennis courts,a cricket field, bowling greens and othe rsporting facilities. As such there are few small buildings on the site. The site is also relatively flat due to the fact that it presently accommodates sporting activities. There will therefore be little need for earthworks. However, the proposed site is a public facility, and as such may not be available for redevelopment. Unless the relocation of these activities can be facilitated, it may not be appropriate to remove the existing facilities.

§ Access by public transport

The site is bounded on two sides by main roads. It can therefore be easily accessed by public transport or private vehicle. It will be possible to accommodate drop-off zones for both buses and taxis due to the frontage of the site onto Old Fort Road. However, the site is not within walking distance from any formal taxi or bus terminals. It is therefore not ideally situated for maximum accessibility.

§ Central location

Site C is located to the east of the city. While it is still accessible by public transport and private vehicles, its proximity to the beachfront means that it is not central and not easily accessible from all directions. The main road which passes the front of the site is a one-way street from the city up to the intersection before the site. This further limits access.

§ Proximity to existing educational facilities

The proposed site is located next to UNISA. UNISA offers courses for adult educators, and in this respect this location for the proposed centre for adult education may prove to be mutually beneficial to both facilities. However, this area does not constitute an educational district.

§ Restrictions

The public facilities on the site restrict the amount of development possible on this site. Construction here would remove a public asset from the community. The site is located very near to Kingsmead Cricket grounds, which is prone to peak use. This may negatively affect accessibility to Site C during these periods. Further, noise generated from the park may also have a negative impact on the learning environment.

§ Overall Assessment

This site is less 'urban' than the Sites A and B. There is therefore less opportunity to partake of the benefits of a city location. The location away means that the site is less accessible by businesses, employees and individuals wishing to make use of the facilities. The site is large and there is therefore space available for parking and outdoor spaces. The site is long and narrow,

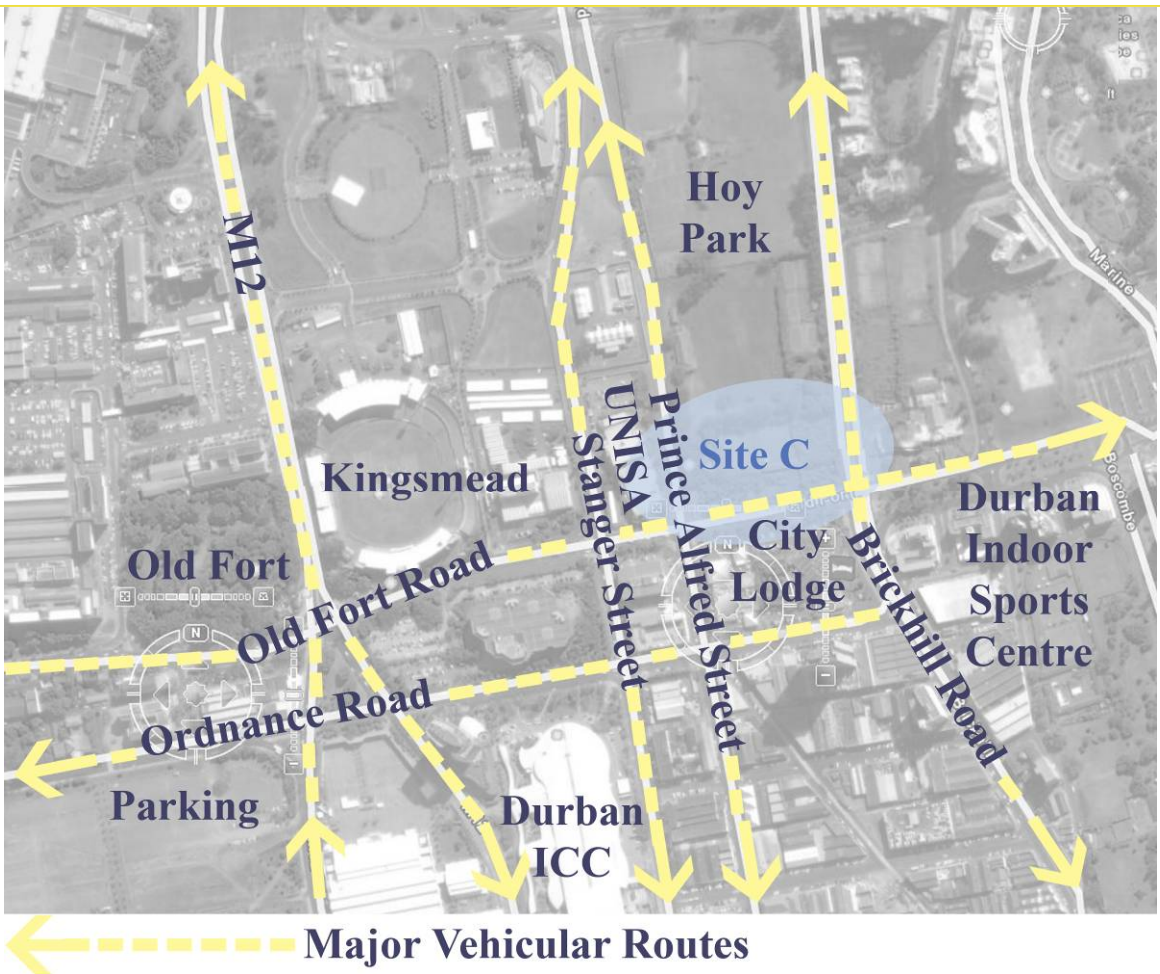


Fig. 77: Aerial photograph of Site C showing the major vehicular routes and landmarks in relation to the site.

and is has north-south orientation which is ideal for learning environments. However, the site is too large for the scale of the proposed project.

6.2.4. Summary and Conclusions

By analysing the three sites above using the same criteria, each site obtains a scorecard that is comparable and objective. This allows the site to be interrogated robustly in terms of how it would respond to the development of the proposed structure. From the analysis done above the Site A in the Greater Warwick Junction is seen as the best site for the development. This is due mainly to its centrality and accessibility by means of public transport, which allows the site to link with the city and the surrounding residential areas. There is a potential linkage to be created between the existing educational facilities and the new centre, or at the very least, for the integration of the new centre into an existing educational district. The site is underutilised and the development of an educational facility here will repair the continuity of the urban fabric in which there currently is a gap. Further, there is also the opportunity here for the extension of the southern market district up towards the north.

	Availability of land	Access by public transport	Access to site via pedestrian routes	Access to site via public roads	Central location	Access to electricity supply	Access to water supply	Links to existing educational facilities	Orientation	Urban context	Image/character/identity
SITE A	•	•	•	•	•	•	•	•	•	•	•
SITE B	X	•	•	•	•	•	•	X	•	•	•
SITE C	•	•	•	•	•	•	•	•	•	•	•

Fig. 78: The table lists the site selection criteria based on the discussion above and compares three sites, Site A, Site B and Site C, under these categories. The results of this analysis resulted in the choice of Site A as the most preferable site. Qualities are represented as follows:

- • Good
- • Average
- X Bad

6.3. Description of the Site

The site is relatively flat and is currently occupied by a few small prefabricated and brick buildings. In these buildings are the offices of printers and driving schools. Currently used as a bus stop, there are four bus shelters which serve this purpose. Here, informal traders sell sweets and food to the commuters waiting at the bus shelter. The remainder of the site is used as a parking area for the office employees, as a driving school, and as a bus parking depot.

On the pavement in front of the bus shelters, people wait to catch buses and taxis. On the opposite side of the road, there is heavy pedestrian flow in the direction of the bus terminal and taxi ranks towards the south. Vehicular traffic is busy past the front of the site along Centenary Road, as well as along Carlisle Street during peak times. The street to the south of the site is relatively unused by both pedestrians and vehicles.

There is a variety in the scale of the surrounding buildings. St. Anthony's School to the north, and St. Aidan's Church to the west, are both three storey buildings. To the east, towards the city, are a number of larger buildings reaching up to 14 storeys in height. The chosen site forms a gap in between these two extremes, with only single storey buildings.

There are few large trees on this site. While the site is longitudinally orientated in a northerly direction, the front of the site faces in a westerly direction onto Carlisle Street.



Fig. 83: A house in the Beatrice Street District.



Fig. 84: Existing prefabricated buildings on site.



Fig. 85: Bus shelters on the relatively flat site



Fig. 86: Small entrepreneurial enterprise under the bus shelter

6.4. Zoning and Figure Ground Studies

The zoning diagram illustrates the gap in the fabric between the educational district and the proximity to other educational facilities suggests the best location for an additional educational building, providing opportunities for shared facilities and fund saving.

The figure-ground study indicates that there is a change of scale from the CBD to the residential area to the west. The chosen site forms a void in the fabric between these two scales, suggesting that an in-fill project here would be appropriate, both to address the change of scale as well as adding a valuable and necessary asset to the city in this highly accessible zone.



Fig. 89: Current zoning according to Durban's GIS information



Fig. 90: Figure Ground Study

6.5. The Current Context:

6.5.1. Disassociated Chaos

The Warwick Junction District is characterised by multiple educational facilities and the confluence of three major transport modes, namely buses, taxis and railway. However, within the middle of this junction is a dead-zone with bus sheds and bus parking. This zone is the choice for the site for the proposal. To the east of the site is the Beatrice Road District, which has a distinctive character which is cut off from the rest of the precinct due to the fact that Beatrice Street is a dead-end. The market zone to the south is isolated from the north by the freeway coming into the city from the east.

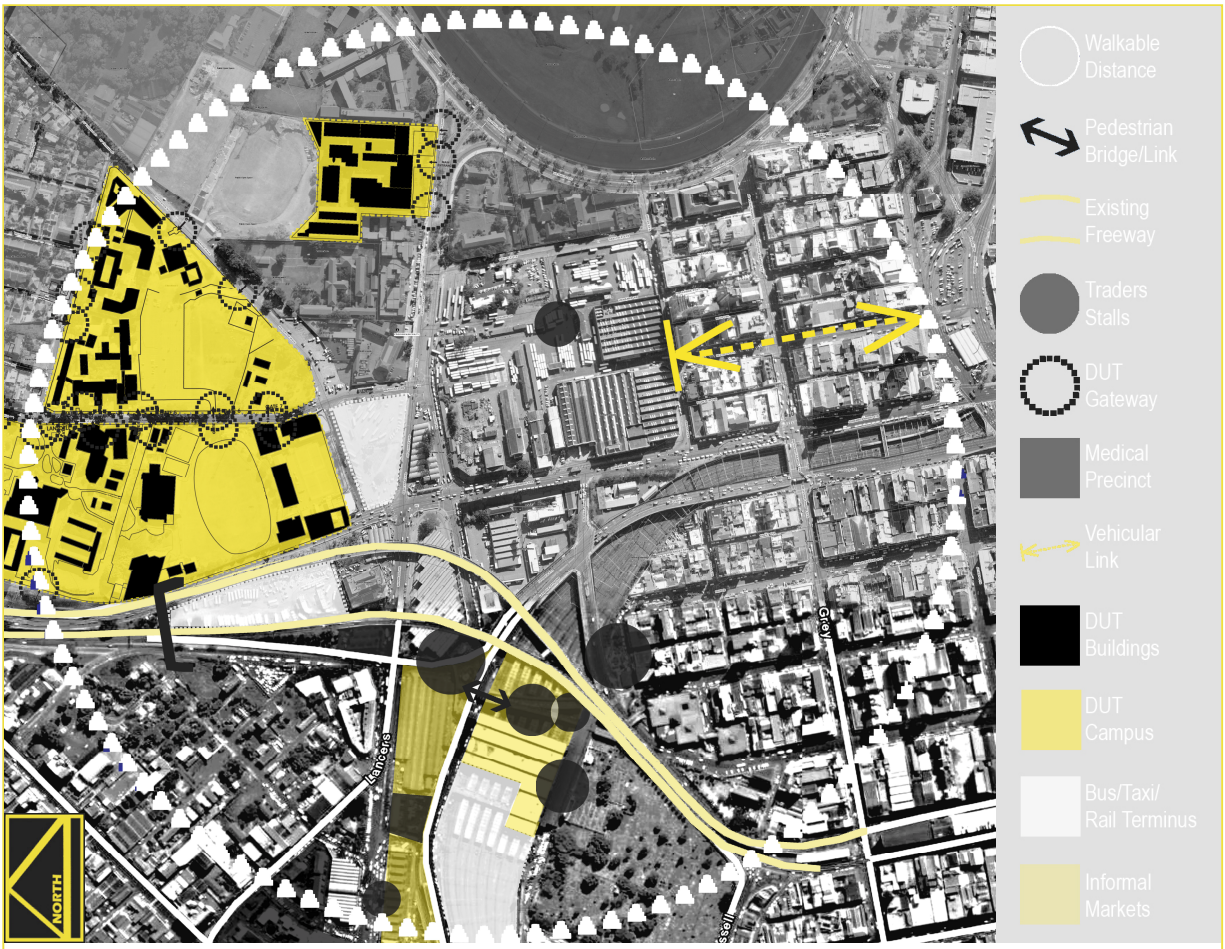


Fig. 91: Map showing the Greater Warwick Junction Precinct as it is currently

6.5.2. Perceptions of the Precinct

To the north of the precinct is the Greyville Racecourse which forms a hard, impermeable edge. The east of the precinct is bounded by Umgeni Road and the railway line, which also bisects the precinct into two distinct areas. The northern area is the educational district which is punctuated by the bus depot which forms a dead zone in the centre of the precinct. To the south-west of the railway corridor is the market district, characterised by informal trade. Within this area are several major transport nodes for buses and taxis. The main paths through the area follow a similar line to the railway corridor, further dividing the northern and southern zones. Some landmarks within the precinct include the ML Sultan Campus of DUT, the fire station, St. Anthony's Church, and the traders' stalls on the Leopold Street pedestrian bridge.

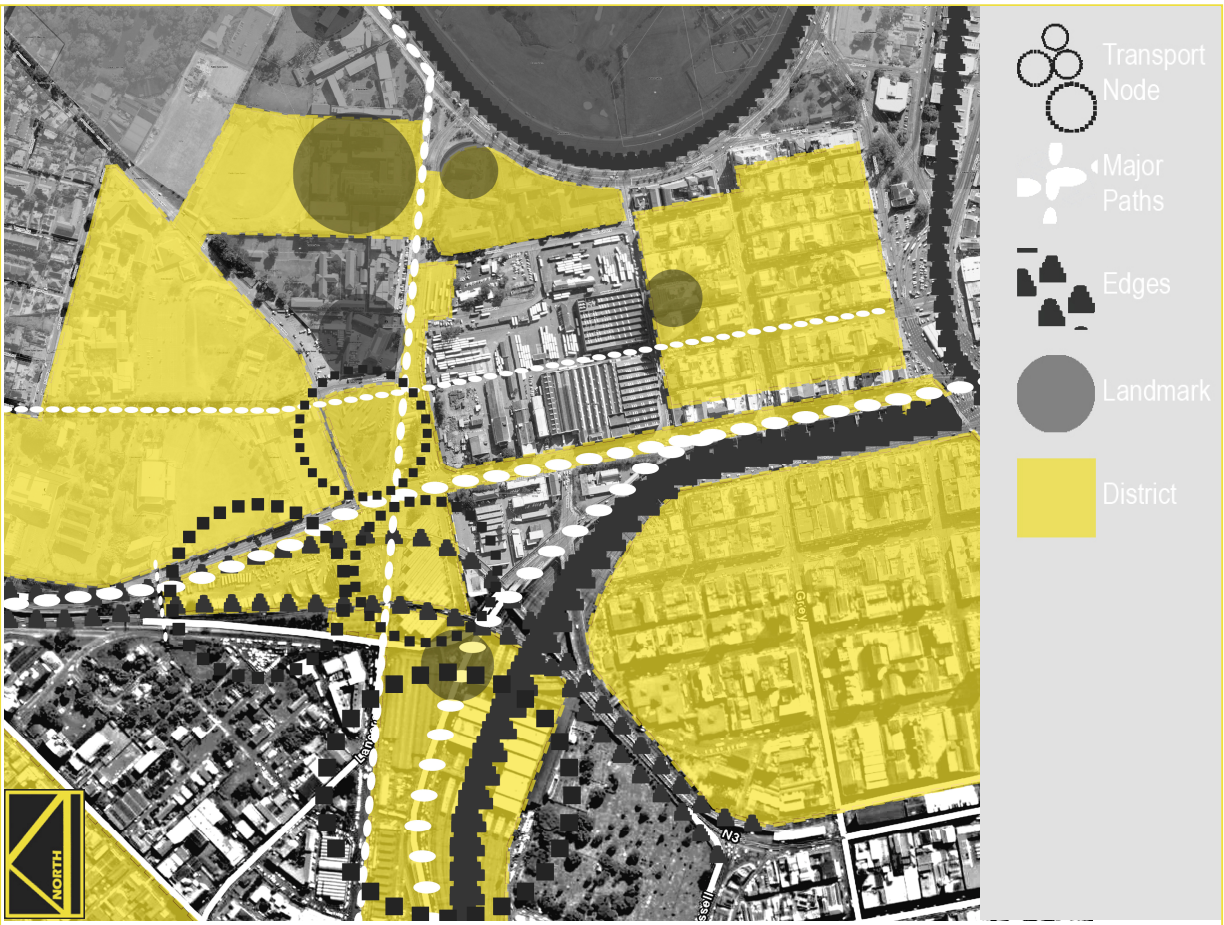


Fig. 92: This map shows the Greater Warwick Junction as it may be perceived, with major landmarks, nodes, edges, paths and districts

6.6. The City's Proposals for Urban Regeneration

The City proposes to improve the quality of the precinct by a number of interventions. The development of a new flyover will eliminate a large amount of traffic from the area, thereby allowing for the pedestrianisation of Centenary Road. Beatrice Street will be extended through the site of the bus shed to link up with Mansfield Road, allowing for direct access from Berea through to the Beatrice Street District. The planners of DUT hope to consolidate their numerous campuses into one. This will be done by the closing off of Mansfield Road at Winterton Walk, thereby eliminating all minor access points, and conflicting with the extension of Beatrice Road. The upgrades proposed to the market district will improve the quality of the southern zone.



Fig. 93: Proposals for the area include the consolidation of the DUT campuses and the construction of a new flyover

6.7. Micro-Climatic Analysis

There are strong winds from the south-west which will require deflection in order to avoid a tunnelling effect. The main street boundary of the site faces slightly south of west, which means that there may be a conflict between the desire for a large, glazed entrance to the building and the need for sun control. The north-east winds can be used to the advantage of the design in order to naturally ventilate the building by means of an atrium-type roof and large opening windows. Generally, the east and west facades would be protected from the low-angled sun and the north should be protected by means of large eaves overhangs and other shading devices. The use of natural light and ventilation, as well as the possible use of solar panels, will minimise the need for mechanical climate control devices.

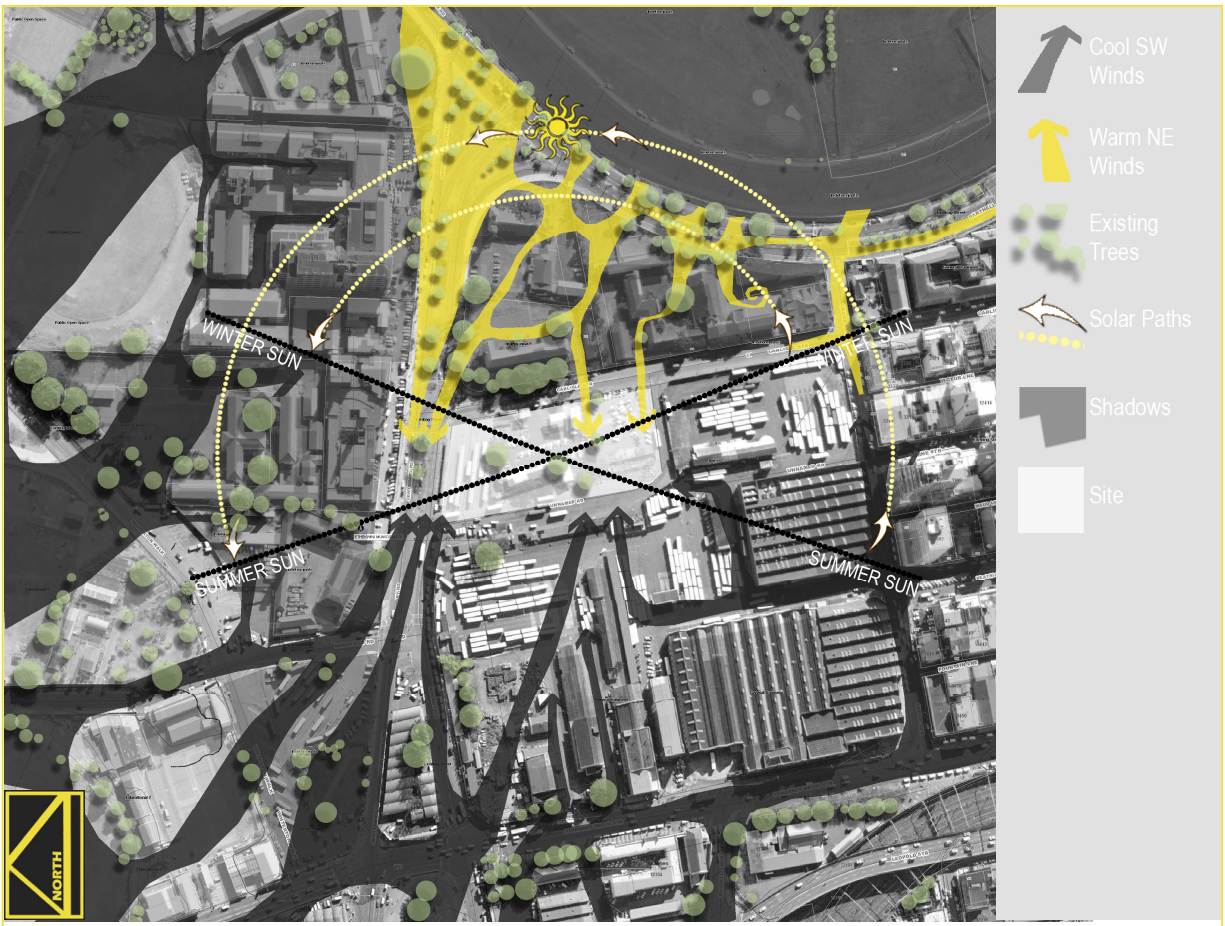


Fig. 94: This map illustrates factors influencing the micro-climate of the precinct, including wind patterns, shadows and solar paths.

6.8. Movement

6.8.1. Vehicular

The most intensive traffic flow in the direct vicinity of the chosen site is in a southern direction along Centenary Road, and along the freeway to the south of Johannes Nkosi Street. In a northern direction, traffic flows from Warwick Road into Centenary Road and then branches either east towards the CBD via Carlisle Street or north-west towards the botanic gardens. Along the unnamed street to the east and south of the site is minimal traffic flow. To the south-west of the site are the main bus terminal and taxi ranks to and from which most of the traffic in the area is moving, particularly during peak times. Due to the educational nature of the district, there is also a midday peak period at which traffic flow once again increases. To the east of the site, along Beatrice Road, traffic is quiet due to the fact that the road is a dead end. During the mornings, traffic flow is in the opposite direction to that already described.



Fig. 95: Map illustrating the vehicular movement routes through the Greater Warwick Junction Precinct.

6.8.2. Pedestrian

Pedestrian activity is very high along Centenary Road, particularly during peak times when people are moving between the taxi rank, bus terminus and their places of work and study. The goal of the pedestrian movement in the afternoons is to access public transport, while in the morning the goal is to reach a place of work or educational institution. There are also many stationary pedestrians. These pedestrians are either waiting for public transport vehicles or are patrons of the informal traders located at these points. For this reason, in many locations in the area pedestrian and vehicular movement coincide. This occurs at the bus terminals and taxi ranks. The busiest pedestrian routes are focused along the edges of Johannes Nkosi Street and Centenary Road, where most public transport is accessed. Places of congregation are concentrated in front of the public transport access points and at the entrances to the educational facilities and hospital.

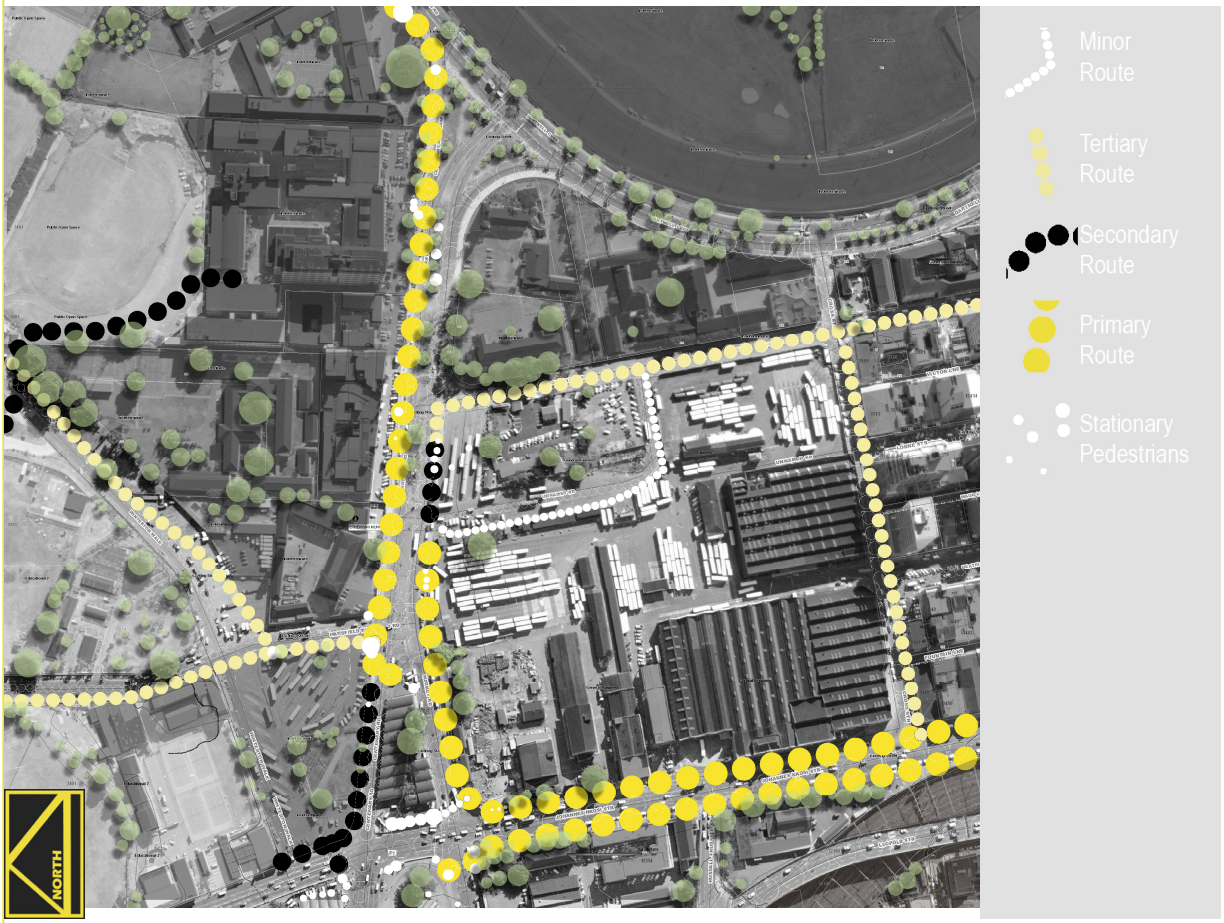


Fig. 96: Map illustrates pedestrian paths through the Greater Warwick Junction Precinct

6.9. Urban Design Proposal

The proposal for the site aims to eliminate the dead zone in the centre of the precinct by proposing the insertion of an Adult Education Centre into the already existing educational district. This and the provision of a meaningful public open space will aim to result in a destination which will draw pedestrians beyond the proposed flyover and into the quieter educational zone. The proposal will also relate to the surrounds, engaging with the hospital to the west on Centenary Road, as well as with St. Anthony's School to the north. Links will be created to the various bus and taxi terminals in the immediate vicinity. To the south of the site, a semi-permeable edge will begin the transition for the commuter onto the site and into the building. On the western edge will be a permeable public edge which is the first step in the transition into the building for the pedestrian.

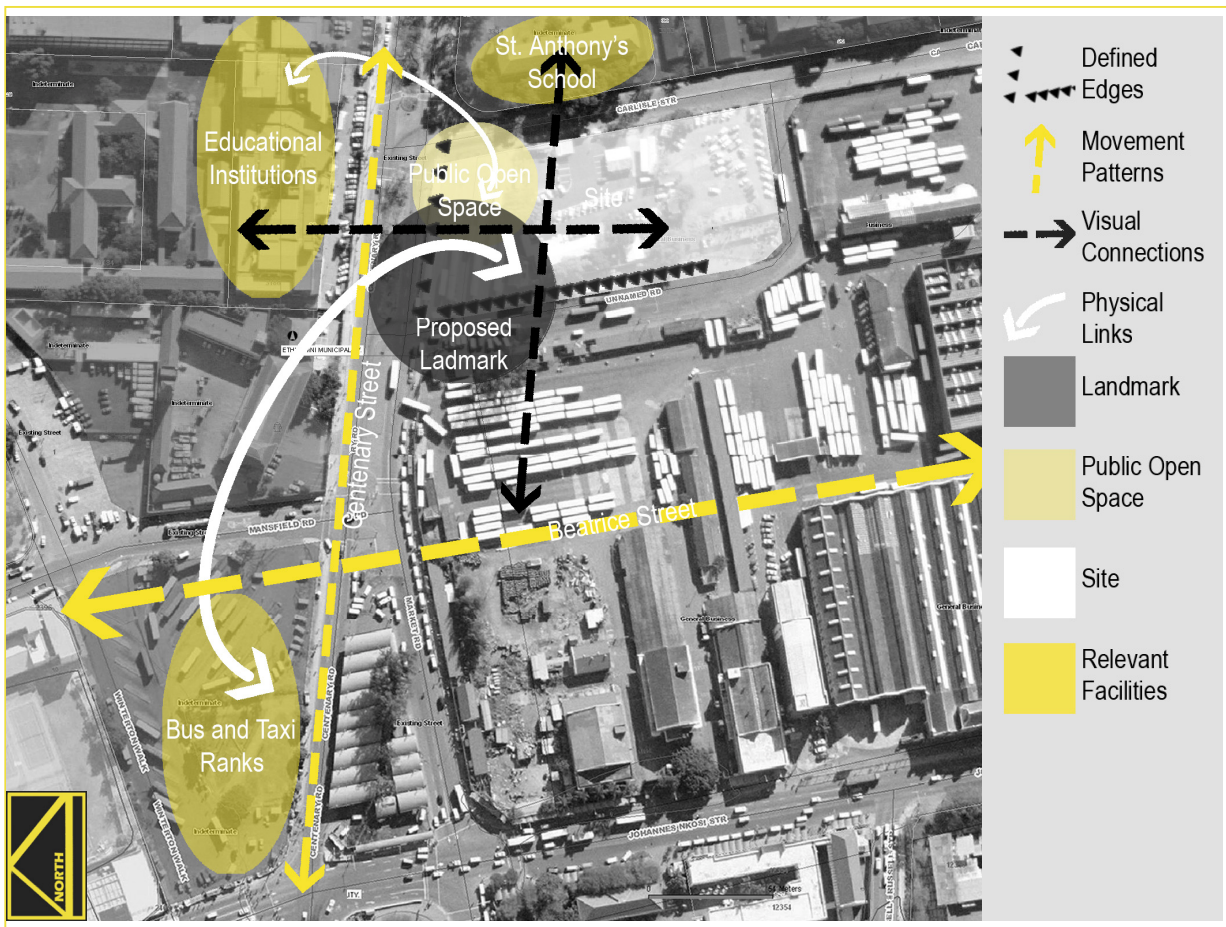


Fig. 97: Map illustrates the conceptual urban design proposal which aims to create links to the surrounding educational facilities and the public transport terminals.

Urban Design Framework:

- Strengthen and rationalise existing trade, movement and infrastructure
- Provide diverse functions relevant to the context and community
- Revitalisation and repurposing of existing buildings in order to positively impact on physical connectivity, economic viability and imageability of the precinct
- Reinforce the existing character of the district through appropriate scale, facilities and choice of materials
- Create links to the surrounding precinct both physically and through function
- Encourage interaction between the public and the built environment through the provision of retail and public service facilities on various scales
- Create an environment that is safe for both the pedestrian and the motorist
- Improve the quality of the environment by means of planting and landscaping, high quality materials and increased activity at street level
- Create pedestrian-friendly routes and links to public transport

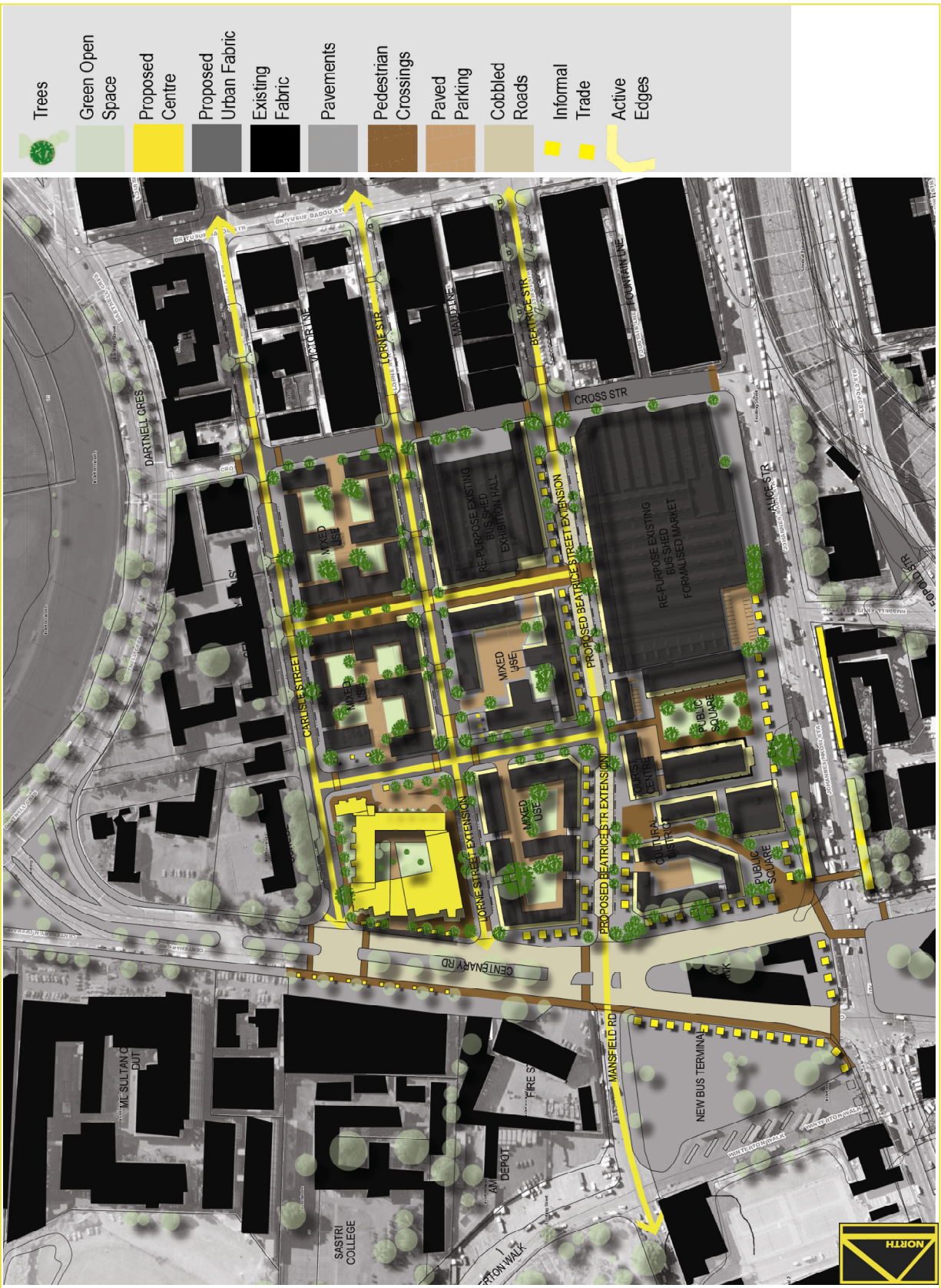
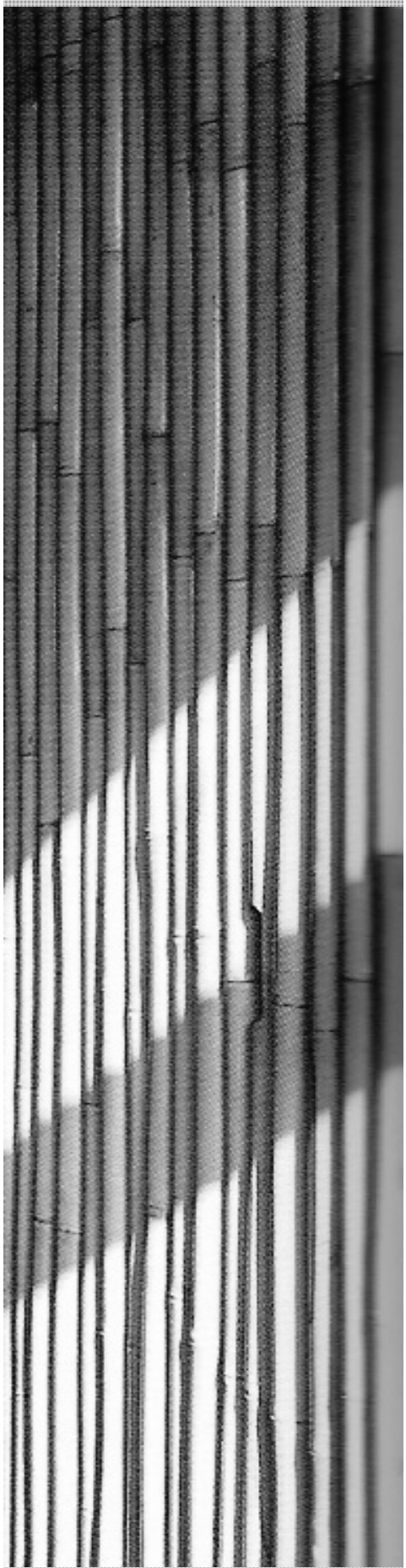


Fig. 98: The urban design connects Mansfield Road to Beatrice Road. Informal trade is proposed along the Beatrice Road Extension and Centenary Road and in the public square at the northern corner of the site.

7

THE NOTIONAL CLIENT



an adaptable space effectively responds to the requirements of any human activity from habitation, leisure, education, medicine, commerce and industry.

Fox, M. A. & Yeh, B. P. (2000). Intelligent Kinetic Systems. Research Report. Cambridge: Kinetic Design Group. p. 3

7. THE NOTIONAL CLIENT

7.1. Introduction

This chapter outlines the design brief which outlines the major functions that the scheme should accommodate, and how these will function conceptually in relation to one another. The developed Brief will then be used in the concluding chapter to define all the functions, spaces and sizes which are required to constitute a Centre for Adult Basic Education and Vocational Training, resulting in a schedule of accommodation.

7.2. The Notional Client

The client for the proposed project may be considered to be a combination of the Department of Education and private sector companies within the field. Day to day running costs should be subsidised by income generated by the activities of the centre in order to reduce expenses to sponsors.

7.2.1. The Client's Requirements and Detailed Brief

The requirements for the development of a Centre for Adult Basic Education and Vocational Training can be considered within a number of different categories. These include issues pertaining to funding and revenue generating activities; environmental requirements; construction system and materials; site requirements, and design objectives.

Due to the nature of education and the fact that the development of a central facility for Adult Basic Education and Vocational Training will be primarily funded by government and private organisations, it is important that the centre combine income generating activities with the other essential functions of the centre. Facilities that may promote income generation should include a coffee shop or cafeteria, as well as lecture, seminar and meeting facilities which can serve the dual purpose of serving as teaching spaces for the centre as well as rentable spaces which can be hired out to small to medium enterprises or other interested parties. Another facility which is also of benefit to a centre for adult education is a day-care centre, which has the ability to generate income as well as meet the needs of the adult learners who have small children.

A centre for adult education caters to a group of users who need an environment which is conducive to learning. There are several factors which influence the quality of the learning environment. The spaces of the building should promote a sense of comfort, informality and flexibility of use. This can be achieved by the appropriate use of colour, texture and furnishings. Further, the environment can be enhanced by the inclusion of natural lighting and ventilation and the inclusion of comfortable outdoor spaces into the centre. The teaching spaces of

the centre will benefit from opening windows, adequate volume and divisible, flexible floor areas.

In order to facilitate the inclusion of adaptable learning spaces, long spans will be beneficial in the structure of the building. However, the benefits of a long span and free plan must be considered in conjunction with the requirements for natural lighting and cross ventilation. A structural system which will allow for expansion by adaptation or addition at a later date, as the need should arise, is also a requirement.

The site selected for the proposed centre for adult education should be centrally located in order that it is as accessible as possible to the widest portion of the population. The chosen location must also be easily accessible by means of public transport and by foot. It would be beneficial to the centre if it is to be located within an existing educational district. The availability of land is an essential consideration, and a site where little or no demolition will be necessary would be preferable. Access to services on such as water, electricity and communications connections should be available. It is desirable that the site selected be located within an urban context in order to take advantage of the benefits of the city, such as centrality resulting in accessibility, and access to public transport. The chosen site should also be in an area with an identifiable character and image with which the public can associate and recognise.

The main objective is to design a Centre for Adult Basic Education and Vocational Training that is relevant to its context and simultaneously conducive to learning. The centre should therefore offer teaching spaces for group discussion, small meetings, seminars, lecture, case study and workshops. These spaces should be of the appropriate size and function in order to accommodate the ideal group sizes, with the additional ability to adapt according to the fluctuations of groups size and changes in curriculum and teaching methods over time. Further, the Centre should provide a comfortable learning environment that promotes learning in an environment which is conducive to these activities

7.2.1.1. Conceptual Design Considerations and Criteria

The Interface between the Centre and the Street: the connection between the centre and the street needs to be gradual, avoiding a harsh transition from one to the other. The centre should be welcoming. This may be achieved by giving over a small portion of the site to public facilities, thereby extending the activities that the passer-by has access to. The activities within the public zone will enliven the street and encourage participation.

Informality: one of the keys to establishing an environment which is conducive to learning and breaks down

a sense of alienation and apprehension is informality. This will be achieved through the organisation of functions around a centrally located gathering space. The avoidance of axial relationships means that there are fewer formal relationships created between spaces. The links between one space and the next will also be informal and unrestrictive, allowing free movement from one function or space to the next.

Legibility: the centre should have a legible planning and spatial organisation. On approaching the centre, the user must intuitively 'feel' where the point of arrival is, while at the same time preserving an element of surprise and discovery as a result of the kinetic experience. A well defined central arrivals area which is strongly linked to the public zone of the street is therefore essential to the legibility of the scheme. The entrance should also relate to all other elements of the scheme.

Flexibility: the scheme should cater for the possibility of change. This makes flexibility a high priority. Spaces should have the capacity to change their function quickly as the need arises.

7.2.1.2. Concepts Relating to Functions

Registered Students: the centre will accommodate 350 registered students at any one time.

Shops and Coffee Shop: these facilities will be located at the public front of the centre along the main street in order to activate the building edge and result in interaction between passers-by and the built environment.

The Public Plaza: the public area should provide communal facilities to give the space relevance and vibrancy through activity. A bus shelter, public telephone, seating for passers-by, traders kiosks and a large outdoor television screen will provided.

The Assembly Area: The assembly area is the focus of the scheme. The informal and comfortable nature of this space will serve to set the tone for the entire scheme. Most of the function, including workshops, classrooms and craft centre will have access to this outdoor space, thereby enriching it with activity. The creation of spaces for chance meetings and informal gatherings is essential to the operation of a centre for adult education. The assembly area will serve this purpose as the platform for gatherings, conversations and cultural integration to take place.

The Learning Resources Centre: this function should penetrate both the public and private spaces in order to convey the importance of the function that it is to perform. From the street there should be a strong visual connection. This will enhance the legibility of the scheme. The activities within the LRC should be made visible to the public in order to make clear the

function of this building and its significance.

The Lunch Pavilion: this forms part of the assembly area to serve the needs of the learners and educators alike. The central location will make it accessible to all users, and it will be made more user-friendly and comfortable by the inclusion of chairs, tables, and shading devices.

The Three Educational Wings: the three major educational functions will be provided for in three separate, but interrelated, 'wings'. The teaching wing will consist of the flexible teaching spaces which will accommodate learning activities such as seminars, case studies, group discussions, tests, and lectures. It will consist of primary teaching spaces accompanied by breakaway spaces as extensions of the classrooms. The divisions between these spaces will be adaptable, light-weight and flexible in order that the spaces can be rearranged into different sizes and groupings depending on the needs which arise. The teaching wing will be orientated in a northern direction in order to take advantage of natural daylighting and natural ventilation opportunities.

The technical wing will house the high technology vocational training workshops in which vocational skills such as bricklaying, plastering, woodworking, and so on, will take place. Each workshop will have access to a screened outdoor workshop area, as well as access from the street for the loading and off-loading of equipment and materials. These workshops will be located as far away from the other functions as possible in order to avoid noise distractions, but will maintain physical and visual links to the other teaching spaces, workshops and central assembly area.

The craft workshop wing will consist of smaller, less sophisticated workshops which can be easily adapted to accommodate a wide variety of craft training activities, including dressmaking, cooking, beading, sculpture, art classes, and so on. The craft workshops will be orientated in a northerly direction in order to make use of daylighitng and natural ventilation opportunities.

The Day-Care Centre: this should accommodate children from toddlers up to school-going age, and provide the relevant facilities. Essential is the provision of a safe and secure outdoor play area. The day-care centre will operate independently from the functions of the Centre.

8

CONCLUSIONS AND RECOMMENDATIONS



colour is not the property of objects, spaces or surfaces; it is the sensation caused by certain qualities of light that the eye recognises and the brain interprets

Mahnke, F. & Mahnke, R. H. (1987). Colour and Light in Man-Made Environments. New York: Van Nostrand Reinhold. p. ix

8. CONCLUSIONS AND RECOMMENDATIONS

8.1. Conclusions

This chapter reviews the data gathered throughout this research, and through this data suggests an appropriate architectural response for the design of a new Centre for Adult Basic Education and Vocational Training in Durban.

The research carried out in this document and the case and precedent studies carried out in Chapter 4 have shown that the main aspects to consider in the design of the centre for adult education are:

- The Interface between the Centre and the Street
- Informality
- Flexibility/Adaptability
- Accessibility/Legibility

8.1.1. The Interface Between the Centre and the Street

As suggested by Edwards (2000: pp. 50-54), the definition of the edge is of vital importance in this type of building which is to house both private and public functions. The definition of a clear transition from the street to the entrance foyer in an important consideration, and the elements which are employed to serve this function will become vital design elements which set the tone of the centre as a whole. The definition of the edge must be clear without resulting in a hard physical barrier which is alienating to the public and the passer-by.

8.1.2. Informality

A facility which is of an informal nature is one which nurtures the relationship between educator and learner. The educational environment should therefore encourage interaction between the various parties on a level which is equal. The environment therefore needs to be informal and welcoming, comfortable and multi-functional in order to enhance the learning experience. By avoiding formal, axial arrangements the establishment of an informal environment is made possible. The allowance for the free movement of users between spaces reduces the number of formal relationships between spaces and allows the spaces to be used in an uninhibited manner.

8.1.3. Flexibility/Adaptability

Movement is the driving force in many of the facets of human existence. Movement may take different forms in different contexts, and may be characterised by change as well as physical movement. The educational scene is one such facet of life which is being constantly affected by movement and change. The centre for adult education should be designed mindful of the constant change in curriculum, teaching methods and outcomes which occurs as time passes. This means that a facility which can accommodate as many types of movement and change as possible will most effectively deal

with the changing nature of education. The centre should therefore have a dynamic atmosphere which not only accommodates change, but encourages it. A flexible environment which can accommodate the various types of teaching methods, group sizes and skills development programs is therefore necessary. This can be achieved in one of two ways: either by accommodating flexible use of spaces by scheduling and program planning which will allow the movement of groups of learners from one space to another depending on the particular learning goal; or the provision of spaces which can be adapted to suit the varying needs of a group within a single space. Both of these methods of providing flexibility should be considered and incorporated into the planning of the proposed Centre for Adult Basic Education and Vocational Training.

8.1.4. Accessibility/Legibility

The nature of the adult learner is such that one may be easily intimidated and discouraged by an environment that is confusing or overwhelming. The spatial organisation of a centre for adult education must therefore be legible and easily understood by the first-time user. The approach and entrance should be clearly defined. This, in turn should link strongly to the public zone and the central assembly space. From here, there should be a relation with all other functions of the centre which can be accessed directly and simply. The signage used in a centre for adult education should be considerate of the vast variety of the users to read, and therefore graphics and symbols which are easily understood can help to improve the legibility and accessibility of the centre. Clarity and simplicity in the definition of paths are key considerations to enhance the accessibility and usability of the centre for adult education.

If the preceding principles are considered throughout the design process, it will be possible to design a centre for adult education which is appropriate to its function and which is a positive learning environment for both educator and learner.

8.1.5. Accommodation Schedule

The spaces below have been determined through precedent analysis and consultation with architectural professionals

Function	Room Description	Activities/Functions	Quantity	No. of people	Area (m^2)	General Requirements
Admin	Foyer/Reception	This is the point of arrival as well as the place where registration will take place	1x	-	175.00	This area will incorporate a reception desk as well as administrative offices for four staff, with a help desk for registering students and seating in a small waiting area, with tables for filling in of forms. Space for display is necessary, as well as access to the LRC and teaching centre, café, day-care centre and careers counselling facilities.
	Facilitators' Offices	Educators workrooms for admin, preparation & one-on-one meetings	5x	5	150.00	Allows for standard office furniture: desk and chairs, and seating for consultation.
	Open Plan Offices	Reception of visitors, administration of facility	1x	10	165.00	Privacy is not vital here so the space will need to accommodate 8 individuals, allowing for chair, workspace, and storage space for each person, as well as incorporate comfortable seating in a small waiting area. Allows for a company fax machine, photocopier and printers.
	Centre Manager's Office		1x	1	25.00	Allows for standard office furniture: desk and chairs, and a mini lounge for informal discussion/meeting.
	Boardroom/Meeting Rooms	Staff meetings other organisations meetings will be held here	1x	12	45.00	This boardroom will need to accommodate a table large enough for 12 people, chairs and also allow for extra people, should the need arise.. AV & IT networks are essential for projection and presentation.
	Staff Lounge & Kitchenette	Relaxation & refreshment for staff between classes	1x	12	40.00	This room should allow for 16 people at any one time, with facilities for coffee machine, microwave, fridge and dish washing, with adequate seating and tables.
	Ablutions	Unisex ablutions for the use of staff	1x	2	12.00	1 WC 1 WHB; 5 lockers

Function	Room Description	Activities/Functions	Quantity	No. of people	Area (m^2)	General Requirements
Public Services	Day-care Centre	Care of staff & learners' children	1x		200.00	To have secure outdoor play area, children's toilets, nappy change, lockers, staff office, small kitchen, sleeping area, reading room and indoor playroom
	Café	Public restaurant - indoor - outdoor	1x 1x	35 30	70.00 -	Coffee bar and tables and chairs for 100 people, with indoor and outdoor seating, with public access. Must have own wc facilities for males and females.
	Kitchen	Food preparation & cooking Yard & Service Area	1x 1x	- -	55.00 -	Storage and preparation space and staff facilities with changerooms, wc's and storage. Access from loading bay with storage space for bins, etc.
	Shops	Small stores for use by learners and for rent by public.	6x	-	75.00	Kiosk-type shops to have access from workshops and from service corridor with adequate shelving for storage. To open to public by means of roller-shutter doors or similar mechanism. Must be secure.
	Refuse Zone	Refuse from café, shops and centre	1x	-	-	Bin storage and wash area, with easy access to the street for refuse collection
	Cleaning Store	Storage of cleaning supplies	1x	-	5.00	Storage of cleaning supplies with access to the cleaning staff room.
	Careers Room	Reading Counselling	1x 1x	4 2	5.00 15.00	Shelves for pamphlets and catalogues, with comfortable chairs for reading and waiting. Councillor's office to have a desk and two chairs as well as comfortable seating for a maximum of three people.
	Public Toilets	To serve the public square and shop owners	1x	-	6.00	Unisex: 1 WC, 1 WHB

Function	Accommodation	Activities	Quantity	No. of people	Area (m^2)	General Requirements
Teaching Spaces	Lecture Theatre	Foyer	1x		250.00	Easy access from main entrance foyer providing direct access to lecture room.
		Large group lectures for learners and available for hire	1x	120	70.00	Should have seating and writing desks for 120 people, with audio-visual equipment, appropriate adjustable lighting and mechanical ventilation. A degree of flexibility is desirable.
	Seminar Rooms/ Group meetings	For use by learners and educators as well as available for rent	8x	12	250.00	To have moveable furniture, with whiteboard and projection screen, with IT connections and adequate storage for teaching aids.
	Case study/ Role Play/ Demonstration	For presentation and demonstration skills, and role play of situations relevant to course content	2x	15	60.00	To have moveable furniture, with whiteboard and projection screen, with IT connections and adequate storage for teaching aids.
	Classrooms	Adaptable standard classrooms with breakaway spaces as classroom extensions. flexible teaching and learning	4x	16	200.00	To have moveable furniture, storage, whiteboard and projection facilities and adequate IT connections.
	Craft Workshops	Rooms for learning practical skills.	4x	16	250.00	Each workshop should offer flexibility to adapt to a changing course curriculum and courses offered, ranging from beading and dress-making to painting and sculpting workshops
	Vocational Workshops	Rooms for learning practical skills.	3x	16	420.00	Each vocational training room is to cater for a specific vocational skill, such as woodworking, brick-laying, metal-working and cooking.
	Covered Outdoor Classrooms	Breakaway rooms as extension of the classrooms	4x	16	160.00	To be directly accessible to classrooms and access outdoors.
	Workshop Stores	For storage workshop equipment.	4x	-	140.00	To have shelving for books and other equipment. These rooms must be secure.
	Storage	For storage of furniture and equipment	2x	-	35.00	General stores for storage of equipment and furniture, to have shelving for books and other equipment. These rooms must be secure.

Function	Accommodation	Activities	Quantity	No. of people	Area (m^2)	General Requirements
Learning Resources Centre	Foyer	Reception, exhibition	1x	-	25.00	Extensive space for display. Direct access to student bags & circulation of LRC
	Circulation Desk	Control and surveillance	1x	-	40.00	Only 1 exit from here to foyer. Plenty space around circulation desk
	Ethereal Lit & Fiction	Browsing/reading	1x	28	300.00	Low chairs & coffee tables
	Non-Fiction/Periodical/ Reference	Reading	1x	24	100.00	Tables with four chairs each and shelving for books and journals.
	Individual Study	Study Carrels	13x	13	25.00	Sound proof or located in a quiet area, with desk, chair and reading light.
		Small Group Rooms	2x	6	100.00	Sound Proof with desks and chairs to accommodate groups of up to 6 people.
	Computer Training	Information and Communication Terminals	1x	13	80.00	Anti-static carpet & fire escape. Provide 1 computer per 2 students.
	Computer Server Room	Storage of server	1x	-	10.00	Adequate ventilation and cooling in order to maintain required temperature.
	Offices	Administration of learning resources centre	1x open plan	3	20.00	Allows for standard office furniture: desk and chairs, and seating for consultation.
	Learners Bags	Storage of learners' bags	1x	-	10.00	Opposite circulation desk for the purposes of surveillance.
	Lecture Room	Large group lectures for learners and available for hire	1x	120	70.00	Should have seating and writing desks for 40 people, with audio-visual equipment, appropriate adjustable lighting and mechanical ventilation. A degree of flexibility is desirable.
	Ablutions (as per SABS 0400)	To cater for 350 people at peak use	3x	350	135.00	Min. Male: 6 WC, 9 Urinals, 6 WHB Female: 15 WC, 9WHB

Totals	Sub-Total				3793.00	
	Circulation		25%		950.00	
	Grand Total				4743.00	
	On Grade Parking	Staff and visitors parking	12,5m^2/ bay	15	187.50	

8.1.6. Design Concepts

The design concepts are developed out of the design brief which states that basic principles are to be present in the centre for adult education. These are interface, informality, legibility and flexibility. Concepts have been further developed to include comfort, adaptability and accessibility. These concepts will be used to influence the design development of the proposed Centre for Adult Basic Education and Vocational Training.

The interface between the public and private realms should be transitional, thereby including the public in some of the activities of the proposed centre. This concept has been further developed to include the interface between indoor and outdoor spaces, where the boundary can be blurred through the use of materials and intermediate space.



Informality is vital in establishing an effective and positive learning environment. The informal arrangement of functional spaces around a centrally located space encourages chance encounters and interaction between learners and educators. An informal environment positively reinforces the establishment of the relationship between the educators and the learners, allowing for the establishment of mutual respect and thereby opening lines of communication.



Clearly defined paths make the building easy to understand and use. Further, legibility is enhanced by the clear, gradual transition from the public to private realms.



Different internal configurations within the core elements of the facility allow for flexibility and personalisation of spaces by the users. This facilitates the various learning goals and teaching methods established by the individual educators and learner.



Comfort within the learning environment constitutes a very important factor in determining the quality of that learning environment. Comfort can be enhanced by the function and adaptability of a space, by the furnishings, and the provision of means for promoting natural ventilation, lighting and overshadowing.



Large span open plan structure allows for the adaptable rearrangement of furniture and functions according to changing needs of the users of the proposed centre.



The establishment of links between existing facilities and public transport networks makes the site easily accessible to the largest portion of the community possible. Accessibility also refers to the media used and appropriateness of the information which is made available to the use.

A

APPENDICES



APPENDIX I

The Most Likely Future Forces to Impact Teachers and Trainers of Adults

(Extracted from Hiemstra, 2000)

The table suggests factors influencing or bringing about change for education within categories such as technological, organisational, economic/political, educational, learning theory, and sociological changes.

Technological Changes	Organizational Changes
1. Continued development of cheaper, faster, and larger memory capacity personal computers. 2. Faster, cheaper communication. 3. Interactive video with conversation and two-way video capability will change everything we do. 4. Continued increased storage, such as CD-Rom storage, including CD-Rom and DVD write-to capabilities. 5. Optical scanning enhancements (easier, faster, etc.). 6. Robotics of various types. 7. Increasing importance placed on technical and computer competencies for everyone. 8. Increasing distance education opportunities via computers and the WWW (including wireless connections). 9. Increasing acceptance of distance education in various forms.	1. Increasingly leaner, meaner organizational structures. 2. Continuously growing demand for increased productivity. 3. Increasing numbers of service organizations and industries. 4. Increased industrial sophistication forced by international competition. 5. Worldwide collaboration/ownership of industries/organizations.
Economic/Political Changes	**Educational Changes**
1. Growing scarcity of resources. 2. Increasing cost of college resulting in fewer college educated workforce entrants. 3. Increased travel costs. 4. Continued decreasing funding for social programs (with corresponding social problems). 5. Continued increase in average age of US citizen and corresponding aging workforce. 6. Continued move toward a global economy. 7. Continuously increasing importance of energy conservation/worries about a warming global climate. 8. Continued movement toward religious and political conservative views at least in the immediate future.	1. Continually increasing requirements for continuing education and training but with diminishing private/public support dollars. 2. Growing number of high quality packaged or individualized learning options. 3. Increasing workplace literacy needs of several types, ranging from basic literacy skills to moral issues to sensitivity to sexual and other harassment issues. 4. Increasing competition for and involvement by women (and minority males) for top management positions. 5. Continuing examination of the ways teachers are trained and utilized.
Learning Theory Changes	**Sociological Changes**
1. Increasing knowledge about adult learning and motivation.	1. Multiple and changing careers.

2. Increasing understanding of how to facilitate adult learning. 3. Expanded thinking/cognitive/learning style models to organize vast amounts of information. 4. Increasing dominance of information processing as the major learning model and need. 5. Increased efforts to and requests for enhancing critical thinking skills. 6. Better understanding of learning differences in terms of gender, race, and other groupings. 7. Enhanced faith in and knowledge of different types of intelligence. 8. Better understanding and manipulation of learning environment.	2. Continued growing importance of dual career families. 3. Increasing number of single parents (both male and female). 4. Greater concern for the whole person, including physical, emotional, and spiritual. 5. Growing emphasis on moral/ethical decision making. 6. Continual growth in multiculturalism in the United States.

APPENDIX II

A CHECKLIST FOR ANALYSING THE LEARNING ENVIRONMENT (Extracted from Hiemstra, 2001: p. 1)

Following is a checklist for analyzing various aspects of the learning environment. Analyze the setting for training, teaching, tutoring, or counselling session in terms of whether or not these concerns seem to exist.

SENSORY CONCERNS	SEATING CONCERNS	SOCIAL/CULTURAL CONCERNS
___ Adequate lighting	___ Adjustable seats or alternative choices	___ Overt or subtle gender discrimination existing
___ Absence of glare	___ Adequate cushioning if devices used for long periods	___ Overt or subtle age discrimination existing
___ Lighting adequate for A/V	___ Can person's legs be and decorations crossed comfortably	___ Overt or subtle racial discrimination existing
___ Attractive/appropriate colours	___ Straight back and flat pan for people with back problems	___ Facilitators trained for age, race, and gender sensitivity
___ Adequate acoustics	___ Adequate sturdiness/size	___ Sociopetal discussion/seating relationships facilitated
___ Adequate sound amplification	___ Easily moved around	___ Knowledge of various cultures and associated histories incorporated into learning
___ Any noise to be reduced or eliminated	___ Seat height from floor	___ Women learners disempowered or devalued in any way
___ Temperature adequate for season of the year	___ Left handed learner provided for	___ Learners whose first language is not English given extra time, help, counselling
___ Adequate ventilation or air adequate conditioning	___ All ergonomic concerns addressed	___ Barriers related to various social issues (male domination, child care needs, etc.) addressed

FURNISHINGS CONCERNS	GENERAL CONCERNS	PSYCHOLGICAL CONCERNS
___ Adequate table or writing space	___ Adequate access/egress to site for learners	___ Learners helped to become acquainted with each other
___ Can furnishing be rearranged for group work	___ Adequate signage to direct learners to appropriate sites	___ Learners helped to feel at ease and relaxed
___ Table space available for refreshments/resources	___ Lavatory/cafeteria/ refreshment machines nearby	___ Special attention given to the very first encounter with learners
___ If sitting at tables can the learners cross their legs	___ Adequate parking nearby	___ Barriers learners may face addressed by facilitators
___ Can tables be arranged in square, circle, or U shape	___ Adequate lighting in parking area and building hallways	___ Barriers learners may face addressed by administrators
___ Absence of ragged or sharp edges on furnishings	___ Adequate space shape and size in learning site	___ Learners helped to take more control of own learning
___ Adequate sturdiness for all furnishings	___ Breakout rooms/areas available if needed	___ Facilitators trained in adult learning literature and theory
___ Can learners see each other okay when seated	___ Does the learning site have flexibility	___ Facilitators trained in adult teaching techniques and theory

APPENDIX III

ANALYSIS OF SPACE ATTRIBUTES (Extracted from Vosko, 1991: p. 30)

Outside the Classroom

__ 1. Clear signage showing identification and direction.

__ 2. Barrier-free access along walkways and in the building.

__ 3. Adequate lighting for safety and security.

__ 4. Availability of restrooms, student lounges, and vending machines.

__ 5. Location of emergency exits and clear directions to them.

Inside the Classroom

__ 6. Adequate lighting for evening classes.

__ 7. Availability of emergency lights.

__ 8. Cleanliness of classroom.

__ 9. Barrier-free accessibility to and in the classroom.

__10. Classroom painted with cheerful colours.

__11. Windows and blinds or shades that are operable.

__12. Adequate control over ventilation, heating, and cooling.

__13. Flexible furnishings.

__14. Available media equipment.

__15. Adequate sightlines for everyone in the classroom.

Rearrangement of the Classroom

__16. Familiarize yourself with the space. Walk all around the room. Notice how it feels in different locations.

__17. Set up the room to suit your needs as a teacher.

__18. Explore the options to suit class members' needs.

__19. Try to imagine which arrangement will work best for which learning activity.

__20. Check for sightlines, glare, lighting, crowding, access, and work space convenience in each arrangement.

Miscellaneous

__21. Search for another classroom if yours is not right.

__22. Conduct a space needs assessment with the learners.

__23. Invite the learners to help rearrange the space.

__24. Encourage comfort and friendliness.

__25. Do a formative evaluation of the space performance.

__26. Do a summative evaluation for the administration.

APPENDIX IV

COLOUR AND LIGHT IN MAN-MADE ENVIRONMENTS
(Extracted from Mahnke, 1987: pp. 42-61)

Colour	Ceiling	Walls	Floor	Notes
Red	intruding, disturbing, heavy	aggressive, advancing	conscious, alert	"In practical situations, pure red is seldom used, except as an accent. Although physiological arousal may be temporary, red psychologically exhibits the characteristics shown above. The over-use of saturated red adds to the complexity within a space. Modifications of pure red are much more suitable."
Pink	delicate, comforting, or too intimate, depending on the individual	aggression-inhibiting, weak, too sweet if not greyed	perhaps too delicate, unfamiliar in this location	
Brown	oppressive, heavy (if dark)	secure and assuring if wood, less so if paint	steady, stable	"The designer must be careful in using brown in certain institutions, as it may evoke faecal associations."
Orange	stimulating, attention-seeking	warm, luminous	activating, motion-oriented	"This hue is more mellow than red and has more liveable charm. Reflection on the skin may enhance some skin tones."
Yellow	light (if toward lemon), luminous, stimulating	warm (if toward orange), exciting to irritating (if highly saturated)	elevating, diverting	"Because of its high visibility, yellow serves many safety purposes, especially in industrial environments. It also appears brighter than white and is useful in poorly illuminated and dim spaces."
Green	protective (reflection on skin may be unattractive)	cool, secure, calm, reliable, passive, irritating if glaring (electric green)	natural (up to a certain saturation point), soft, relaxing, cold (if toward blue-green)	"Green, along with blue-green, provides a good environment for meditation and tasks involving high concentration."
Blue	celestial, cool, less tangibly advancing (if light), heavy and oppressive (if dark)	encouraging and space-deepening (if dark)	inspiring feeling of effortless movement (if light), substantial (if dark)	"Blue tends to be cold and bleak if applied to large areas, especially in hallways and long corridors. Medium or deep tones are appropriate in incidental areas. Pale blue is refracted sharply by the lens of the eye and therefore tends to cast a haze over details and objects in the environment This may cause distress to some people confined to a particular area for a long period."
Purple				"Seldom used in the interior space except for incidental areas. In large spaces it may disturb the focus of the eye. Psychologically, it may appear disconcerting and subduing."
Grey	shadowy	neutral to boring	neutral	"As the case with all neutral hues, grey fails to have much psychotherapeutic application."
White	empty (no design objections- helps to light sources and reduce shadow)	neutral, empty, sterile, without energy	tough-inhibiting (not to be walked upon)	"There are psychological justifications for not using white or off-white as a dominant colour in the majority of environments."
Black	hollow to oppressive	ominous, dungeon-like	odd, abstract	

APPENDIX V – INTERVIEW SCHEDULE

To support the findings of the research, interviews were conducted with key informants in the fields of adult education and architecture. The following topics were covered in the interviews:

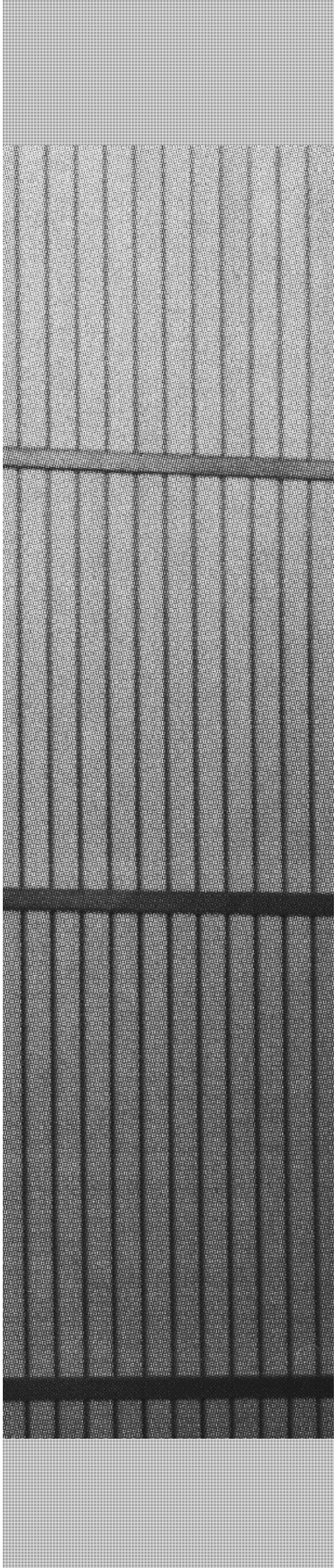
- The current situation of Adult Basic Education and Training in Durban
- The benefits of ABET
- Accessibility and availability of current programs
- Partnerships between the government, non-governmental organizations and the private sector
- The shortfalls of existing ABET centres
- The key functions necessary in an ABET centre
- Relevant courses for the community
- Learner/Educator relationship
- Most beneficial teaching methods and suitable accommodation

Outcomes of e-mail interview with Elda Lyster, Centre for Adult Education, UKZN.

- Adult education is generally more easily accessed in urban contexts than rural ones. This may be due to availability of facilities, or the centrality of educational facilities in urban contexts, or the availability of public transport.
- Many municipalities run adult education programs, but the centres in use are generally schools or other training facilities not especially equipped for adult education. Fixed furniture in classrooms limits the use of appropriate teaching methods and therefore limits the ability to teach in an appropriate way. There are no dedicated centres in KwaZulu-Natal, and very few in the country as a whole.
- Currently there are several government, NGO and private sector funded ABET centres. Predominant funder is the government.
- Suitable desks and seating especially for participatory activities and group work; suitable chalkboards/white boards; suitable display space; suitable storage space; library space; library books; stationery and teaching equipment are all facilities which are lacking in multi-purpose centres.
- Over and above literacy and numeracy, training in entrepreneurial skills, skills for income generation and health education are of priority in South Africa. The provision of vocational training is preferable but more difficult to incorporate than is generally understood.
- The relationship between learners and educators should be egalitarian, encouraging the use of participatory teaching methods. This influences the need for flexible furniture, enough space, display areas, proper whiteboards and equipment.
- The provision of a learning resources centre is essential as one of the most notable deficit in ABET centres is the lack of library space and library books.
- Additional concerns for adult learners are mainly access to transport and physical safety.

B

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