AN EDUCATIONAL COMPUTER PROGRAMME DESIGNED FOR COMPANIES IN SOUTH AFRICA TO FACILITATE EMPLOYEE HOUSING ASSISTANCE

by

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DECLARATION

I, the undersigned, hereby declare that the work contained in this thesis is my own original work and has not previously in its entirety or in part been submitted at any university for a degree.

ABSTRACT

'Housing' has been addressed as a basic human right. In South Africa this right has become a challenge, which cannot be met by the government alone. It also requires a vast contribution from the broader non-State (private) sector. This includes large companies who need to provide housing assistance to their employees.

The aim of this research was to develop an educational computer programme which can be used by companies in their employee housing assistance programmes. The objectives of the research included establishing the extent to which companies provide employee housing assistance; the viability of an educational computer programme; the requirements of companies; criteria and content of a computer programme; and the development and testing of a pilot demonstration module of an educational computer programme for employee housing assistance.

Exploratory research was carried out on a sample of 112 companies by means of both postal and telephonic questionnaires. The results of these surveys indicated that 41 of these companies have already established employee housing assistance, providing general information on housing and housing related issues. Most of these companies, however, are only offering financial assistance to their employees without the necessary education and training which should accompany it. A programme which provides these aspects benefits both the company and the employees and should be implemented by many more institutions throughout the country.

The main findings of this research, indicated the viability of an educational computer programme and the surveyed companies were positive about using it as part of their employee housing assistance.

Throughout the world, computers have proved to offer high-quality interaction and unique learning opportunities to users of varying levels of understanding. They have also demonstrated that they are convenient to use and assist in promoting effective management of time and finances.

On the basis of the responses to the survey, essential elements of an educational computer programme for the use of companies in employee housing assistance were identified. A pilot demonstration module was developed using a holistic and didactically sound approach.

The development of this educational computer programme, will allow lower income employees to receive beneficial housing assistance at their own pace and level of comprehension and education through an enjoyable and contemporary medium.

The results of the initial (but limited) testing of the pilot demonstration module, suggested that there is justification for the further development of the programme and for research to be carried out to examine its effect in the private sector.

This research sheds light on the present trends in the provision of employee housing assistance in the private sector and the positive contribution which companies can provide to the housing crisis in South Africa.

OPSOMMING

'Behuising' word as 'n basiese reg van die mens beskou. In Suid-Afrika het hierdie reg 'n uitdaging geword wat nie deur die regering alleen aanvaar kan word nie. Dit verg ook 'n groot bydrae van die breër gemeenskap, veral die privaatsektor, en dit sluit groot maatskappye wat behuisingshulp aan hulle werknemers behoort te verskaf, in.

Die hoofdoel van hierdie navorsingsprojek was om 'n opvoedkundige rekenaarprogram te ontwikkel wat deur maatskappye as deel van 'n behuisingsondersteuningsprogram aan hulle werknemers gebied kan word. Die doelwitte van die navorsing was onder meer om die mate waartoe maatskappye reeds behuisingsondersteuningsprogramme vir hulle werknemers aanbied, te bepaal. Verder is die lewensvatbaarheid van 'n opvoedkundige rekenaarprogram bepaal, asook die maatskappye se behoefte aan so 'n program. Daar is ook vasgestel wat maatskappye se menings oor die kriteria vir en inhoud van 'n opvoedkundige rekenaarprogram, wat as deel van hulle behuisingsondersteuningsprogram aan werknemers gebied kan word, is.

Verkennende navorsing is onderneem met 'n steekproef van 112 maatskappye deur middel van telefoniese- en posvraelyste. Die resultate van hierdie vraelyste het aangedui dat 41 van die maatskappye reeds 'n behuisingsondersteuningsprogram aanbied wat algemene inligting oor behuising en behuisingsverwante aangeleenthede aan die werknemers verskaf. Die meeste van dié maatskappye, wat behuisingsondersteuningsprogramme aanbied, bied egter alleenlik finansiële hulp aan hulle werknemers, sonder die nodige meegaande opvoeding en opleiding.

'n Program wat beide finansiële en opvoedkundige hulp aanbied kan maatskappye en werknemers tot voordeel strek en behoort landswyd deur baie meer inrigtings geïmplementeer te word.

Die hoofbevindinge van die navorsing het getoon dat die opvoedkundige rekenaarprogram lewensvatbaar is, en die deelnemende maatskappye het bereidwilligheid getoon om so 'n program as deel van hulle werknemers se behuisingsondersteuningsprogram in te sluit.

Die ontwikkeling van die rekenaarprogram sal dit moontlik maak vir werknemers om op verskillende vlakke van begrip en opvoedingspeil, voordelige behuisingsondersteuning teen hulle eie tempo en deur middel van 'n genotvolle en kontemporêre medium te kan ontvang.

Dit is wêreldwyd bewys dat rekenaars hoë kwaliteit interaksie en unieke leergeleenthede op alle begripssvlakke kan bied. Daar is ook bewys gelewer dat rekenaars nie net gerieflik is nie, maar ook effektief met die bestuur van tyd en finansies is.

Op grond van die vraelys resultate, is noodsaaklike elemente van 'n rekenaargebaseerde behuisingsondersteuningsprogram vir werknemers geïdentifiseer, en 'n proefmodule ontwikkel wat gebruik maak van 'n holistiese en didakties gesonde benadering.

Die uitslae van die eerste (maar beperkte) toetsing van die proefmodule dui daarop dat daar regverdiging is vir die verdere ontwikkeling van die program asook vir navorsing om te bepaal wat die effek van so 'n program op die privaatsektor sou wees.

Hierdie navorsing het lig gewerp op huidige neigings in die verskaffing van behuisingsondersteuning aan werknemers in die privaatsektor, asook op die positiewe bydrae wat deur maatskappye gelewer kan word tot die oplossing van die behuisingkrisis in Suid-Afrika.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1

INTRODUCTORY PERSPECTIVES

1.1 INTRODUCTION AND PROBLEM STATEMENT

The White Paper on housing (Department of Housing, 1994a:22) addresses housing as "a basic human right" and clearly illustrates the importance of striving towards effective housing for all South Africans. In 1995 South Africa's population was estimated to be 41.5 million. More than half (62%) were found to be living in informal settlements without a structured house. The country's backlog of 21 million housing units needs to be addressed (Erasmus, 1995:17,23). It has been recognized that the government cannot meet these needs alone and a great demand is expressed for the contribution from the broader non-State (private) sector in addressing this massive challenge (Department of Housing, 1994a:40; National Business Initiative, 1998:vii,5). Verheem (1995:1) supports this by encouraging all sectors to strive to promote positive economic conditions in households.

The Minister of Housing, Ms. Mthembi-Mahanyele, stressed the important role which companies can play in supporting their employees in the housing process (National Business Initiative, 1998:vii). Companies must not only understand the housing situation of their employees but also provide, to the best of their ability, advisory; administrative; financial and material assistance in order to improve their housing circumstances (Department of Housing, 1994a:42).

The National Business Initiative (1998:10), acknowledges the housing assistance which many companies are already providing for their employees, but emphasizes the need for all companies to establish comprehensive employee housing assistance programmes. Such assistance should provide general information on housing and housing related issues offered by companies to those who work for them. This

would provide employees with the skills and knowledge required to be good home owners and consumers (National Business Initiative, 1998:10). It is not only important to provide people with facilities, but just as essential to equip them with knowledge of decision-making, purchasing, operating and maintaining of such facilities (Verheem:1995:2).

Problems that many company employees of lower income face on a daily basis include lack of housing assistance, low levels of affordability, poor access to housing goods and services and limited housing availability (National Business Initiative, 1998:2). The addressing of these and other related topics in successful employee housing assistance programmes, would not only form a key element in the country's socio-economic transformation, but improve the general socio-economic climate of the company (National Business Initiative, 1998:vii).

Successful employee housing assistance will increase housing satisfaction, motivation and expand existing knowledge, all of which contribute to an increase in the standard of living and quality of life of employees. Verheem (1995:1) stresses the importance of such assistance for the empowerment of South Africans by creating responsible and worthy consumers.

Additional benefits for the companies who provide employee housing assistance would include; attracting and retaining specialist employees, and the indirect improvement of employee performance and productivity (National Business Initiative, 1998:4). The benefits for the lower income employees are just as great as for the companies (Dunstan, 1989:8).

"The quality of one's life is affected by the condition in which one lives as well as the activities one engages in and the motives and attitudes that one has toward all of these" (Van Wyk, 1987:58). In other words, a person's attitude towards his/her everyday activities can be positively influenced by a good quality of life.

The Skills Development Act (No.97 of 1998) has made it imperative for all employers to register with a Sector Education and Training Authority (SETA) and to pay the

statutory Skills Development Levy to the South African Revenue Service. A section of the levy (80%) may be reclaimed if it can be proved that training courses offered by the company, comply with the South African Qualifications Authority (Government Gazette,1998:i).

The main objectives of the Skills Development Act coincide almost directly with the aims of an employee housing assistance programme, namely :

" a) to develop the skills of the South African Workforce -

i) to improve the quality of life for workers, their prospects of work and labour mobility;

ii) to improve productivity in the workplace and the competitiveness of employees;

iii) to promote self-employment; and

iv) to improve the delivery of social services.

b) to increase the levels of investment in education and training in the labour market and to improve the return on that investment.

c) to encourage employees –

i) to use the workplace as an active learning environment;

ii) to provide employees with the opportunities to acquire new skills;

iii) to provide opportunities for new entrants to the labour market to gain work experience; and

iv) to employ persons who find it difficult to be employed." (Government Gazette, No 97, 1998,i).

Chapter 5 of the Act deals specifically with Skills Programmes. These have to be occupationally based and on completion will constitute a credit towards a qualification registered in terms of the National Qualifications Framework. This opens the possibility for company employees to begin to acquire recognized qualifications.

The National Business Initiative (1998:9) provides different points of focus for the implementation of employee housing assistance. These include awareness of housing issues, affordability of housing, access to housing and availability of

housing. Companies should select the most appropriate one, suiting both the needs of the employees and the company. While the success of the assistance chosen relies on this, it is also largely dependent on the method of transfer of information and implementation thereof.

Companies employ people from many different educational backgrounds, creating a diverse group of employees. This should be carefully considered in the development of employee housing assistance programmes to ensure information is easily understood by employees of all levels of comprehension. Interaction is also essential as it provides direct support and involvement in the knowledge building process (Harasim, Hiltz, Teles & Turoff, 1995: 4). The acquisition of skills should be focused on, rather than just the transfer of information. This will enable greater practical use, thus enabling better application and development of problem solving and critical thinking abilities (Sendov, 1997:420-421).

The information and skills obtained should be relevant and easily adaptable to the possible social, physical, cultural and political changes and demands constantly being placed on employees. This will ensure that the knowledge gained in a housing assistance programme will be of greater practical use. Owing to the continuous changes in housing developments and world trends, the content of a housing assistance programme should be easy to adapt and update, thus keeping it as accurate as possible.

Harasim *et al.*, (1995: 111) have acknowledged the rapid pace of technological and social changes and have indicated a need for lifelong and continuous development in all careers. Learning should therefore not only be closely linked to job performance and increased production, but also to technological skills and advancements, making the adjustment to these progressions an easier process.

The global focus on both technology and communication is increasingly being led by the computer industry and the development of networks (Sendov, 1997:415). Years of experience have shown computer-mediated communication to not only offer high-quality interaction, but many additional advantages. The use of computers in

everyday life increases the interaction between people, businesses and even nations. Both the intensity and quality of this interaction is improved. Computers have also provided opportunities for better access to group knowledge, immediate support and convenience. This has all been made possible through networks, which are no longer a luxury, but have become a necessity. Computers have also developed opportunities in careers and in personal lives, resulting in an increase in motivation for many people (Harasim *et al.*, 1995: 28,173).

Forsyth, (1996:4,16) supports the above by adding that computer-mediated communication provides a unique learning environment suited to the needs of each individual, self-paced learning at various levels, making it both convenient and effective in time and financial management. Although companies have for years provided in-house training programmes, the transfer via computers will aid in the presentation of the material and the motivation of the employees. Forsyth, (1996: 4) encourages corporate and government trainers and training programmes to take advantage of multimedia computer-mediated communication as an educational tool.

Computer-mediated communication is therefore a valid and reliable method to be used by companies to provide their employees with housing information and basic computer skills.

The foregoing leads to the following problem statement: What are the properties (content, elements and design properties) of a computer programme that could be used by companies for employee housing assistance?

1.2 OBJECTIVES OF THE RESEARCH

This section presents the main and secondary objectives as well as an objective flowchart for this research. See Figure 1.1.

1.2.1 Main Objective

- To develop a pilot demonstration module of an educational computer programme to be used by companies for employee housing assistance.

In order to achieve the main objective, the following secondary objectives were formulated.

1.2.2 Secondary Objectives

- To establish the extent to which companies in South Africa provide employee housing assistance.

- To establish whether companies in South Africa see an educational computer programme, to be used as part of employee housing assistance, as a viable option.

- To determine what requirements companies have for an educational computer programme, to be used a part of employee housing assistance.

- To establish criteria for the development of an effective educational computer programme to be used by companies for employee housing assistance.

- To determine relevant content for an educational computer programme to be used by companies for employee housing assistance.

- To develop a pilot demonstration module of a visual interactive educational computer programme to be used by companies for employee housing assistance.

- To obtain opinions on the pilot demonstration module of a visual interactive educational computer programme to be used by companies for employee housing assistance.

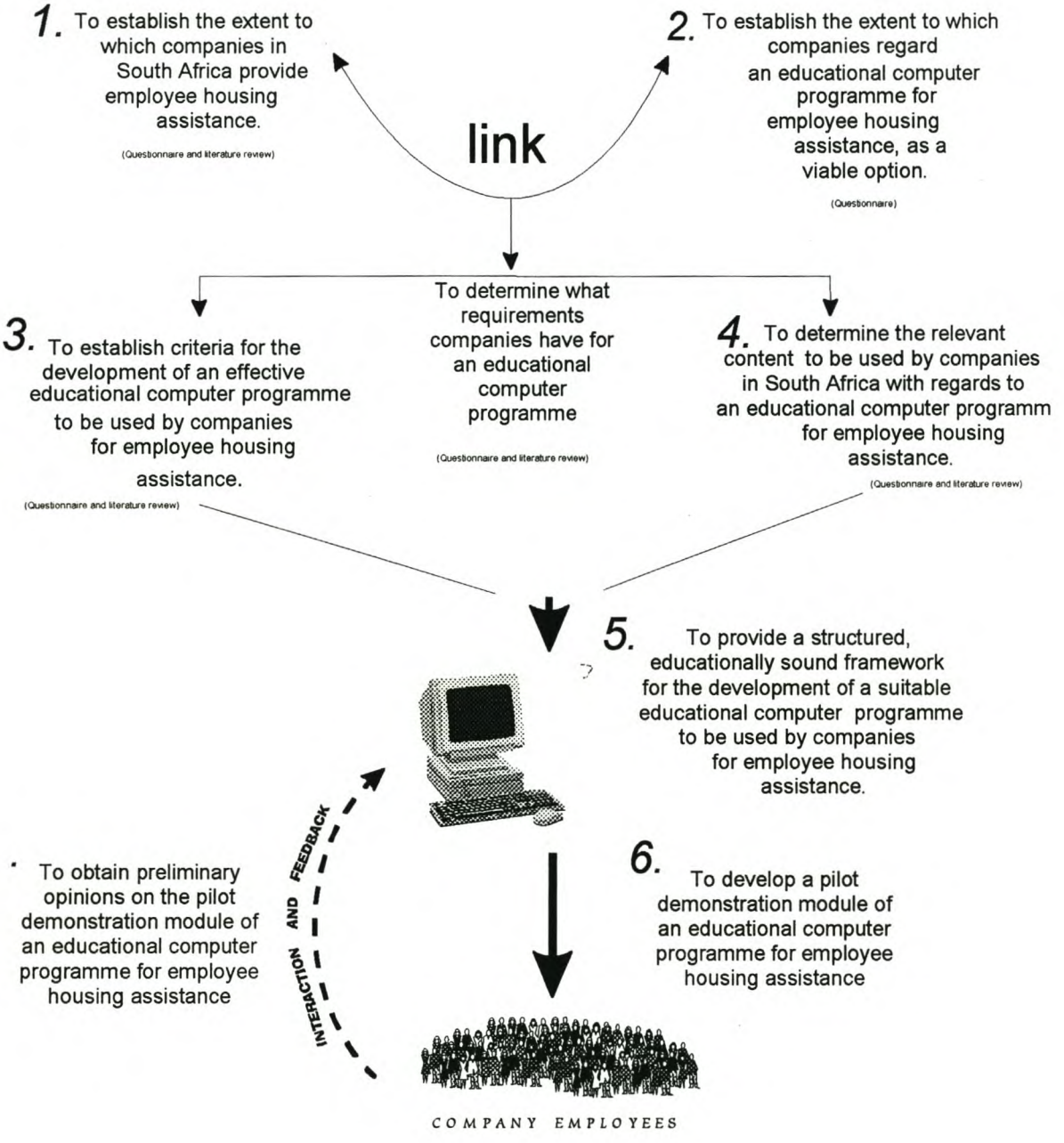

FIGURE 1.1: DIAGRAMMATIC REPRESENTATION OF OBJECTIVES

1.3 CONCEPTUAL FRAMEWORK

The conceptual framework for the research is shown in Figure 1.2.

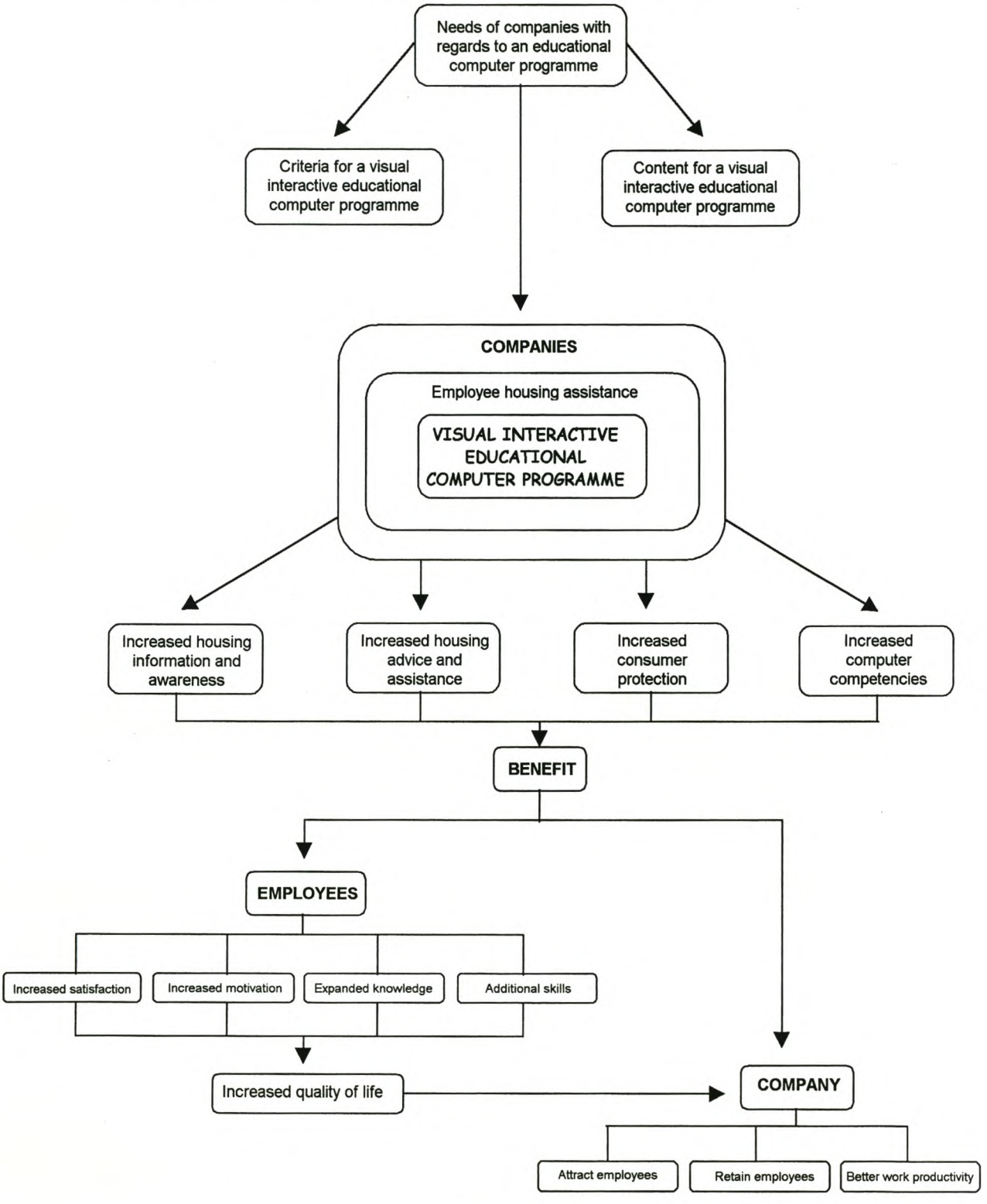

FIGURE 1.2: CONCEPTUAL FRAMEWORK FOR THE RESEARCH

The requirements of companies with regard to an educational computer programme will determine the content and elements for the design of the educational computer programme. This educational computer programme is designed to assist companies in providing housing advice and assistance to employees.

The advantages of using such a programme include the following:

a) Increased housing information and awareness;
b) Increased housing advice and assistance;
c) Increased consumer protection;
d) Increased computer competencies.

These advantages will have a positive effect on both the employees and the company. The employees may benefit through increased satisfaction, increased motivation, expanded knowledge and additional skills. All of these in turn contribute to an increase in quality of life for the individual employee. If an employee feels secure and satisfied in his personal and home environment, the contentment gained through this, often leads to better job satisfaction and working environment.

The company can benefit through attracting employees, retaining those employees they already have and an overall increase in work productivity and quality.

1.4 OUTLINE OF RESEARCH

Chapter 1 provides an introduction to the research. It includes the rationale, justification and problem statement, objectives and diagrammatic flowchart thereof, thus setting the context for the research. The conceptual framework is also presented.

Chapter 2 includes key definitions and the literature relevant to the research which has been studied, forming a theoretical foundation supporting the study.

Chapter 3 will delineate the research methodology used to obtain and analyse the data for this research. The method, techniques and data analysis procedures are discussed in detail in order to show their validity and reliability.

Chapter 4 conveys and discusses the survey results and findings of the study.

Chapter 5 will delineate the design process of the computer programme based on the findings in chapter 4. The design preparation, design process and programme specifications will be reported. Preliminary opinions of the tested pilot demonstration module will also be included.

Chapter 6 presents the conclusions of the study. It also provides recommendations for the design of an educational computer programme for the use of companies for employee housing assistance. Shortcomings of this study, as well as recommendations for further research will also be reported in this chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

The aim of this chapter is to present an overview of the literature relevant to the research. The chapter will be divided into the following sections:

- The South African housing situation
- Effective transfer of information
- Computer-based Instruction

This chapter thus aims to place housing, education, and computer based training into context, as well as clarify the conceptual framework of the research, which was presented in Chapter 1.

2.2 THE SOUTH AFRICAN HOUSING SITUATION

This section of the literature review will place the housing situation in South Africa in context. It will define important terms in housing, discuss the extent of the housing problem, and the proposed strategy for further housing development in South Africa. It will then motivate and discuss the need for housing education and training to overcome stumbling blocks and the participation of the private sector.

The section is divided into the following parts:

- Description of relevant terms
- Current housing policy

- The need for housing education and training
- Role of the private sector

2.2.1 DESCRIPTION OF TERMS

The Department of Housing (1994a:21) defines **housing** as *"...a variety of processes through which habitable, stable and sustainable public and private residential environments are created for viable households and communities*". This stresses the importance of the environment in which the house is situated as well as the satisfaction of needs of the occupants of the house (Department of Housing, 1994a:21). The Housing Act of 1997 describes housing as both a product and a process which is essential for the socio-economic well-being of the nation and a product of human endeavor and enterprise, which plays a major role in the development process (Department of Housing, 1997b:4).

Housing development as referred to in the Housing Act, 1997 (Act 107, 1997) means,
"the establishment and maintenance of habitable, stable and sustainable public and private residential environments to ensure viable households and communities in areas allowing convenient access to economic opportunities, and to health, educational and social amenities in which all citizens and permanent residents of the republic will, on a progressive basis have access to" (Department of Housing, 1994a:21; Department of Housing, 1997b:4).

The above refers to the physical establishment of houses, as well as the process of development which in turn leads to a sustainable and stable environment (Department of Housing, 1997b:4).

Housing and the development thereof, should not just be viewed as a structure, but the incorporation and fulfillment of human needs such as freedom of choice, participation in development, a sense of identity, self-expression, safety and security, and the general education of the consumer

(Van Wyk 1995:111). All these improve the quality of life of the community, thereby increasing the satisfaction of the people within the community.

Housing development should ultimately aim at the improvement of quality of life of the community. In order to achieve this, it is essential to get the input and participation of the people themselves (Jeppe, 1985:27).

2.2.2 CURRENT HOUSING POLICY

The Minister of Housing, Ms. Mthembi-Mahanyele, (1999:1) commented on the substantial dent which has been made in the housing backlog in South Africa. Over 800 000 homes have been or are in the process of being built, providing shelter for more than 3 million people. While over a million households are standing in line for subsidies to be approved.

"This, for poor people, some of whom have been living in backyard rooms or informal settlements, has meant the difference between survival and the restoration of their human dignity" (Mthembi-Mahanyele,1999:1).

Although these figures appear to be positive, the backlog of approximately 4 million housing units is still tremendous. This figure does not include the additional physical problems which often result from insufficient housing provision. "...overcrowding, squatter settlements and increasing land invasion in urban areas..." (Department of Housing, 1994a:11). It is also essential to consider the serviced sites needing upgrading, the lack of access to basic services in many rural areas and the existing accommodation requiring upgrading (Department of Housing, 1994a:11).

Minister Mthembi-Mahanyele also referred to the obstacles delaying this housing delivery process. They include: lack of finance due to decrease in housing budget and lending from private sector, length of time for housing projects to be completed, legal constrains for the fast release of land and lack

of co-ordination between housing and services such as health, social services, education and infrastructure (Anon, 1998).

The high rate of increase in population contributes considerably to this backlog (Department of Housing, 1994a:11). A large portion of the rapidly increasing population falls into the low income group. This group has severe limits on their housing options due to their inability to afford adequate housing through their own financial resources. Table 2.1 indicates that more than one third (39.7%) of South Africa's households fall within the lowest income bracket.

TABLE 2.1: PROJECTED MONTHLY HOUSEHOLD INCOME DISTRIBUTION

NO.	INCOME CATEGORY	PERCENTAGE	NUMBER OF HOUSEHOLDS
1	R 0 – R 800	39,7 %	3,30 m
2	R 800 – R1500	29,0 %	2,41 m
3	R 1500 – R 2500	11,8 %	0,98 m
4	R 2500 – R3500	5,6 %	0,46 m
5	>R3500	13,9 %	1,15 m
TOTAL		100 %	8,3 m

Department of Housing 1994a:8

Housing and access to adequate housing is a basic human right. It is the right of each individual and the responsibility of the government to provide access (Department of Housing, 1997b:2) (Act 107 of 1997). The affordability of the lower income bracket has therefore to be focussed on and methods found to support them and obtain maximum benefit from their limited financial resources (Department of Housing, 1994a:16).

A number of additional constraints add to the housing challenge of the future. One of the main factors being the sociological issues. These include: high expectation from people, increasing levels of crime and violence, lack of consumer protection, limited view on housing, lack of payment of services, increased need for special housing and the great need for housing education (Department of Housing, 1994a:16).

The housing strategy and policy for South Africa is set out in the White Paper on Housing (Department of Housing, 1994a:15). This serves as a measure to fulfill housing requirements on a progressive basis. The document provides an overall approach to ensure that sustainable housing development takes place.

The White Paper on Housing (Department of Housing, 1994a:24) sets out seven key strategies to reach the national housing goal. These strategies, together with their possible influence on the activities of the private sector, will be briefly discussed.

a) *Stabilising the housing environment*

This strategy includes two angles of approach. The first being a campaign aimed at the resumption of payment for goods and services and the other a committing engagement from the private sector, especially in housing credit provision (Department of Housing, 1994a:28). The government is committed to take responsibility to educate consumers on the importance of the payment for goods and services. The private sector can contribute through housing education and training programmes to encourage employees to pay for their services and goods used.

b) Supporting the housing process

Housing delivery, which includes land, basic services, secure tenure and upgrading of the environment and established services and homes, needs to be increased to a sustainable delivery level where backlogs are dealt with (Department of Housing, 1994a:28). The private sector is able to contribute and provide a wide variety of delivery options to communities.

c) *Mobilising private savings and housing credit*

To ensure adequate protection for consumers, the facilitation of housing

credit needs to be mobilised. One of the proposed long term strategies was the establishment of a National Housing Finance Corporation (Department of Housing, 1994a:30). Private financial institutions could assist greatly in this process of establishing a National Housing Finance Corporation. Company employees should also be encouraged to follow a personal saving scheme.

d) *Subsidies*

Due to the affordability problems at the lower end of the housing market, it is essential to provide some method of assistance to ensure access to housing. There are many different subsidy schemes presently being offered by the government. These include: ownership subsidies, collective ownership subsidies, social housing subsidies, rental subsidies and subsidies aimed at site and service schemes (Department of Housing, 1994a:31).

The amount received is determined by the joint monthly household income of the person (or couple) applying for the subsidy. These amounts are presented in Table 2.2 below.

TABLE 2.2: LEVELS OF HOUSING SUBSIDIES IN SOUTH AFRICA

JOINT MONTHLY HOUSEHOLD INCOME IN RANDS	SUBSIDY IN RANDS
R 0 – R1500	R 16 000
R 1501 – R 2500	R 10 000
R 2501 – R 3500	R 5 500

Department of Housing, 1998b:13 (Annual report)

The private sector should support and encourage their employees to apply for subsidy assistance from the government. This can be done through housing education and training where the conditions and amounts of these subsidies can be explained to and understood by targeted communities.

e) Rationalising institutional arrangements

The government endeavors to institute a sustainable long term institutional framework, by removing fragmentation, overlap, wastage and inefficiencies in the housing process (Department of Housing, 1994a:31). This should aid in the improving of communication between the private and public sectors, which in turn should speed up the housing development process.

f) Speedy release of land

A Development Facilitation Act (Department of Housing, 1994a: 31) has been established to speed up the release of land. This serves as a mechanism for the potential use of appropriate land for low cost housing (Department of Housing, 1994a: 31). This will, in turn, speed up the housing delivery process for all housing role-players, including the private sector.

g) Co-ordination and integration of public sector investment

The housing delivery process requires co-ordinated and integrated action and responsibility from both private and public sectors. It is therefore essential to establish a mechanism whereby communication between these role-players is maximized to its fullest potential (Department of Housing, 1994a:33). Improved co-operation and communication could result in better opportunities for communities.

It is essential to include all role-players in the housing process and the government thus aims to facilitate participation, promote consultation and effective communication between government, civil society, the housing suppliers and any other stakeholders in the development process (Department of Housing, 1997a:8;10).

"*Supporting the People's Housing Process*", supplementing the National Housing Policy, further emphasized the importance of the combined participation of the Government, civil society, the private sector and other role-players (Department of Housing, 1998a:3).

The government therefore recognizes the large role which the private sector is able to and should play in the housing development process (Department of Housing, 1994a: 4).

2.2.3 THE NEED FOR HOUSING EDUCATION AND TRAINING

Although the government is in the process of providing housing in South Africa, it is somewhat stunted by many different factors (Department of Housing, 1997c:5). The White paper on housing has highlighted a number of constraints in housing development that are related to community development (Department of Housing, 1996:14).

These include:

a) Land issues: Land is viewed by many South Africans as an inexpensive resource. This often leads to the waste and inappropriate use of land. Land set aside for low cost housing is often invaded, resulting in a stunted delivery (Department of Housing, 1994a:14). Education is needed on the value of land and the effects which land invasions have on the housing delivery process in the country.

b) Many South Africans have had very high expectations regarding the delivery of houses, which may not be met and therefore lead to discouragement (Department of Housing, 1994a:15).

c) The housing process has been delayed due to the crime rate, violence and political interference (Department of Housing, 1996:2; Viljoen, 1997:2).

d) Communities have been exploited due to low levels of consumer education (Department of Housing, 1994a:15).

e) Communities do not view the associated social and economical benefits of the physical structure of housing (Department of Housing, 1994a:15).

f) The non-payment for services and bonds inhibits the delivery of housing (Department of Housing, 1994a:15; De Ridder, 1998:34) refer to the non-payment of services and bonds adding to the delay in housing delivery.

g) The demand for housing has in many cases been lowered. This may be attributed to factors such as the low economic growth rate, declining income per capita, unequal distribution of income, low levels of gross domestic product and declining personal savings (Department of Housing, 1996:2).

h) Low volumes in applications for financial assistance, could be accounted for by the weak marketing and promotion programmes to support subsidy schemes. This has resulted in a severe lack of awareness (Department of Housing, 1996:5; Morkel, 1997:2; Mulenga, 1995:4; Stout, 1997:4; Viljoen, 1995:2).

A lack of knowledge and education in housing is responsible for many of the problems currently being experienced in the country's housing delivery process (Tight, 1996:28, Van Niekerk, 1998:15). Informing the communities of the technical, legal and financial aspects of housing, as well as educating and advising them on housing matters is therefore essential (Department of Housing, 1994a:50,53; Mackay, 1995:6).

In support of the above, the Deputy Director General of Housing mentioned four critical success factors (economic growth and development; consistency and certainty; efficient performance and communication) on which the future of housing depends. One of the highlighted issues was communication and the need for transfer of information. It was also stressed that unless

consumers are provided with the correct and substantial amount of knowledge and information to enable them to make informed choices, the housing process cannot function properly (Karsen, MN, 1999:11).

This facilitation of critical learning cannot be achieved by the government alone and requires the participation of all sectors to empower communities (Acharya & Verma, 1996:358). As Jensen (1996:i) remarks, *"Present problems cannot be solved with the same level of thinking and by the same tools that created them*".

It is therefore the responsibility of all sectors to provide housing education to consumers, especially those from low income, disadvantaged backgrounds (Karsen, MN, 1999:11).

2.2.4 THE ROLE OF THE PRIVATE SECTOR

It has been recognized that government alone cannot achieve the housing development process and provision of housing. This challenge must be approached as a partnership between the government and the private sector. In this way the collective resources, capacity, knowledge and skills of both can be utilised (Department of Housing, 1994a:40; National Business Initiative, 1998:5).

Minister Mthembi-Mahanyele stated that "... *companies can play an important part in housing because of their ability to support their employees' involvement in the housing process*" (National Business Initiative, 1998:v). Jensen (1996:iii) considers that: *". . . a small group of concerned citizens can change the world. It is, indeed, the only thing that ever has".*

The private sector influences a large part of the population. This may include employees, clients and stakeholders. It is therefore both worthwhile and essential for companies (employers) to be aware of their employees' housing

circumstances as this in turn has a material influence on their health and productivity (Department of Housing, 1994a:40).

The National Business Initiative (1998:2) mentioned four specific areas in housing where employees are currently facing problems:

a) *Lack of housing awareness*
   Consumers are being exploited more and more, due to an insufficient level of housing literacy.

b) *Low levels of affordability*
   Employees are receiving low incomes, high interest rates and in addition the experience of increasing costs of housing.

c) *Poor access to housing goods and services*
   Access to land, services, subsidies and other housing related services are becoming increasingly difficult to acquire.

d) *Limited housing availability*
   There is a drastic shortage of suitable houses to fulfill the needs of the lower income communities.

As is legislatively and politically stated by the White Paper, the National Business Initiative (1998:3) mentioned a number of reasons why companies in the private sector should intervene. These include economic factors, leverage and business pressures, technological factors and social factors. All of these factors not only deal with current housing conditions, but also with long term social stability. Political pressure often provides an incentive for companies to assist in their employees' housing conditions.

Improved housing can in the long term contribute to increased work productivity and economic performance (National Business Initiative, 1998:4).

" While many companies are providing some form of housing related assistance to employees, few have comprehensive employee housing policies in place. Many rely on one or a few specific programmes only. As a result, the effectiveness of the support is often reduced. Most companies could improve or augment their current housing policies in some way" (National Business Initiative, 1998:10).

A broad partnership between the state and non-state sectors needs to be established. This has been envisaged through different approaches. These include:

a) *Suppliers of materials and services*

The period of low activity in housing development has led to the importance of supply of material and services. The government has recognised a difficulty in the control of competitive prices and it is therefore necessary to establish an open competition between the suppliers to restrain any drastic increase in pricing/costs (Department of Housing, 1994a:41).

b) *Construction sector*

It is essential that the gap between the larger more formal construction sector and the less advantaged, smaller construction sector forms an equal and constructive partnership. This will uplift and develop the less formal sector in the housing process. In addition, it will aid in the inhibition of large price escalations by imposing competition between possible delivery agencies (Department of Housing, 1994a:41).

c) *Financial sector*

The lower financial bracket is a cause for great concern. Although the government accepts responsibility for their role in the development of the home environment for all South Africans, it is becoming increasingly difficult with the lack of resources. The private sector can contribute through investments, loans and incentives. This will attract the required level of investment in housing through mechanisms creating an

institutional and financial framework (Department of Housing, 1994a:42).

d) *Employee assistance*

The National Business Initiative (1998:8) identified four specific areas where companies can improve housing conditions. Figure 2.1 provides a clear diagrammatic guideline of these areas.

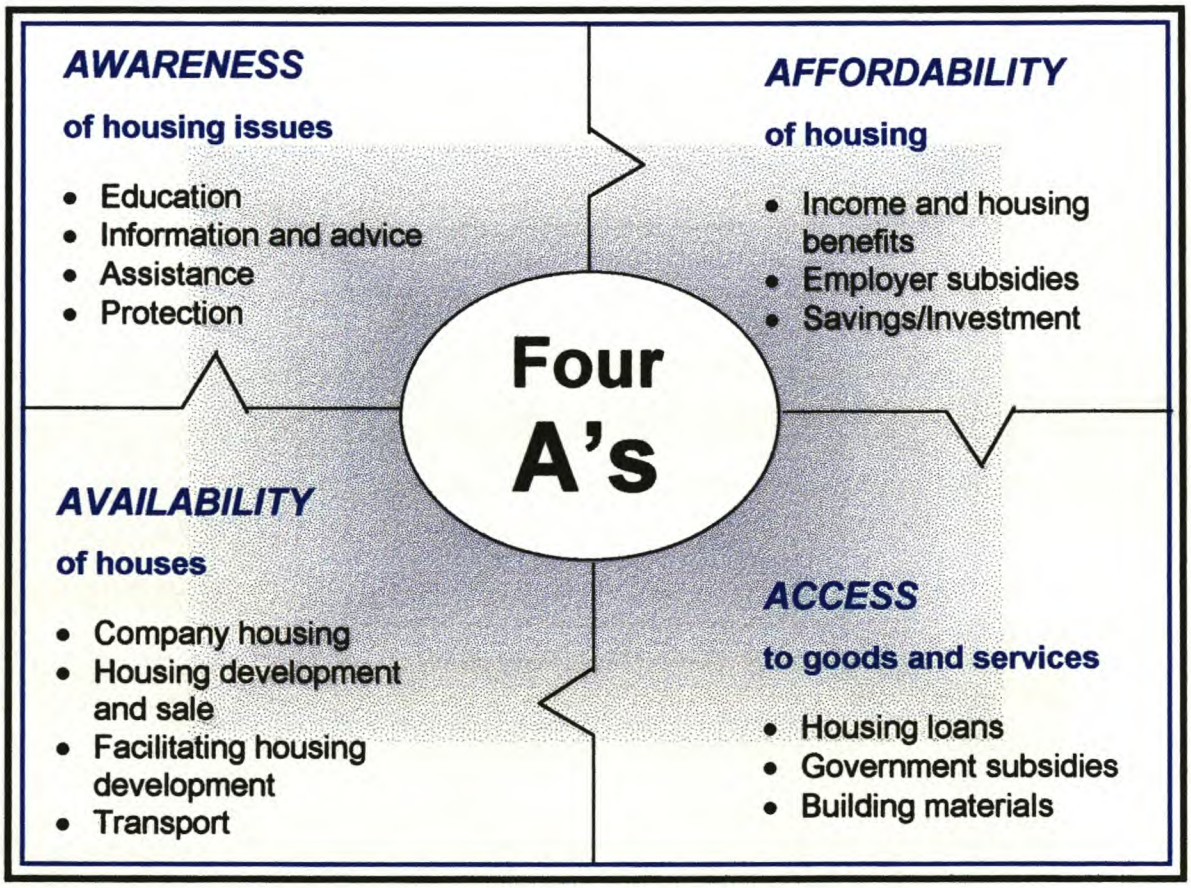

FIGURE 2.1: THE FOUR AREAS (A'S) OF EMPLOYEE HOUSING ASSISTANCE TO WHICH COMPANIES CAN CONTRIBUTE (National Business Initiative, 1998:8)

The National Business Initiative (1998:9) recommended that companies select, from the four main categories, programmes which would best meet their needs and those of their employees. Figure 2.1 outlines ideas for different programmes which could be used by companies for their employees.

e) *Community and civil society*

Housing has already been identified as a people's process where input from all sectors are necessary. Government requires assistance in needs identification, prioritization, planning and implementation of housing developments from the private sector, therefore involving all representatives of the population (Department of Housing, 1994a:42).

" Government recognizes that it cannot meet South Africa's housing delivery needs alone, and that its resources must be coupled with those of the private sector, non-government organizations and households themselves" (National Business Initiative, 1998:5)

The National Business Initiative (1998:8) suggested that housing assistance for employees be provided in order to improve their housing conditions. Employee housing assistance, according to Peters, (1999:87) may be defined as *"a structure within a company that provides assistance to employees".* Employee housing assistance was successfully introduced in South Africa in the 1980's and has continued to evolve. This has been recognised as a viable force in the workplace and confronts an extensive range of social problems, which are often otherwise not addressed by the employees (Maiden, 1999:xii).

Employee housing assistance has not only improved the health and productivity of the employees, but also addressed the socio-economic development of the country (Harper, 1999:1). In recent research (Harper, 1999:2), 45% of the 93 top South African companies, were found to have employee housing assistance programmes. Many companies, however, have not yet identified the value of such a programme in human resource development.

The lack of education and knowledge in housing has been highlighted in many different sections of this chapter. It is essential for all sectors, specifically the private sector, to facilitate the empowerment of lower-income communities, in order to increase the overall quality of living (Acharya &

Verma, 1996:358). Knowledge and expertise should be communicated to those people who require it to fulfill their needs (Acharya & Verma, 1996:360).

2.3 THE EFFECTIVE TRANSFER OF INFORMATION

This section of the literature will provide an overview of the effective methods of transferring information. It will define transfer of information, discuss the cognitive and learning processes and motivate the value of mediation in learning.

This section is divided into the following parts:

- Introduction
- The learning process
- Cognitive education
- Mediated learning

2.3.1 INTRODUCTION

Communication, as defined by the Concise Oxford Dictionary (1964:244), is:

"the act of imparting and/or giving of information. When communicating, a person is able to give and receive information. Effective transfer of information is essential for communication to take place and may be referred to as the learning and teaching of knowledge to or from another".

Samuels, (1992:10) refers to communication as a *"skill which provides a basic foundation to get, keep and progress on a job".* As life consists of a series of endless 'jobs' or tasks, communication is an ongoing process through which we learn and teach others.

Donald, Lazarus and Lolwana (1997:37) discuss communication patterns and the subsystems which exist within the complete communication system. It is impossible for communication to take place throughout the broadest system and it is therefore essential that clear and direct communication occurs within a particular subsystem. The broadest system may be compared to that of the family as a whole, and each relationship between each member of the family develops a subsystem of its own.

Given the nature of subsystems and human tendencies, an overflowing effect amongst subsystems is created. This forms an overlap between subsystems, promoting interaction and communication throughout the system as a whole.

As a person develops and changes, their subsystems and sphere of influence on communication within the subsystems will also change. Each stage of a person's life will lend itself to learning a different set of values, morals and knowledge. A person has a responsibility to learn and develop as a person throughout hi/her life (Samuels, 1992:10). Similarly, as a child grows up within a family, he has more influence on family matters.

The private sector may be viewed as a subsystem of the whole or alternatively, each institution a subsystem of the private sector. When in the workplace, the company or institution for which the person works contributes greatly to the learning process.

'Workers' will have to be involved in an ongoing learning process and be adaptable, innovative, and have the ability to think and plan for themselves (Samuels, 1992:7). Jensen, (1996:6) refers to Gagzaniga who views learning as: *"nothing more than the amount of time it takes a person to sort out his thoughts in order to achieve his goals".*

Problem solving is a key issue in life and the ability to make mature and responsible decisions when solving problems is developed through learning the ability to think for oneself. These skills are taught through effective

communication, making learning an interesting, positive and continuous process.

2.3.2 THE LEARNING PROCESS

"Human learning is a lifelong process" (Jarvis, 1995:1). It is something that is continued throughout life, irrespective of age. Changes in society have created a greater need for adult learning. This is not only in social and personal interests but also in occupations as well (Jarvis, 1995:3). There is a demand for an increase in critical thinking, creative thinking and problem solving. Adults are rapidly having to learn new concepts and adapt to the changes involved in all learning (Robinson, 1994:3).

"Learning involves the active participation of the learner, is dependent on the learner, results in long term changes in the individual's knowledge base, and is internal to the learner" (Hresko & Parmer, 1991:22). It is also important to view learning from a cognitive perspective taking into consideration the multi-dimensional nature of it. This will include the nature of the task and material, and the type of instruction and intervention taking place (Hresko & Parmer, 1991:22).

"Effective learning includes curiosity, self-confidence and self awareness with respect to knowledge and how that knowledge is acquired and applied. Successful learning helps to develop skills so that the knowledge an individual possesses can be used to good effect," (Frazer, 1992:56).

To achieve maximum learning results, interaction must take place with the environment. When learning, a person should be experiencing. How a person perceives these experiences, has led to many different theories (Driscoll, 1994:9).

One of these theories is the cognitive processing view, which sees the learner as a processor of information through different stages. This four staged

model begins with the input from the environment, processing and storing in the memory and ends with output in the form of learned information and skills (Driscoll, 1994:68).

"Learners' not only need to learn, but
they also need to know what they learn", (Jensen, 1996:6).

The learning process no longer consists only of the acquiring of new information but also the development of problem solving skills. As we enter the twenty-first century, educators are believing more and more in the benefits of cognitive teaching and training and the intellectual act of cognition (Ashman & Conway, 1993:33; Samuels, 1992:11).

2.3.3 COGNITIVE EDUCATION

'Cognition', may be defined as the action or product of knowing, knowledge and consciousness. It is the awareness of actions, also involving perception, reason, conception and judgement. Learning can therefore be seen as the manipulation of information which is received, and its integration into the existing base of knowledge (Ashman & Conway,1993:33).

Monteith (1990:452) refers to present times as the "information age". There is so much information available, it is impossible to process it all. It is therefore the responsibility of the learner to be able to regulate his/her own learning so as to learn more independently. Self regulated learning can be seen as the learner being completely involved in his/her own learning through behaviour, motivation and thought processes.

Intelligence is genetically acquired and therefore cannot be changed, however a person is able to mould "non-intellectual" factors such as attitudes, beliefs and motivation to the environment in which they live. This can be done through cognitive operations and cognitive education (Samuels, Klein & Haywood, no date:3). Through cognitive education, a learner is taught to regulate his/her learning behaviour among personal, environmental and

behavioural influences, therefore equipping one to manage the information age (Monteith, 1990:452).

Psychologists have over the years researched many different theories and models based on learning memory and thinking which describe the relationships between cognitive processes, effort and outcomes (Ashman & Conway,1993:34). Seven of these theories will be briefly discussed with the emphasis remaining on cognitive education.

2.3.3.1 Bloom

Bloom separated a human's learning abilities into three domains, namely: cognitive, affective and psychomotor (Driscoll, 1994:335; Byrnes, 1996:65; Spencer, 1988:41). He saw a taxonomy of levels within the cognitive area, which are presented in Table 2.3.

TABLE 2.3: BLOOM'S TAXONOMY OF COGNITIVE OUTCOMES

Knowledge	Remembering previously learned material, including facts, vocabulary, concepts, and principals
Comprehension	Grasping the meaning of material
Application	Using abstractions, rules, principles, ideas, and other information in concrete situations
Analysis	Breaking down material into its consistent elements or parts
Synthesis	Combining elements, pieces, or parts to form a whole or constitute a new pattern or structure
Evaluation	Making judgements about the extent to which methods or materials satisfy criteria

Driscoll, 1994:335

Bloom's taxonomy was designed as a set of behaviours of intended outcomes of the learning and education process. It is arranged in hierachial order,

consisting of six different classes, knowledge being the lowest order and evaluation the highest (Byrnes, 1996:65; Spencer, 1988:43-44). The achieving of the level of evaluation should be a goal set by all educational programmes therefore encouraging discussion, communication, critical thinking and problem solving (Spencer, 1988:42).

2.3.3.2 Piaget

In the 1960's and 1970's a well known psychologist, Piaget, researched extensively the parallels between cognitive modifiability and intellectual development. This led to much research in these fields and in education (Samuels, Klein & Haywood, sa:3). Many have taken his theories and developed and researched them further. Piaget believed that through prior knowledge, a child's understanding, learning and development was influenced. Intellectual development was based on the different stages and patterns of thought, whereby cognitive conflict is developed between the newly attained information and prior knowledge. This forces a person to reorganize his thought processes in order to resolve this inner conflict (Samuels, Klein & Haywood, sa:4).

Piaget describes knowledge in terms of schemes, concepts and structures, and believes that knowledge is found on four levels of thought and progress, through abstraction, assimilation, accommodation and equilibrium (Byrnes, 1996:7). Through this, a person learns to think for himself in a critical way as well as solve problems by making decisions.

The ability of individuals to guide their own learning, thinking, acting and feeling are all as a result of certain cognitive strategies. Learners must develop their own strategies which in itself is a process of learning to learn and think independently (Driscoll, 1994:341).

2.3.3.3 Motivation

Cognitive education allows a person to acquire thinking skills which will develop him/her into an independent thinker and a lifelong learner with intrinsic motivation. This will prepare the learner for a changing and adapting society. Byrnes (1996:227) describes motivation as a *"construct used to explain initiation, direction, and intensity of an individual's behaviour".*

Intrinsic motivation according to Woolfolk, (1980:315), can be defined as *"motivation associated with activities that are their own reward".* Intrinsic motivation is promoted through curiosity, interest, satisfaction and sense of accomplishment. Learning and cognition stems from motivation and the person's need and desire to acquire new information and knowledge. Throughout the learning process, motivation must be present to ensure that independent thinking becomes automatic (Woolfolk, 1980:320).

Part of learning to think independently is learning to think creatively which involves debate, originality and using insight in solving problems (Driscoll, 1994:341).

2.3.3.4 Bruner

Bruner compares problem solving, the tackling of a problem presented by someone else, with problem finding, where learners rely on previously acquired skills and personal thoughts to solve the problem. Problem solving will eventually bring about the same solution irrespective of who attempts to solve it, whereas problem finding requires reflective and creative thinking (Driscoll, 1994:341).

Bruner's views on learning and development show that it is essential to acquire knowledge and skills, however, more so to solve problems, which require the learner to go beyond that (Driscoll, 1994:234).

Problem solving requires planning ahead, monitoring outcomes, predicting outcomes of one's performance and many other skills. These all result in conditional knowledge or meta-cognition. Meta-cognition is one's awareness of thinking, self regulating behaviour and the reflection on one's own thoughts (Driscoll,1994:103).

2.3.3.5 Meta-cognition

Meta-cognition is thus the management of one's own learning and the control over one's own thoughts (Kriegler, Du Toit & Smart., 1990:109). Meta-cognition appears as one of the aims of cognitive education, which are:

a) the development of teaching methodologies so that meaningful learning and understanding takes place;
b) the promotion of conditions for the development of cognition ensuring application in everyday life;
c) the linking of elements of competency (e.g. knowledge, skills, attitudes and values) to human functioning (e.g. emotional, intellectual and social relationships);
d) to develop the ability to understand the tool of thinking and communicate these to others;
e) to recognize and promote potential in others therefore increasing development;
f) to promote social interaction;
g) to encourage learner participation and co-operative learning;
h) to encourage learners to question and challenge ideas;
i) to reflect self thought and meta-cognition (reflection of one's own thinking);
j) to encourage people to recognize and adapt to changing environments (Topham, Henning, Skuy, Langly & vd. Westerhuizen, sa:8).

Cognition and cognitive education has led to much research and extensive understanding and development of theories by psychologists and

knowledgeable people in other related fields (Samuels *et al.*, sa:3). Both Bloom and Piaget have developed theories of high-order thinking, therefore assuming that thinking is a continuous process from lower forms to higher forms. It is essential for the learner to master the lower levels before they are capable of the higher levels (Byrnes, 1996:59).

It is believed by Piaget that as a person develops, his/her thinking becomes increasingly abstract and logical, therefore assuming a higher order of thinking (Byrnes, 1996:69). Piaget recognises classification, inference making, hypothesis-testing and experimentation as the four major cognitive processes. Bloom sees understanding, application, analysis, synthesis and evaluation as higher forms of thought (Byrnes, 1996:69).

2.3.3.6 Vygotsky

Vygotsky also based his theory on high and low order thinking. He views any skill as a lower form of thought, as it is being controlled by the environment. It is only when the execution of the skills is controlled by the performer that it is considered a higher form (Byrnes, 1996:65).

Vygotsky recognises social interaction as the key to this shift in control from the environment to the individual. Vygotsky's theory of cognitive education centres around the zone of proximal development (ZPD) (Byrnes, 1996:31).

This theory stems from the belief that all psychological processes are first encountered within the social context (Samuels *et al.*, sa:3). Cognitive processes for example decision making, problem solving etceteras, are shared with and developed in the presence of others and later become independent. It is the process of becoming 'independent thinkers' which is gradually controlled by the surrounding environment and those people in it, as well as self-regulation. Vygotsky stresses the importance of imitation in this development process, however a person is only able to imitate that which lies

within his own zone of potential intelligence (Driscoll, 1994:231; Samuels *et al.*, sa:3).

The ZPD therefore refers to the difference between a person's own zone of intellectual potential and the developmental level which has been reached. Vygotsky considers the ZPD to be an index of learning potential. If the zone is narrow, a person is not yet ready to perform at a more advanced level and if the zone is broad, it could indicate the person's ability to perform at a higher level (Driscoll, 1994:231; Samuels *et al.*, sa:4).

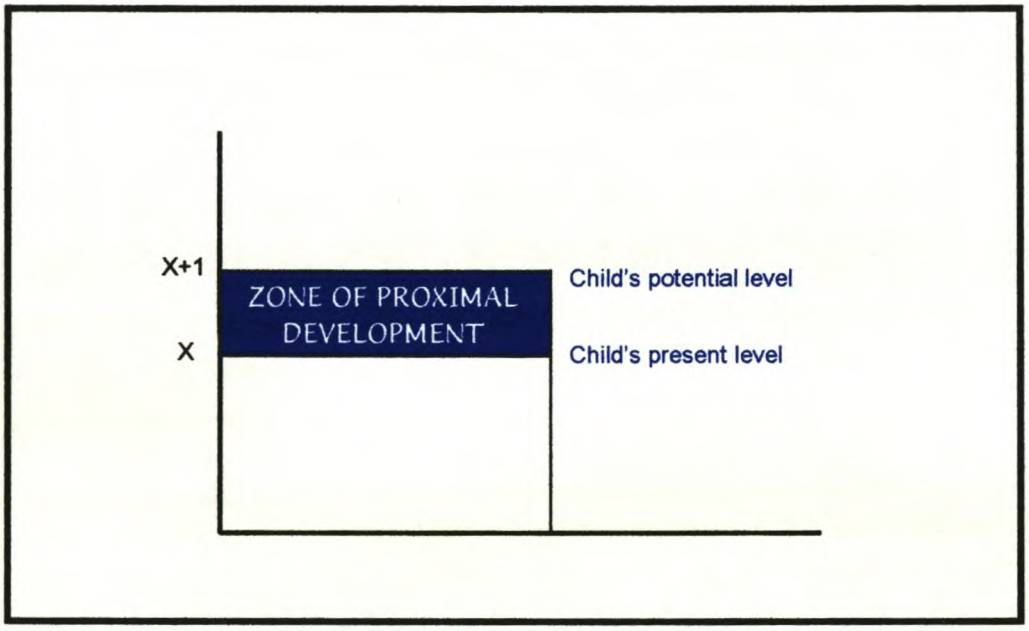

FIGURE 2.2: VYGOTSKY'S ZONE OF PROXIMAL DEVELOPMENT (Sutherland, 1992:44)

In Figure 2.2, a learner's present level is represented by x and the potential to achieve x+1. As presented in Figure 2.2, the area within this is the Zone of Proximal development (ZPD). Learners should aim to achieve x+1. Different ages in learners will represent different gaps.

The ZPD can also be interpreted as the difference between a child learning a skill and the actual mastering of this skill through practice and feedback. There is a definite gap between the absolute-novice level and the complete-

mastery level, demonstrating not only knowledge, but also the interpretation of the knowledge (Byrnes, 1996:31-33; Driscoll, 1994:233).

Vygotsky believes that a person is not able to achieve this level of potential development without the collaboration and assistance from adults or peers etc. A mediator is needed to achieve the higher levels of knowledge (Byrnes, 1996:32; Driscoll, 1994:233; Spencer, 1988:176).

The ZPD forms a place where mediation takes place. Mediation is the *"product of a group, community, or broader social constructions of* meaning" (Donald, Lazarus & Lolwana,1997:50). Through mediation, a learner takes in what is presented. If the mediation demonstrates new ways of thinking, the learner often rises to a higher level of understanding. The mediation must assist the learner in organising and understanding the information being presented (Donald *et al.*, 1997:51).

Other psychologists have developed similar theories on the importance of mediation. These will be discussed in the following paragraphs.

2.3.3.7 Freuerstein

Freuerstein, a fellow student of Piaget, collaborated with him and another colleague to develop a theory based on the ability and unique capacity which a person has to adapt their cognitions (thought processes) to suit the changing environment in which they function (Samuels *et al.*, sa:4). Barriers such as age, severity of condition and etiology tend to influence rather than prevent thought processes. Changes in surrounding structures influence how a person understands information and responds to sources of information.

This can be based on a particular learning mode, the Mediated Learning Experience (MLE). MLE is defined by Samuels *et al.*, (sa:4) as *"the intentional acts upon the part of a mediator".* It is believed that adequate MLE is the key to normal cognitive development. A lack thereof may lead to inadequate cognitive education.

Freuerstein uses MLE to explain the reason why two children of the same age develop differently. For interaction to be considered to be MLE, three of the twelve identified characteristics of MLE must be present. These are intentionality and reciprocity; transcendence (generalisation beyond the immediate event) and mediation of meaning (Samuels *et al.*, sa:4).

Once the learner has received the mediation, he/she must indicate some response, therefore going beyond the immediate situation. This response may be through verbal or non-verbal means, either way creating a form of interaction (Donald *et al.*,1997:50).

Mediated learning can benefit a learner at any stage in the life cycle. It is therefore also suitable for adult learners (Samuels *et al.*, sa:4). It is aimed at changing a person's functioning in an environment and is believed that it leads to the development of cognitive functions.

When considering the essence of the above presented theories, the importance of cognition, problem solving skills and independent thinking, have summed up the need for mediation in the learning process. A mediator, whatever the sort, promotes interaction and effective development of knowledge and skills. It is from this understanding of knowledge that aspects of the present study have developed.

2.3.4 MEDIATED LEARNING EXPERIENCE

Mediated learning is a vital approach which ensures effective learning. It is the addition of a mediator into a learning situation. Whereas in a traditional model of learning, the organism interacts with the stimuli yielding a response, in mediated learning, a mediator is included between the stimuli, the organism and the response (Skuy & Mantis, 1991:ii). Figure 2.3 illustrates this concept.

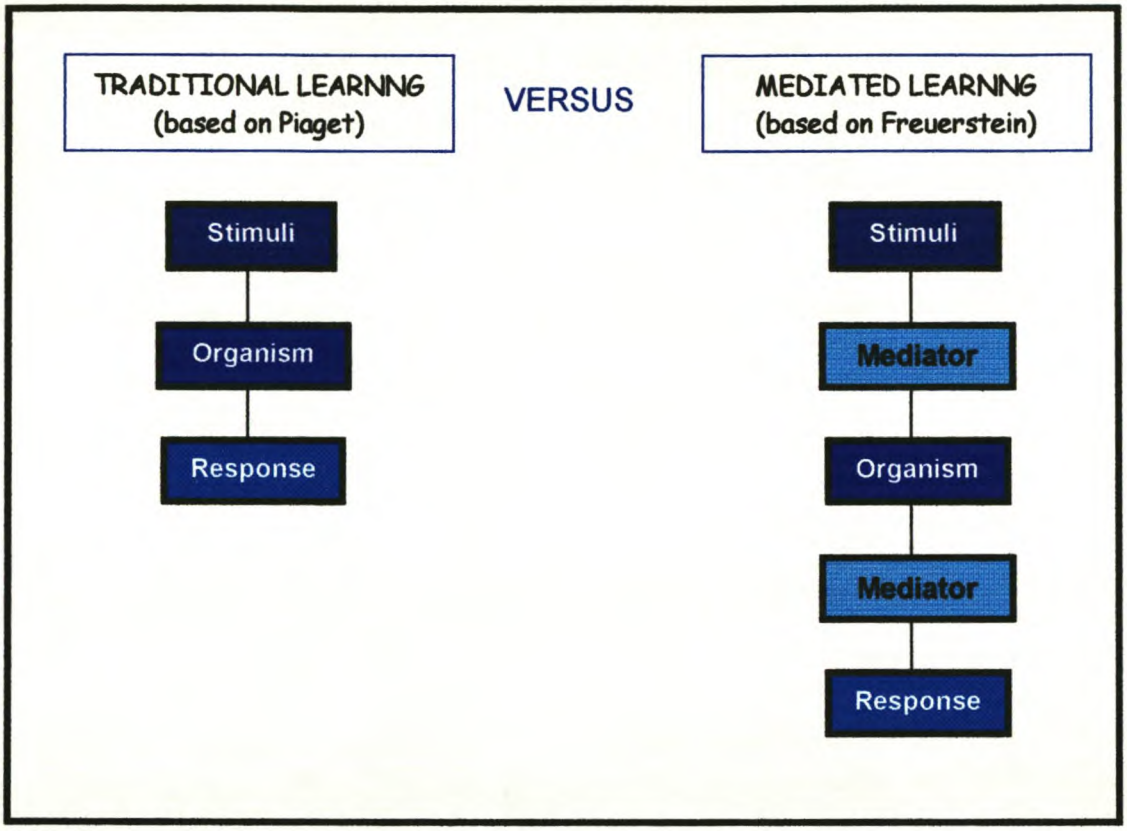

FIGURE 2.3: COMPARISON BETWEEN TRADITIONAL AND MEDIATED LEARNING (SKUY & MANTIS, 1991:II)

Mediated learning allows for greater receptiveness to direct exposure. This is seen as more beneficial, for both immediate and long term acquisition of knowledge.

Freuerstein identified ten criteria or types of interaction which are fundamental in mediation. Intentionality and reciprocity, meaning and transcendence are all essential for effective interaction in mediation. Competence, self-regulation and control of behaviour, sharing behaviour, individuation, goal planning, challenge and self-change may function at varying times during mediation (Skuy & Mantis, 1991:ii-iii). Mediation can therefore be seen as a very effective learning method.

Bloom recommended a list of alternative learning methods. These not only appealed to the learners, but also showed positive effects in the learning process (Spencer, 1988:81). All of these methods included visual text, one

with the addition of symbols and icons and another audio-visual aids (sound and movement) (Spencer, 1988:81).

Scientists have through the years researched the power of non-conscious learning and the value of visuals, music, stories and movement (Jensen, 1996:36). Learning is made easier through visualization. When asked to do so, children may not be able to count from one to ten, however will be more likely to count the number of fingers they have. When looking at their fingers, they are able to visualize the numbers (Driscoll, 1994:238).

Vygotsky's theory of learning was based on the need for social origin, including self-regulation, consciousness and symbolic mediation (Byrnes, 1996:69). He referred to mediation at a time when technology was not as advanced as it is today. There is, however no reason why he would not consider calculators, computers and other powerful aids as mediators (Spencer, 1988:176).

Mediated learning provides new tools for the learning and education process. These include:

a) tools for thinking with;
b) tools for organising information;
c) means of assessing information;
d) means of communicating and processing the 'printed' word;
e) means of stimulating and reinforcing learning (Verhagen, 1987:71).

In order for effective cognition to take place, the tools for cognitive development must be used in the learning process. Contextualising and organising information can in certain ways empower the process. Vygotsky deals with an essential tool which is the use of language. It may be written, spoken, read or include other symbol systems (Donald *et al.*, 1997:62).

Bruner looks at the representation of images (iconic representation), symbols (symbolic representation) as well as action patterns (enactive representation) among them (Donald *et al.*, 1997:62). Enactive representation can become

very advanced for example in the form of movements etc. and iconic representation could be visual, artistic, or musical imagery. It is important that all of these interact with each other to achieve maximum learning and development (Donald *et al.*, 1997:62).

Spencer (1988:10) refers to Thorndike's beliefs, stated in 1912, that 'telling and showing' had a positive effect on the learning process. The lecture-demonstration or telling-showing method may include the use of printed textbooks, object lessons, maps and dictionaries. These all appeal to the visual senses.

Even Einstein viewed picture and graphics as having a greater impact than words (Spencer 1998:173). He was quoted by Spencer, (1998:173) as saying:

*"The words or language, as they are written or spoken, do not seem to play any role in my mechanisms of thought. The psychical entities which seem to serve as elements in thought are certain signs and more or less clear images which can be voluntarily reproduced or combined... The above mentioned elements are, in my case, of visual and some muscular type. Conventional words or other signs have to be sought for laboriously only in some secondary stage..." (*Spencer, 1988:174).

When learning a skill, it is more valuable to acquire it by means of direct actions. A better skilled sailor will develop from watching a film on sailing rather than reading about it in a book (Spencer, 1988:183). Through mediation of knowledge, the learner gets a more accurate picture of reality (Spencer, 1988:180). Knowledge of the above research findings provides valuable lessons for the present study. These are discussed further in greater detail.

2.3.4.1 The use of human senses in the learning process

Whether information is received directly, indirectly or physically, it is experienced through our senses before being processed. Depending on the stimulus, different senses or combination of senses are used (Spencer, 1988:103). Much research has been done on the relationship between our senses and how we learn and remember (Spencer, 1988:103).

Triechler in Spencer (1988:103) sees the primary sense used as having a large effect on the amount humans tend to learn and remember. This is illustrated in Figure 2.4 below.

We learn:

1.0%	Through taste
1.5%	Through touch
3.5%	Through smell
11.0%	Through hearing
83.0%	Through sight

We remember:

10%	Of what we read
20%	Of what we hear
30%	Of what we see
50%	Of what we see and hear
70%	Of what we say as we talk
90%	Of what we say as we do a thing

FIGURE 2.4: THE RELATIVE EFFECTIVENESS OF THE PRIMARY SENSES (Spencer, 1988:103)

It is clear to see that according to Triechler in Spencer (1988:103), the combination of senses aids in the learning process. Through audio-visual movements, a number of findings were noted:

a) They supply a concrete basis for conceptual thinking and hence reduce meaningless word-responses of learners;

b) they have a high degree of interest for students;
c) they make learning more permanent;
d) they offer a reality of experience which stimulates self-activity on the part of the pupils;
e) they develop a continuity of thought; this is especially true for motion pictures;
f) they contribute to growth of meaning and hence to vocabulary development; and
g) they provide experiences not easily obtained through other materials and contribute to the efficiency, depth, and variety of learning (Spencer, 1988:103-104).

Figure 2.5 shows a hierarchical cone developed by Dale (Spencer,1988:104) which illustrates the narrowing of sensory experience from direct, purposeful experiences to verbal symbols.

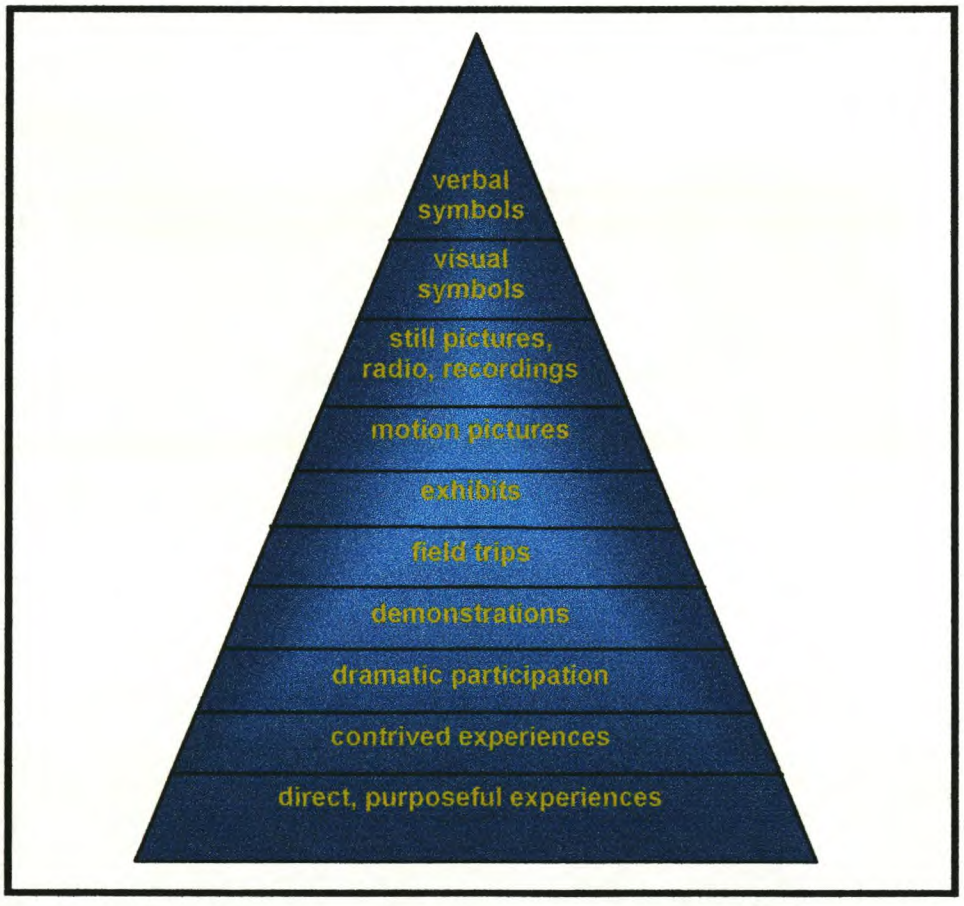

FIGURE 2.5: DALE'S 'CONE OF EXPERIENCE' (Spencer, 1988:104).

2.3.4.2 The use of the brain in the learning process

Although psychologists have developed many theories on ways of thinking and processing of knowledge, it is also essential to look at the physiological aspects of the brain. Recent research has shown that the brain is dominant in visual learning. The eye is capable of registering 36,000 visual messages per hour, which we should be taking better advantage of (Jensen, 1996:55).

"Attract the brain with movement,
contrast and colour changes"
(Jensen, 1996:55)

A brain is said to function best in certain environments. These environments should take noise, lighting, temperature, ionization, colour, plants, and visual learning into consideration (Jensen, 1996:54).

For maximum impact on the brain, the medium should be alternated or combined to use more than one sense. Videos, movement and sound, show and tell, vivid drawings and strong posters all use the combination of more than one sense (Jensen, 1996:56).

Learning should not only be the receiving end of a process of teaching into which knowledge and skills are incorporated, but also use communication and interaction to achieve educational goals. Education has changed over the past years and is slowly developing from teacher centred instruction (little interaction) to learner centred instruction (interaction). The learning machine is slowly developing, as are two key words 'interactive' and 'multimedia' (Barker & Tucker, 1990:15).

2.3.4.3 Interaction

Berge (1999:5) describes interaction as a *"sustained two-way communication among two or more persons for the purposes of explaining and challenging perspectives"*.

Harasim *et al.*, (1995: 3) describes interaction as the *'ability to share information and build group knowledge'*. It is seen as a very important element of learning and instruction. Forsyth, (1996:28) supports this by referring to interaction '*as one of the higher order levels of feedback'* which is essential in the learning process.

All learning requires some form of interaction, either feedback learning or dialogue learning. The result and efficiency of the interaction in achieving the goal depends on a number of components. Examples of these include elementary and factual knowledge, basic skill training, perceiving, acting, knowing, comprehending and gaining of insight (Berge, 1999:5; Fisher & Mandl, 1987:54).

2.3.4.4 The use of Media and Multimedia

Multimedia stems from the word media. Multimedia is a term used to describe a package of information which it presented in a combination of graphics, sound, video and text. Media makes it more possible for interaction and visual learning to take place (Barker & Tucker, 1990:19).

Although media as been discussed up to now, is relevant to modern teaching methods, the use of video, sound, graphics, movement and so on are all being harnessed in new and exciting ways. Interactive media has been incorporated into the use of multimedia. Figure 2.6 illustrates the developments taken place from as early as 1989.

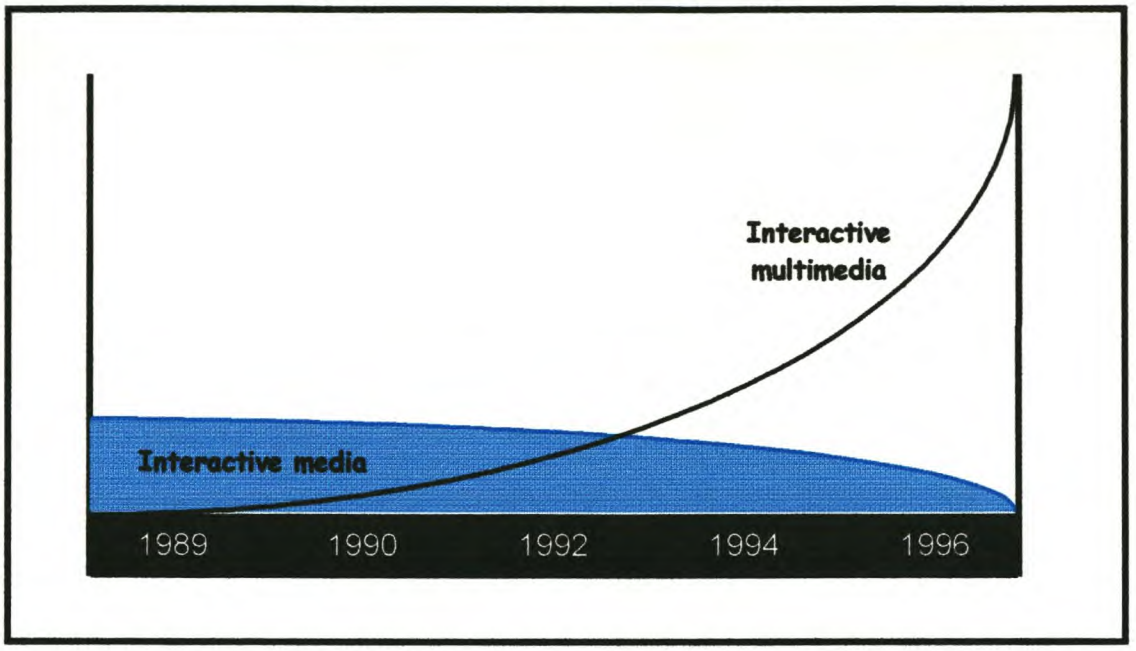

FIGURE 2.6: THE USE OF MEDIA AND MULTIMEDIA INTERACTION FROM 1989 TO 1996 (Barker & Tucker, 1990:23).

Barker and Tucker (1990:23) predicted that by the year 1996 multimedia interaction would have almost dominated media interaction. This is in fact what has happened and even more so in the past 4 years. Possible reasons for this can be noted in the comparisons of the two types of interactive learning. Interactive media involves higher costs than that of multimedia. A reason for this could be that interactive media would involve professional market pricing, whereas multimedia is more available for consumer purchasing. Multimedia makes use of pure digital technologies whereas interactive media is a combination of many. The hardware used for interactive media is more complex than that used for multimedia. Interactive media is tutor orientated, while multimedia is learner orientated (Barker & Tucker, 1990:24).

Multimedia is often used to achieve multiple instructional and learning goals and can aid in combining different parts of the learning system (Tergan, 1998:17). Technological based environments combine interaction, exploration, expression, communication and collaboration, all of which contribute to the learning process (Tergan, 1998:18).

Technology stimulates learner inquiry. Learners are able to experience rather than memorise (Barab, Hay & Duffy, 1998:15). Laurillard (1991:229) conducted research on a learner's experience of multimedia and narration. The conclusion was drawn that interactive media forms a user-control medium. Although the learner expects to have control, there is not enough knowledge for the learner to have full control.

The value of the development of technology in education has enhanced training with the transmission, delivery, and storage of educational mediums. It has even been compared with the value of the development of the railroads. Multimedia has developed in many forms, namely tutorials, simulations, virtual reality expert systems and many other forms (Barron & Orwig, 1995:3).

The benefits of these such developments are endless, and through this, various case studies have proven to increase effectiveness of training and self-confidence in the learners. It has aided in the reduction of time and decreased cost, both of which are vital for schools and businesses which run in-house training programmes. Essential elements of learning, including, active learning and multisensory delivery, which have been highlighted up to now, are greatly supported by multimedia learning. Through multimedia, learners are encouraged to explore and they are intrinsically motivated by the new and exciting method of learning (Barron & Orwig, 1995:3-5).

Multimedia presents both opportunities and challenges for learning and education and should be implemented into as many learning situations as possible (Barron & Orwig, 1995:7). Multimedia has taken on a whole new meaning with the personal computer. It has made it possible to access and manage a wide variety of media in a not too complex manner (Barker & Tucker, 1990:19).

2.4 COMPUTER-BASED INSTRUCTION

This section of literature will examine the use of computers in training and the advantages thereof. It will examine the extent to which they can be used in the private sector. Guidelines for the development of a computer-based training programme will also be presented.

This section is divided into the following parts:

- Introduction
- Advantages of Computer-based Instruction
- Computer-based Instruction in the Private Sector
- Development of a Computer-based Instruction Programme

2.4.1 INTRODUCTION

Computer-based instruction, as defined by Criswell (1989:1), "*refers to any use of a computer to present instructional material, provide for active participation of the student, and respond to student action*".

Computers not only deliver information, but are also able to combine the properties shared by other media (Venezky & Osin, 1991:207).

Computer-based instruction was originally thought of as instruction via the computer. As advancements have been made, computers are able to present information through the combination of text, visual graphics, sound and movies in a simple and unique way. They are also able to evaluate a student's responses and progress and store this information with little effort (Barker & Tucker, 1990:20; Driscoll, 1994:59).

Figure 2.7 illustrates the multiplexing done by the computer, creating an efficient shared resource (Barker & Tucker, 1990:20).

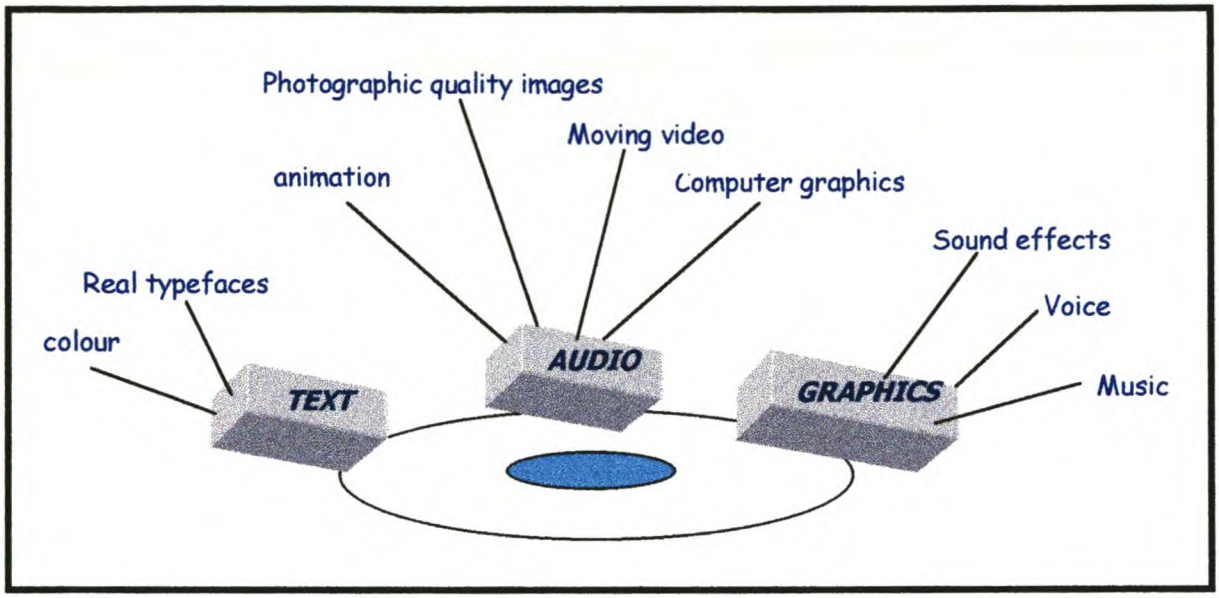

FIGURE 2.7: DISPARATE TECHNOLOGIES ALL BEING DELIVERED THROUGH THE MEDIUM OF A COMPUTER (Barker & Tucker, 1990:20)

The computer has been referred to as the electronic blackboard, however its uses are almost unlimited. Instruction is done through the use of a computer (hardware) and programmes to operate the computer (software).

The computer hardware provides a selection of technical properties. Computers provide remote access to information through either, disk, CD-ROM, or the internet. They present information via more than one means of output, namely, screen output; sound via speakers; and hardcopy via a printer. Computers allow the learner to input information or responses via keyboard, mouse and other devices. This enables a two-way communication. This interaction is able to take place over varying distances given the nature of computer networking (Verhagen, 1987:71).

2.4.2 ADVANTAGES OF COMPUTER-BASED INSTRUCTION (CBI)

Computer-based instruction (CBI) can be used successfully in a number of different circumstances. It is essential that the information content does not change significantly over a short period of time. This may cause unnecessary

loss of time and money. CBI is beneficial when information needs to be presented to more than one person. It allows for repetition and therefore aids in the mastering of skills. It is also suitable when teachers/or facilitators have little time to spare (Criswell, 1989:3).It is however essential that the CBI not only provides practice, but also presents and teaches the material (Criswell, 1989:3).

CBI is very goal orientated and helps the learner focus on a specific aim or concept. It does, however, also allow the learner to place the goal in different contexts. Learners are able to monitor their progress, and through problem-solving and feedback, the learner receives motivation to achieve the target skill. CBI minimizes the working load and is able to adjust the length of the steps in the learning process (Corbett & Anderson, 1992:83). All of these factors increase the quality of the learning (Venezky & Osin, 1991:23).

The possibility of new capabilities, especially in the areas of visualization and interaction through media, provide exciting ideas for the future of learning. Computers provide access of a multitude of subjects and disciplines to a large variety of people. Computers have on the whole proven to be efficient tools which have also developed discipline amongst those who are competing to challenge the fast paced world of hardware and software (Venezky & Osin, 1991:25-26).

On-line learning opens up vast opportunities via networks. It creates an almost limitless supply of information areas and disciplines. On-line learning is being used at many educational institutions in combination with distance learning, where the learner is able to interact and communicate with a lecturer on another computer (Mühlhäuser, 1995:44).

CBI has through research been proven cost-effective, especially now after the initial and critical introductory phase has passed (Moonen, 1987:87). Cost-effectiveness also stems from the amount of time saved.

CBI has the added advantage of 'on-demand' learning. This means that a learner is able to learn via the medium of the computer in his/her own time or when needed to seek information (Mühlhäuser, 1995:43). Distance learning allows the learner to learn in an environment of his choice. This may even be in the comfort of his/her own home. Laurillard (1991:64) comments on the negative effect which distance learning could have, with the absence of communication. It is therefore essential to make use of multimedia to promote interactivity.

Anderson (1991:39) refers to the positive influence a computer, in particular multimedia, has on the reading, writing and language skills of the learner. Computers are increasingly being used to develop problem-solving skills (Driscoll, 1994:59).

Open learning provides the learner with the opportunity to be in charge and in control of the learning situation. It allows for organizational and managerial skills to be put to use in order to solve the problems presented. Open learning does not restrict the amount of learners, which in the growth of population has become a vital issue. It does not take on the physical and social restraints of traditional learning and allows for single-parents, workers, handicapped people etc. to have similar learning opportunities to others (Barker & Tucker, 1990:27).

Computers slow down or speed up the process of learning, depending on the intellectual abilities of the learner. Computers are able to repeat a concept as many times as desired, individualising learning and often taking pressure away from those learners not in the main stream (Chabay & Sherwood, 1992:153).

The primary aims of the computer in the process of learning and instruction can be summerised into initial teaching (introduction; explication; demonstration; problem solving; practice), assessment (review; testing), and maintenance and support (management ; guidance). For computers to function in the initial teaching stage, software or specific programmes have to

be designed (Venezky & Osin, 1991:144). Many different formats and guidelines have been given as to how to develop educational software, largely depends of the authoring program used or the skills of the programmer (designer).

2.4.3 COMPUTER-BASED INSTRUCTION IN THE PRIVATE SECTOR

Learning is vital, even as an adult, as it is a second chance to develop knowledge and skills. It is an opportunity which commerce and industry should provide their employees (Wolfson, 1993:93). As Knowles (1980:45) puts it, *"they are after all . . . producers, doers, workers, spouses, parents . . . who have status in their own eyes and those of others . . . They have a deep psychological need to be seen by others as self-directing".*

Education and the way in which information has changed and developed has affected the private sector. Companies have for many years been providing in-house training for their employees and it has become more than a case of giving traditional lectures and written notes (Barker & Tucker, 1990:27).

CBI and its rapid technological changes allows for the delivery of information to a large number of people. This is ideal for companies and large businesses who employ large numbers of staff with varying levels of education (Criswell, 1989:3). They are able to deliver information in a simple manner with the minimum of facilitators needed. This saves both time and money (Wolfson, 1993:93).

In the industry, *"time is money"* (Barron & Orwig, 1995:4). Employees cannot all be taken out of the workplace together for training, as this would influence the daily performance of the company. A small reduction in employee training time could have a large impact on the company. It is therefore essential that individual training can be utilized at a time when it is suited to each employee. On-demand training via the computer offers such an option (Mühlhäuser, 1995:27-28).

Through research, multimedia and computer-bases instruction have shown to reduce employee training time by 30%. In 1994 a computer-based training programme which was implemented by the Holiday Inn, reduced course time from fourteen to six days (Barron & Orwig, 1995:4). Eskom reported a 33%-66% reduction in the time from traditional to computer-based training (Chance, 1993:145).

CBI was introduced at the St Antony's Adult Education Centre. Approximately 1000 learners make use of this facility everyday. It has been very successful without restricting the class-hours and proved notable for the equality with which each person was treated (Wolfson, 1993:95). It is particularly important to eliminate any kind of discrimination, especially among working-class adults in South Africa.

Research showed that the adult learners using the computer-based instruction found it to be: *" 'new', 'exciting' and 'fun' "* (Wolfson, 1993:96).

Barker and Tucker (1991:27) describe open learning as *"an organisational solution for a learning need"*. It allows for individualized learning which in the workplace is essential, owing to the different levels of educational background and understanding. Many employees are not literate and cannot read and write. Through multimedia, they are able to experience the same presentation of learning material, through sound and graphics with the support of text.

A study was carried out in Massachusetts in 1993 to determine the extent to which multimedia computer technologies were being utilised in their in-house training. Results showed that of the one thousand companies in the sample, forty-five percent were found to be using computer multimedia in different forms, including tutorials, simulations, virtual reality and expert systems. An increasing number of companies are turning to multimedia programmes as technologies become more available (Barron & Orwig, 1995:3). This demonstrates the successful use of such programmes in companies.

In 1979, Eskom was one of the first companies in South Africa to initialize computer-based in-house training. Terminals were installed to handle up to 200 people (Chance, 1993:147). In 1982 Old Mutual and Standard Bank successfully followed, establishing regional training centres for their staff. In 1984 and 1985 South African Airways, Barclay's Bank (First National Bank), Allied Building Society (ABSA Bank), Volkskas (ABSA Bank), Liberty Life, Trustbank (ABSA Bank), and United Building Society (ABSA Bank), all established training programmes using computers.

In 1991 another eight top South African companies followed suite. The South African Post Office and Telkom have both included computer-based training in their long term strategic planning. Their net savings over 5 years were calculated in the region of 2 million rand (Chance, 1993:149).

A 1991 survey showed the South African computer-based training industry to be worth 91 million rand (Chance, 1993:149).

Old Mutual carried out a comparative study on the results offered through traditional instruction means and computer-based instruction. These results, as shown in Table 2.4 indicate that computer training yielded a far greater success (Chance, 1993:151).

TABLE 2.4: RETENTION SCORES FOR A COURSE OFFERED BY TRADITIONAL vs. COMPUTER BASED INSTRUCTION MEANS

COURSE	AVERAGE TEST SCORE	AVERAGE RE-TEST SCORE	DIFFERENCE
CLASSROOM	89%	56%	-33%
CBI	91%	76%	-15%

Chance, 1993:150

The average test score was taken immediately after the training and the re-test score after 3 months had elapsed. It is interesting to note that CBI, not only produced better results in both tests, but also had better results in terms

of the retention of the knowledge in the long-term memory. Old Mutual's explanation for this was the interaction present in the CBI (Chance, 1993:151). Denel, another major company, has also reported a drastic increase in results since the incorporation of CBI (Chance, 1993:151).

Kritzinger of Deloitte PimGoldby commented on their introduction of the VAT Tutor which provided training to employees six months prior to the introduction of Value Added Tax in South Africa:

"It should ideally be interactive, so participants can test their understanding and retention of each step before continuing. Our VAT Tutor Programme is supplied with a workbook so actual examples can be practised. The multimedia approach is a proven success in terms of speed of learning and retention of information" (Chance, 1993:151).

The success rates and financial benefits for companies on CBI has been remarkable. It is important to expose employees to computers, given the technological future of the world. This can only benefit the employer and the employee.

It is essential that "*companies start to serve the communities in which they operate*" *and "bring technology to the masses and educate them as to its benefits in a modern society*" (Chance, 1993:166).

2.4.4 DEVELOPING AN EDUCATIONAL COMPUTER-BASED PROGRAMME

Before developing a computer-based programme, the developer should have a comprehensive picture of the background, content, and workings of the programme. Certain recommended stages should be followed in order to achieve a successful end result (Nydahl, 1987:28).

Criswell, (1989:7) provides a clear cut and simple application of the four components to consider when designing a programme. This is easily applied to most computer based educational mediums. These include: providing clear instructional objectives; teaching by means of smaller lessons in order to master the complete unit; allowing students to progress at their own pace; and carefully sequenced instruction (Criswell, 1989:7). The next sections will discuss different theories of how to sequence and plan the design of the programme.

2.4.4.1 Sequence of the Design

Once it has been decided to design a computer-based educational programme, a certain path has to be followed to ensure that the goals set are in fact met. Knowledgeable people and researchers have presented many different processes to follow when designing, producing and evaluating CBI. The process of Criswell (1989:50) was designed as a collaborative process and has been successfully used for the last ten years. It clearly identifies each sequence and includes important steps within each sequence. Table 2.5 provides a summary of the steps in CBI design, production and testing.

These steps can be closely matched to the design process identified by the educational services. This consists of detecting the need or problem, defining what the user needs, designing the information, developing and implementing the programme, delivering it and dedicating which involves post-production evaluation. These six "D's" do not provide enough detail for the computer guiding of the design (Mühlhäuser, 1995:27-28). Additional methods should be added to supplement this one.

TABLE 2.5: STEPS IN COMPUTER BASED INSTRUCTION DESIGN, PRODUCTION AND TESTING

Step 1	Conduct environmental analysis • Proposed use of courseware • Available hardware • User attitudes
Step 2	Conduct knowledge engineering • Course content • Concept/task analysis
Step 3	Establish instructional goals and objectives • Instructional goals • Specific objectives and student performance levels • Instructional objective taxonomies
Step 4	Sequence topics and tasks in CBI lessons
Step 5	Write courseware • Introductions, interactions, remedial sequences, review, and tests • Tailor interactions for specific student performance levels
Step 6	Design each frame, the student-computer dialogue, and the student performance record
Step 7	Program the computer • Programming languages • Authoring languages and packages
Step 8	Product accompanying documents
Step 9	Evaluate and revise the CBI
Step 10	Implement and follow-up as necessary

Criswell, 1989:51

Step 4 is one of the most important steps and requires the sequencing of topics and tasks in the programme, therefore providing a framework for the programme.

2.4.4.2 Framework of the programme

When designing an educational computer programme, it is important to examine three key words namely; course, unit and lesson. Course refers to a large structure taught over a period of time. It may in fact constitute the complete programme designed. Units are the parts of the course, often referred to as chapters, similar to that of a book. Many lessons would make up the parts of a unit. These lessons can further be divided into segments (Venesky & Osin, 1991:135). There are many different theories on the structure and outline of the design of a programme, however this simple

illustration in Figure 2.8 illustrates how all of these parts of the computer programme fit together in a logical and adaptable way.

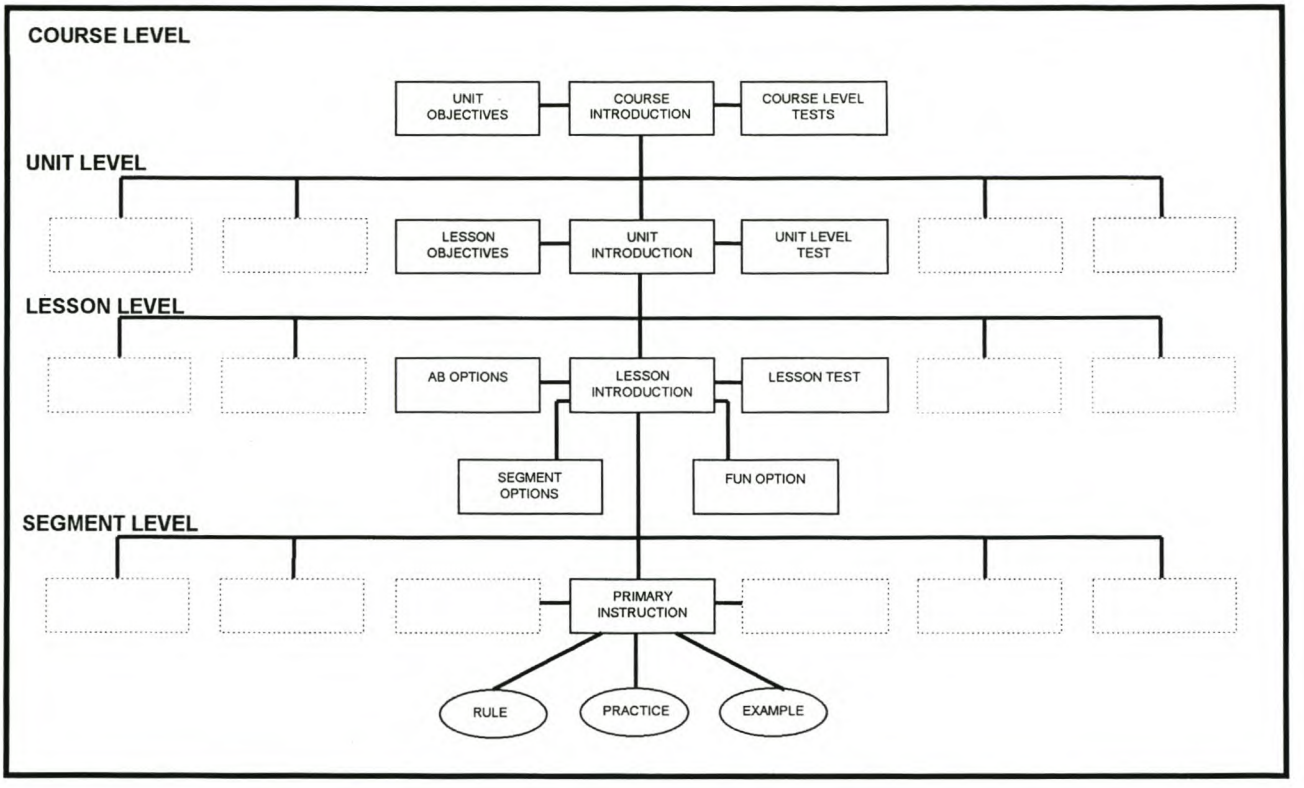

FIGURE 2.8: TICCIT COURSEWARE STRUCTURE (Venezky & Osin, 1991:141)

Criswell (1989:133) provides a detailed courseware plan following a similar pattern to that of Venezky and Osin (1991). Each topic and subtopic is also introduced, the learning, interaction and practice takes place, and once the topic has been reviewed and summarised, feedback is given to the learner. The subtopics are linked and all form a part of the main topic.

2.4.4.3 Structure of Lessons

Criswell (1989:7) referred to one of the design components as a carefully sequenced instruction. It is important that the programme follows a logical order and that each lesson follows the same sequence. This familiarises the learner with the programme and builds confidence and motivation.

The learner should constantly be building on previously learned material. Each sub section should reflect on knowledge already attained and build on it. Criswell (1989:7) has referred to a logical sequence of ten steps in instruction which is easily applied and adjusted to planning lessons. Due to its simplicity, a variety of topics could be sequenced through these steps. Figure 2.9 illustrates the process of information or instruction sequencing from the grasping of the students attention through to the feedback given.

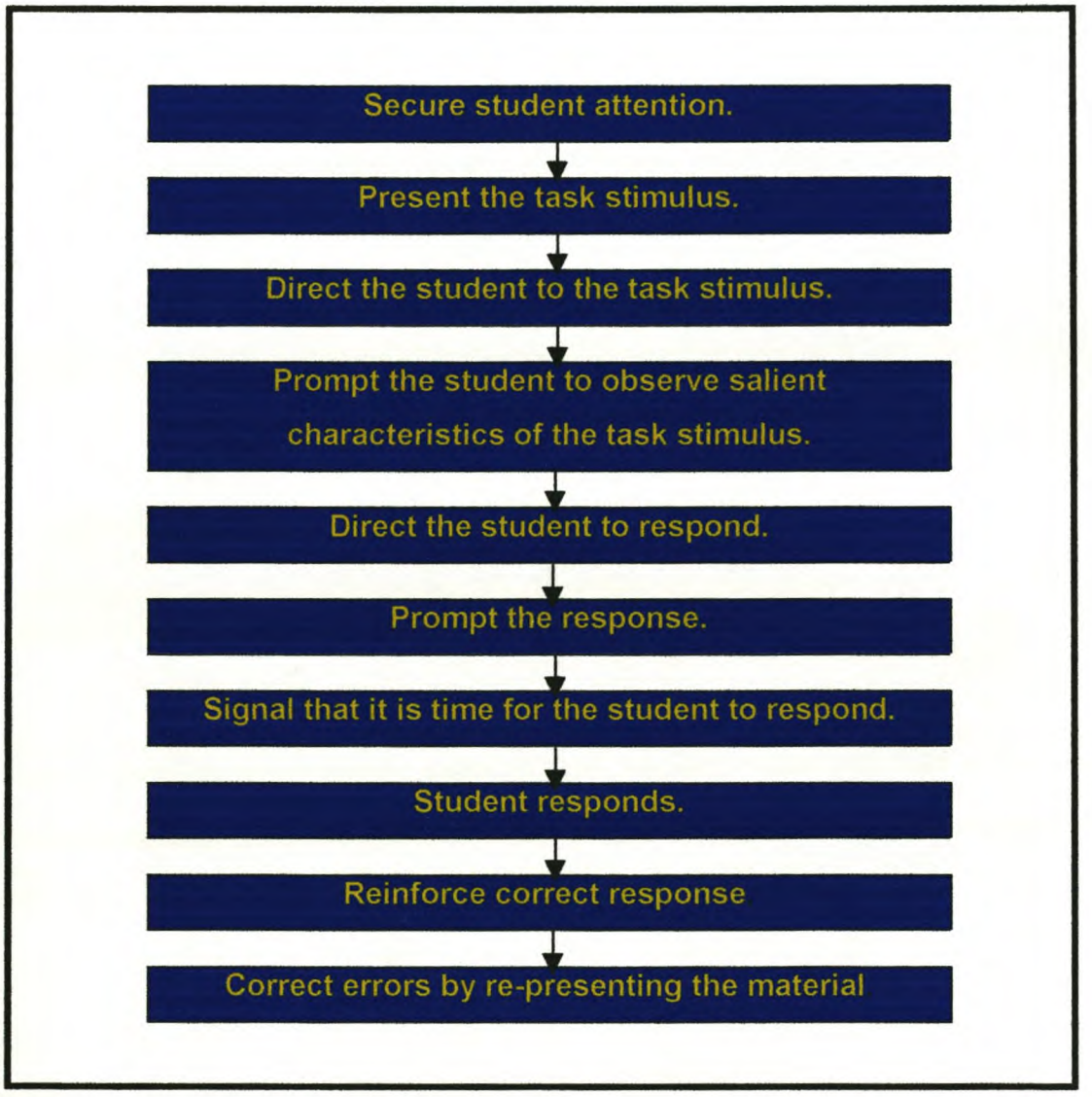

FIGURE 2.9: STEPS IN INSTRUCTION (Criswell, 1989:8)

The advantage of these guidelines is that they are not specifically aimed at CBI, but can be applied to any programme designed for learning. It is

therefore not limiting and follows basic educational principals. It also includes feedback and interaction, both very important at all levels of learning.

2.4.4.4 Properties of a Computer-based programme

For maximum results and benefits of the programme, it is essential to pay special attention to the properties.

One of the most important properties of the programme is the presentation of the text. According to Venezky and Osin (1991:217) the text must be precise and explicit. It must attune to the reading level of the learners and information must not be overloaded. Terminology, abbreviations and formats should be consistent and help the learner rather than hinder the progress. It is important that the learner remain active and interested in the information. Each screen should focus on one specific concept.

Chabay and Sherwood (1992:155) consider *'simple to be better'*. The use of blank space on the screen can be very effective. The mixture of text and graphics can clarify concepts, this however should be done carefully (Chabay & Sherwood, 1992:163). Different types of fonts should be minimised and stuck to throughout the programme (Chabay & Sherwood, 1992:159). Many different fonts can confuse the eye.

The font size and type and structure of the lines should be legible and make for easy reading. Should the text be spoken at the same time, this must be carefully synchronized (Venezky & Osin, 1991:218). Attention-getting devices should be used to focus the learners attention on important aspects. This, however should not be used unnecessarily. Colour, especially of graphics and animation, should enhance the programme and entice the learner. There should be a clearly established link between the graphics and the other components and they should aid in the comprehension of complex messages (Venezky & Osin, 1991:218-220).

The design of the programme should remain simple and gimmicks and unnecessary extras should be avoided. Letters, shapes, colours and sound should be mixed effectively to convey the message (Venezky & Osin, 1991:218). Should sound and audio effects be used, they should be clear and well synchronized (Venezky & Osin, 1991:224).

The technical aspects should be carefully considered and monitored to achieve maximum results. The presentation speed should be carefully considered (Venezky & Osin, 1991:218). A learner does not want to have to wait for the screen to show. This will result in loss of interest and motivation.

Provide the user with lots of control to move around within the programme (Chabay & Sherwood, 1992:179). Simple movement through the units and lessons of the programme is essential. A clear menu should be present as well and functional buttons to aid in movement between pages and sections (Venezky & Osin, 1991:220). Allow the information to flow from page to page, allowing for consistency in the displays and interactions (Chabay & Sherwood, 1992:168).

Interactivity, as reviewed previously in the literature, is essential in all computer programmes (Chabay & Sherwood, 1992:170). To keep the programme useful for all levels of understanding and previous educational experience, allow the learner to use the mouse rather than the keyboard. Pointing is often easier than typing (Chabay & Sherwood, 1992:173). This way the learner learns an additional skill of using the mouse of a computer.

Students should be given clear feedback on their progress. This could take the form of a quiz in which the learner can monitor his progress (Chabay & Sherwood, 1992:177). It is essential that the learner is clear on exactly what is expected of him/her. Clear instructions should be provided in a way that is easily understood (Chabay & Sherwood, 1992:174).

All of these properties must be considered when programming and the success of them may depend on the software used to develop the

programme. The authoring language used depends entirely on the programmer's personal preferences and skills.

2.5 SUMMARY

Given the current housing situation in South Africa, it is clear to see that there is a definite need for increased communication through education and training. Although the government has been the force behind this, it cannot meet this need alone. It requires help from all sectors.

The private sector has a wide circle of influence, owing to the number of employees. These employees range from low to high income and have varied levels of education and understanding. It is therefore the responsibility of individual companies to provide housing education and training to employees to increase their quality of life.

"Whether we like it or not, new forms of learning are with us" (Barker & Tucker, 1991:45). The potential for multimedia use is there, it is up to educators and facilitators to make us of it. It not only creates long term information benefits, but also the development of skills that would not normally be perfected (Barker & Tucker, 1991:45). The use of computers in developing countries has been encouraged in order for their technology to remain at a competitive level with that of industrial companies (Hawkridge, 1991:25). This is particularly essential in the private sector.

CBI is suitable to be used in all types of instruction, including business and industry. It can be utilized for components of instruction, or as a whole unit (Venezky & Osin, 1991:29). This makes it ideal for the workplace, as employees are able to vary their time spent on a certain component.

The challenge of housing education and training via the medium of computer-based training rests in the hands of the private sector. With it, they are able to make a difference!

CHAPTER 3

RESEARCH METHODOLOGY

Chapter 3 will focus on the research methodology used in the study. This chapter will present and discuss the research approach, universum and sampling and the measuring instrument used. It will provide a detailed account of each stage carried out during the research procedure.

3.1 RESEARCH METHOD

To achieve the objectives of this study, a quantitative, exploratory and descriptive survey research method was used (Babbie, 1989:80). This study was aimed at including a broad spectrum of companies throughout South Africa, from whom the data were collected.

The section which follows provides a detailed explanation of each stage involved in the research procedure.

3.2 RESEARCH PROCEDURE

3.2.1 STAGE 1: PREPARATION

Prior to the onset of the research, many knowledgeable people in the fields of housing, education and computers were spoken to. Computer programmers were consulted on the design of an educational computer-mediated housing programme and the viability of

it. The viability included finances as well as the use in the private sector. The housing situation in South Africa was discussed with knowledgeable people in the housing field. Employees of companies throughout South Africa were also consulted as to the implementation of such a programme and the viability in different companies in South Africa.

A review of literature was carried out. This included reviewing the current housing situation in the country and the contribution which the private sector could make; the educational and didactical methods of learning and transfer of information; and the most appropriate means employing these methods.

This provided a secure foundation for the next stage in the research study.

3.2.2 STAGE 2: UNIVERSUM AND SAMPLING

3.2.2.1 Sample

The universum and sampling method was done by means of a two step process. The universum consisted of those companies in South Africa identified and listed in the National Business Initiative's publication in 1998 as companies who offered employee housing assistance programmes or who planned to in the near future (National Business Initiative, 1998:51). This universum included 212 companies. Due to the nature of the country's economy, many of these companies no longer exist. To draw the sample, only those companies listed on the Johannesburg Stock Exchange (J.S.E) were included. This provided a sample of 112 companies (Addendum A).

The J.S.E. was used as it indicates the most recent list of South African companies and provides a certain level of financial success. The companies represented a wide variety of categories as can be seen in Figure 3.1.

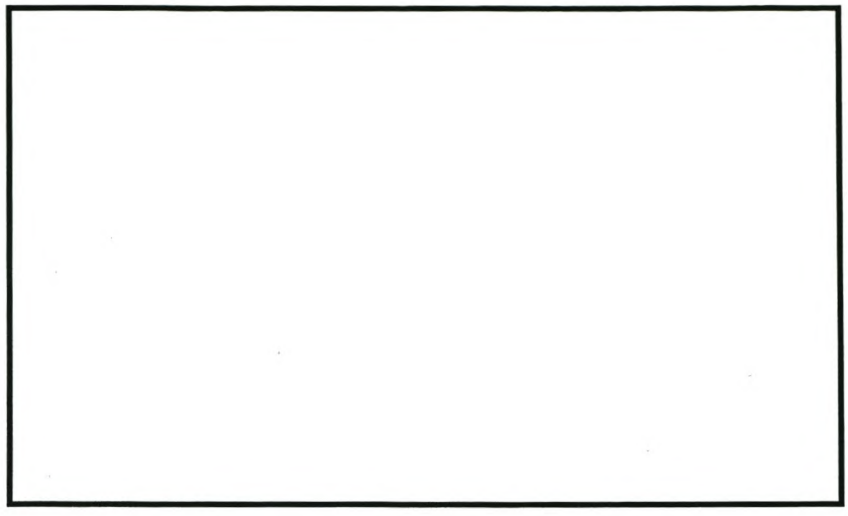

FIGURE: 3.1: DISTRIBUTION CATEGORIES OF SAMPLE COMPANIES

Figure 3.1 shows that in the sample, financial and manufacturing companies were in the majority with private services and chemical companies representing the smallest numbers.

3.2.2.2 Respondents

The respondent in each company was identified as being the person responsible for housing assistance and training of employees. In the case of most companies, this person was the Human Resources Manager.

Once the sample had been established, the questionnaire had to be designed and tested. This is recorded in the next stage.

3.2.3 STAGE 3: QUESTIONNAIRE DEVELOPMENT AND TESTING

This section will identify and explain the development and testing of the measuring instrument. This highlights its validity and reliability.

The survey was carried out using a structured collection process, by means of a postal questionnaire (see addendum B). Bickman & Rog (1998:22) support the use of a structured collection process as a good and sound research method.

The questionnaire addressed the following objectives:

- Establish the extent to which companies in South Africa provide employee housing assistance;
- Establish whether companies in South Africa, see an educational computer programme to be used as part of employee housing assistance, as a viable option;
- Determine what requirements companies have for an educational computer programme as part of employee housing assistance;
- Establish criteria for the development of an effective educational computer programme to be used by companies for employee housing assistance; and
- Determine relevant content for an effective educational computer programme to be used by companies for employee housing assistance.

For this study, a postal survey was seen as the most appropriate data collection method for a number of reasons. These include time limitations and geographic distribution of the various companies included in the study. Furthermore, postal surveys offer the following advantages, namely:

- lower expenses;
- allow for a wide geographic distribution;
- respondents can answer in their own time and at their own pace;
- privacy;
- respondents can see the context of the questions;
- no expectations from interviewer (Bickman & Rog, 1998:399; Bless & Higson-Smith, 1995:111).

Disadvantages of postal questionnaires include:

- low response rate;

- questionnaire not answered correctly;
- respondent leaving out questions;
- no control over the environment;
- bias often included (Babbie, 1989:241; Bickman & Rog 1998:400; Bless & Higson-Smith, 1995:112; Katzer, Cook & Crouch, 1991:183).

Both the advantages and disadvantages mentioned above were carefully considered during the initial planning stages of the research. The postal survey was, however seen as the most suitable method, given the objectives of the research.

3.2.3.1 Development of the questionnaire

For the construction of the postal questionnaire, the dendrogram technique was used. This is a theoretical structure which aids in formulating the questions on the lowest branching levels (Schutte, sa:2). See Addendum C for the dendrogram designed for the purpose of this research.

The questionnaire consists of structured, single and multiple choice questions, Likert-type questions and open-ended questions. The open-ended questions have been kept to a minimum due to the difficulty in coding them and their generation of inconsistent responses (Jackson, 1995:372; Babbie, 1983: 138).

Bickman and Rog, (1998:365), Jackson (1995:381) and Babbie (1983:139) all provide guidelines on how to avoid negatively influencing the response rate. Important factors which were taken into account were: the length, layout, and sequence, relevance and clarity of questions.

3.2.3.2 Testing the questionnaire

In order to increase internal content validity and eliminate flaws, the questionnaire was pre-tested. The questionnaire was tested among four local companies, and

adjustments were made according to their feedback. These were minor and included only slight changes to the layout of questions. It is essential to eliminate ambiguity and ensure that all respondents understand each question in an identical manner (Jackson, 1995:385). It is essential that postal questionnaires are checked and tested thoroughly, as it is the only link between the respondent and the researcher (Dixon, 1989:22). The researcher is in agreement with both Jackson (1995) and Dixon (1989) and incorporated their suggestions in the process.

3.2.4 STAGE 4: DATA COLLECTION

The data collection phase included a two-step procedure. This procedure is presented below.

3.2.4.1 Initial Telephone Survey

In order to ensure the best response rate possible, an initial telephone survey was carried out. This established the name of the person in each company who was directly responsible for employee assistance, in-house training and housing policies. Most of the companies identified their Human Resources Manager as the most appropriate person to speak to. This also served as a method to inform the person of the questionnaire and request that it be completed and returned promptly.

3.2.4.2 Postal Questionnaires

The first questionnaires were sent out on the 20th September 1999. The questionnaires were sent out accompanied by a covering letter (Addendum D), on a university letterhead, which informed the respondent of the value of the research and provided clearly detailed instructions on how to complete the questionnaire (Babbie, 1983:150). The envelope and covering letter was addressed to the respondent in person, ensuring that he/she would receive it and it would not get lost in the company's general mail.

This also eliminated time, which could have been wasted on the internal redistribution of mail in the company.

The respondents were asked to respond promptly and direct any queries to the researcher. Self-addressed, stamped envelopes were enclosed to allow for easy response. The researcher received calls from three of the companies who were not prepared to respond. They were requested to return the questionnaire uncompleted. Many companies returned their questionnaires via facsimile. After 3 ½ weeks (the time period given for response), only 22 questionnaires (19%) had been returned.

3.2.4.3 Facsimile reminders

On 20 October 1999 facsimile reminders (addendum E) were sent to all those companies, who had not yet responded, encouraging a prompt response (Bickman & Rog 1998:420; Leady, 1997:194). After another 2 ½ weeks, only two more questionnaires were received. Owing to the fact that a 50 % response rate in postal questionnaires is considered adequate, an alternative method had to be followed so as to enable the researcher to have an adequate number of questionnaires for statistical analysis (Bailey, 1987).

3.2.4.4 Telephone questionnaires

Using the same questionnaire, each respondent who had not yet returned the questionnaire was telephoned. The calls were made on the 22nd and 29th of November 1999. The researcher read each question, requiring the respondent to respond over the phone. This yielded another twenty-two completed questionnaires which represented a response rate of 59 %, which according to Bailey (1987), Babbie (1990:182) and Rea and Parker (1992:85), is an above adequate number for postal questionnaires. Over 60% is considered very good (Babbie, 1990:182). The 41% not returned or telephonically questioned may be accounted for by the relocation or closing down of companies, by a company policy not allowing respondents to participate in the survey

and other negativity towards the research and completion of questionnaires. Table 3.1 shows the response rate of the return of the questionnaire.

TABLE 3.1: RESPONSE RATE TO THE QUESTIONNAIRE

	DATE	FREQUENCY	CUMMULATIVE FREQUENCY	%
Postal questionnaires	20-Sep-99	22	22	19.6%
Fax reminder	20-Oct-99	2	24	21.4%
Telephone questionnaires	22-Nov-99	20	44	39.2%
	29-Nov-99	22	66	58.9%
TOTAL			**66**	**58.9%**

3.2.4.5 Potential Bias

Potential bias possibly resulted from the varying attitudes of respondents. Some were prepared to respond immediately, while others refused due to time limitation, despite being informed that the questionnaire would take approximately ten minutes.

The questionnaires answered over the telephone had the advantage that the respondent had the opportunity to ask for a question to be explained or clarified, should they not have understood. This was, however very seldom experienced by the researcher.

Respondents, over the phone, were captured into answering then and there. This may have resulted in a rushed attempt, however they were then not required to return the questionnaire via the post, unlike the postal respondents. The respondents of postal questionnaires were able to answer in their own time and venue.

Due to the potential bias of the postal and telephone questionnaires, the data was initially analysed separately.

These biases have been acknowledged and taken into account in the analysis of the data.

Since it was not the aim of this research to investigate differences between postal and telephonic responses to the questionnaire, these differences were not taken into account in the presentation of the data or the discussions of the results.

3.2.5 STAGE 5: STATISTICAL ANALYSIS

The data was coded, processed and organised using Microsoft Excel spreadsheets. Descriptive statistics were provided and analysed. Where appropriate, these statistics have been displayed in the form of tables, graphs or pie charts.

The stage involving the interpretation of the results and a discussion thereof, are provided in the following chapters (Chapter 4 and 5).

3.2.6 STAGE 6: DESIGN PLANS FOR AN EDUCATIONAL COMPUTER PROGRAMME

Information obtained form the survey formed the basis of the criteria and information content for the design and development of a visual interactive educational computer programme to be used as part of employee housing assistance. Design plans for the programme (course, unit and lesson plans) may be found in chapter 5.

3.2.7 STAGE 7: DEVELOPMENT OF A PILOT DEMONSTRATION MODULE

Due to the time, financial and skill limitations, a complete educational computer programme for the use of companies for employee housing assistance, was not able to be developed. A pilot demonstration module was designed instead, to indicate the

potential of the complete educational computer programme. Chapter 5 includes the detailed stages in the design process of the pilot demonstration module.

3.2.8 STAGE 8: PRELIMINARY OPINIONS ON THE PILOT DEMONSTRATION MODULE

Ten respondents were used to test the pilot demonstration module. A second questionnaire was compiled, to test the suitability of the pilot demonstration module. The questions were directly related to the content and elements of this pilot demonstration module and respondents were asked to provide their opinion using a five-point scale (Addendum F).

The design of the educational computer programme for housing advice and assistance was aimed at lower income employees of companies in South Africa. It was therefore essential to test whether the pilot demonstration module was suitably designed for the varying levels of knowledge and understanding of these employees. This was carried out on six of the ten respondents (60%).

Two of the ten respondents (20%) were grade nine learners and another two (20%) were high school teachers (Guidance/Life skills and Computer Studies). These respondents provided their opinions to determine the extent to which an educational computer programme for housing advice and assistance could be used beyond the private sector. These results outline the potential of such a programme being used in the South African school system.

Respondents were also asked to provide their overall opinion of the programme. The respondents were carefully observed while completing the pilot demonstration module and their actions and reactions recorded. These results, which are presented in Chapter 5 of this study, will provide guidelines for the future development of an educational computer programme for employee housing assistance.

CHAPTER 4

RESULTS AND DISCUSSION:
EMPLOYEE HOUSING ASSISTANCE IN COMPANIES

4.1 INTRODUCTION

The aim of this chapter is to present and discuss the results obtained from the survey. The results will be presented and discussed under the secondary objectives of this research, namely:

- Establishing the extent to which companies in South Africa provide employee housing assistance.
- Establishing whether companies in South Africa see an educational computer programme to be used as part of employee housing assistance, as a viable option.
- Determining the requirements that companies have for an educational computer programme for employee housing assistance.
- Establishing criteria for the development of an effective educational computer programme to be used by companies for employee housing assistance.
- Determining relevant content for an educational computer programme to be used by companies for employee housing assistance.

As was discussed in Chapter 3 (Research Methodology) both a telephonic (42) and a postal (24) survey was used in the data collection process. These results have been combined in the data tables.

4.2 THE EXTENT TO WHICH COMPANIES IN SOUTH AFRICA PROVIDE EMPLOYEE HOUSING ASSISTANCE

The first objective was to investigate the extent to which companies in South Africa provide employee housing assistance. The responses to questions 1, 2, 3, 4, 5, 6, 19 and 20 of the survey were used to provide the data pertaining to this objective.

This section identifies those companies who offer employee housing assistance, the type of housing related services offered to employees and the method by which they offer housing assistance.

It also examines the hours spent on this service as well as the costs involved. Also reported in this section, is the data pertaining to those companies who do not offer employee housing assistance. This section identifies and reports on why they did not offer such programmes, whether they were planning to in the near future, and if so, what they were planning to offer.

4.2.1 COMPANIES OFFERING EMPLOYEE HOUSING ASSISTANCE.

Question one of the questionnaire determines which housing-related services from those listed being offered to employees of the respondent companies.

This question was formulated specifically to determine how many companies actually offer any form of employee housing assistance, and where they do, what aspects of employee housing assistance are covered by these programmes.

Figure 4.1 reflects the number of companies, included in the survey, offering some form of housing related service to employees.

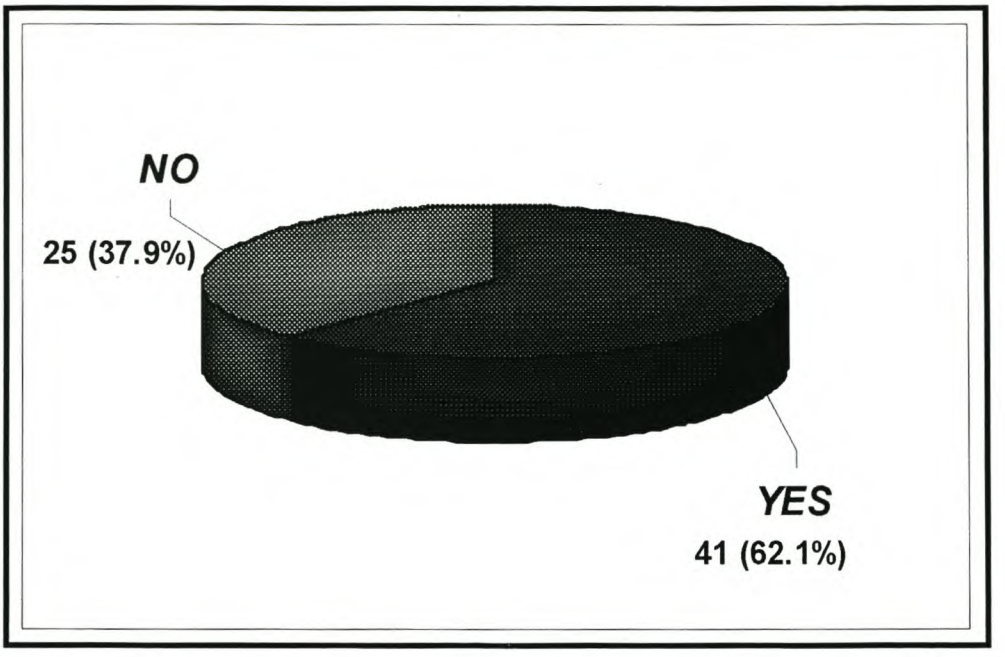

FIGURE 4.1:COMPANIES OFFERING EMPLOYEE HOUSING ASSISTANCE

It can be seen from Figure 4.1 that 62.1% of the companies approached offer employee housing assistance. Housing is a basic human need which should be addressed by companies to ensure a better quality of life for their employees. The results obtained here reflect an encouraging trend, indicating that companies are aware of the needs of their employees.

Research done by the National Business Initiative (1998:10) in 1998 received a similarly positive response. Seventy-nine percent of the companies which they surveyed, indicated that they offered employee housing assistance. The slight difference in response indicated between this research and that of the National Business Initiative (1998) may be as a result of many companies stopping their housing assistance due to the increasing financial costs of providing employee housing assistance. Financial institutions have taken over the supporting role in the housing process for the employees of many companies. Results to support this observation follow later in this chapter.

Although a large percentage of companies indicated that they offer some form of employee housing assistance, their response to question one indicated that this assistance is limited. It was essential to examine the type of assistance which they are offering.

4.2.2 DIFFERENT TYPES OF EMPLOYEE HOUSING ASSISTANCE BEING OFFERED BY COMPANIES IN SOUTH AFRICA

Forty-one of the surveyed companies currently offer some form of employee housing assistance. Table 4.1 categorizes the assistance according to the type of housing related service which they offer. Some of the companies indicated that they offered more than one type of assistance.

TABLE 4.1: TYPE OF EMPLOYEE HOUSING ASSISTANCE OFFERED BY COMPANIES

TYPE OF ASSISTANCE	NO	%	YES	%	TOTAL
A. Financial housing assistance	1	2.4	40	97.6	41
B. Administrative advice	26	63.4	15	36.6	41
C. Advice on housing issues	30	73.2	11	26.8	41
D. Advice on social matters	36	87.8	5	12.1	41
E. Practical housing advice	29	70.7	12	29.3	41

n=41

Table 4.1 indicates that 97.6 % of the 41 companies which offer housing related services to their employees, offer advice and assistance of a financial nature. Some of these companies also offered other forms of assistance in addition to financial aid.

The research determined that the majority of companies were either offering low interest housing loans through other financial institutions or allowing their employees to borrow from their provident funds, also at a low interest rate. Very few companies offer a non-repayable housing subsidy or housing allowance.

Figure 4.2 is a visual presentation of the data reported in Table 4.1.

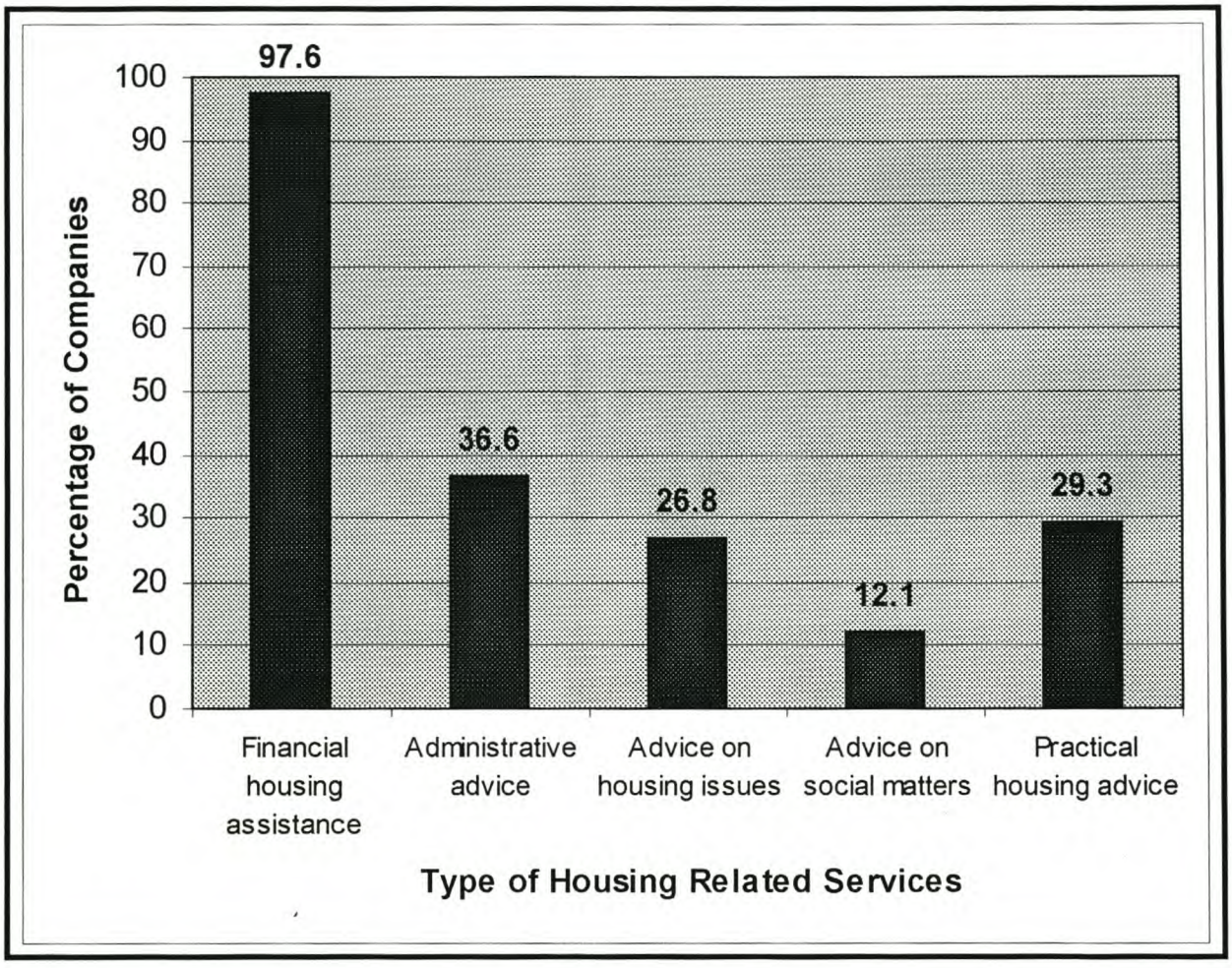

FIGURE 4.2: HOUSING RELATED SERVICES OFFERED (n=41)

It is clear from Figure 4.2 that although 97.6% of companies are offering financial assistance, there is very little advice provided on other housing-related issues. Given the social situation in South Africa today, advice on social housing issues is essential. People need to learn how to live together harmoniously and it is disappointing that only 12.1% of the companies offer advice on social matters related to housing, such as water conservation and recycling.

Administrative advice is offered to their employees by 36.6% of the companies. Judging by the large percentage of financial assistance provided, much of the administrative advice and assistance with loan application and budgeting is a back-up to issues relating to finance and not assistance with other non-financial issues related to housing.

Only 26.6 % of the companies indicated that they offer assistance on housing issues such as renting vs. purchasing; consumer rights and consumer responsibilities. The inclusion of such issues could contribute to solving some of the housing related problems currently experienced in South Africa. If problems such as land allocation, land value, sanitation and recycling – to name but a few – were addressed in employee housing assistance, the employees would have a better understanding of some of the contentious issues which surround the provision of housing.

Many of the housing problems in South Africa relate to the values and standards of different social groups as do other problems such as pollution, crime, drug and alcohol abuse. The strong connection between housing and societal problems has not yet been fully realized by companies, as well as how housing education and training, for employees, would benefit not only the employees themselves directly, but indirectly the country as a whole. Companies with well-informed and properly housed employees would form a more stable work force, which is committed to the company.

Practical housing advice is offered to their employees by 29.3% of the companies. This advice involves structural building and renovation guidance. It is an expensive form of advice, as it requires the expertise of knowledgeable people in this field. The expense of providing such a service is a possible reason why so few companies offer it.

Compared to the results of the National Business Initiative (1998), the present research reflects an increase in the provision of financial assistance to employees. The National Business Initiative (1998) indicated that 92% of companies offered financial housing assistance in forms such as loans, inclusion into basic remuneration, saving schemes

and rental agreements. The possible increase in the provision of financial housing assistance by companies from 92% (1998) to 97.6% found in the present study, could be as a result of the increasing financial cost involved in buying, renting and renovating of housing. Employers are now also recognizing their role and responsibility to employees to ensure harmonious living environments.

Companies need to increase the awareness of their employees on financial and other related housing knowledge in order to raise their standard of living. One way in which this could be achieved is through housing education and training.

The National Business Initiative (1998:10) reported that in 1998, 82% of the companies were offering housing related education and advice to employees. The findings of this study show this to be considerably lower. This is apparent in Figure 4.2 where less than 40% of the companies responded that they provided administrative advice, advice on housing issues, advice on social matters and practical housing. Possible reasons for this phenomenon are the expenses involved, budgetary restraints and cost and lack of available expertise.

The findings of this research do, however, support the statement made by the National Business Initiative (1998:10) that although many companies are providing employee housing assistance, these programmes are not sufficient and more extensive ones need to be established. The effectiveness and support of the housing process, needs to be increased an employee housing assistance plan which forms an integral part of current company training policies. In other words, all company training programmes should include housing-related units for their employees' benefit.

4.2.3 DIFFERENT METHODS OF PROVIDING EMPLOYEE HOUSING ASSISTANCE.

Question two investigated the way in which assistance is provided, which is indication of the quality housing assistance provided to employees.

Companies provide housing assistance using a variety of methods. These methods are shown in Table 4.2. Individual advice is clearly the most favoured method employed by companies (87.8%). Group advice is sometimes used (7.3%) as is giving out brochures and pamphlets (12.2%). Self study methods, lectures and Computer Aided Training are not used by the companies in the survey.

TABLE 4.2: METHODS OF OFFERING EMPLOYEE HOUSING ASSISTANCE

QUESTION	NO	%	YES	%	TOTAL
A. Individual advice	5	12.1	36	87.8	41
B. Group advice	38	92.7	3	7.3	41
C. Self study modules	41	100	0	0.00	41
D. Lectures	41	100	0	0.00	41
E. Brochures / Pamphlets	36	87.8	5	12.2	41
F. Computer aided teaching	41	100	0	0.00	41

n=41

A possible explanation for the preferred use of individual above group and other types of advice is that, given the financial costs involved, individual advice requires less preparation and development of material than the other methods of presentation. Individual and group advice is presented on a 'need-to-know' basis which is ideal for many employees. For many companies, it is also an easier alternative than printing booklets or brochures, or preparing lectures and self study notes.

Individual Advice

The high response for individual advice (87.8 %) may be a direct result of the employees' preference for confidentiality about their financial affairs. Furthermore, the

employees are not intimidated by a large group and are able to ask questions and gain information relevant to their own housing situation and need. Since most of the housing assistance provided by companies is financial assistance, individual advice may appear to be the most suitable method, given the varying dynamics of income, expenditures and financial situations of the current South African population. Companies who do not offer employee housing assistance may have chosen this route due to the costs involved in employing a specific person for the purpose of offering housing assistance.

Group Advice

There was a small group of respondents (7.3 %) who indicated that group advice is the method in which their employee housing assistance is presented. Group advice is a difficult method of presentation, as it requires all of the employees in the group to have similar needs to be addressed and similar levels of education and understanding. As reported in the literature review (Chapter 2), this is almost impossible, given the varying levels of understanding and comprehension of the South African society.

Brochures/Pamphlets

Only 12.2% of the companies responded that they used brochures and pamphlets. This is surprising, as it is one of the least time consuming and cost-effective methods of distributing information. There are agencies such as banks which provide brochures to the company so that the development cost is not born by the company which merely distributes the brochures as required. The low response regarding this could be the result of a lack of availability of suitable brochures and pamphlets and companies not necessarily having the knowledge, skills or resources to develop their own material.

Lectures

The 0 % response to lectures is not surprising. Given the level of knowledge and understanding of the majority of the employees who use housing assistance (other than financial), lectures are not a suitable method. Lower income employees will not feel comfortable with sitting in a lesson where someone teaches / lectures them on facts. This is also not a beneficial method for the employers. For this method to be cost-

effective for a company, larger numbers of employees would have to attend such lectures. This would mean time-on-the-job would be lost while workers were attending lectures, company productivity could be compromised.

Computer-aided Instruction

Despite research (Chance, 1993:151) indicating a high success rate when utilizing computer-aided instruction for in-house training, the present research findings indicate that none of the surveyed companies offer housing assistance to their employees by means of the computer and computer-aided instruction. Computers offer individualised learning as often as needed, in a cost-effective way (Barker & Tucker, 1990:27; Chabay & Sherwood, 1992:153). Computers are an ideal in-house training method for companies and there are many advantages of using this method. The 0 % response obtained in this study, could be because there is no appropriate computer programme available for companies to use in providing employee housing assistance.

The method of presentation must be directly related to the needs of the recipients of the employee housing assistance. Companies consist of a variety of different employees, all with different levels of understanding and needs. Companies should ensure that the employee housing assistance which they offer is adaptable to each employee's level of comprehension. This would be made possible through computer aided instruction.

4.2.4 EMPLOYEES RECEIVING HOUSING ASSISTANCE IN COMPANIES

Question four of the questionnaire aimed to examine which employees receive housing assistance.

Table 4.3 indicates which employees, within the companies, are receiving and making use of housing assistance.

TABLE 4.3: EMPLOYEES WHO RECEIVE HOUSING ASSISTANCE

EMPLOYEES	NO	%	YES	%	TOTAL
Administrative employees	8	19.5	33	80.5	41
Management	14	34.1	27	65.9	41
Other	4	9.7	37	90.3	41

n=41

Table 4.3 shows that there is a wide range of employees who receive housing assistance. Thirty-three companies (80.5%) indicated that their administrative employees received housing assistance, 27 companies (65.9%) indicated their management received housing assistance while 37 companies (90.3%) indicated that other employees in their company received housing assistance in some form.

Figure 4.3 shows a fairly even distribution of recipients of housing assistance from management to other employees.

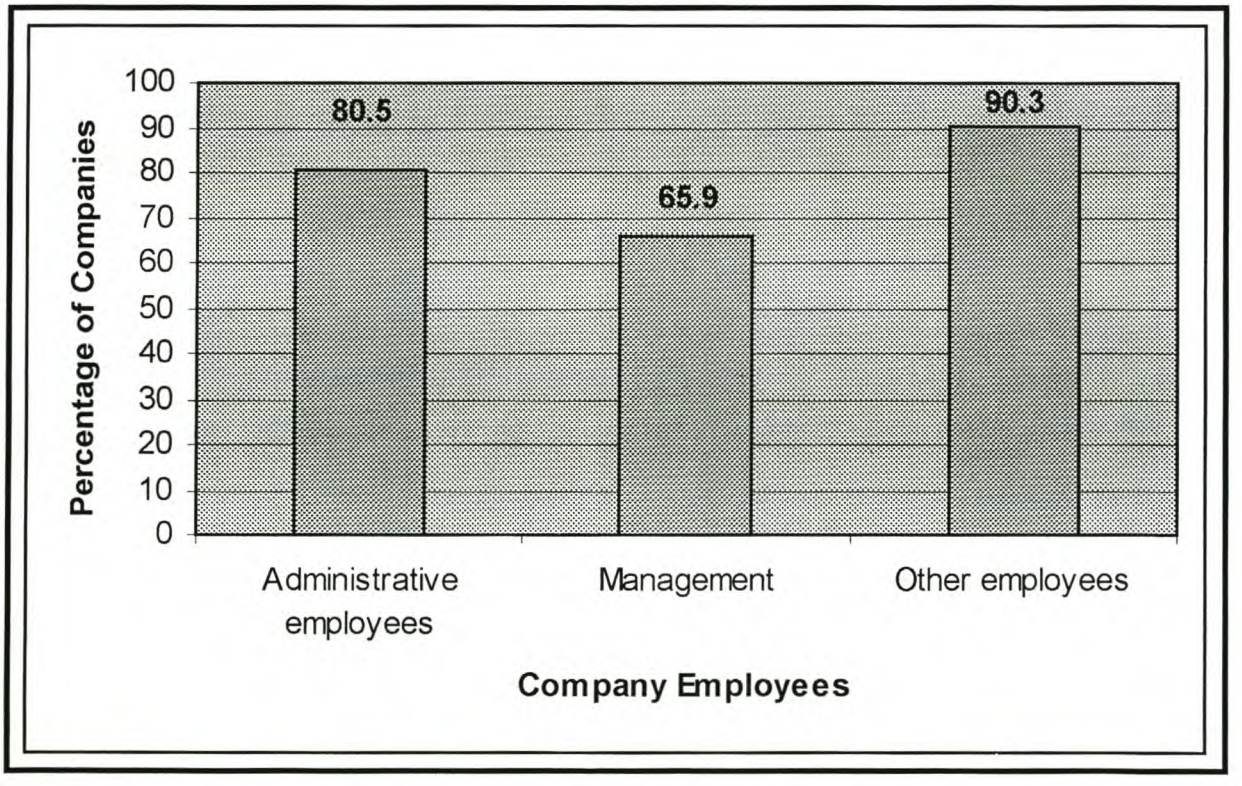

FIGURE 4.3: EMPLOYEES RECEIVING HOUSING ASSISTANCE (n=41)

The 'Other' refers to all the employees other than management and administrative, in the company. The respondents that indicated 'other', specified low income employees or all of the employees in the company.

These results are directly linked to the type of housing assistance offered. Table 4.1 showed that 97.6% of the companies offer housing assistance of a financial nature. This would appeal to all employees of a company and not just a certain group. This is a possible reason for the fairly even distribution of categories of employees receiving housing assistance.

Had greater emphasis been placed in giving advice and other housing-related assistance, rather than purely financial aid within the respondent companies, it is possible that this service would have been provided more to the lower income employees. As it is, the financial assistance available is distributed to all of the employees, including the management and the administrative employees.

It is probable that companies would offer housing advice and assistance (as opposed to mere financial assistance) if it were considered cost-effective since they would wish their employees to be well-informed about the many other aspects of which go together with the giving of financial aid.

4.2.5 HOURS SPENT ON EMPLOYEE HOUSING ASSISTANCE BY COMPANIES

In question 3 of the survey, companies were requested to indicate the number of hours per week allocated to employee housing assistance. The result was poor and inconclusive as only 6 companies responded to the question. Table 4.4 shows this response.

TABLE 4.4: HOURS SPENT ON EMPLOYEE HOUSING ASSISTANCE PER WEEK

	MEAN	MEDIAN	MIN	MAX	Std.Dev
NUMBER OF MAN-HOURS	58	23	1	260	100

n = 6

The low response is probably a direct result of the companies' preference for giving financial assistance to their employees for housing rather than spending time giving advice. It is therefore more relevant to them to measure assistance in terms of rands/cents rather than in terms of hours.

Of the six that did reply the variation in the time spent was from 1 hour per week to two-hundred-and-sixty man-hours per week. Time spent on housing advice by companies would be affected by factors such as size of the company, actual demand for information by employees and the attitude of the company towards staff training/development. Cost would obviously be a central factor. Employing knowledgeable people in an advisory capacity could be exorbitant.

A method of providing the necessary information which is both cost-effective and makes advice available on demand, would be the answer to most companies' needs. This could be achieved by computer-based instruction which is both cost-effective and can be used when needed (Moonen, 1987:87; Mühlhäuser, 1995:43).

4.2.6 COST OF EMPLOYEE HOUSING ASSISTANCE PROVIDED BY COMPANIES

Question five of the questionnaire asked for an indication of what the annual cost of the employee housing assistance was to the company.

TABLE 4.5: ANNUAL COST OF EMPLOYEE HOUSING ASSISTANCE PER COMPANY

	MIN	MAX	MEAN	MEDIAN	Std.Dev.
AMOUNT IN RANDS	0	7 000 000	1 162 967	40 000	2275125

n = 9

Table 4.5 indicates the amounts in rands that companies spend on employee housing assistance per year. This question was only answered by 9 respondents which might reflect a reluctance to release information on financial aspects of the company.

Another reason may have been the ambiguity of the question. Respondents may not have been clear whether to declare the amounts spent on financial assistance or to limit this to actual amounts spent on housing advice and assistance.

The poor response to this question did not allow for comprehensive discussion. The maximum figure in Table 4.5 (R7 000 000), however does indicate that there are companies willing to spend large amounts of money on housing assistance for their employees.

4.2.7 ANNUAL NUMBER OF EMPLOYEES THAT RECEIVE HOUSING ASSISTANCE

Question six of the questionnaire investigated how many company employees the service reached per year.

The number of employees receiving assistance is relevant to the size of the company and a good deal of variation is therefore to be expected. Table 4.7 indicates the responses of the companies to the question and shows that large companies have several thousand recipients (30 000) while others have very few (7).

TABLE 4.6: ANNUAL NUMBER OF EMPLOYEES RECEIVING HOUSING ASSISTANCE

	MIN	MAX	MEAN	MEDIAN	Std.Dev.
NUMBER OF EMPLOYEES	7	30 000	5 328	2 000	7746

n = 37

From question one of the questionnaire, which determined the type of employee housing assistance offered, it is already known that companies do not offer proper housing education and training together with financial aid. Given the large number of employees in the private sector, this is cause for concern. The Department of Housing (1994a:40) stresses the great influence which the private sector can have on a large part of the population by offering training to their own employees and through them, to the community at large.

Companies should ensure that the quality of the employee housing assistance that they offer does not decrease in the face of large, and ever increasing, numbers of employees. The method of transfer of this housing assistance should be carefully considered. Certain methods are just not appropriate for large groups. An example of this is personalized individual advice. Although an ideal situation, unfortunately this is not cost-effective. One person would not be able to deal with the needs of several thousand individuals. Computer-based training is therefore an ideal alternative. It combines an individual approach to learning and at the same time, creates a cost-effective resource which can be used many learners (Barker & Tucker, 1990:20).

4.2.8 REASONS FOR COMPANIES NOT OFFERING EMPLOYEE HOUSING ASSISTANCE

Question 19 of the questionnaire asked for respondents to state reasons for not offering employee housing assistance.

Table 4.7 summerises these reasons. It should be noted that the number of responses exceeds the number of respondents as they were free to provide more than one reason for not offering employee housing assistance.

TABLE 4.7: REASONS WHY COMPANIES DO NOT OFFER EMPLOYEE HOUSING ASSISTANCE

REASON	NO	%	YES	%	TOTAL
Employees do not need housing assistance	25	100.0	0	0.0	25
Employees do not want housing assistance	25	100.0	0	0.0	25
Other institutions provide housing assistance for employees	16	64.0	9	36.0	25
Company cannot afford to provide housing assistance	12	48.0	13	52.0	25
Company has not yet identified the need to supply housing assistance	18	72.0	7	28.0	25
"Other" reasons	15	60.0	10	40.0	25

n=25 (total number of responses exceeds the number of respondents)

The results contained in Table 4.7 are encouraging in that no companies responded that employees do not need housing assistance or do not want housing assistance. This indicates that even those companies who do not offer housing assistance to their employees, recognise that there could be both a demand and a need for it. Nine companies (36.0%) indicated that this assistance is provided by other institutions. Companies were asked to specify which institutions provided such assistance. All those

who responded indicated that assistance was provided by financial institutions, banks being the most important source.

Given the nature of financial institutions, their main task is to provide financial assistance although some banks and financial institutions do offer advice, guidance and general education on housing issues in the form of brochures, information booklets and personal consultations.

Thirteen companies (52%) who offer no housing assistance to employees indicated that they were not able to afford to supply their employees with housing assistance and assistance on housing issues. This once again suggests that the majority of companies assume housing assistance implies and is limited to financial assistance in the form of housing allowances and possibly do not understand that assistance should include advice and guidance on housing-related matters. These are just as essential and should be offered in conjunction with financial assistance in a well-formulated housing assistance programme.

Seven companies (28%) have not yet identified the need for housing assistance. A possible reason for this could be that they have not surveyed the opinions of their employees.

The 10 companies (40%) who provided 'other' reasons, mostly indicated in their specification that their company was too small to provide housing assistance to their employees. The majority of them were part of the 52% who indicated that their company could not afford to provide housing assistance for their employees. This again indicates the misconception which companies have that employee housing assistance refers to providing, in essence, financial assistance.

Companies should be informed that they do not necessarily need to provide financial assistance, but that employee housing assistance also refers to housing education and

training which is equally, if not more important than the financial assistance and could be affordable to companies of varying sizes.

4.2.9 FUTURE ESTABLISHMENT OF EMPLOYEE HOUSING ASSISTANCE BY COMPANIES

Question 20 of the questionnaire requested respondents to indicate whether the company plans to provide any housing related assistance to employees in the near future. None (0%) of the 25 companies which indicated that they do not offer housing assistance to their employees, plans to establish this service in the future.

The reasons given are directly linked with the responses of question 19, which required the respondents to indicate the reasons for them not offering employee housing assistance. Table 4.7 indicated clearly that a major concern was the expense involved in setting up such a programme, especially when other institutions were able to offer assistance to their employees.

It is of concern that companies are overlooking the value of offering housing–related educational programmes to their employees. Educational programmes are directly related to the upliftment of the community. This brings into focus the whole issue of social responsibility. Companies need to be properly informed of the value of housing-related assistance and be persuaded to introduce this as part of their social responsibility.

Since computer-aided instruction is considered to be cost-effective (Moolen, 1990:20), a company which appreciates the value of such education and training should not find it a financial burden to introduce housing assistance and would certainly enhance their social responsibility undertakings to their employees and the community.

Multimedia programmes in particular would assist low income employees in learning and mastering new skills on the computer and gain information relating to their own responsibilities as home owners and knowledge about acquiring and caring for their home. This would benefit not only themselves, but also their communities as information would be disseminated to others in the course of informal communication (Driscoll, 1994:59). Furthermore, the company would benefit from having employees who were able to work a computer.

4.3 THE VIABILITY OF USING AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

The second objective of the study was to investigate whether companies see an educational computer programme as a viable option to be used as part of an employee housing assistance – should one be available.

The data pertaining to this objective was obtained from the responses to questions 7-15. These concerned only companies which already offered employee housing assistance.

These questions examine the current computer facilities of the companies as well as computer access and usage. It determined the companies' opinions of an educational computer programme on housing advice and assistance and the possible benefits of such a programme to individual employees as well as the company as a whole.

4.3.1 COMPUTER FACILITIES WITHIN COMPANIES INCLUDED IN THE SURVEY

Question seven of the questionnaire established whether the company had computers/computer facilities. This question was necessary to establish whether the

companies in the survey have the facilities which would be required to run a multimedia programme, should one be available.

It was clear from the responses that computer facilities as such are not a problem as all 41 companies currently offering or are considering offering employee housing assistance (100%) indicated that they have such facilities available. This is hardly surprising as to conduct business in today's world has become almost impossible without the use of a computer. Clearly, computers have become an integral part of the business world. This is supported by the literature review which has already made several references to the rapid technological changes taking place world-wide.

Despite the fact that not all the companies in the survey offer employee housing assistance, all of them (100%) indicated that they have computer facilities available. It may therefore be concluded that all of them would be able to make use of an educational computer programme as part of employee housing assistance.

This implies that such computer programmes could easily be incorporated into any employee training offered within a company. Furthermore, a computer programme would be cost-effective as it would not require a specific person to provide the employee housing assistance. It could make use of the training officers already employed to run other parts of the employee training units, or, in some companies, could fall into the portfolio of virtually anyone who could assist others to use a computer.

4.3.2 THE USE OF COMPUTERS BY COMPANIES THAT OFFER EMPLOYEE HOUSING ASSISTANCE

Question eight of the questionnaire asked what the companies use computers for.

Table 4.8 highlights the ways in which computers are utilized in the companies in the survey. It reveals that all (100%) of the companies which offer employee housing assistance use computers for administrative purposes.

TABLE 4.8: USE OF COMPUTERS IN COMPANIES THAT OFFER EMPLOYEE HOUSING ASSISTANCE

USE OF COMPUTERS	NO	%	YES	%	TOTAL
Training	20	48.8	21	51.2	41
Administration	0	0.00	41	100	41
Other	35	85.3	6	14.6	41

n=41

About half (51.2%) of the respondents indicate that the company uses computers for training purposes. The questionnaire did not provide a specification of the types of training, but it could be assumed that most of this would be training relevant to the companies' direct needs, while employee housing assistance is geared towards the individual and would be of indirect benefit to the company. Apart form administrative uses, computers are used for operational functions such as assembly lines and manufacturing the companies' products on large machinery and other equipment and employees would need training for these specific functions.

The fact that more than half of the companies which already offer employee housing assistance already use computers for training means that they must make use of some sort of computer-based training programmes. It should therefore be relatively easy to introduce an educational computer programme for housing assistance.

These research findings are in line with Barker and Tucker (1990:27) who report that many companies are providing in-house training for employees. Research carried out by Barron and Orwig (1995:3) indicated that 45% of companies included in their study were found to be using computer-aided instruction, and in particular, multimedia programmes.

When comparing the results of Barron and Orwig (1995) to the present study, it can be noted that over the past five years technology has been increasingly used in industry

and in companies throughout South Africa. In fact, many companies are having to adapt rapidly to the technological advances happening in the larger system and with time are also realizing the benefits of their technological advancement.

The benefits of computer-based instruction make it an ideal method of in-house training, where costs, time and facilitators are decreased to minimum requirements (Barker & Tucker, 1990:27; Wolfson, 1993:93).

4.3.3 EMPLOYEE UTILIZATION OF COMPUTER FACILITIES IN COMPANIES OFFERING EMPLOYEE HOUSING ASSISTANCE

The purpose of question nine of the questionnaire was to find out which employees made the most use of the available computers in the forty-one companies offering employee housing assistance. The question distinguished between employees in the management and administrative sectors and also made provision for identifying other groups of employees which did not fall directly into either of the above categories.

Table 4.9 indicates the different categories of employees who use the computer facilities of companies offering employee housing assistance.

TABLE 4.9: EMPLOYEES WHO USE THE COMPUTER FACILITIES IN COMPANIES

EMPLOYEES	NO	%	YES	%	TOTAL
Management	4	9.8	37	90.2	41
Administration	2	4.9	39	95.1	41
Other	17	41.5	24	58.5	41

n=41

Management

Of the 41 companies in the survey who indicated that they offer employee housing assistance, 37 (90.2%) reported that their managerial staff made use of the computer

facilities. This is not surprising since management would need to access essential information stored in company computers. Furthermore, communication within the company as well as with outside agencies would be facilitated through the use of e-mail / Internet by the management corps. In the business world of today, communication by means of the computer is no longer a luxury, but an essential element of business transactions.

Administration

Of the 41 companies in the survey which indicated that they offer employee housing assistance, 39 (95.1%) indicated that their computers were used by administrative staff. This high utilization of computers by administrative employees is to be expected as most companies would keep computerized records and use the computer for a multitude of administrative purposes.

Other Employees

Of the 41 companies which offer employee housing assistance, 24 (58.5%) indicated that there were also groups of employees, other than management and administration which made use of the computer facilities. When asked to specify who these "other" groups were, they identified a heterogeneous group of all employees which mostly fell into the low income group of employees.

This suggests that some low income employees have some basic computer literacy and computer operational skills. Companies could introduce an educational computer programme for employee housing assistance with the expectation that their employees would have enough basic knowledge of the computer to be able to operate it.

Such a programme would not only provide housing education and training but also add to the employees' computer skills which benefit them personally and the company in the long term.

4.3.4 INTERNET ACCESS AND CD-ROM FACILITIES OF COMPANY COMPUTERS

Question 10 of the questionnaire was posed to provide information regarding the availability of CD-ROM and Internet facilities which would be essential for computerized employee housing assistance.

Figure 4.4 indicates that 90.2% of the companies in the survey, who offer employee housing assistance have CD-ROM facilities while 95.1% have access to the Internet.

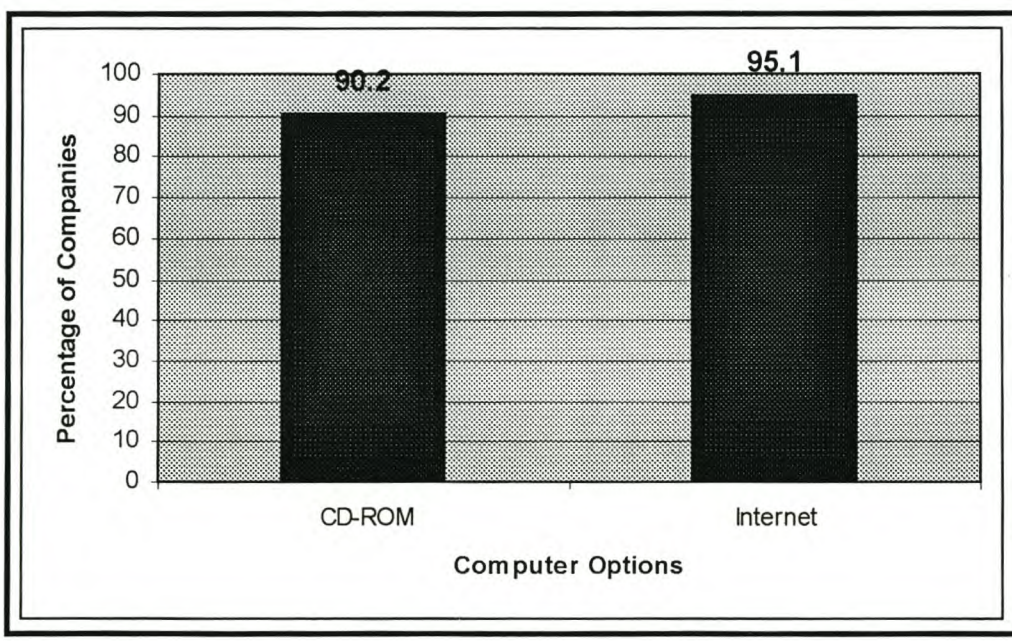

FIGURE 4.4: COMPANIES WITH ACCESS TO CD-ROM AND INTERNET (n=41)

These statistics do not imply that every computer in the company is equipped with CD-ROM and Internet, but the company does have access to them. This high response suggests that the computer technology in these companies is fairly advanced and an educational computer programme used as part of their employee housing assistance would be easily accessible to the employees via CD-ROM or Internet. The findings therefore substantiate the feasibility of utilizing existing computer technology such as CD-ROM and Internet for the development of an educational computer programme on

housing advice and assistance. CD-ROM and Internet would provide a cost-effective and relatively easy method of distributing such a computer-based programme to companies.

4.3.5 DESIRABLITY OF AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

Question 11 of the questionnaire asked whether respondents thought that their company would consider a visual interactive multi-media computer programme to provide housing advice and assistance for its employees.

It was necessary to gauge whether the companies which already offer employee housing assistance felt that there was a need for such a programme and whether or not they would utilise it. The question was open-ended, giving the respondents from the 41 companies who offer employee housing assistance, the opportunity to state an opinion. The outcome however, could be categorized as having either a positive or a negative overtone. Figure 4.5 illustrates the responses.

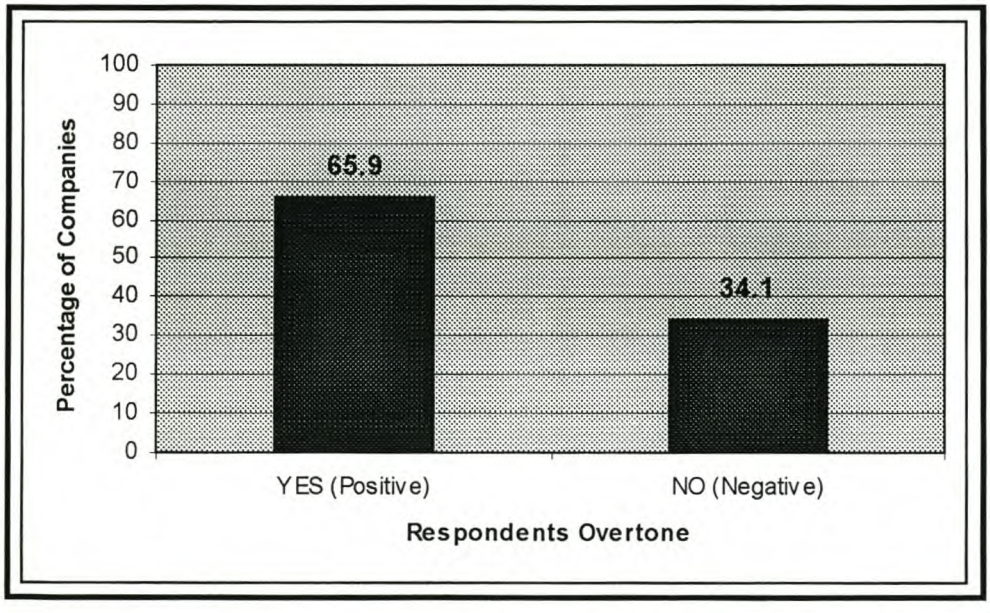

FIGURE 4.5: DESIRABILITY OF AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE (n=41)

Of the 41 companies which offer employee housing assistance, 27 (65.9%) responded that they would make use of such a programme if it were available. This positive response suggests that there are companies which are willing to try new ideas regarding housing assistance programmes for their employees.

4.3.6 BENEFITS OF AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE IN COMPANIES

Question 12 of the questionnaire asked whether the respondents thought their company would benefit from a visual interactive multimedia computer programme on housing advice and assistance.

The 27 (65.9%) companies who had responded positively to Question 11, which asked whether the companies who offered employee housing assistance would obtain/purchase a visual interactive multimedia programme, also felt that such a programme would benefit their company.

The 14 remaining companies who did not think such a programme would be beneficial, did not provide any specific motivation for their negative response, although they were given a space on the questionnaire to do so. Those respondents who completed the questionnaire telephonically and did not offer any motivation for the negative response, could not be prompted to do so. This would have created unwanted bias.

This lack of motivating response could have been due to the fact that the person responsible for human resources, who completed the questionnaire, may have given a personal opinion on the previous question. This does not necessarily reflect the opinions of the company.

The reason for giving no motivation for the negative response in this question may be indicative of a lack of will on the part of the company as reflected by the respondent.

4.3.7 EMPLOYEES TO WHOM COMPANIES WOULD PROVIDE AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING

Question 13 of the questionnaire aimed to identify the groups of employees within the company who were most likely to be exposed to an educational computer programme on housing advice and assistance, if one were available.

Table 4.10 summarizes the responses of the 27 respondents of companies who offer some form of employee housing assistance and who originally stated in Question 12 that their company would benefit from a visual interactive multimedia computer programme.

TABLE 4.10: EMPLOYEES TO WHOM COMPANIES WOULD PROVIDE AN EDUCATIONAL COMPUTER PROGRAMME

EMPLOYEES	NO	%	YES	%	TOTAL
Administrative employees	12	44.4	15	55.6	27
Management	11	40.7	16	59.3	27
Other employees	2	7.4	25	92.6	27

n=27

Of the 27 companies, 15 (55.6%) stated that they would offer the programme to the administrative staff, while 12 (44.4%) indicated that they would not. This response could mean that administrative staff in some companies may already be exposed to relevant housing information for example, bank employees, and that they would therefore have no need for a special educational programme on housing.

Of the companies in the survey already offering some form of employee housing assistance, 16 (59.3%) indicated that they would make such an educational computer programme available to their management staff while 11 companies (40.7%) would not.

Despite the blurring of the lines between the administration and management groups of employees, there seems to be a clear interest in offering a visual multimedia programme to both administrative and management sectors.

There is no doubt about the inclination from company respondents towards offering an educational computer programme to the "other" employees (low income employees) as 25 of the 27 companies have reacted positively to this (92.6%). This suggests that there are companies who are open to the introduction of such a programme and that feel it would be beneficial to low income employees, of the company.

These findings reflect on the respondent companies regard for the importance of housing education for all employees and not just a selected few. They see a very strong need for this amongst the low income employees in the company, who need to be educated on housing in order to increase their standard of living. This is becoming increasingly more important owing to the increase in population growth of the lower income group. Housing education and training is needed to improve this situation (Department of Housing 1994a:11).

4.3.8 EMPLOYEE BENEFITS FROM AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING ADVICE AND ASSISTANCE

Question 14 of the questionnaire aimed to establish ways in which employees would benefit from an educational computer programme on housing advice and assistance.

Respondents were requested to indicate, on a 5-point scale, whether they agreed of disagreed with four specified beneficial outcomes and were given the opportunity to add any other benefits which had not been stated.

Table 4.11 contains the responses of the 27 companies which felt they would make use of an educational computer programme on housing advice and assistance.

TABLE 4.11: BENEFITS TO EMPLOYEES WHEN USING AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING ADVICE AND ASSISTANCE

	STRONGLY DISAGREE								STRONGLY AGREE		
BENEFIT	1	%	2	%	3	%	4	%	5	%	TOTAL
Increased motivation	0	0.00	1	3.7	5	18.6	9	33.3	12	44.4	27
Increased satisfaction	0	0.00	1	3.7	4	14.8	13	48.1	9	33.3	27
Increased knowledge	0	0.00	0	0.00	1	3.7	7	25.9	19	70.3	27
Additional skills	0	0.00	0	0.00	3	11.1	8	29.6	16	59.2	27

n=27

Increased Motivation

Of the 27 companies which would use an educational computer programme for housing advice and assistance, 12 (44.4%) *agreed strongly* that they thought the motivation of the employees would increase after having used such a programme. A further 9 companies (33.3%) also *agreed* with the statement. This positive response from 21 companies (77.7%) was very encouraging, and showed the positive effect which an educational computer programme on housing advice and assistance could have on those employees to which it was offered.

Increased satisfaction

There were 9 respondents (33.3%) who *agreed strongly* that their company's employees would benefit from an educational computer programme on housing by showing or feeling increased satisfaction with their work situation. Thirteen other

respondents (48.1%) also *agreed* with this statement which gave an overall positive response of 81.2%. An improved living environment can motivate employees to improve their performance and productivity in their job. This contributes to both life satisfaction and that in the work place (National Business Initiative, 1998:4).

Increased Knowledge

The overall response to this suggested beneficial outcome from the introduction of an educational computer programme on housing was very positive. Nineteen companies (70.3%) *agreed strongly* with the statement with another 7 (25.9%) showing *agreement.* This strong response of a total of 96.2% indicates that the feeling is that employees will have positive gains in knowledge from such a programme. Employees, after completing an educational computer programme on housing advice and assistance, will experience an increase of knowledge in both housing awareness and the use of a computer.

Additional Skills

Respondents indicated that there would be other skills learned from an educational computer programme on housing. There were 16 companies (59.2%) in the survey which indicated *strong agreement* about this while 8 companies (29.6%) *agreed.* This provided yet another positive overall response of 88.8%

If the results of the question conceiving the areas in which employees would benefit from using an educational computer programme on housing are summed up, it appears that respondents *strongly agree* that there are direct benefits to be gained. Increased motivation, satisfaction and knowledge as well as additional skills such as increased computer skills, ability to obtain additional skills (access knowledge independently and independent thinking skills). Figure 4.6 illustrates the results.

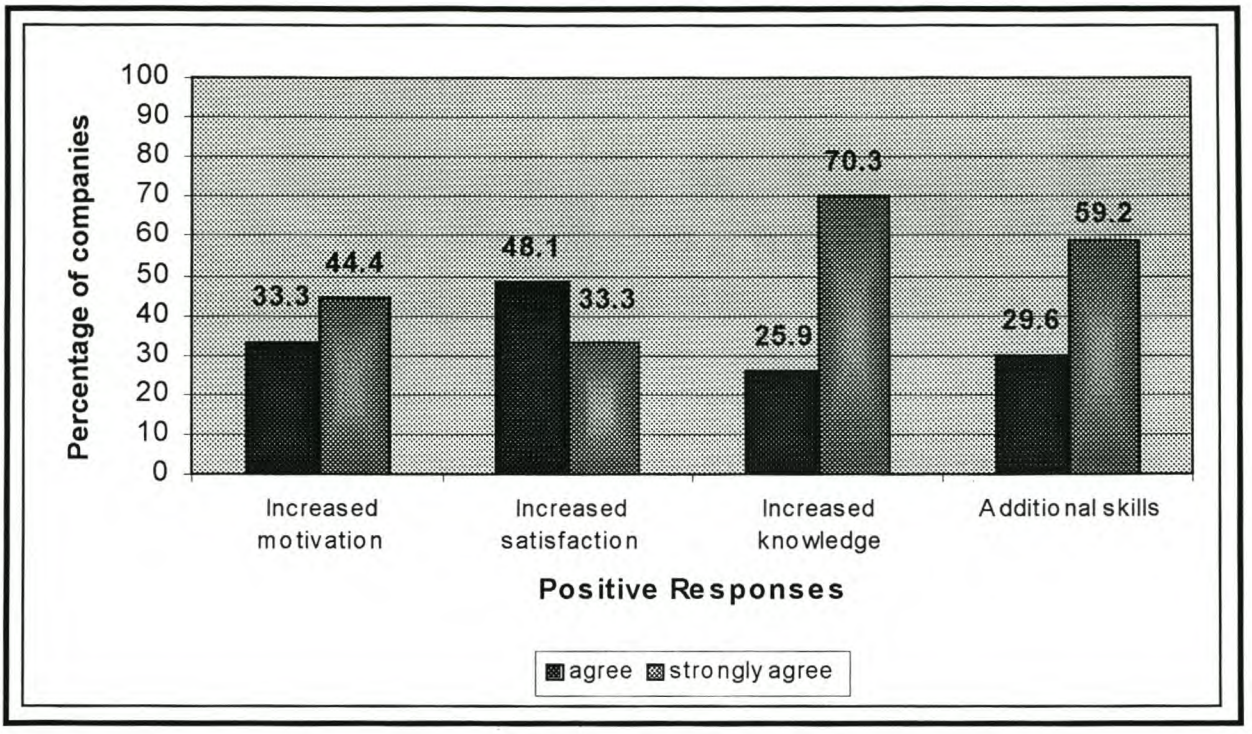

FIGURE 4.6: EMPLOYEE BENEFITS OF AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING ADVICE AND ASSISTANCE

There were 77% of the companies which agreed with all of the benefits listed in Table 4.11. This supports the findings of the National Business Initiative (1998) who stated that the employees of companies would benefit through increased motivation, increased satisfaction, additional knowledge and additional skills obtained from employee housing assistance. Figure 4.6 shows clearly that increased knowledge is considered to be the greatest benefit which the respondents felt their companies' employees would receive. This is links to the main aim of the educational computer programme for employee housing assistance, namely to provide employees with information and knowledge of the housing field. This creates greater awareness of housing issues and develops them into better housing consumers which ultimately will increase their quality of life.

These benefits in their turn will indirectly influence the quality of work of the employees, therefore benefiting the company. The company could also benefit in other ways, as shown in section 4.3.9 to follow.

4.3.9 COMPANY BENEFITS FROM AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING ADVICE AND ASSISTANCE

Question 15 of the questionnaire was aimed at establishing how the respondents saw their company benefiting from computer-based employee housing assistance.

The 27 companies who had indicated in question 11 of the survey (figure 4.5), that they thought an educational computer programme on housing was a good idea, proceeded to indicate how this would benefit their company.

The responses to question 14 regarding ways in which employees would benefit from an educational computer programme indicated that an educational computer programme on housing advice and assistance could increase their motivation, work satisfaction and knowledge and provide them with a number of additional skills. Respondents now had to indicate what the benefits to the company would be of an educational computer programme on housing advice and assistance. This was done using a 5-point scale.

TABLE 4.12: COMPANY BENEFITS FROM AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING ADVICE AND ASSISTANCE

	STRONGLY DISAGREE								STRONGLY AGREE		
BENEFIT	1		2		3		4		5		TOTAL
		%		%		%		%		%	
Attracting employees	1	3.7	3	11.1	12	44.4	8	29.6	3	11.1	27
Retaining employees	0	0.00	3	11.1	13	48.1	9	33.3	1	3.7	27
Improved productivity	0	0.00	3	11.1	11	40.7	9	33.3	4	14.8	27
Less absenteeism	0	0.00	9	33.3	11	40.7	6	22.2	1	3.7	27

n=27

Attracting employees

The largest number of respondents 12 (44.4%) remained neutral on this possible benefit, while there were 8 respondents (29.6%) who *agreed* and 3 who *strongly agreed*

that this would be an attraction for prospective employees. There were only 4 negative responses.

The high neutral response indicates the uncertainty which the responding companies feel towards an educational computer programme on housing advice and assistance and the amount of employees that it will attract. A company which is perceived to educate and care for its employees might attract people to work for it.

Retaining Employees

The largest response to this question was neutral (13 respondents or 48.1%) while 10 companies (37%) showed *agreement*.

The responses seem to reflect a degree of uncertainty as to whether having an educational computer programme on housing advice and assistance would help to retain employees. The neutrality need not, however, be interpreted as being negative. In all probability respondents preffered to remain neutral as they have no direct experience on which to base their response.

Improved Productivity

The respondents once again chose the neutral path (11 companies or 40.7%). There was some *strong agreement* with the statement (4 companies or 14.8%) and 9 companies (33.3%) *agreed* that productivity would improve with the introduction of an computer based educational programme on housing. There were also 3 respondents (11.1%) who disagreed and therefore did not believe such a programme will have any effect on productivity.

The fairly strong base of *agreement* (13 respondents or 48.1%) that a computer-based programme on housing advice and assistance will have a positive influence on productivity, indicated an awareness that employees whose basic need for housing satisfaction and housing knowledge and skills is met, will put more energy and commitment into their job.

Less Absenteeism

Respondents were either neutral (11 companies or 40.7%) or they did not agree that there would be less absenteeism if employees were exposed to such a programme (9 respondents or 33.3%). There were some who *agreed* that absenteeism would be reduced (6 companies or 22.2%) and 1 respondent who *agreed strongly* that there would be less absenteeism if employees were to use an educational computer programme on housing advice and assistance.

From these responses it would seem that an educational computer programme on housing advice and assistance would not lead to less absenteeism. The neutrality of 40.7% of respondents could reflect some cynicism on the absentee situation in many places of employment. Figure 4.7 illustrates these results.

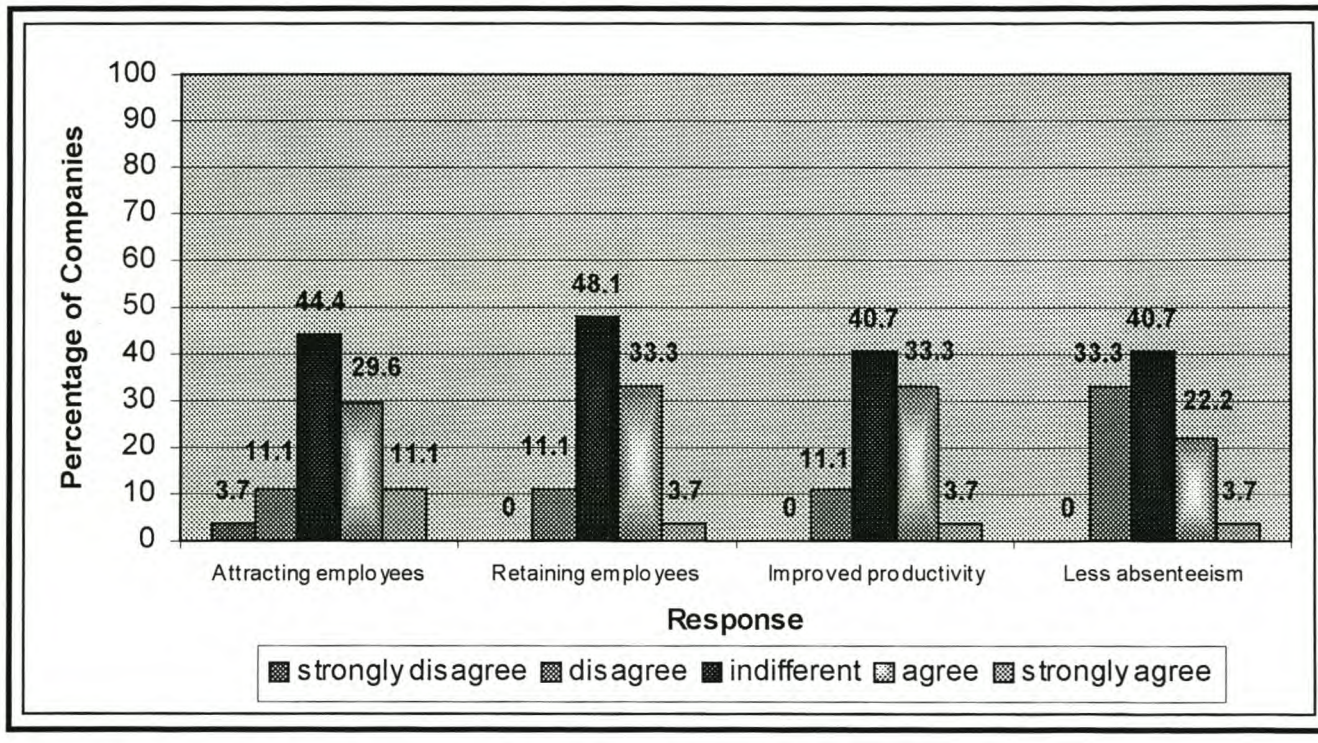

FIGURE 4.7: PREDICTED BENEFITS FOR COMPANIES FROM AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING ADVICE AND ASSISTANCE (n=27)

Although respondents were given the option of indicating other benefits which the company might gain from an educational computer programme on housing advice and assistance, none of the respondents took advantage of it.

The fact that most of the companies responded using the neutral alternative, may be the result of lack of time and patience owing to the fact that this question was towards the end of the questionnaire and respondents may have wanted to complete the questionnaire quickly, choosing the indifferent response, providing a neutral answer requiring very little thought.

Furthermore, respondents were possibly not aware of the indirect influence which the quality of one's housing situation and environment can have on a person's daily attitude to work and social interactions. As was stated by Van Wyk (1987:58), all these factors indirectly influence one's work. The Department of Housing (1994a:40) and The National Business Initiative (1998:v) both support this statement by stressing the influence which the employees' home circumstances have on their health as well as their productivity.

4.4 ESSENTIAL ELEMENTS OF AN EDUCATIONAL COMPUTER PROGRAMME PROVIDING HOUSING ADVICE AND ASSISTANCE

This section will determine what companies regard as essential elements of an educational computer programme for employee housing assistance. This will provide the researcher with guidelines for the final development of the programme.

Question 16 of the questionnaire established which elements of an educational computer programme on housing advice and assistance, were seen by respondent companies as being essential. Forty-one companies which currently offer housing assistance, were requested to indicate on a 5-point scale how essential they felt different elements were for computer-based employee housing assistance.

From the results recorded in Table 4.13, it can be seen that there was *strong agreement* with the majority of the elements.

TABLE 4.13: ESSENTIAL ELEMENTS FOR THE DESIGN OF AN EDUCATIONAL COMPUTER PROGRAMME

	STRONGLY DISAGREE								STRONGLY AGREE		
ELEMENTS	1	%	2	%	3	%	4	%	5	%	TOTAL
Affordability and cost-effectiveness	0	0.00	1	2.4	4	9.7	3	7.3	33	80.5	41
Compatibility with computer equipment and programmes	0	0.00	1	2.4	4	9.7	6	14.6	30	73.1	41
Easily updateable and upgradeable	0	0.00	0	0.00	1	2.4	13	31.7	27	65.8	41
Reliability	0	0.00	0	0.00	2	4.9	8	19.5	31	75.6	41
Flexibility to all levels of knowledge	0	0.00	1	2.4	4	9.7	4	9.7	32	78.0	41
Interactivity between the user and computer, feedback	1	2.4	2	4.8	5	12.1	13	31.7	20	48.8	41
User-friendly needing minimum of prior computer skills	0	0.00	0	0.00	2	4.8	7	17.0	32	78.0	41
Time effectiveness	0	0.00	0	0.00	1	2.4	6	14.6	34	82.9	41
Interchangeable sources (e.g. Internet, CD_ROM and disks)	0	0.00	3	17.6	7	17.0	13	31.7	18	43.9	41
Readily available and accessible when needed	0	0.00	0	0.00	3	7.3	9	21.9	29	70.7	41

n=41

The reactions of the respondents to the different programme elements are analysed below.

Affordability and Cost-effectiveness

This was obviously considered to be an important element by the respondents as 80.5% (33) *strongly agreed* that a programme of this nature should be affordable and cost-effective and a further 7.3% (3) *agreed* with this statement.

This positive response of 87.8% indicates clearly that cost-effectiveness and affordability, especially given the prevalent financial circumstances is crucial. It is essential to deliver information in the simplest manner and most cost- and time-effective way (Wolfson, 1993:93).

Compatibility with computer equipment and programmes

There was *strong agreement* on this element from 30 company respondents (73.1%) while another 6 companies (14.6%) indicated their *agreement*.

The positive response to this question (87.7%) is hardly surprising as compatibility with existing equipment and programmes would seem to be linked strongly to the affordability and cost-effectiveness of the programme.

Easily updateable and upgradable

There was *strong agreement* on this factor from 27 companies (65.8%) and agreement from 13 companies (31.7%). Only 1 company took a neutral stance on this issue.

This 97.5% *agreement* makes it clear that a programme would have to be adaptable and easily upgraded to be viable for companies. It is essential that companies are able to upgrade the programme, given computer technological advances and change in facilities. Finances and time can be spared through an easy information update process.

Reliability

The majority of the responding companies indicated that reliability of an educational computer programme was an important element (95.1%). The 31 companies (75.6%) in *strong agreement*, 8 companies (19.5%) in *agreement* and only 2 companies (4.9%) taking a neutral stand, would not want an unreliable programme as this leads to loss of time and money when expertise are required to solve problems.

Flexibility to all levels of knowledge

This question concerns the issue of whether the programme is flexible enough to accommodate a range of different levels of prior knowledge which the users might be at. It pre-supposes that the users will have had differing exposure to education both in terms of years of schooling and other training and the quality thereof. Programmes would therefore need to be flexible enough to cater for a wide range of user entry levels, especially in terms of reading skills and comprehension.

The respondent companies consider flexibility of the programme to be important since 32 companies (78.0%) *strongly agreed* with this element, another 4 companies (9.7%) *agreed* while 4 companies took a neutral stance.

Interactivity between the user and computer

This question was included to gauge whether respondents favoured the interactive mode of programme presentation which gives immediate feedback above the more static type of computer training programme.

Respondents generally think interaction is an important aspect of an educational computer programme with *strong agreement* from 20 companies (48.8%) and *agreement* with the statement from 13 companies (31.7%).

All learners require feedback on performance as soon as possible. An interactive computer programme gives immediate feedback at each step of the learning process which is both encouraging and affirming. Feedback in an interactive computer

programme is individual and generally faster than a teacher could respond. Users can also work at their own pace, undeterred by the pace of their fellow learners. The positive response from 80.5% of respondents indicates that interactivity is an important consideration.

User-friendly, needing minimum prior computer skills

This question was devised to enable companies to state whether they felt that an interactive computer programme should be user-friendly and able to be operated by someone with very little prior knowledge of a computer.

Lower ranked (less educated) employees who are not familiar with the computer may be frightened off using a computerized training programme unless it was simple to use. The programme instructions should also be easy enough not to require too much knowledge of computer operations but should consist of a few very simple instructions.

There was a *strong agreement* from 32 of the companies (78.0%) *agreement* from another 7 companies (17.0%) that an educational computer programme on housing advice and assistance should be easy to use with only 2 companies taking the neutral route.

It is clear from the responses, that for 95.5% of the companies a user-friendly programme which could be easily operated is an essential element of an educational computer programme on housing advice and assistance. Less educated employees for whom the programme would be intended might be intimidated by having to use a computer and might not have any (or limited) access to computers in the course of their jobs. Less educated employees are probably lower paid as well, and they are unlikely to have a computer at home. They are less likely to be fully computer literate and confident with the operation of a personal computer.

It is therefore not surprising that companies would like an educational computer programme to be user-friendly. Furthermore, they would not want to have to spend much time on basic computer tuition.

Time-effectiveness

Companies must always make optimal and effective use of working time and the working day is usually structured accordingly. It seemed important then, to include a question to gauge how companies would react to the issue of the time-effectiveness of a computer-training programme.

The result was a clear agreement that such a programme should be time-effective. Thirty-four of the 41 companies in the survey (82.9%) *strongly agreed* that it should be time effective while 6 more companies *agreed* with the statement. Only 1 company remained neutral.

Productivity and time-on-the-job is of the greatest importance to a company. If employees are withdrawn from their work for long periods, this causes productivity levels to drop which has financial implications for the company. If an educational computer programme required a limited amount of time for employees to use it, this would be seen as a positive step towards safeguarding against wasting time and therefore, money.

Interchangeable sources (Internet, CD-ROM)

The availability of a computer programme through a variety of interchangeable sources would make it accessible to a wider range of companies with different computer facilities. The responding companies seemed to agree that the programme should be available through a variety of sources with 18 companies (43.9%) in *strong agreement,* 13 companies (31.7%) *agreeing* with the statement and 7 companies (17.0%) giving a neutral response.

The individual nature of the programme allows employees to use the programme whenever they wish to, including free working hours (lunch breaks or even after working hours). The use of an educational computer programme does not restrict them to certain times. Since it would merely mean inserting a CD-ROM disc and following the instructions on the disc, no elaborate plans have to be made to access the information which could be available at any time convenient to the worker.

Readily available and accessible when needed

The effectivity of any training programme within a company context may well be determined by accessibility and availability to the employees. If these criteria are not met, it will not be used.

Access and availability were indeed considered important by the companies in the survey, with 29 of the companies (70.7%) *strongly agreeing* with the programme being readily available at all times, another 9 companies (21.9%) were in *agreement* while only 3 were neutral in their response.

Other

There was no response to the invitation to add other essential elements to the list.

The essential elements for an educational computer programme for employee housing assistance as set out in Table 4.13, can be grouped into the following broad categories:

- Financial considerations
- Company time-management
- User facilitation

4.4.1 FINANCIAL CONSIDERATIONS

From Figure 4.8 it was clear that affordability and cost-effectiveness of the educational computer programme was the most important financial consideration of most

companies (80.5% agreement). This is supported by Wolfson, (1993:93) who refers to the low costs and time involved in the medium of computer instruction. This however does not include the time it takes the developer to set up the programme. It is also important for the programme to be compatible with current equipment (73.1% agreement). Because of the competitive market in the computer industry, a lot of different computer equipment and programmes are available. Not all companies will have the same hardware and software and will not want to have to purchase alternatives simply to run a housing programme for their employees.

Figure 4.8 graphically reports the financial considerations as essential elements of an educational computer programme for employee housing assistance.

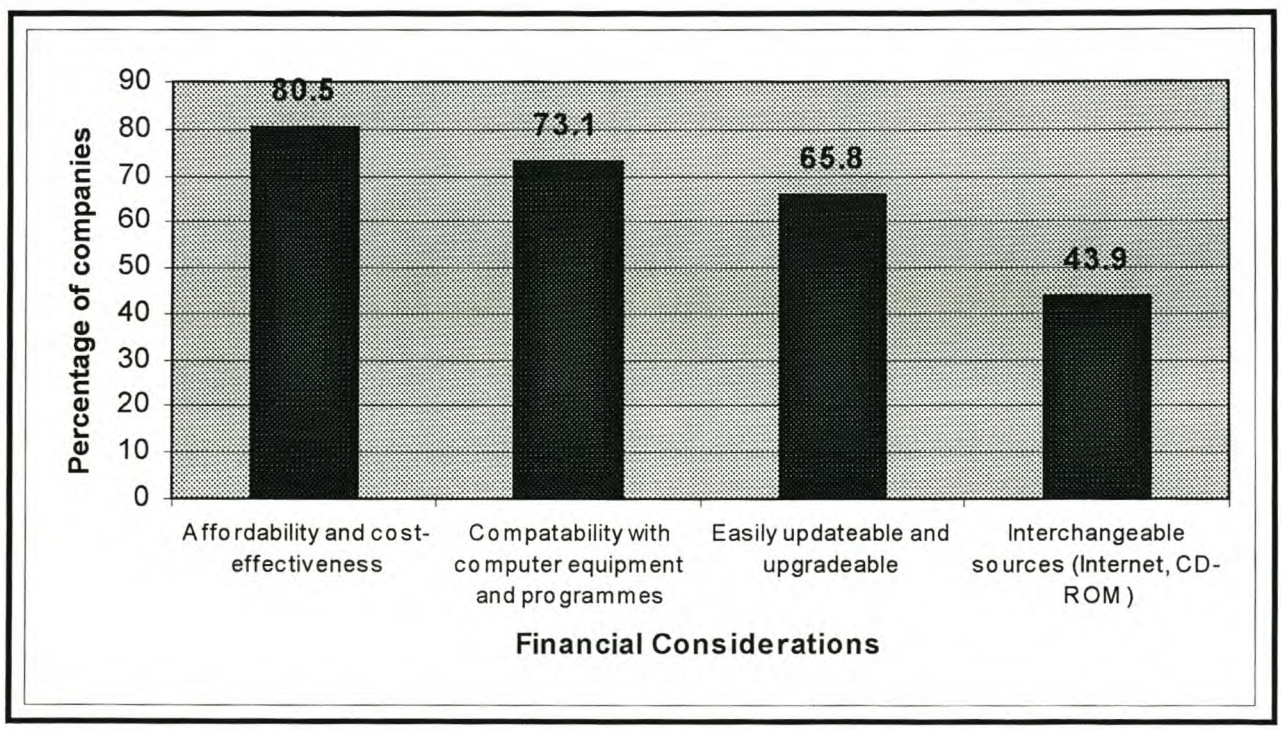

FIGURE 4.8: FINANCIAL CONSIDERATIONS AS ESSENTIAL ELEMENTS OF AN EDUCATIONAL COMPUTER PROGRAMME

The programme should also be easily updateable and upgradeable (65.8% agreement). With the rapidly changing technological situation, the programme must not be out of date within a couple of months after purchase. Upgrading should be easy to complete, possibly via an Internet Website download facility. Knowledge and information in the housing field could vary over time. These changes should be easily incorporated into the programme at any stage.

Interchangeable sources (Internet, CD-ROM) did not seem to be essential to the respondent companies as there were only 18 companies (43.9%) which strongly agreed that the programme should have interchangeable sources, allowing for CD-ROM and Internet compatibility. The respondents are obviously aware of the technical implications of this compatibility, which is an essential element of the educational computer programme. Not all companies, as indicated in the results of this research, have access to all of the sources.

Since companies first priority is to make a profit, any investment in staff training and skills development would need to guarantee good value for the money spent. The responses to the questions on financial considerations as essential elements of an educational computer programme bear this out.

4.4.2 COMPANY TIME MANAGEMENT

From Figure 4.9 it can be seen that the most important issue within the category of company time management is that the educational computer programme must be time-effective with 82.9% of the companies indicating their concern for this element. This means that company time should not wasted by employees while they complete lengthy assistance on housing issues, but they are able to complete modules within a shorter period of time.

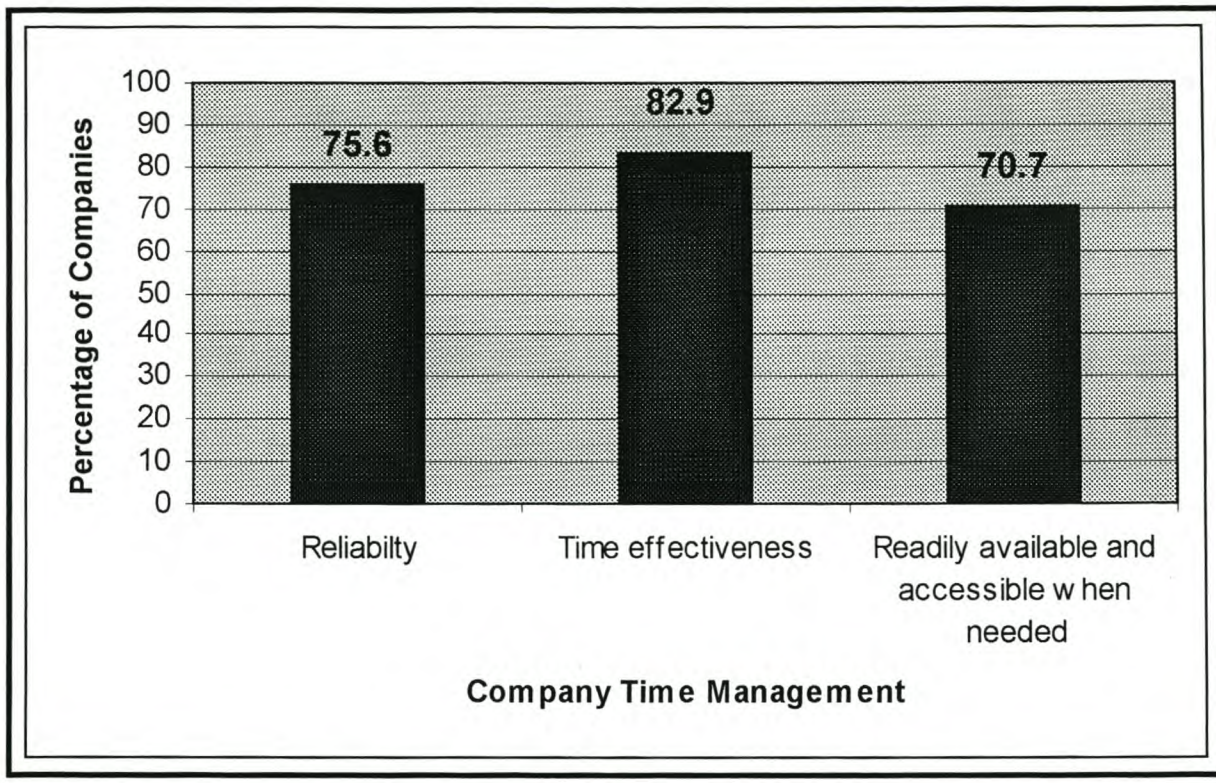

FIGURE 4.9: COMPANY TIME MANAGEMENT AS AN ESSENTIAL ELEMENT OF AN EDUCATIONAL COMPUTER PROGRAMME

This should be seen as directly linked to the financial considerations as time lost to the company while employees are completing a training programme which is not directly linked to their job and not time-effective will mean loss of productivity and ultimately loss of revenue for the company.

Respondents also support the notion that a programme should be reliable (75.6% agreed). In essence this means that it should not break down but should work properly at all times. Time is of the essence in the business world and an unreliable educational computer programme on housing advice and assistance could possibly lead to the programme not being used. There would be no point to having such an educational computer programme and it would certainly not help to solve the current housing problems in the country.

Furthermore, 29 companies (70.7%) agreed that availability and accessibility are essential criteria and that an educational computer programme should be available to employees when they are free to use it, or at a time convenient to the company (as in a slack production period). Both the time-effectiveness of the educational computer programme and its availability and accessibility will contribute positively to good time-management in the company. This is supported by Barron and Orwig (1995:4), who referred to *'time as money'* when in the business sector.

4.4.3 USER FACILITATION

Both flexibility and user-friendly programmes appear to be strongly favoured by the companies (78%). Flexiblilty to cater for different levels of prior knowledge is considered important especially when given the varying levels of education and training amoungst the South African population. User-friendly programmes should cater for even those who have few, if any, computer skills.

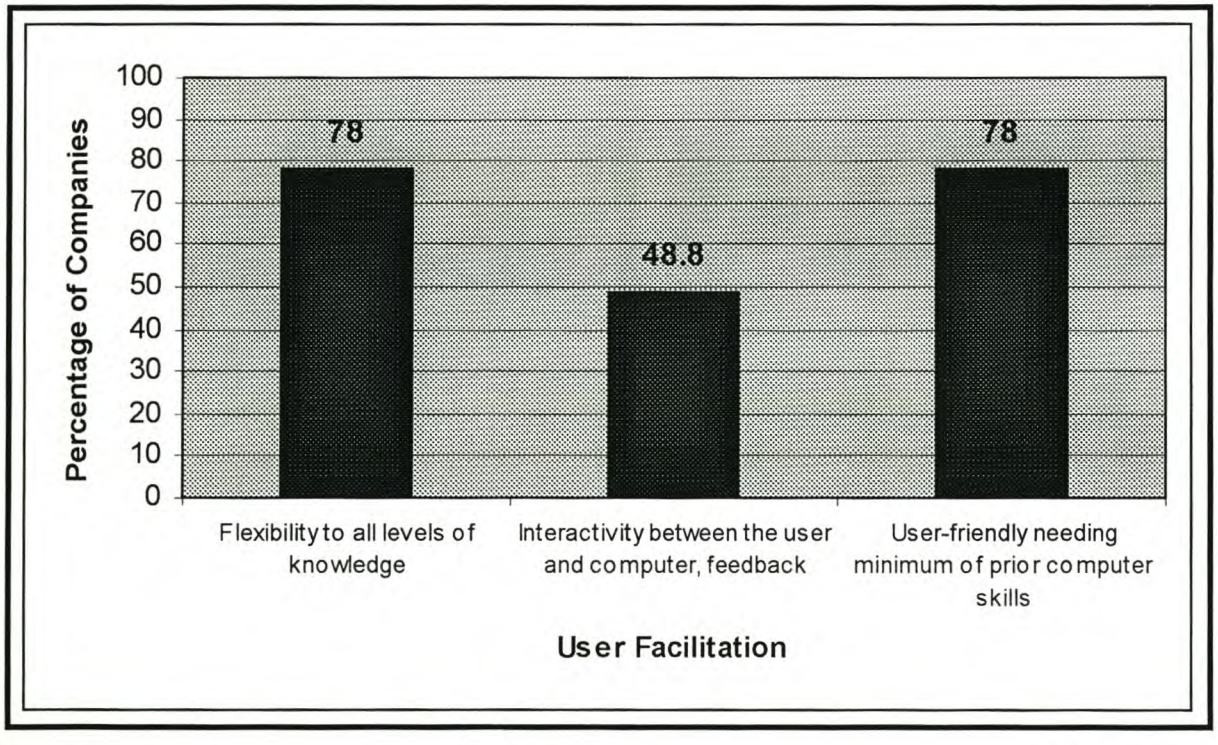

FIGURE 4.10: USER FACILITATION AS AN ESSENTIAL ELEMENT OF AN EDUCATIONAL COMPUTER PROGRAMME

There is *strong agreement* that interactivity should be included in the design of the educational computer programme. Interactivity, according to Harasim, Hiltz, Teles and Turoff (1995:3) is one of the most important elements in the transfer of information. This is in line with Kritzinger who stressed the importance of interactivity, so that employees could test their understanding (Chance, 1993:166).

4.5 CONTENT RELEVENT TO AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

Respondents were requested to indicate what they considered to be relevant content for an educational computer programme on housing advice and assistance. The responses gathered would provide the researcher with guidelines for the development of such a computer-based programme.

Question 17 of the questionnaire contained 16 content areas, identified by Serfontein (1999:102), which might be considered essential to an educational computer programme on housing advice and assistance for employees of companies. Respondents were requested to indicate on a 5-point scale the degree to which they agreed or disagreed with the suggested content areas.

The results are presented in Table 4.14

TABLE 4.14: RELEVANT CONTENT FOR AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

	STRONGLY DISAGREE								STRONGLY AGREE		
CONTENT	1		2		3		4		5		TOTAL
		%		%		%		%		%	
Financial aspects of housing	0	0.00	0	0.00	1	2.4	3	7.3	37	90.2	41
Basic housing technology	0	0.00	5	12.1	5	12.1	4	9.7	27	65.8	41
Housing market	0	0.00	3	7.3	4	9.7	10	24.4	24	58.5	41
Housing needs of the consumer	0	0.00	3	7.6	7	17.1	6	14.6	25	60.5	41
Community and the role it plays	1	2.4	3	7.6	5	12.1	14	34.1	18	43.9	41
Housing and the environment	1	2.4	4	9.7	6	14.6	15	36.5	15	36.6	41
Tenure options	0	0.00	2	4.8	1	2.4	13	31.7	25	60.9	41
Housing maintenance	0	0.00	2	4.8	5	12.1	12	29.2	22	53.6	41
Housing policy	0	0.00	4	9.7	9	21.9	12	29.3	16	39.0	41
Source of housing information	0	0.00	0	0.00	4	9.7	18	43.9	19	46.3	41
Legal aspects of housing	0	0.00	0	0.00	1	2.4	8	19.5	32	78.0	41
Resource Management	1	2.4	3	7.3	10	24.4	14	34.1	13	31.7	41
Cultural aspects of housing	2	4.8	4	9.7	9	21.9	13	31.7	13	31.7	41
Housing design and furnishing	2	4.8	4	9.7	7	17.1	12	29.2	16	39.0	41
Housing consumerism	1	2.4	1	2.4	3	7.3	11	26.8	25	60.9	41
Role-players in housing	0	0.00	6	14.6	7	17.1	11	26.8	17	41.4	41

n=41

Financial aspects of housing

This includes affordability of housing, different sources of housing finance, different types of housing finance, different ways of obtaining this housing finance and the responsibilities of the consumer once the financial commitment has been made.

There was a strong agreement from 90.2% of the respondents that financial aspects of housing should be included in an educational computer programme.

It is essential for potential home-owners to be able to understand such matters as hidden costs involved in home ownership, affordability of their home, knowing where to get finance, understanding the repayment system, knowing how to save and the financial responsibilities of paying for the other housing related (water, electricity).

Basic Housing technology

Basic housing technology includes the basic skills (processes) which an individual or family needs to be able to make informed decisions regarding the planning, building, finishing off, renovation and maintenance of a home. There was considerable support for the inclusion of aspects of such housing knowledge into an educational computer programme with 65.8% of the respondents *strongly agreeing* and another 9.7% in *agreement* (75.5% in all).

The importance of this topic for an educational computer programme on housing is that many people may chose to build their own houses, especially as they may prefer to start with a basic unit and then add on to it. It is therefore essential for the building regulations to be known, basic aspects of housing such as sanitation and ventilation adhered to and where to find the necessary building skills – to mention but a few.

Basic housing technology should feature fairly prominently as part of the content of an educational computer programme for employee housing advice and assistance.

Housing market

This aspect refers to the economic role that housing plays in South Africa; the different phases included in the housing cycle; the role-players that are included in the cycle and the factors affecting the housing market.

There were 34 respondents (82.9%) who either *agreed* (10; 24.4%) or *strongly agreed* with the inclusion of this area of content in an educational computer programme on housing. This indicates that they feel that issues such as cost vs. location, cost vs. quality, resale value of property, increasing property value by home improvement and maintenance and general matters pertaining to the housing market are essential knowledge areas in an educational computer programme on housing.

This section of the educational computer programme could even cover the role of the estate agent in the process of buying and renting a house and the common pitfalls encountered when dealing with them.

Housing needs of the consumer

This area includes the factors affecting the housing needs of the consumer and the order in which these needs are satisfied.

Thirty-one or 75.1% of the respondents *agreed* (16.6%) or *strongly agreed* (60.5%) that this was essential content for an educational computer programme. This area of housing knowledge covers factors such as the choice of suitable housing, understanding how family structures will impact on that choice and how at different times in the family life-cycle housing needs will change. It also covers the use of the home environment for individual development and addresses factors such as the need for privacy for family members and what constitutes a "healthy home environment".

These issues are also essential to promoting harmonious living. Housing therefore has an important role to play in promoting contented living and the development of positive attitudes all of which should form part of the educational computer programme on housing.

Community

The different components of a community (civil, social and economic) each play a role in acquiring and keeping a home.

A good number of the respondents (78.0%) *agreed* that this was a relevant issue to be addressed in an educational computer programme on housing. It is encouraging that 43.9% of these respondents *strongly agree* with the suggested inclusion of the topic.

Community obligations with regard to home ownership, the links between home and community, the communities' involvement in maintaining a well ordered environment are all issues which are addressed within this area of knowledge, as is the very structure of the community itself. Since no person lives in isolation and families are part of the community in which they live, this aspect is essential for the promotion of good citizenship. The concept of community and the role it plays in civic, social and economic development should be addressed in some form in an educational computer programme on housing.

The environment.

The micro-, meso- and macro-environment all have an affect on housing, just as housing impacts the environment. It is encouraging that their reciprocal influence is recognised by 30 of the respondents (73.0%) as an important aspect for including in an educational computer programme on housing. Fifteen of these respondents (35.5%) were in *strong agreement*.

Environmental problems should be in the foreground of any housing development project and the issue of individual collective responsibility for the environment needs constant addressing. Environmental education has a vital place within employee housing assistance and it is gratifying to see that this has been acknowledged in the response to the question.

Tenure options

Tenure options refers to the different types of tenure, the housing consumer's rights and responsibilities required by each type of tenure and the advantages and disadvantages of the different types of tenure.

There was a very positive response to the inclusion of information of this sort in an educational computer programme on housing (92.7%). This would include information such as different tenure options, different forms of ownership, owning versus renting, responsibilities of being a home owner, the pros and cons of buying an 'own-site' versus being part of a scheme.

Housing maintenance

This aspect of housing covers the maintenance of different types of housing, different housing structures, the types of materials needed in maintaining and renovating each type of house, as well as the different construction methods which could be used. So often prospective or current home owners get themselves into a difficult situation because they do not have proper or complete information about the renovation or upgrading which needs to be done (or they wish to do) to a house.

It is encouraging to see that 34 of the 41 respondents (82.8%) regard this as essential information to be included in an educational computer programme on housing. This implies when maintaining a house, matters such as the advantages and disadvantages of self-help schemes, incremental/progressive housing, the use of appropriate materials and the costing of those materials should be addressed in such a programme.

Housing policy

It is the right of each citizen to be well informed, especially about his/her basic rights to adequate shelter under the constitution of South Africa. An educational computer programme used as part of employee housing assistance would provide an ideal vehicle for transmitting knowledge about these and other rights to company employees, and via them to the wider community. Consumers should know about housing policy,

housing and the constitution, understand the peoples' housing process and the housing process in general.

Only 16 out of the 41 respondents (39.0%) *agree strongly* that this is a relevant content area for an educational computer programme on housing. This area of knowledge is fairly complicated and can become technical especially when dealing with the Housing Act (Act 107, 1997) and the Housing White Paper (Department of Housing, 1994). This is not necessarily of great interest to all housing consumers even though it is an essential area of knowledge.

This importance is recognised in the results in Table 4.15 where 28 respondents (68.3%) were in *agreement* with the inclusion of information on the housing policy in an educational computer programme for employee housing assistance.

Sources of housing information

This aspect of housing includes all possible sources that a consumer could use to find information when acquiring and/or keeping a home. It would guide consumers to institutions for information on financial housing issues, government departments for information on legalities of housing and the policy and housing consultants for additional advice on their housing situation.

Nineteen of the 41 respondents (46.3%) *strongly agreed* and 37 in total (90.2%), that potential home-owners should be well informed where to find all the relevant information (both legal an financial). Knowing where to find information empowers the individual. Assessing such information is an achievement which promotes self-esteem. The indirect benefits of this type of module in an educational computer programme on housing, could therefore be considerable.

Legal aspects of housing

This area concerned the quotations, contracts and other legal transactions that a housing consumer would need to be aware of when acquiring or keeping his/her own

home. There was a very positive response to this item with 32 respondents (78.0%) indicating that they *strongly agreed* with the inclusion of legal aspects of housing in the educational computer programme on housing.

This implied that 40 of the 41 respondents (97.5%) of the responding companies felt that consumers should be made aware of legal aspects of housing. This should include matters such as the legal implications of contracts, the consequences of non-payment, implications and responsibilities of contracts, have an understanding of quotations, understanding responsibilities of payment of rates (taxes), water and electricity and generally understand the principle of "the user pays".

For homeowners, these issues are not only crucial for the acquisition of a house but also for the keeping of that house. In communities where there is a culture of non-payment, this information needs to be brought home in an educational computer programme on housing not only for the good of the individual, but for the community as a whole.

Resource management

Management of resources includes all the types of resources a housing consumer would require when acquiring and keeping an own home; the knowledge of how to efficiently and effectively manage their use; and how to generate resources.

There were only 13 respondents of the 41 (31.7%) who indicated that they *strongly agreed* that management of resources should be included in an educational computer programme on housing. This implies that they considered matters such as management of household waste, optimal use of natural resources (e.g. solar heating), entrepreneurship in the home, ecological conservation and pollution to be issues which needed to be addressed.

These issues include the sparing use of scarce resources. The correct management of resources could have an positive influence on the many of financial implications which

South Africa is presently experiencing. A total of 27 respondents (65.8%) recognised the importance and effect of better knowledge in the strategic management of resources. This is very relevant to companies, as many are becoming increasing aware of the depleting human and non-human resources in business and manufacturing.

It is a matter of priority to educate towards skillful management of resources and avoidance of waste, as resources are limited and all should be aware of using them sparingly. In the home, this awareness needs to be passed on to all members of the household.

Cultural aspects of housing

Homes are an expression of the individual household. The form which this expression takes, is influenced by the culture to which they belong. Aspects of culture such as norms, values, symbolic sanctions, material culture, social structure, housing experience, reference group, religion and lifestyle, impact on the housing consumer.

There was great support for the inclusion of a section on cultural aspects in an educational computer programme on housing (63.4%). Such a module would promote respect for different cultures and the expression of culture in housing and instill an appreciation of the richness of the architecture of South Africa.

Such a module could not only encourage the individual to express his/her own cultural heritage through his/her home, but also give the programme users a better understanding and tolerance of persons from different cultures. This, in turn would promote better understanding and relationships between groups.

Housing design and furnishing

This topic addresses the various forms of decoration and design used inside and outside the consumer's home. Although there are specialists in this field, it is useful to possess some basic information on appropriate furnishings, interior decorating, lighting,

interior components and materials, ergonomics (design of furniture and equipment) and efficient use of space.

The respondents support the inclusion of such issues in an educational computer programme on housing positively, with 39% showing *strong agreement* and 29.2% showing *agreement.*

Despite the fact that experts are available, their services are expensive and some not sufficient. Knowledge of design and furnishing would empower individuals to undertake these tasks for themselves.

Housing consumerism

This aspect of housing includes the rights and responsibilities of the consumer, the behaviour of the housing consumer when acquiring and keeping an own home and protection of the housing consumer. There is good support for the inclusion of this aspect in an educational computer programme on housing (87.79%), with 25 respondents (60.9%) in *strong agreement.*

Such a module should address the economic importance of being a home owner; steps in acquiring a house, how to keep that house, obtain information to overcome potential problems, make decisions based on critical evaluation of options, and how to take proactive steps to find housing.

The housing consumer is an important link in the consumer chain and such a module would promote awareness of rights and responsibilities as well as decision-making skills in the individual which would ultimately be an asset to the community as a whole.

Role-players in housing

Many people, organisations (government and non-government) and businesses play a role in the housing process in South Africa.

It was *strongly agreed* by 41.4% and *agreed* by 26.8% of the respondents that it would be desirable to include such information in an educational computer programme on housing. The different housing structures (local, provincial and national), how they operate and even very practical knowledge of where to find the local housing office could be included in such a section of an educational computer programme on housing.

For the housing consumer, this type of information is invaluable, as there are times when it is necessary to have access to the relevant authorities, organisations or individuals in order to receive assistance or acquire further information.

Figure 4.11 provides a visual representation of the 6 preferential areas of content indicated by the 41 respondent companies. These had a very positive *(strongly agreed)* response of over 60%. The positive response suggests that companies would find the inclusion of those aspects into an educational computer programme to be used as part of employee housing assistance to be relevant to their needs.

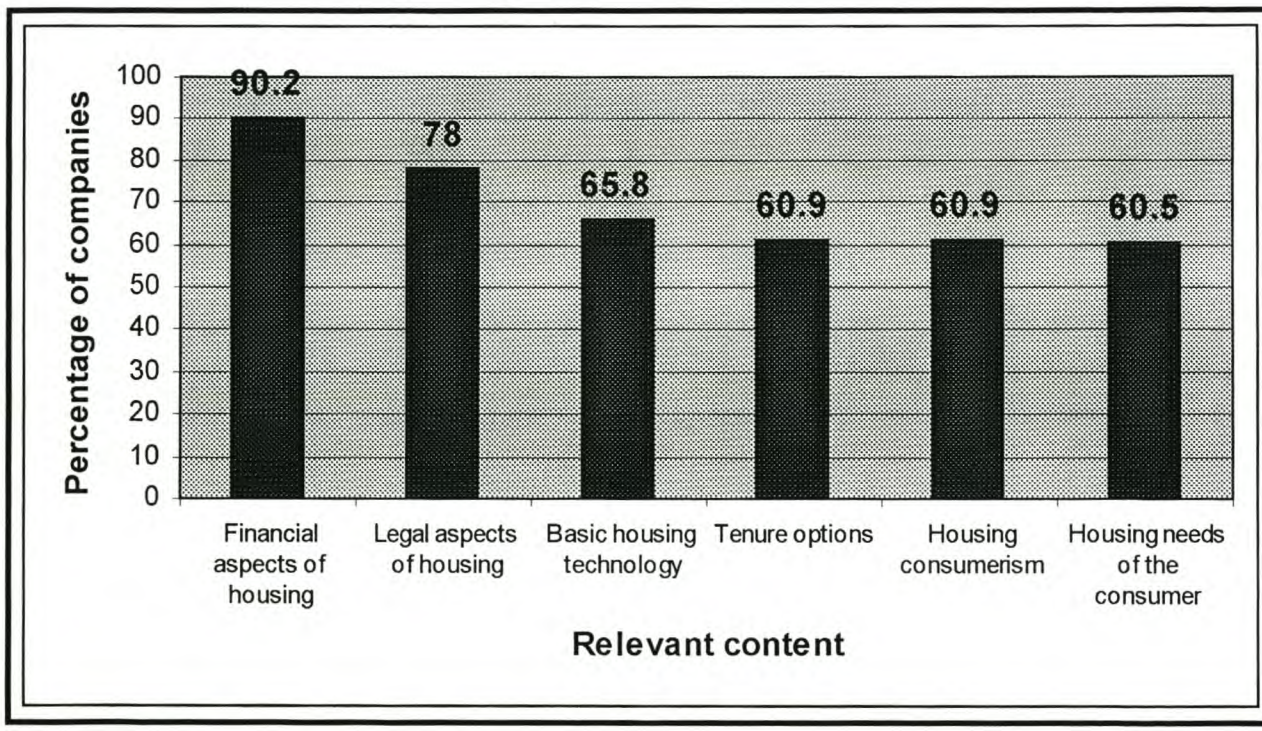

FIGURE 4.11: RELEVANT CONTENT OF AN EDUCATIONAL COMPUTER PROGRAMME ON HOUSING ADVICE AND ASSISTANCE, PRESENTED IN ORDER OF PREFERENCE

After the identification and subsequent reviewing of the relevant content a framework emerged from which an educational computer based programme for housing assistance can be developed.

The figure shows clearly where the priorities lie and what content areas the companies find most relevant to their needs. Financial aspects (90.2%) are the most in demand, followed by legal aspects (78.0%).

The identification of key content areas, for an educational computer programme for the use of companies in their employee housing assistance, provides a framework for developing the programme itself. When asked to identify additional content areas, the respondents declined. It was not possible to prompt the telephone respondents as unwanted bias would have been created.

The key areas included in the educational computer programme being developed were limited to the suggested content derived from the responses of the responding companies in question 17 of the questionnaire

4.6 INTEREST EXPRESSED BY COMPANIES IN AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

Companies were asked to express their interest in receiving information on a visual interactive computer programme providing housing advice and assistance. Figure 4.12 summerises the interest expressed by the 66 companies in the survey on further information regarding an educational computer programme to be used as part of their employee housing assistance.

It was clear that 68.2% (45 companies) were interested in an educational computer programme for employee housing assistance. This is very encouraging and further supports the development of such a programme on housing.

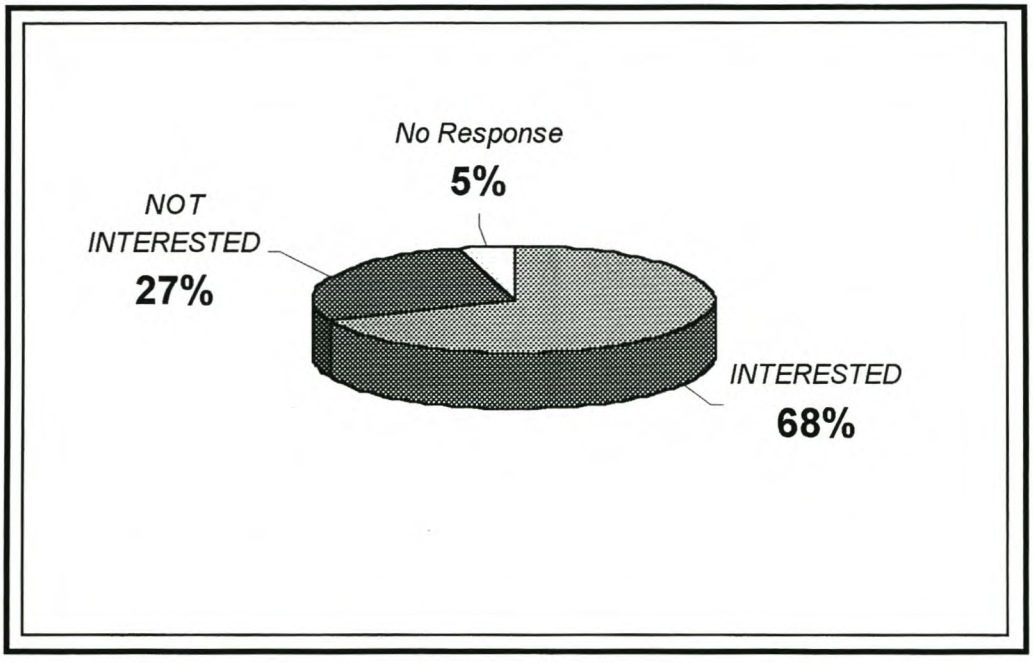

FIGURE 4.12: INTEREST EXPRESSED BY COMPANIES IN THE EDUCATIONAL COMPUTER PROGRAMME

The aim of this chapter was to present and discuss the results obtained from the survey. From the companies surveyed, over half indicated that they do offer some form of employee housing assistance although much of this assistance was of a financial nature.

Respondent companies felt that employees would increase their knowledge and skills through an educational computer programme on housing advice and assistance which might also serve to retain current employees and possibly attract new ones to the company.

The respondents were particularly concerned that an educational computer programme should be affordable, compatible with the companies' current computer equipment and programmes and easily upgradeable. Furthermore, the programme should be time-effective, reliable and readily available. They also favoured a user-friendly and flexible programme which could cater for different levels of prior knowledge and computer experience.

Content which was relevant for an educational computer programme on housing was identified as financial issues of housing, legal aspects of housing, basic housing technology, tenure options and housing consumerism.

The design of the educational computer programme is discussed in Chapter 5 in terms of the preparation of the design, the design process and the programme specifications.

CHAPTER 5

RESULTS AND DISCUSSION:
COMPUTER PROGRAMME DESIGN

The aim of this chapter was to present the process which was followed designing the computer programme. The chapter will be divided into the following sections:

- Introduction
- Design Preparation
- Design Process
- Programme Specifications

5.1 INTRODUCTION

The overall findings of this study which were reported in chapter 4 clearly indicate the viability of developing an educational computer programme to be used as part of employee housing assistance in companies.

The results of the survey showed a great need for housing education and training in the private sector. This is needed particularly for the lower income employees of companies who make up a large percentage of private sector employees. It has proven difficult to train these vast numbers and the method of computer facilitation seemed to be an ideal solution. It has also proved to be an effective method for transfer of information, given the target group of lower income employees. Computers allow for

the use of the human senses, therefore allowing people of all learning levels to grasp information easily.

The results showed that all of the companies included in this survey had computer facilities and most had access to Internet and CD-ROM. This demonstrates the accessibility of such a programme should it be available, to the companies surveyed.

The results highlighted the benefits for both the companies and employees of an educational computer programme on housing advice and assistance. The design process of the computer programme had to be carefully drawn up and strategically followed, to ensure that these benefits would be achieved.

5.2 DESIGN PREPARATION

Correct preparation was essential so that problems and limitations could be avoided later on in the process. The preparation for the design process included the following:

- Sequence of Design
- Resources available
- Elements to be included
- Content to be included

5.2.1 SEQUENCE OF DESIGN

Criswell's (1989:50) sequence of design which was described in the literature review (Chapter 2) was used to ensure that the path followed met the goals which were set for the programme. This sequence is presented in Table 5.1.

TABLE 5.1: STEPS IN THE DESIGN OF THE COMPUTER PROGRAMME (Criswell, 1989:51)

CRISWELL (1989:50)		*THIS STUDY*	*TIME FRAME*
Step 1	Conduct environmental analysis	• Discussions with programmers, housing experts and educational experts • Literature review • Hardware availability • Skills required • Software required	Aug 1998 – Oct 1999
Step 2	Conduct knowledge engineering	• Literature review • Research on previous housing courses, books and other material • Research survey of this study	Aug 1998 – Oct 1999
Step 3	Establish instructional goals and objectives	• Literature review • Research on previous housing courses, books and other material • Research survey of this study	Aug 1998 – Oct 1999
Step 4	Sequence topics and tasks in computer-based instruction (CBI) lessons	• Structure the content into sequences	Oct 1999 – Nov 1999
Step 5	Write courseware	• Break down the sequences into scenes on the storyboard • Modify content into lessons and scenes	Oct 1999 – Dec 1999
Step 6	Design each frame	• Inclusion of graphics and canvas size on storyboard (each lesson)	Oct 1999 – Dec 1999
Step 7	Program the computer	• Use Macromedia Flash 4.0; Aldus Freehand; Homesite 4.0; MS Access database • Hardware available • Acquire and use programming and design skills	Dec 1999 – Aug 2000
Step 8	Produce accompanying documents	• Computer-aided help file included in the programming • Brief operation document • Online instructions	Jun 2000- Aug 2000
Step 9	Evaluate and revise	• Further study	N/A
Step 10	Implement and follow up	• Further study	N/A

Stages nine and ten are not included in this study, however, they could be used as basis for further research on this topic. The next section examines the facilities needed for the design of the computer programme.

5.2.2 FACILITIES AVAILABLE

It was essential to examine the hardware available to establish the software (programmes) which could be used for the design of the programme. The software included:

- Macromedia Flash 4.0
- Aldus Freehand
- Homesite 4.0
- MS Access database

To run this software the following requirements had to be met with regard to the hardware:

- Intel® Celeron Processor
- 64 megabytes of RAM
- 6.4 gigabyte Hard Drive
- 48 x CD-ROM Drive
- 16 bit Soundcard
- Standard keyboard
- Standard mouse
- 1.44 megabyte stiffy drive

A vast amount of time was required for the development of the programme. For the programme to be user-friendly and easy operational, it was essential to use the development of graphics, text and sound, as well as animation and interaction. These functions all added to the design process in terms of time required.

To abide by all copyright laws, every picture and diagramme was designed from scratch and every line drawn in separately. This proved to be a very time consuming task.

The researcher (author) did not possess all of the programming skills required, and therefore had to learn and acquire them as they were needed. This proved to be a valuable learning process in itself, but also exceptionally time consuming.

Due to time limitations involved in this study, only a demonstration version of the computer programme has been included in this research. Further developments and additions could be developed in the future. This demonstration version of the programme provides guidelines as to what the possibilities of the completed programme are.

Finances could also prove a limitation in the further development of the computer programme, especially given the rapid technological developments and the constant need for upgrades on both software and hardware. The initial purchasing of the hardware and software has also proven very costly.

5.2.3 ELEMENTS TO BE INCLUDED

The results in chapter 4 highlighted the elements which the respondents found most essential for the inclusion in the computer programme design. The following elements of the computer programme were considered and included in the design process:

- Time effectiveness
- Affordability and cost-effectiveness
- User-friendly, needing minimum of prior computer skills
- Flexibility to all levels of knowledge
- Reliability
- Compatibility with computer equipment and programmes

- Readily available and accessible when needed
- Easily updateable and upgradeable

The following elements were not seen by the respondents as essential but could be considered for future development of the programme:

- Interactivity between the user and computer, feedback
- Interchangeable sources (Internet, CD-ROM)

More details on the inclusion of each of these elements are reported in section 5.3, in the design process.

5.2.4 CONTENT TO BE INCLUDED

The results of the questionnaire showed which content the respondents saw as the most essential. Financial aspects of housing, legal aspects of housing, basic housing technology, tenure options, housing consumerism and housing needs were therefore used as the basis for the content to be included in the educational computer programme.

The content of the programme had to be carefully considered, as not all content is suitable for a computer-based instruction method. The content has to be clear, simple and fit together in a logical and adaptable way. This study has used very basic concepts to build a framework of content, onto which, further information can always be added at a later stage. Although only a demonstration model was designed for the fulfilment of this study, the complete content outline of the suggested topics has been included in the section to follow.

Table 5.2 outlines the topics that the respondents of the survey identified as the most essential for inclusion into a computer programme for the use of companies in employee housing assistance.

TABLE 5.2: MODULES AND MODULE UNITS DEVELOPED FROM THE RESULTS OF THE SURVEY

ESSENTIAL CONTENT FROM SURVEY RESULTS	MODULES	UNITS
Financial aspects of housing	1. Planning your finances	• Affordability • Budgeting
	2. Methods of payment	• Subsidy, loans and bonds • Installments
	3. Things to consider	• Insurance • Inflation • Resources
Legal aspects of housing	1. Understanding terms	• Contracts • Quotes
	2. Responsibilities	• Legal implications and responsibilities • "The user pays"
Basic Housing Technology	1. Thinking ahead	• Planning • Prioritizing
	2. Planning and making decisions	• Changes • Resources • Positioning a house • Planning a house • Sketching a house
	3. Implementing the building process	• Building • Finishing off
	4. Living in the new home	• Maintenance • Renovation
Tenure options	1. Types of tenure	• Understanding tenure options • Owning vs renting
Housing consumerism	1. Are you a good housing consumer?	• Rights • Responsibilities • Consumer protection
Housing needs	1. What are your housing needs?	• Hierarchy of needs • Needs
	2. Are your housing needs being fulfilled?	• Fulfillment of needs

The content of each module has been structured according to the TICCIT Courseware Structure which clearly defines the level and educational content of each lesson (Venezky & Osin, 1991:141). These structures can be seen in Tables 5.3 to 5.9

Each module has been divided into module units and then into lessons. The lessons are structured according to segments (computer scenes) which follow a similar pattern. This includes an introduction, learning section, interaction and review. Some of the interaction in the sections also includes some form of feedback.

TABLE 5.3: MODULES, MODULE UNITS AND UNIT CONTENT ON FINANCIAL ASPECTS OF HOUSING

(Rural Housing Loan Fund, 1999:2-35; NES SACHED TRUST, 1995:27p; Venter, 1997:103p)

MODULE	PLANNING YOUR FINANCES	METHODS OF PAYMENT	THINGS TO CONSIDER
MODULE UNIT	• Affordability • Budgeting	• Subsidy, loans and bonds • Installments	• Insurance • Inflation • Resources • Interest • Deposit
CONTENT OF MODULE	***INTRODUCTION:*** A budget is a written record which shows income, expenditure and savings. It allows you to manage your money correctly and allows you to plan more carefully. A purchase which is affordable when you are able to buy it for the amount of money which you have	***INTRODUCTION:*** It Is essential for you to understand the basic financial terms. Dealing with money correctly can save you a great deal in the long term.	***INTRODUCTION:*** There are certain terms which you need to understand before buying a house.
	LEARNING SECTION: • AFFORDABILITY: It is essential to only buy things which you can afford. • BUDGETING HAS CERTAIN ADVANTAGES:	***LEARNING SECTION:*** • SUBSIDY: Once-off grant, payable by the government in your name to get land, services or housing.	***LEARNING SECTION:*** • INSURANCE: Insurance is an amount which you pay every month to an insurance company. Should you lose items/house etc. through a fire, theft or other loss, the insurance

1. Helps you accept limitations of your income so that you can make purchases with greater certainty and enjoyment
2. It makes you more objective about your financial affairs and the amount of money that you have available for your house
3. You gain better insight into your requirements and objectives in the planning of your house
4. Allows you to spend money more purposefully
5. You can plan better for the future

- BUGETING TERMS:

Income: the amount of money which you receive every month
Expenditure: the amount of money which you spend every month
Savings: the amount of income which you do not spend and put away for emergencies.

- HOW TO DRAW UP A BUDGET:
  1. Set realistic goals
  2. Determine expected income

- LOANS:

Borrowing of money from a financial institution (bank). It gets paid back in installments with interest.

- BOND:

Where the bank buys the house on your behalf, and takes ownership of it until you have paid the money back to the bank.

- INSTALLMENTS:

The amount of money paid back to the bank every month for a certain period of time. This is worked out before the loan/bond is taken.

company will pay out the value of the goods/property.

- INFLATION:

Inflation is the rate with which prices of goods rises therefore decreasing the value of your money.

- INTEREST:

Interest is the money paid for the use of money. If you borrow money from the bank, you have to pay a certain amount of interest on the loan. This is a certain percentage of the money which you borrowed.

- RESOURCES:

Resources are things (skills and supplies) which you can use to achieve your goals or fulfill your needs.

	(e.g. salary) 3. Determine expected expenses (e.g. rent, food, transport etc.) 4. Savings 5. Balance the income and expenditures 6. Implement the budget 7. Re-evaluate the whole budget		• DEPOSIT: Money put down as a pledge to do something or pay more later. This shows that an agreement will be kept.
	INTERACTION: • Draw up a budget of your own according to the guidelines above.	***INTERACTION:*** • Which of the financial options (subsidy, loan, bond) would you use? • Why would you choose this option?	***INTERACTION:*** • How will insurance, inflation, interest, resource and deposit affect the amount of money you need for building or purchasing of your home?
	REVIEW: A good budget should show some form of savings and it's expenditure should not exceed the income.	***REVIEW:*** If you do not have all the money that you need to buy/build a house, there are ways of borrowing it.	***REVIEW:*** To successfully finance your house, it is essential to consider inflation, insurance, resources and interest

TABLE 5.4: MODULES, MODULE UNITS AND UNIT CONTENT ON LEGAL ASPECTS OF HOUSING

(Rural Housing Loan Fund, 1999:2-35; NES SACHED TRUST, 1995:27p; Venter, 1997:103p)

MODULE	UNDERSTANDING TERMS	RESPONSIBILITIES
MODULE UNIT	• Quotes • Contracts	• Legal implications and responsibilities • "The user pays"
CONTENT OF MODULE	***INTRODUCTION:*** Contracts and quotes can save a lot of money, pain and heartache, in the long term, if carried out properly.	***INTRODUCTION:*** There are laws and policies that protect the buyer/renter, financial sources, and the builder/seller. These laws must be strictly adhered to.
	LEARNING SECTION: • QUOTE: A quote (quotation) is an exact indication of the total amount you would have to pay for goods or services. It is important to look at many different options before spending your money. You need to investigate different prices and the quality, which you will receive for that amount. By comparing quotes you ensure that you get the best value for money.	***LEARNING SECTION:*** • Once you have signed the papers to say that you are officially renting/buying the house, you are legally responsible for the payments of the house. • When buying a house you are expected to pay the amount that you agreed on an installment every month until it is paid off. When renting a house you are expected to pay the agreed upon amount every month for the duration of the rental contract. • You are also responsible for paying for the rates which you receive e.g. water, electricity etc. These services are

• CONTRACT: The building contract is a written agreement a person makes with the builder before he starts building. They should have discussed and agreed on the following: 1. What the work will include 2. Payment (the amount and when the payment will take place) 3. Time frame (how long the whole job will take) 4. Problems and faults (to be done after the person has moved in) 5. Contacting the builder (how are you able to contact the builder once started building) 6. Building skills of the builder 7. Rental contract	not free and you are expected to pay for what you use. These amounts differ between renting and buying a house. When renting a home, you do not pay all of the costs towards the services, as the owners cover some of them.
INTERACTION: What would you list in the contract?	***INTERACTION:*** List the possible services which you will have to pay for when you own your own house.
REVIEW: Quotes and contracts should be considered carefully before the building process begins.	***REVIEW:*** REMEMBER NB: "The user pays"

TABLE 5.5: MODULES, MODULE UNITS AND UNIT CONTENT ON TENURE OPTIONS

(Rural Housing Loan Fund, 1999:2-35; NES SACHED TRUST, 1995:27p; Venter, 1997:103p)

MODULE	TYPES OF TENURE
MODULE UNIT	• Understanding tenure options • Owning versus renting
CONTENT OF MODULE	***INTRO:*** Many people do not buy a house but they rent one from someone else.
	LEARNING SECTION: The differences between ownership and renting include: RENTING • You do not own the land or the house • Not an investment • Once your contract has expired you can be asked to leave at any stage • The owner is responsible for repairs and maintenance to the property • You can decide how long you want to stay at one place • You do not have to insure the building • The owner is responsible for the payment of rates and taxes OWNING • You own the land and property • You can sell it when you want to • You cannot be asked to leave • Property can increase in value • You can make improvements (will increase value) • You can rent out the property

	• You must insure against fire, theft and other natural disasters • You can leave the property in your will to someone • You have to pay the rates and local taxes • You can feel more secure
	INTERACTION: Would you rather rent or own a property and why?
	REVIEW: Owning and renting property each have their own advantages and disadvantages. You must decide which one suites your needs the best.

TABLE 5.6: MODULES, MODULE UNITS AND UNIT CONTENT ON BASIC HOUSING TECHNOLOGY

(Rural Housing Loan Fund, 1999:2-35; NES SACHED TRUST, 1995:27p; Venter, 1997:103p)

MODULE	THINKING AHEAD	MAKING YOUR OWN DECISIONS	PLANNING THE BUILDING PROCESS
MODULE UNIT	• Planning • Prioritizing	• Changes • Resources	• Positioning a house • Planning a house • Sketching a house
CONTENT OF MODULE	***INTRODUCTION:*** Before you begin with the building or renovating process, you need to plan!	***INTRODUCTION:*** Decide what you want!	***INTRODUCTION:*** Now that you have decided on your goal and prioritised your needs, you need to take three (3) very important steps
	LEARNING SECTION: *PLANNING* • WHY DO WE NEED TO *PLAN*? 1. So you do not run out of money (ensure that you have enough money to pay for your roof!) 2. So that you do not run	***LEARNING SECTION:*** What changes (renovation) or developments (building) do you want to make to your property? • You can use your money in many different ways to change your living space. • You need to decide on your main goal (a goal is the end product you are	***LEARNING SECTION:*** *HOW DO I POSITION MY HOUSE ON THE LAND?* • Space to extend / build on more Where you position your house is very important, because, if your family grows, you might want to add a room to your house. • Heat and Light 1. To get the most heat and light, the rooms you spend most time in should face the North. 2. In South Africa, the sun comes from the North, making these rooms warmer and brighter.

out of materials (You may not have enough bricks to finish the walls) 3. To prevent building problems 4. Can you think of any others ? • HOW DO YOU PLAN? You must prioritise *PRIORITISING* Prioritising is deciding what is important • WHY MUST YOU PRIORITISE? You can not get everything at once (you need to spend your money on the most important things first)	working towards). • You goal may be to: 1. Build a fence around your house 2. Connect to water or electricity or arrange for them to be brought into your home 3. Improve your house 4. Build a new room onto your house 5. Build a new house 6. Add to your house for your own business 7. Build a toilet in your home or on your property 8. Put a tank for holding water, or buy sun powered systems to produce electricity for your house Have you got any resources which you could use?	3. In very hot areas, you can always use trees, or an overhanging roof for shade in the hot Summer months. • Wind It is important to look at the direction of the wind, because: 1. If it blows through the house, it can cool the house down 2. It can bring in dust 3. The doors could blow off 4. It can cause damage to windows etc. How to prevent this? 1. Use trees and plants to protect the house from the wind. 2. If the roof of the house slopes, make the shorter side face the wind. 3. Place doors on sides which do not directly face the wind • Slope Your house should preferably be build on flat land. Never build at the bottom of a slope, because: 1. Water will rush down into your house 2. The water may then sink under the house and cause cracks If there is a slope, you must take precautions. To prevent this, cement should be put around the base of the house

	• HOW DO YOU PRIORITISE? 1. Make a list of all the things you need or would like to do 2. Decide which are the most important	• Resources are skills which would help to achieve your goal. 1. Have you got any savings which you could use? 2. Do you have a friend or family member who could help with the building? 3. Could you get a government subsidy or loan for housing, land or services? 4. Could you make your own bricks? 5. Could you gather your own thatch instead of sheeting for the roof 6. Could you reuse any building materials you already have? • All resources which you already have, could save you money.	• <u>Services</u> A service is something offered to you (for example water and electricity) 1. You must position your house close to these 2. They usually come from sources close to the road • <u>Trees</u> Try not to cut down any trees, because they give shade and shelter from the sun and wind Do not build too close to trees and plants, because, roots can cause damage to the house • <u>Security</u> You can feel safer and more secure on your property, by: 1. Putting a fence around the property 2. Putting burglar bars on the windows 3. Putting a security gate on your door *<u>HOW DO I PLAN MY HOUSE?</u>* • You need to answer some questions in order to plan your house 1. How many rooms do you need?

		ONE OF THE MOST IMPORTANT DECISIONS WHICH YOU WILL HAVE TO MAKE IS: • Which neighbourhood (area) would you like to live in? • <u>Consider these factors:</u> 1. Religion 2. Race 3. Age 4. Interests 5. Stage in the family life cycle 6. Services which you use frequently 7. Other established community facilities (school, church, library etc.)	2. What are they? 3. What size of house? 4. Will it be big enough for your whole family? 5. Do you need to build an extra room to rent out for extra money? 6. Do you need space for a home business? • You do not need to build all of the rooms at once. • Decide on the most important and which you can afford now. • You can always build on later. The next step is to draw sketches of the house and rooms *<u>HOW DO I SKETCH A PLAN OF MY HOUSE?</u>* • You must first plan where the kitchen and bathroom are to be positioned, because: 1. They are the most expensive rooms to be built 2. The bath / shower / basin / toilet must preferably be against the outside wall to be easily attached to the pipes 3. If you don't have municipal water now, plan for when you do get water • You must plan which rooms you would like to receive the sun, because: 1. The North facing rooms will get the most light and sunshine 2. Some rooms will need bigger and more windows than the others

			• You may want to put a ceiling into your house, because: 1. Insulating your roof, prevents the heat from escaping 2. A ceiling stops the house from getting too hot or too cold
	INTERACTION: 1. Make a list of the things which you would like to change (renovation) or build in your home and the things which you would like to buy for your home. 2. Circle the three (3) most important.	***INTERACTION:*** 1. Write down you main goal 2. Write a list of your own resources	***INTERACTION:*** 1. Answer the questions according to your needs for a house. 2. Draw a sketch of your entire house. 3. Colour in the parts which you want completed immediately.
	REVIEW: Planning allows a person to prioritise and carry out the most important things first. This makes the building or renovation process more affordable.	***REVIEW:*** Resources which you already have may save costs and effort in achieving your goal	***REVIEW:*** Planning the position of your home, the layout and structure of the house and sketching a plan, are three very important steps which must be followed before seeing the builder.

TABLE 5.7: MODULES, MODULE UNITS AND UNIT CONTENT ON BASIC HOUSING TECHNOLOGY (continued)

(Rural Housing Loan Fund, 1999:2-35; NES SACHED TRUST, 1995:27p; Venter, 1997:103p)

MODULE	IMPLEMENTING THE BUILDING PROCESS	LIVING IN THE NEW HOME
MODULE UNIT	• Building • Finishing off	• Renovation • Maintenance
CONTENT OF MODULE	***INTRODUCTION:*** The building and finishing off can be a long process but if you find the correct builder, there should be less problems.	***INTRODUCTION:*** Houses often need fixing or renovating. The people (builders / handymen) who carry out this task must be qualified to do so.
	LEARNING SECTION: GETTING THE RIGHT BUILDER: 1. What to look for in a builder • Look at houses which he has previously built • Get a recommendation, other people which the builder has already worked for 2. Discuss the following with him • What the work will include • Payment • Timeframe • Problems and faults • Contacting the builder • Building skills 3. Payments to the builder • If you have a bond from the bank, do not pay the builder any money, as the bank pays the builder	***LEARNING SECTION:*** Houses may need fixing or you might decide to make some changes. This is also an expensive task and should be carefully thought through and planned before doing so. When things break (leaking roof) it is important to fix them as soon as possible. By leaving it, the problem can get much bigger and more expensive to fix.

	directly 4. <u>The building contract</u> <u>THE BUILDING PROCESS</u> 1. Digging foundations 2. Laying the floor slab 3. Mixing the cement 4. Brickwork 5. Doors and windows 6. Roofing 7. Plumbing and electricity <u>THE FINISHING OFF PROCESS</u> 1. Putting in permanent fixture (kitchen, bathroom) 2. Cupboards 3. Painting 4. Tiling 5. Carpeting 6. Final decorating	
	<u>INTERACTION:</u> What would you look for in a builder?	***<u>INTERACTION:</u>*** What do you think are the most common maintenance jobs on a house?
	<u>REVIEW:</u> The building and finishing off of the house can be a long process. It is important that each and every step of the process is done carefully and accurately.	***<u>REVIEW:</u>*** Always remember to keep some emergency savings in case you need to fix something in the house.

TABLE 5.8: MODULES, MODULE UNITS AND UNIT CONTENT ON HOUSING CONSUMERISM
(Rural Housing Loan Fund, 1999:2-35; NES SACHED TRUST, 1995:27p; Venter, 1997:103p)

MODULE	ARE YOU A GOOD CONSUMER?
MODULE UNIT	• Rights • Responsibilities • Consumer Protection
CONTENT OF MODULE	***INTRODUCTION:*** A consumer is someone who uses / consumes goods and services. A good consumer is aware of his/her rights and responsibilities
	LEARNING SECTION: A GOOD CONSUMER: • Fulfills primary needs first (then secondary) • Saves money • Does not waste money, food and other needed goods • Does not damage his possessions or environment • Saves resources • Is aware of his/her rights and responsibilities RIGHTS OF A CONSUMER: • A consumer has the right to be safe • A consumer has the right to information • A consumer has the right to a choice between different

goods and services

- A consumer has the right to realistic prices
- A consumer has the right to complain
- A consumer has the right to protection

RESPONSIBILITIES OF A CONSUMER

A consumer must:

- Spend wisely
- Read contracts, fine print and guarantees
- Pay promptly
- Carry out instructions (cleaning steps on a product label)
- Making informed and responsible choices
- Be honest
- Protest when necessary services and products do not meet the correct standards
- Not purchase damaged goods
- Know his/her own needs
- Buy S.A products

HOW IS THE CONSUMER PROTECTED?

- By the legislation (e.g. Trade Act)
- By autonomous bodies and government departments (South African Bureau of Standards)

	• Volunteer organisations (South African National Consumer Council) • Housing Consumer Protection Trust • National Home Builders Registration Council
	INTERACTION: Are you a good consumer? What can you do to become a better consumer?
	REVIEW: Everybody is a consumer and therefore should be aware of his/her rights and responsibilities.

TABLE 5.9: MODULES, MODULE UNITS AND UNIT CONTENT ON HOUSING NEEDS (Rural Housing Loan Fund, 1999:2-35;; NES SACHED TRUST, 1995:27p; Venter, 1997:103p)

MODULE	WHAT ARE YOUR HOUSING NEEDS?	ARE YOUR HOUSING NEEDS BEING FULFILLED?
MODULE UNIT	• Maslow's hierarchy of needs • Needs	• Fulfillment of needs
CONTENT OF MODULE	***INTRODUCTION:*** Everyone has his/her own needs. It is important that these needs are met and fulfilled.	***INTRODUCTION:*** Are you happy where you are living?
	LEARNING SECTION: Needs can be met through achieving one's goals in everyday life. There are different levels of needs. Maslow created a hierarchy of needs. He placed physical needs at the bottom, being the most important and above that safety. These two are fulfilled through housing, with shelter and protection from the elements. Once those are fulfilled, a comfortable living environment creates love and affection and esteem and lastly, self-actualization. 1. Physical needs, 2. Safety needs, 3. love and belonging needs, 4. esteem needs, 5. self-actualization needs	***LEARNING SECTION:*** A person must be happy where they are living and their standards must be met through their home environment. Different people have varying standards and while one person may be happy to live in a mud hut, someone else may not. When building and renovating, you must look clearly at what your standards are and whether or not you can meet them to fulfill your needs. It is often not financially possible to meet the standards that we would like to meet.

	INTERACTION: What are you most important needs?	***INTERACTION:*** How would you improve on your house to fulfill your needs and meet your standards?
	REVIEW: For a person to be happy, his/her needs have to be established and fulfilled.	***REVIEW:*** Each individual must strive to reach and maintain his/her standards which he/she sets.

5.3 THE DESIGN PROCESS

The design process of the educational computer programme included many different steps which were followed in order to achieve the goals of the programme. The section which follow describes the design process.

5.3.1 STEP 1: PLANNING AND DESIGN PREPARATION

It was essential to plan the educational computer programme carefully prior to the design thereof. This prevents serious problems from occurring in the later stages of the design process where they are a lot more difficult to solve.

This step included creating a sequence of design, looking at the resources which were available and examining the elements and content to be included in the programme. These have been reported in greater detail in sections 5.2.1; 5.2.2; 5.2.3 and 5.2.4 of this chapter.

Owing to the time and financial limitations of the research, only a small section of the modules, "Thinking Ahead" and "Planning and Making Decisions" have been used for the design of the demonstration programme of this study.

5.3.2 STEP 2: STORYBOARD

A storyboard shows the content broken down into the words and sentences as they will appear in the computer programme. Flow charts and arrows are used to show the direction and order of the appearance of the content.

This step involved re-conceptualizing the various information resources and using the predominantly textual content to complete the storyboard. The storyboard was then broken down into scenes and spaces were made available for possible graphics.

The information was then re-sequenced and the scenes broken into layers representing the level of appearance, time and animation. At this stage the canvass size had to be stipulated in accordance with possible end-user personal computer viewing limitations.

5.3.3 STEP 3: DESIGN AND INCLUSION OF GRAPHICS

Capturing the graphics in itself is a very time-consuming task. It was essential to abide by all copyright laws and regulations. Most *clipart* can be freely used for personal use, however not on a commercial and resale basis. Although *clipart* is easily available and can be found online as well as in commercial packages (e.g. Corel Megagallery 110,000 Dazzling Art Images on CD-ROM), the size of each bitmap is far too large. A single *clipart* can take up approximately 46 814 bytes of space.

All the different options were investigated for this programme and each graphic was created through the use of simple lines. The graphics were designed in a vector-space saving programme called Aldus Freehand (II). Once designed and clarified, the graphics were exported into Flash (I).

The layers within scenes were then connected to create an animation sequence. It was essential to connect the scenes precisely so that the movement of the animation occurs dynamically and automatically.

The sizes of the graphics may seem small but this is only because simplified graphics have been used inside Freehand. This is in itself a time-consuming task.

5.3.4 STEP 4: PROGRAMMING A (FLASH 4.0)

Using the programming functions of Flash 4.0, certain features of the animation were able to be elevated. Once the graphics and text had been entered, the sequences had to be programmed in.

This involved the following actions:

- Creating form elements and assigning variables to text field elements.
- Assigning user actions to buttons to enable easy moving between scenes for the user. The user should be able to use the programme with the minimum of prior computer knowledge.
- Creating certain events depending on the user selection. This enables the user to personalize the programme to his/her own choice.
- Creating complex scenes by manipulating methods, properties and events of certain objects within the scene (e.g. visibility, morphing).
- Creating and incorporating a *HELP* file available for users. This provides instructions for the operating of the computer programme as well as troubleshooting during use.

The programming was the most time-consuming part and was what presented the majority of the problems in the process. The researcher did not possess all of the required skills to carry out this part of the programming. It is a specialist field that requires knowledge of graphic design, sound development and advanced programming. All of these skills take years of practice in order to develop them to a proficient enough level to be able to achieve the ideal goals set for this educational computer programme. The researcher was fortunate enough to find the required help of a programmer to assist and provide guidance through the various stages.

The demonstration version designed for the purpose of this research, therefore only provides an idea of the possibilities for the development of such a programme. The complete programme will require the work of dedicated and experienced programmers in the field of multi-media. This however will be very time-consuming and expensive.

5.3.5 STEP 5: SOUND INCLUSION

Sound was originally included in the earlier stages of planning, however, later it posed great problems. Sound files can drive up sizes enormously often up to 100 Megabytes or beyond depending on the number of scenes in the animated sequences. This would add huge download times to presentation both on CD-ROM and on the World Wide Web.

The *.wav* sequences, when converted to Flash sound files, did not comply with the hardware configuration. Problems were also experienced with the Soundblaster 16 and correspondence and compatibility with the settings of the Device Manager. This presented problem for the use of sound.

The addition of sound also added further development time onto the process. This would increase the costs as well as complexity of the site in line with synchronizing scenes to time as well as capturing voice-overs and converting to necessary *.wav* or *.midi* sound files depending on final application (i.e. CD-ROM or the WWW or both).

Sound was eventually left out of the pilot demonstration module owing to the lack of time available and the finances which would have been required to purchase new hardware in order to adapt the compatibility of the software and the hardware.

5.3.6 STEP 6: PROGRAMMING B (DATABASE)

The next step in the process was to connect a database to the programme. Companies will be able to access their employees' details through a database by means of user codes. This will allow the employers to monitor the progress of their employees in the answers that they provide to the questions.

This feature would be a great asset to the programme, however it adds a great deal of complexity and development time to the presentation. The database construction followed the following process:

- Construct a relational database within MS Access consisting of various tables linked together via foreign key relationships and referential integrity.
- Dynamically edit, delete and update database (e.g. User details) via a programming language called Active Server Pages within Homesite 4.0.
- Manipulate form text field variables within Flash 4.0
- Place database on the website which will be accessed via a modem when user presses submit.

5.3.7 STEP 7: PRESENTATION FORMAT

It was essential to examine what the hardware of the end users would be in order to develop the strategy for end-user machine requirements. This includes the size (in megabytes) of the programme as well as the download times. The maximum download times therefore had to be worked out.

Planning had to be done for the possible future inclusion on a website as well as the final format of presentation (e.g. Projector.exe file). This will allow the user to be able to insert the CD containing the programme into any personal computer without the expense of buying specific software to run it. The programme should then run automatically.

5.3.8 STEP 8: TROUBLESHOOTING

It is essential for each scene and layer of the programme to be troubleshot and that the complete programme is debugged. This checks the flow of scenes from one to the next as well as the timing. The scene loading times had to be adjusted and the scenes tested on the browser and desktop.

The programme was burnt / cut onto a compact disk and thereafter tested and re-tested. At this stage the programme was ready for demonstration. However, for the final viewing, the animation movie programme was copied onto the harddrive of the end-user. This facilitated faster viewing via the Central Processing Unit (CPU) and Random Access Memory (RAM) of the desktop.

5.4 PROGRAMME SPECIFICATIONS

It is very difficult to estimate a total cost for the complete programme as many extra hours were used for the researcher to acquire and develop the skills needed for the programming. Owing to the time restrictions, it was only possible to create a demonstration (pilot) version.

It was also essential to create a suitable size to enable presentation via a cost-effective method. The current size specifications are presented below:

- There are over 40 graphics creating a total size of 500 kilobytes (405,000 bytes).
- The average size of the graphics are 25-40 kilobytes
- The average size of a Scene is +/- 100 kilobytes

The programme can immediately be presented on CD-ROM, and can be placed online to be accessible via the Internet (IE5). The division of the programme into modules allows for users with varying levels of knowledge. The simple 'mouse-click' function makes the programme user-friendly and requires the minimum of prior computer skills.

5.5 DEVELOPMENT AND TESTING OF THE PILOT DEMONSTRATION MODULE OF AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

It was necessary to establish the opinion of potential users, concerning the design, content, elements and suitability of the pilot demonstration module of the educational computer programme for employee housing assistance, developed in this study.

Ten respondents (6 low income employees, 2 grade 9 pupils, 1 guidance/life skills teacher and 1 computer studies' teacher) were requested to view the pilot demonstration module and indicate their opinions on a 5-point scale on the 12 formulated questions (Addendum F). They were also asked to comment on the functioning and suitability of the programme. The responses provided the researcher with guidelines for the future development of an educational computer programme for employee housing assistance.

5.5.1 LOW INCOME EMPLOYEE RESPONDENTS' OPINIONS OF THE PILOT DEMONSTRATION MODULE OF AN EDUCATIONAL COMPUTER PROGRAMME

The results of the opinions of the 6 low income employees which were tested, are contained in Table 5.10

Of the 6 low income respondents, 4 (66.6%) saw the pilot demonstration module as easy to use. The module was developed for the use of people who have not necessarily used a computer before. Those who had not (2 respondents), took a short period of time to get used to the new concept, but once they had mastered the use of the computer mouse movements and 'clicking', they were more confident and therefore able to enjoy the learning process.

TABLE 5.10: OPINIONS OF LOW INCOME EMPLOYEES ON THE PILOT DEMONSTRATION MODULE

CONTENT	STRONGLY DISAGREE 1	%	2	%	3	%	4	%	STRONGLY AGREE 5	%	TOTAL
The computer programme was **easy to use**.	0	0.0	0	0.0	2	33.3	0	0.0	4	66.6	6
The **colours** of the screen made the programme more interesting.	0	0.0	1	16.6	0	0.0	2	33.3	3	50.0	6
The meaning of the **pictures** were clear and easy to understand.	0	0.0	2	33.3	1	16.6	1	16.6	2	33.3	6
The **text** (writing) was easy to understand.	1	16.6	0	0.0	1	16.6	3	50.0	1	16.6	6
The **movement** of the pictures and text made the programme more interesting.	0	0.0	1	16.6	0	0.0	1	16.6	4	66.6	6
The programme ran at the correct **speed** for me to follow.	0	0.0	1	16.6	1	16.6	0	0.0	4	66.6	6
Sound (voice) would make the programme easier to understand.	0	0.0	1	16.6	2	33.3	1	16.6	2	33.3	6
It was easy to **move from one screen** to the next.	0	0.0	2	33.3	0	0.0	1	16.6	3	50.0	6
The questions at the end of each lesson were easy to understand..	1	16.6	0	0.0	0	0.0	3	50.0	2	33.3	6
It was easy to fill in the **answers** to the questions at the end of each lesson.	1	16.6	1	16.6	0	0.0	3	50.0	1	16.6	6
The computer programme was **fun** to do.	1	10.0	0	0.0	0	0.0	1	16.6	4	66.6	6
It was more **exciting** to use a computer programme than too learn by reading a book or listening to a person lecturing.	1	10.0	0	0.0	0	0.0	1	16.6	4	66.6	6

n=6

It was felt by 83.3% (3 respondents *strongly agreed*; 2 respondents *agreed*) that the colours of the screen enhanced the interest of the pilot demonstration module. Bright colours caught the attention of the user, although some of the colours of the text need to be adapted so that they stand out more.

Of the 6 respondents, 3 (50.0%) *agreed*, and 1 (16.6%) remained neutral, with regard to the clarity and understandability of the meaning of the pictures. The aim of the simple

graphics was to support the text in explaining the concept to those users who are illiterate or have very weak reading skills. The respondents with lower comprehension skills may not have been fully able to understand the meaning of the pictures.

One respondent (16.6%) *strongly agreed* and 3 *agreed* (50.0%) that the text was easy to understand. The text was simplified into short and concise sentences that only provided one fact at a time. This allowed for users with very underdeveloped comprehension skills to grasp each fact. Respondents who could not read well were still able to enjoy the pictures and understand the very basic ideas behind them. A voice-activated programme could enhance this understanding. Another stumbling block was the language barrier. English was not the mother-tongue of 5 of the respondents. This inhibited their understanding. The programme would possibly need to be translated into other languages.

Eighty-three percent of the respondents (4 *strongly agreed*, 1 *agreed*) saw the movement of the text and pictures as a method of retaining the users' interest in the pilot demonstration module. Animation not only improves the user interface, but also enhances the explanation of certain concepts. It is a method of creating a more enjoyable and exciting learning process.

Of the 6 respondents, 4 (66.6%) felt that the pilot demonstration module ran at the correct speed for them to follow. Only 1 respondent felt that certain scenes progressed too fast to grasp the complete meaning. The programme provides the user with a 'back/reverse button' to enable him/her to repeat the scene or lesson as many times as required.

Of the 6 respondents, only 2 (33.3%) *strongly agreed* that sound would enhance the understanding of the programme. One respondent *agreed*, while 3 respondents (50.0%) remained neutral. When not familiar with the advantages of sound effects and voice activation, it is difficult to predict the effect that it could have on the enhancement of an educational computer programme. Sound can have a positive effect for all users,

but especially for the illiterate ones who would be able to hear the words spoken as they appeared on the screen. Sound effects would also add interest to the programme and perhaps have a positive influence on the understanding of the meaning of the pictures. A voice-activated programme would however, not solve the language problem, unless there was a variety of languages to choose from.

The pilot demonstration module was designed to follow on, using only the mouse to click. Three of the respondents (50.0%) responded positively to the movement from one screen to the next. This action is difficult to grasp for those users who have never used a computer before. The forward and reverse buttons are however, large enough for users to 'click' with little difficulty. After a little practice, this task was found to be fairly easy.

The questions were designed to monitor the progress of the users. They are opinion-based answers and therefore do not pressure the user for the right answer. Only 2 respondents (33.3%) *strongly agreed* that the questions were easy to understand. While testing the pilot module, the respondents were observed to watch their reactions to the programme. Most of them felt pressured and nervous. These respondents were not used to answering questions and found it to be an unpleasant experience.

For those users who were not familiar with the computer and computer keyboard and those who had limited reading, writing, comprehension and/or typing skills, typing in answers was a very difficult exercise. This would explain why only 1 respondent of the 6 (16.6%) *strongly agreed* that the answers were easy to fill in at the end of each lesson.

Of the 6 respondents, 4 *agreed strongly* and 1 *agreed* that the pilot demonstration module was fun to do (50%). Even those respondents who found themselves in an unfamiliar and stressful situation, enjoyed the new and exciting method of learning. They found the computer approach different to what they were used to and realised that they might enjoy it even more with practice and without being observed. Five

respondents (83.3%) considered the method of learning through computer-based programmes, such as this pilot demonstration module, more exciting than books and the lecturing method.

It is very encouraging to see the positive response received from the respondents on the future design and development of an educational computer programme for employee housing assistance. All of the respondents (100%) saw both the pilot demonstration module and the further development of the programme as a good idea.

Lower income employees (n=6) thought that the programme was a good idea but there was a bit of tension with being observed during the completion of the programme. The subjects who had no prior computer skills were able to cope quite well with the mouse action once they had been shown the technique of 'clicking'. A short period of demonstration and practice before employees begin with an educational computer programme would overcome this difficulty.

Although some subjects were not English speaking, this was not a large stumbling block, although the programme would have been easier for them had it been in their own language. Not surprisingly, the simpler questions, requiring one-word answers were more easily answered and the programme was a source of more stress for non-writers and non-spellers.

The overall response was positive from the lower income employees who tested the pilot demonstration module with one respondent remarking that it was "*just like TV*". This was taken to mean that completing the programme had been fun. The module took 20 – 40 minutes to complete which was not too long for the users to get bored or tired. This would be a suitable length for each lesson module for an educational computer programme. It would allow employees to complete a module in a lunch break. The questions and answers make it easy for an employee's progress to be gauged.

5.5.2 TEACHERS AND LEARNERS OPINIONS OF THE PILOT DEMONSTRATION MODULE OF AN EDUCATIONAL COMPUTER PROGRAMME

The pilot demonstration module was also tested in the school environment (n=4) to establish the possibilities of using an educational computer programme on housing at school level. The results of the opinions of two teachers (Computer Studies and Life skills/Guidance) and two grade 9 learners are contained in Table 5.11

TABLE 5.11: OPINIONS OF TEACHERS AND LEARNERS ON THE PILOT DEMONSTRATION MODULE

	STRONGLY DISAGREE								STRONGLY AGREE		
CONTENT	1	%	2	%	3	%	4	%	5	%	TOTAL
The computer programme was **easy to use**.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
The **colours** of the screen made the programme more interesting.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
The meaning of the **pictures** were clear and easy to understand.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
The **text** (writing) was easy to understand.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
The **movement** of the pictures and text made the programme more interesting.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
The programme ran at the correct **speed** for me to follow.	1	25.0	1	25.0	0	0.0	0	0.0	2	50.0	4
Sound (voice) would make the programme easier to understand.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
It was easy to **move from one screen** to the next.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
The questions at the end of each lesson were easy to understand..	1	25.0	0	0.0	0	0.0	0	0.0	3	75.0	4
It was easy to fill in the **answers** to the questions at the end of each lesson.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
The computer programme was **fun** to do.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4
It was more **exciting** to use a computer programme than too learn by reading a book or listening to a person lecturing.	0	0.0	0	0.0	0	0.0	0	0.0	4	100	4

n=4

Table 5.11 clearly showed the *strong agreement* of all of the respondents to all of the questions which they were required to provide their opinions on. The 2 respondents (50%) who did not *strongly agree* with the speed being suitable, commented on the pilot demonstration module being too slow for their liking. This is a clear indication that a programme of this nature is far to easy for grade 9 pupils and should be developed into a more complex and factual learning tool.

Although the grade nine pupils and the teachers found the pilot demonstration module and the questions incredibly easy, they enjoyed completing the module and providing their opinions. This module is too easy for the general use of the high school, but could be used effectively for revision purposes as well as in the primary school outcomes based education curriculum to enhance critical thinking skills in particular. It was suggested that the programme could be incorporated into the Life-skills programme, providing "*a springboard for discussion*".

Despite being found too easy, it was declared to be enjoyable and fun, and different from the usual school presentation of lessons. It might be better suited to the learners who themselves come from lower income housing areas.

Chapter 6 will conclude the results of the study as well as recommendations for further research.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATIONS

6.1 INTRODUCTION

The main objective of this research was to develop a pilot module for an educational computer programme to be used by companies as part of their employee housing assistance. In order to achieve this aim, a number of secondary aims first had to be met. The secondary aims were met through exploratory research using postal and telephone surveys amongst 112 companies in South Africa. The results gained from the surveys confirmed the need for an educational computer programme for employee housing assistance in companies.

This chapter will present the conclusions as well as recommendations for further research. (These will be presented according to the secondary objectives.)
Furthermore, the shortcomings of the research are highlighted in this chapter.

6.2 THE EXTENT TO WHICH COMPANIES IN SOUTH AFRICA PROVIDE EMPLOYEE HOUSING ASSISTANCE

This research was motivated by the ongoing need for housing education and training in South Africa. The literature highlighted the backlog of provision of housing which the government is trying to reduce. However, the government has identified that they cannot do this alone. Input from all sectors is greatly needed, especially the involvement of the private sector, which has a strong influence through its vast numbers of employees.

The results of the section of the survey which investigated the extent to which a sample of South African companies provide employee housing assistance, show evidence that some do offer such assistance. This assistance, however, is mainly financial assistance. It is offered to all the employees in the companies, however, many, especially the low income employees, are unaware of how to use this financial assistance to achieve maximum benefits. Companies are not generally aware of the importance of housing education and training, which should go hand in hand with the financial assistance which they are already offering.

Companies are mainly offering this assistance on an individual basis as required by the employees, and many are employing a person specifically to deal with this, which is costly to the company. Companies need to find a method of transferring information to their employees, which is both cost- and time-effective. Computer-based instruction will make employee housing assistance informative, and cost- and time-effective. Even those companies who do not offer employee housing assistance, motivated their main reason for not doing so as being the high costs of presentation. Computer-based instruction could possibly encourage more companies to offer housing assistance to their employees as it would offer a cost- and time-effective source of housing information.

6.3 VIABILITY OF AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE.

Computer-based instruction is a viable option, since all of the companies have computers and most companies have access to Internet and CD-ROM. Many companies are already, and have been for years, offering training programmes via computer-mediation in fields other than housing education and training. This has also been didactically proven as an effective medium for the transfer of information.

Computers in companies are available to most of the employees and could, in addition, develop computer skills, which could be beneficial to the company.

Additional employee benefits of a computer-based programme to be used as part of employee housing assistance, including increased motivation, satisfaction and knowledge for the employees. The benefits of such a programme for companies themselves were indicated as attracting and retaining employees, improved productivity and less absenteeism. The response of the companies to the overall benefits of such a programme was very positive.

From the survey, it can be concluded that the companies would be interested in an educational computer programme on housing and that there would be benefits for both employees and the companies.

6.4 THE ELEMENTS AND CONTENT OF AN EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

It was established that the educational computer programme should be affordable, cost- and time-effective, user-friendly and needing a minimum of prior computer skills. It should also be flexible to accommodate different levels of knowledge, reliable and compatible with existing computer equipment and programmes. Such a programme should be readily available and accessible when needed and easily updateable and upgradeable.

These elements linked very positively with the literature reviewed in Chapter 2 and added to the validity of using an educational computer programme as part of employee housing assistance.

The survey indicated that respondents saw financial aspects of housing, legal aspects of housing, basic housing technology, tenure options, housing consumerism and housing needs as the most essential. It was therefore decided to base the educational computer programme on these elements.

6.5 THE DEVELOPMENT OF THE EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

The majority (>50%) of the companies in the survey showed interest in an educational computer programme for employee housing assistance. This positive response supported the objectives of the study and indicated the need for the development of a computer programme for employee housing assistance.

The main aim of the study was to develop a framework for an educational computer programme to be used as part of employee housing assistance. The survey not only provided guidelines for the design of the programme, but also showed that companies considered it to be a potentially suitable means whereby their employees could gain vital information regarding housing.

The development of the programme was charted using the design structures in the literature review (Chapter 2). These structures provided a step-by-step approach, which ordered the content and the design in a logical sequence. This was simplified so that even those who do not have a good understanding of computer programming would be able to follow the design process. The focus of the programme, as with most employee housing assistance, will be on the lower income employees.

The content of the programme focuses on those elements of content indicated by the companies, as the most essential. Additional content can be added easily at a later stage.

The programme format was planned in short lessons to eliminate boredom, and provide a greater sense of achievement as each lesson is successfully completed. Each lesson has a test-your-knowledge (interaction) section, where users are able to test their grasp of concepts and understanding of the content. These are not questions with correct or incorrect answers, but are more questions requiring insight to test the users thought processes on the topic. This is usually less intimidating and stressful for the user. The questions could also function as a guideline for the company to record the progress of their employees.

The researcher's original intention was to use the framework to design a complete educational computer programme to be used as part of employee housing assistance. It soon became apparent, however, that this would be a longer and more costly process than at first envisaged. It was decided that a pilot module would be more appropriate and realistic and that this module would be tried out by a few low-income employees and others to obtain some preliminary feedback on the module from them. A positive response would justify further development of the programme and criticism would provide guidelines for the development of the educational computer programme.

The pilot module was designed in Flash 4.0 using Visual Basic Programming Language with a Java base. This allows it to be easily converted to HTML format (Internet) and run on a personal computer. The pilot module was placed onto compact disk so that companies can insert a disk, and have automatic access to the programme. This makes it user-friendly especially, to those who are not familiar with the workings of a computer.

The pilot module was designed using a bright interface which is visually very appealing. The multimedia included text, animation and graphics, with simple text lines to ensure maximum understanding for all users, whatever the level of understanding. The sound was not able to be installed owing to software and hardware compatibility problems.

The results of this research have indicated that the design of the educational computer programme on housing advice and assistance would be an asset to the private sector. The procedures followed in this study were suitable and created a logical process in order for the researcher to achieve the objectives. All of the objectives contributed to the final development of the educational computer programme and have provided a broad perspective on housing education and training in the private sector.

Although the main survey method used in this research was appropriate, the questionnaires failed to provide in-depth opinions of the current trends in employee housing assistance in South African companies. For this, focus groups may have provided more insight into the housing situation in companies.

A questionnaire should have also possibly been provided to the employees of the companies, and not just the Human Resource Manager. This would have created a less biased opinion between what the companies are actually providing in terms of employee housing assistance and what they would like outsiders to perceive.

Although it was not ideal to only develop the pilot demonstration module, the testing of it provided guidelines for the adjustments which would need to be made before and during the design and development of the complete educational computer programme. This saved both time and money in the development process.

6.6 THE PILOT DEMONSTRATION MODULE

Although the pilot module of the computer programme was only tested on 10 subjects, certain observations were possible.

The design of the educational computer programme for employee housing assistance should take on the same structure as the pilot demonstration module, with a few minor adjustments for the different users.

Lower-income users

The following should be considered in the development of the educational computer programme for lower-income employee housing assistance:

- Lower income employees must undergo a brief tutoring session on how to use the computer. This need not be detailed, but it is essential that they grasp basic concepts of computer literacy. This should possibly include, switching the computer on and off, 'clicking' with the computer mouse, inserting a diskette or CD-ROM, and understanding elementary typing on the computer keyboard. These concepts will equip them with the basic skills required to run an educational computer programme with confidence.

- The language of the text of the programme created a barrier, which decreased the impact of the information learnt by the user. It is important for the educational computer programme to adapt to the various languages of its users. This could be done through a number of ways:

    1. The screen text could be translated into more than one language, allowing the user to indicate his/her preference before starting
    2. The screen text could be voice activated through sounding the language of the user's choice. Although the text would not appear in the user's mother-tongue, he/she would be able to hear it spoken.
    3. Clearer pictures with greater detail and more advanced animation could decrease the need for constant use of the text. The text could not however be completely replaced, as every lesson has a section of interaction where the user is required to complete questions on the information gained during the lesson.

All of the above suggestions will require planning and adjustments to the development and programming of the educational computer programme. This will increase both the time and cost.

- The actions which the user has to carry out should be kept simple and to a minimum. These should, where possible, be restricted to the simple 'clicking' of the computer mouse. This is a concept easily grasped by beginners and can be practiced by exposing the users to computer games.

- The length of each module should be limited to 20 minutes. This allows the user to complete a module during a lunch break without the feeling of being rushed or interrupted. This also prevents boredom and frustrations which could develop if the modules were longer.

- Sound inclusion would certainly add to the effectiveness of the educational computer programme for employee housing assistance. Sound effects and voice activation could be fully utilised to create better understanding and add interest and variety to the programme.

- The questions at the end of each lesson should prompt short answers which do not allow the user to feel threatened and nervous. It must be emphasized that it is not a test, but merely an opinion which is provided. The questions should not require a correct or incorrect answer.

- The environment in which the user completes the programme should be a non-threatening environment, and one in which he/she feels comfortable. It is essential that the programme is adaptable to all levels of understanding so as to prevent discrimination of any sort amongst employees of companies.

Learners and teachers

The Grade 9 learners enjoyed completing the pilot demonstration module. They adapted immediately to the use of the educational computer programme, due to their advanced computer literacy knowledge and skills. The programme would be more suitable as revision in different elements of the school curriculum, rather than a primary information tool. The teachers encouraged the development of an educational computer programme on housing advice and assistance and provided guidelines for its possible use in schools.

For an educational computer programme on housing advice and assistance to be maximally utilized in the school system, the following changes need to be made:

- The level and standard of information needs to be increased to suit the comprehension of the targeted learner. This can be done in two ways:

    1. The information can be increased in amount, complexity and understanding thereof. More complex concepts can be used requiring more advanced comprehension and understanding.

    2. The programme can be aimed at the primary school learner, where comprehensive levels are much lower. This however could create the problem of some of the topics not being as applicable to the younger learner.

- The programme should be aimed at children and schools in lower income areas, where basic housing concepts are more relevant and applicable.

- The questions and answers should be suitably adapted for the level of understanding of the learner. This would enable teachers to use the answers as a monitoring tool on the progress of the learner.

- The content should be more specifically structured around the learning areas and subject curriculums in the school system. This would increase the demand for its use in the educational system.

- The teachers emphasized the importance of the content included in the educational computer programme and the valuable contribution it would make to a learner's knowledge and life skills.

The pilot demonstration module was given an encouragingly warm overall reception and the programme was considered to be worthy of further development.

6.7 SHORTCOMINGS OF THE RESEARCH

The following shortcomings of the research were noted:

- Very little literature was available on previous studies similar to this research, especially in the field of housing and the role of the private sector.

- The questionnaire required fairly specific information on the state of the employee housing assistance currently being offered in a company, which the respondents might not have had knowledge of. When faced with the questions to which they did not have an informed response, the respondents may have tended to gloss over the questions without proper consideration. This could have effected the reliability of the results.

- The researcher experienced a low response to the postal questionnaires.

- The 'other' spaces provided on the questionnaire for respondents to fill in additional categories and opinions were very seldom completed. The majority of respondents completed the questionnaire over the telephone and the researcher could not in any way prompt a response, as this would have created unwanted bias.

- The time for the design of the computer programme and the skills required, was underestimated by the researcher and therefore only a pilot module of what the programme could potentially involve, was produced.

- When testing the pilot demonstration programme, the users/respondents were observed. This made some of them feel nervous and pressured. This may have had an affect on the responses to the questionnaire.

6.8 RECOMMENDATIONS FOR FURTHER RESEACH

The following recommendations for further research are made, based on the main findings and conclusions of the research.

- Further research should include qualitative data, including focus groups, where the needs of employees and their opinions about housing assistance could be assessed. The current study only addresses the needs of the companies in this regard.

- The full educational computer programme should be designed and then tested in companies, so as to evaluate its strengths and weaknesses. Appropriate alterations should then be made to the programme until it satisfies the exact needs of the employees and companies.

- The educational computer programme on housing advice and assistance has the potential to be adapted and used in other sectors (schools etc.). This should be considered and implemented and adjusted appropriately for other users (learners).

6.9 CONCLUDING REMARKS

It is apparent that a substantial education and training programme for housing should be incorporated into the daily functioning of private sector companies. More housing education and training is needed and this need for housing education and training can be addressed through an educational computer programme on housing advice and assistance.

Employees will be able to access required housing information at the click of a button, and at the same time, learn invaluable basic computer skills. Companies will no longer have to employ a person to provide housing assistance but could incorporate the housing assistance programmes into the general training offered by the company. This would save both money and time. Employees would not be limited to certain time slots, but could access information during lunch breaks, or even after hours. This will result in less interference with work and could lead to an increase in productivity.

The computer programme will provide a new and exciting method of retrieving information. This educationally sound method will ensure that the employees will understand and remember the information, therefore benefiting greatly from it.

An educational programme on housing will assist in improving the standard of education and training in the private sector and have a trickle effect into households in South Africa. The nature of this programme will be such, that it could be used in other areas of housing education, for example, in schools for self study and revision modules within

the Home Economics syllabus or in the teaching of Urban Geography and Business Economics.

This educational computer programme also opens the possibility for company employees to begin to acquire a recognized qualification on completion of the employee housing assistance course/programme. Evaluations and accreditation of the employee housing assistance programme in terms of the National Qualifications Framework would thus seem to be a definite requirement for its future progress.

Without doubt, the programme has the potential for being a versatile, accessible and portable asset not only to housing education as such, but to the promotion of skills in general.

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ADDENDUM A

COMPANY DETAILS

	COMPANY NAME	ADDRESS 1	ADDRESS 2	ADDRESS 3	CODE	TEL NR	FAX
1	ABSA GROUP LTD	PO BOX 260595	EXCOM	JOHANNESBURG	2023	(011) 3504000	(011) 3502130
2	ACTSTOP	PO BOX 2335	JOHANNESBURG		2000	(011) 3379131	(011) 3371843
3	ADCOCK INGRAM LTD	PRIVATE BAG X69	BRYANSTON		2021	(011) 7099300	(011) 7099332
4	AECI LIMITED	PRIVATE BAG X21	GALLOMANOR		2052	(011) 3296111	(011) 8068701
5	AFESIS CORPLAN	PO BOX 7101	EAST LONDON		5200	(0431) 433830	(0431) 432200
6	AFFROX	PO BOX 879	GERMISTON		1400	(011) 4563904	(011) 8711283
7	ALEXANDER FORBES	PO BOX 787240	SANDTON		2146	(011) 2690000	(011) 2691111
8	ALPHA LIMITED	PO BOX 781868	SANDTON		2146	(011) 7801000	(011) 7801091
9	ALTFIN	PO BOX 700	KEMPTONPARK		1620	(011) 9741156	(011) 9741100
10	ALUSAF		RICHARDS BAY			(0351) 999211	(011) 9992710
11	ANGLO AMERICAN	PO BOX 61587	MARSHALLTOWN	JOHANNESBURG	2107	(011) 6389111	(011) 6384429
12	ANGLO AMERICAN PLATINUM GROUP	PO BOX 62179	MARSHALLTOWN	JOHANNESBURG	2107	(011) 3736111	(011) 8342379
13	ANGLOVAAL MINING LTD	PO BOX	MARSHALLTOWN	JOHANNESBURG	2107	(011) 6349111	(011) 6340038
14	ARTHUR ANDERSEN	PO BOX 2563		CAPE TOWN	8000	(021) 4199900	(021) 4193712
15	ASA LTD	36 WIERDA RD WEST	SANDTON	JOHANNESBURG	2196	(011) 7840500	(011) 7840506
16	ASSOCIATED ORE AND METAL CORPORATION	PO BOX 61042	MARSHALLTOWN	JOHANNESBURG	2107	(011) 4847212	(011) 6436411
17	BOPHUTHATSWANA BUILDING SOCIETY	PO BOX 4350	MMBATHO		2735	(0140) 843300	(0140) 25108
18	BUIL.DING MATERIAL SUPPLIES OF SA	PO BOX 131258	NORTHMEDE		1511	(011) 4251761	(011) 8493635
19	CASHBANK	PO BOX 15545	VLAEBERG		8018	(021) 4621747	(021) 4615387
20	CG SMITH LIMITED	PO BOX 784525	SANDTON		2146	(011) 8830575	(011) 8833129
21	C.N.A. GALLO	PO BOX 9380		JOHANNESBURG	2000	(011) 7840030	(011) 7840669
22	COLOMBUS STAINLESS STEEL	PO BOX 781815	SANDTON		2146	(011) 7832060	(011) 8831416
23	COLORPRESS PTY LTD						
24	COMMERCIAL UNION OF SA LTD	PO BOX 3555	JOHANNESBURG		2000	(011) 4911476	(011) 4921237
25	COOPERS AND LYBRAND	PO BOX 9481	JOHANNESBURG		2000	(011) 4984000	(011) 8344745
26	CORPORATE HOMES TRUST	PRIVATE BAG X12	WESTVILLE		3630	(031) 2669761	(031) 865329
27	DELOITTE AND TOUCHE	PRIVATE BAG X6	GALLO MANOR		2052	(011) 8065000	(011) 8065003
28	DELTA ELECTRICAL INDUSTRIES	PO BOX 78396	SANDTON		2146	(011) 7834500	(011) 8845398
29	DELTA FOUNDATION						
30	DELTA MOTOR CORPORATION	PO BOX 1137	PORT ELIZABETH		6000	(041) 4039111	(041) 4302903
31	ENGEN LIMITED	PO BOX 35	CAPE TOWN		8000	(021) 4034120	(021) 4034646
32	ERNST & YOUNG	PO BOX 2332	JOHANNESBURG		2000	(011) 4981339	(011) 4981238
33	ESKOM	PO BOX 1091	JOHANNESBURG		2000	(011) 8008111	(011) 8005684
34	FEDSURE HOLDINGS LIMITED	PO BOX 666	JOHANNESBURG		2000	(011)3326000	(011) 4921102
35	FIRST NATIONALBANK OF SA LIMITED	PO BOX 7791	JOHANNESBURG		2000	(011) 3712111	(011) 3712257

36	FOSCHINI LIMITED	PO BOX 2563	CAPE TOWN		8000	(021) 9381911	(021) 928734
37	GBS MUTUAL BANK	PO BOX 114	GRAHAMSTOWN		6140	(0461) 27109	(0461) 28855
38	GILBEYS, DISTILLERS AND VINTNERS		JOHANNESBURG		2000	(011) 3338501	(011) 3331050
39	GILDENHUYS, V/D MERWE INC.		PRETORIA			(012) 4273700	(012) 4273777
40	GOLDFIELDS OF SA LTD	PO BOX 61525	MARSHALLTOWN	JOHANNESBURG	2000	(011) 6399111	(011) 6392101
41	HENMONT INVESTMENTS	PO BOX 25809	EASTRAND		1462	(011) 9182682	(011) 9183858
42	HOME LOAN GUARANTEE COMPANY	PO BOX 23	AUCKLANDPARK		2006	(011) 7263150	(011) 7267415
43	HOUSING CONSUMER PROTECTION TRUST		AUCKLANDPARK	JOHANNESBURG	2000	(011) 3338501	(011) 3331050
44	HOUSING SOLUTIONS	SUITE 405	MAILZONE X8	MELVILLE	2109	(011) 4861830	(011) 4861418
45	IBM SOUTH AFRICA GROUP LTD	PRIVATE BAG X9907	SANDTON		2146	(011) 3029111	(011) 3029988
46	ILOVO SUGAR LTD	PO BOX 194	DURBAN		4000	(031) 3051511	(031) 3076915
47	IMPALA PLATINUM HOLDINGS LTD	PO BOX 61386	MARSHALLTOWN	JOHANNESBURG	2107	(011) 3762800	(011) 8365954
48	INDUSTRIAL DEVELOPMENT CORP. OF SA	PO BOX 784055	SANDTON		2146	(011) 2693000	(011) 2693116
49	ISLAND VIEW STORAGE LTD	PO BOX 149	DURBAN		4000	(031) 4664241	(031) 4664541
50	JCI GOLD	PO BOX 590	JOHANNESBURG		2000	(011) 3739111	(011) 4921070
51	JOHANNESBURG HOUSING COMPANY	PO BOX 61738	MASRSHALLTOWN		2107	(011) 8360442	(011) 8364407
52	JOHNSON & JOHNSON	PO BOX 786514	SANDTON		2146	(011) 8045960	(011) 8045644
53	KHAYA LETHU HOME LOANS PTY LTD	PO BOX 5854	JOHANNESBURG		2000	(011) 8384245	(011) 8384299
54	KHULA	PO BOX 4197	RIVONIA		2128	(011) 8078464	(011) 8078471
55	KING FINANCE	PO BOX 6397	BLOEMFONTEIN		9300	(051) 4474713	(051) 4306965
56	KWAZULU FINANCE & INVESTMENT CORP LTD	PO BOX 2801	DURBAN		4000	(031) 9078911	(031) 9075350
57	LIBERTY LIFE ASSOC. OF AFRICA LIMITED	PO BOX 10499	JOHANNESBURG		2000	(011) 4083911	(011) 4082109
58	LONRHO AGR BUSINESS SA	PO BOX 682	WARMBATHS		0480	(014) 7300274	(014) 7300121
59	MALBAK LIMITED	PO BOX 782040	SANDTON		2146	(011) 8831901	(011)7835708
60	MATTHEW NEL AND ASSOC.	PO BOX 31713	BRAAMFONTEIN		2017	(011) 4033640	(011) 4031499
61	MERCEDES BENZ OF SA	PO BOX 1717	PRETORIA		0001	(012) 3091500	(012) 3287376
62	METROPOLITAN LIFE LIMITED	PO BOX 2212	BELLVILLE		7535	(021) 9405911	(021) 9405730
63	MONDI LIMITED	PO BOX 61101	MARSHALLTOWN		2107	(011) 6384000	(011) 6385092
64	MURRAY & ROBERTS HOLDINGS LTD	PO BOX 1000	BEDFORDVIEW		2008	(011) 4551410	(011) 4552222
65	NAMPAK LTD	PO BOX 784324	SANDTON		2146	(011) 4447418	(011) 4444794
66	NASIONALE PERS LTD		CAPE TOWN		8000	(021) 4062121	(021) 4062913
67	NATIONAL UNION OF MINEWORKERS	PO BOX 2424	JOHANNESBURG		2000	(011) 8837012	(011) 8368365
68	NEDCOR	PO BOX 1144	JOHANNESBURG		2000	(011) 6307111	
69	NESTLE		CAPE TOWN		8000	(021)9512201	(021) 5117378
70	NISSAN SA (PTY) LTD	PO BOX 785749	SANDTON		2146	(011) 8837720	(011) 8837785
71	OCEANO FISHING GROUP LTD	PO BOX 3596	CAPE TOWN		8000	(021) 4195911	(021) 4195979

72	OLD MUTUAL	PO BOX 66	CAPE TOWN		8000	(021) 5099111	(021) 5094444
73	OTIS ELEVATOR COMPANY LTD	PO BOX 2729	JOHANNESBURG		2000	(011) 3345200	(011) 3345936
74	PG BISON LTD			JOHANNESBURG	2000	(011) 3533500	(011) 6182127
75	PRETORIA PORTLAND CEMENT COMPANY LTD	PO BOX 782248	SANDTON		2146	(011) 4881700	(011) 7263537
76	RAND MERCHANT BANK LTD	PO BOX 786273	SANDTON		2146	(011) 8833650	(011) 7837188
77	RAND MINES LTD	PO BOX 78861	SANDTON		2146	(011) 4411611	(011) 4411837
78	REX TRUEFORM CLOTHING CO LTD	PO BOX 1856	CAPE TOWN		8000	(021) 4609400	(021) 4609500
79	RICHARDS BAY MINERALS	PO BOX	RICHARDS BAY			(0351) 9013111	(0351) 9013160
80	ROBERTSONS LTD	PO BOX 1956	DURBAN		4000	(031) 3699600	(031) 3060315
81	SAMANCOR LTD	PO BOX 8186	JOHANNESBURG		2000	(011) 3787000	(011) 3787368
82	SANLAM	PO BOX 1	SANLAMHOF		7532	(021) 9479111	(021) 9478066
83	SASOL LIMITED	PO BOX 5486	JOHANNESBURG		2000	(011) 4413111	(011) 7885092
84	SC JOHNSON AND SON		PRETORIA		0001	(012) 6785412	(012) 5412144
85	SCHERING PTY LTD			JOHANNESBURG	2000	(011) 3139700	(011) 3139793
86	SENTRACHEM	PO BOX 781811	SANDTON		2146	(011) 7803600	(011) 7838997
87	SMITHKLINE BEECHAM PHARMASEUTICALS	PO BOX 347	BERGVLEI		2012	(011) 4445200	(011) 4443477
88	SOCIAL SURVEYS PTY LTD	PO BOX 93942	YEOVILLE		2143	(011) 4871833	(011) 4873621
89	SOUTH AFRICAN SUGAR ASSOC.	PO BOX 374	DURBAN		4000	(031) 3056161	(031) 3044939
90	SOUTHERN LIFE ASSOC.LTD	GREAT WESTERFORD	MAIN RD	RONDEBOSCH	7700	(021) 6580911	(021) 6891323
91	SPAR GROUP LTD			CAPE TOWN	8000	(021) 5507300	-21
92	STANDARD BANK OF SA	PO BOX 9510	JOHANNESBURG		2000	(011) 6369112	(011) 6361021
93	STANDARD CORPORATE FINANCES PTY LTD	PO BOX 3832	RIVONIA		2128	(011) 8072239	(011) 8071699
94	SWISS RE SOUTHERN AFRICA LTD	PO BOX 7049	JOHANNESBURG		2000	(011) 6869020	(011) 4895600
95	TAVISTOCK COLLIERIES		JOHANNESBURG		2000	(011) 3739111	(011) 3739111
96	THE ASSOCIATED ORE AND METAL CORP. LTD	PO BOX 61042	PARKTOWN	JOHANNESBURG	2107	(011) 4847212	
97	THE MINEWORKERS PROVIDENT FUND		JOHANNESBURG			(011) 4987100	
98	TIGER OATS LTD	PO BOX 78056	SANDTON		2146	(011) 3200111	(011) 8842029
99	TNBS MUTUAL BANK	PO BOX 186	UMTATA		5100	(0471) 312661	(0471) 25430
100	TONGAAT HULLETS GROUP LTD	PO BOX 3	TONGAAT	KWAZULU NATAL	4400	(0322) 994000	(0322) 923333
101	TOYOTA SA LTD	PO BOX 481	BERGVLEI		2012	(011) 8099111	(011) 4441755
102	TRANSNET	PRIVATE BAG X47	JOHANNESBURG		2000	(011) 4887108	(011) 4887125
103	UMGENI WATER		DURBAN		4000	(031) 7197300	(031) 7197325
104	UNILEVER SA PTY LTD	PO BOX 209	BOKSBURG		1460	(011) 8995911	(011) 9144282
105	UNITED INTERNATIONAL PICTURES		BELLVILLE	CAPE TOWN	8000	(021) 9190210	(021) 9101012
106	UNITRANS LTD	PO BOX 15	NORTHLANDS	JOHANNESBURG	2116	(011) 4428551	(011) 4427802
107	VAN LEER SA PTY LTD	PO BOX 7164	JOHANNESBURG		2000	(011) 6437131	(011) 6436010

108	VENDA BUILDING SOCIETY	PO BOX 845	THOHOYANDOU		0950	(0159) 2154	(0159) 21986
109	WARNER-LAMBERT SAPTY LTD	PRIVATE BAG X6	TOKAI		7966	(021) 7104111	(021) 7104900
110	WEIR-ENVIROTECH	PO BOX 70	ISANDO		1600	(011) 9292600	(011) 9292955
111	WERKSMANS ATTORNEYS	PO BOX 927	JOHANNESBURG		2000	(011) 4880000	(011) 4843100
112	WOMEN DEVELOPMENT BANK	PO BOX 592	AUCKLANDPARK		2006	(011) 7264230	(011) 7261938

ADDENDUM B

POSTAL QUESTIONNAIRE

QUESTIONNAIRE

Please complete this questionnaire as carefully and accurately as possible. All the information will be treated in the strictest confidence and will be used for research purposes only.

SECTION A

Instructions:
Section A must be answered by all respondents

1. Which of the following housing related services are currently being offered to employees by your company ?

Please indicate by a cross in the appropriate block(s).

	YES	NO
Financial Housing Assistance *(i.e. housing allowance etc.)*	☐	☐
Administrative Advice *(i.e. budgeting, loan application etc.)*	☐	☐
Advice on Housing Issues *(i.e. renting vs. purchasing, consumerism etc.)*	☐	☐
Advice on Social Matters *(water conservation, recycling etc.)*	☐	☐
Practical Housing Advice *(i.e. maintenance, renovation, ergonomics etc.)*	☐	☐

If you answered **YES** to any of the above questions, please supply detail on the

EMPLOYEE HOUSING ASSISTANCE as offered by your company

↓

Continue to Section B (question 2)

If you answered **NO** to all of the above questions:

Please leave out Section B (questions 2 to 18) and

↓

Proceed to Section C (question 19)

SECTION B

Instructions:
Section B must be answered by those companies who offer some form of Housing Assistance to their employees.

2. How do you offer Housing Assistance to your employees ?

Please indicate by means of a cross in the appropriate block(s).

- ☐ Individual advice
- ☐ Group advice
- ☐ Self study modules
- ☐ Lectures
- ☐ Brochures / Pamphlets
- ☐ Computer aided teaching
- ☐ Other, please specify _____

3. How many hours are spent on this assistance, by the company, per week ?

Please indicate the number of hours.

_____Hours

Specify, if needed _____

_____

4. Who receives this assistance ?

Please indicate by means of a cross in the appropriate block (s).

- ☐ Administrative employees
- ☐ Management
- ☐ Other employees, please specify _____

5. What does this service cost your company per year ?

*Please indicate an **estimated** amount in Rand.*

R _____

6. How many employees does this service reach per year ?

Please indicate an estimated amount of employees.

_____ *employees*

7. Does your company have computers / computer facilities?

Please indicate by means of a cross in the appropriate block.

☐ Yes

☐ No → If no, continue with question 11

8. What are these used for?

Please indicate by means of a cross in the appropriate block (s).

☐ Training

☐ Administration

☐ Other, please specify _____

_____

9. Who uses these computers ?

Please indicate by means of a cross in the appropriate block (s).

☐ Management only

☐ Administration

☐ Other employees, please specify _____

10. Are the computers equipped with?

Please indicate by means of a cross in the appropriate block (s).

☐ CD-ROM

☐ Internet

11. Would you consider obtaining / purchasing a <u>visual interactive multi-media computer programme</u> to provide housing advice and assistance for employees in your company ?

Please give your opinion on the lines provided.

_____

_____

_____

12. Would your company benefit from a visual interactive multi-media computer programme which would provide housing advice and assistance for employees in your company ?

☐ Yes

☐ No → If No, please provide a reason

_____

_____

_____

And continue with question 16

13. Which employees in your company would you offer such a service to ?

☐ Administrative employees

☐ Management

☐ Other employees, please specify _____

14. <u>Employees</u> will benefit from such computer based housing assistance in the following ways:

Please indicate your opinion by circling the most appropriate number on the grid provided

	STRONGLY DISAGREE				STRONGLY AGREE
a) Increased motivation	1	2	3	4	5
b) Increased satisfaction	1	2	3	4	5
c) Increased knowledge	1	2	3	4	5
d) Additional skills	1	2	3	4	5
e) other, please specify	1	2	3	4	5

_____

15. <u>Your company</u> will benefit from such computer based employee housing assistance in the following ways:

Please indicate your opinion by circling the most appropriate number on the grid provided

	STRONGLY DISAGREE				STRONGLY AGREE
a) Attracting employees	1	2	3	4	5
b) Retaining employees	1	2	3	4	5
c) Improved productivity	1	2	3	4	5
d) Less absenteeism	1	2	3	4	5
e) other, please specify	1	2	3	4	5

_____

16. Which of the following do you see as essential elements of computer based housing advice and assistance ?

Please indicate your opinion by circling the most appropriate number on the grid provided

	DEFINITELY NO				DEFINITELY YES
a) Affordability and cost-effectiveness	1	2	3	4	5
b) Compatibility with computer equipment and programmes which the company already has.	1	2	3	4	5
c) Easily updateable and upgradeable	1	2	3	4	5
d) Reliability	1	2	3	4	5
e) Flexible to all levels of knowledge	1	2	3	4	5
f) Interactivity between the user and computer, providing feedback on progress	1	2	3	4	5
g) User-friendly needing minimum of prior computer skills	1	2	3	4	5
h) Time effectiveness	1	2	3	4	5
i) Interchangeable sources (e.g. Internet, CD-ROM and Disks)	1	2	3	4	5
j) Readily availiable and accessible when needed	1	2	3	4	5
k) other, please specify	1	2	3	4	5

_____

17. Which of the following do you see as essential content of computer based housing advice and assistance for your company?

Please indicate your opinion by circling the most appropriate number on the grid provided

	DEFINITELY NO				DEFINITELY YES
a) Financial aspects of housing, including insurance, budgeting, loans, subsidy etc.	1	2	3	4	5
b) Basic housing technology, including planning, building, materials for construction, security, finishing off etc.	1	2	3	4	5
c) Housing market, including understanding economic cycle and factors which affect housing market etc.	1	2	3	4	5
d) Housing needs of the consumer and how to meet them.	1	2	3	4	5
e) Community and the role it plays , including civic, social and economic development.	1	2	3	4	5
f) The effect which housing has on the environment and the environment on it, e.g. pollution, erosion, weather conditions etc.	1	2	3	4	5
g) Tenure options e.g. renting vs. buying etc.	1	2	3	4	5
h) Housing maintenance, e.g. renovation and upgrading.	1	2	3	4	5
i) Housing policy, understanding the housing policy, subsidies and the constitution.	1	2	3	4	5

	DEFINITELY NO				DEFINITELY YES
j) Sources of housing information, including where to find more information on housing.	1	2	3	4	5
k) Legal aspects of housing, including quotes, contracts and responsibilities etc.	1	2	3	4	5
l) Resource Management, including efficient management of home, recycling and waste.	1	2	3	4	5
m) Cultural aspects of Housing, including expression of culture, norms and traditional housing.	1	2	3	4	5
n) Housing design and furnishing, including appropriate wall, floor and window finishings, lighting and ergonomics.	1	2	3	4	5
o) Housing consumerism, including the rights and responsibilities of the consumer etc.	1	2	3	4	5
p) Role-players in housing, including individuals and organisations involved in the housing process.	1	2	3	4	5
q) other, please specify _____	1	2	3	4	5

If you do offer some form of housing assistance at present, PLEASE DO NOT ANSWER SECTION C (questions 19 – 21), BUT CONTINUE TO SECTION D (page 10)

SECTION C

Instructions:
Section C must be answered by those companies who do not currently offer any form of housing assistance to employees.

19. Which of the following reasons, for not offering any Employee Housing Assistance, applies to your company?

Please indicate by means of a cross in the appropriate block(s).

- ☐ Employees do not need housing assistance
- ☐ Employees do not want housing assistance
- ☐ Other institutions provide housing assistance for employees, if so, please specify _____
- ☐ Company can not afford to provide housing assistance
- ☐ Company has not yet identified the need to supply housing assistance
- ☐ Other, please specify _____

20. Does your company plan to provide any housing related assistance to employees in the near future?

Please indicate by means of a cross in the appropriate block.

☐ YES ☐ NO

a) If **NO**, why not? _____

_____

_____

Continue to Section D

21. If YES, which of the following is your company planning to offer?

Please indicate by a cross in the appropriate block(s).

	YES	NO
Financial Housing Assistance *(i.e. housing allowance etc.)*	☐	☐
Administrative Advice *(i.e. budgeting, loan application, subsidy etc.)*	☐	☐
Advice on Housing Issues *(i.e. renting vs. purchasing, consumerism etc.)*	☐	☐
Advice on Social Matters *(water conservation, recycling etc.)*	☐	☐
Practical Housing Advice *(i.e. maintenance, renovation, ergonomics etc.)*	☐	☐

SECTION D

Instructions:
Section D must be answered by all respondents

22. Would your company be interested in receiving information on the visual interactive multi-media computer programme providing housing information, being developed as part of this research?

YES ☐ NO ☐

Thank you for your participation.

Please return this questionnaire as promptly as possible to:

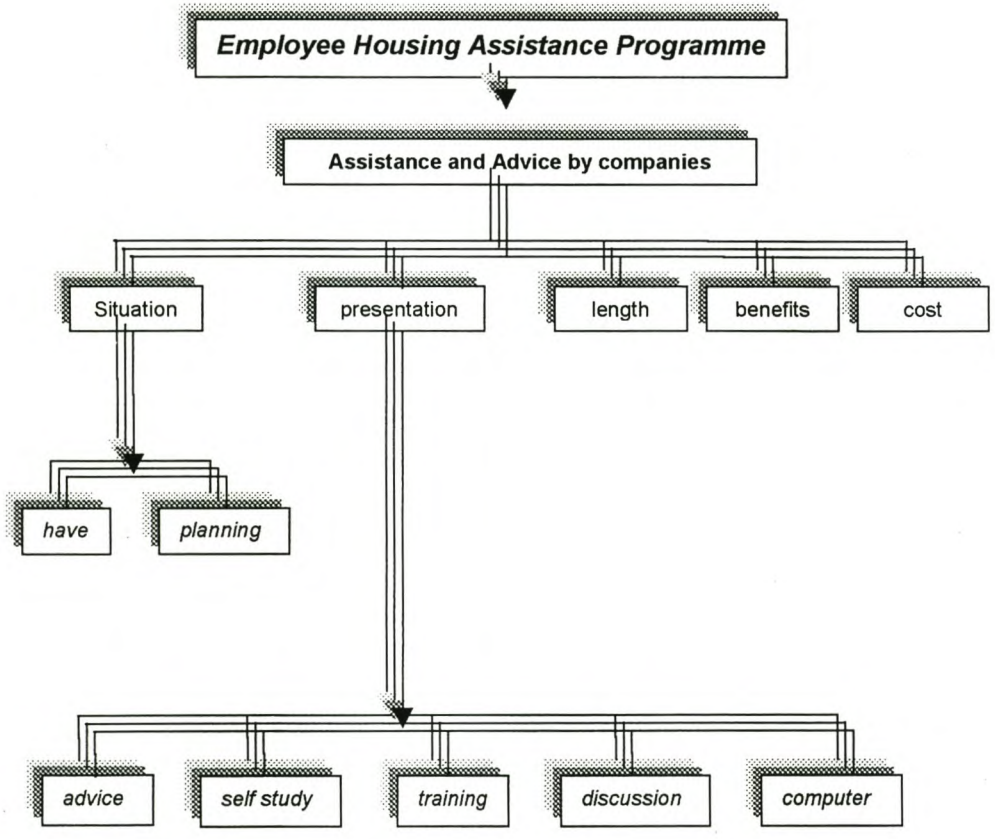
Dept Consumer Science
University of Stellenbosch
Private Bag X1
Matieland 7602

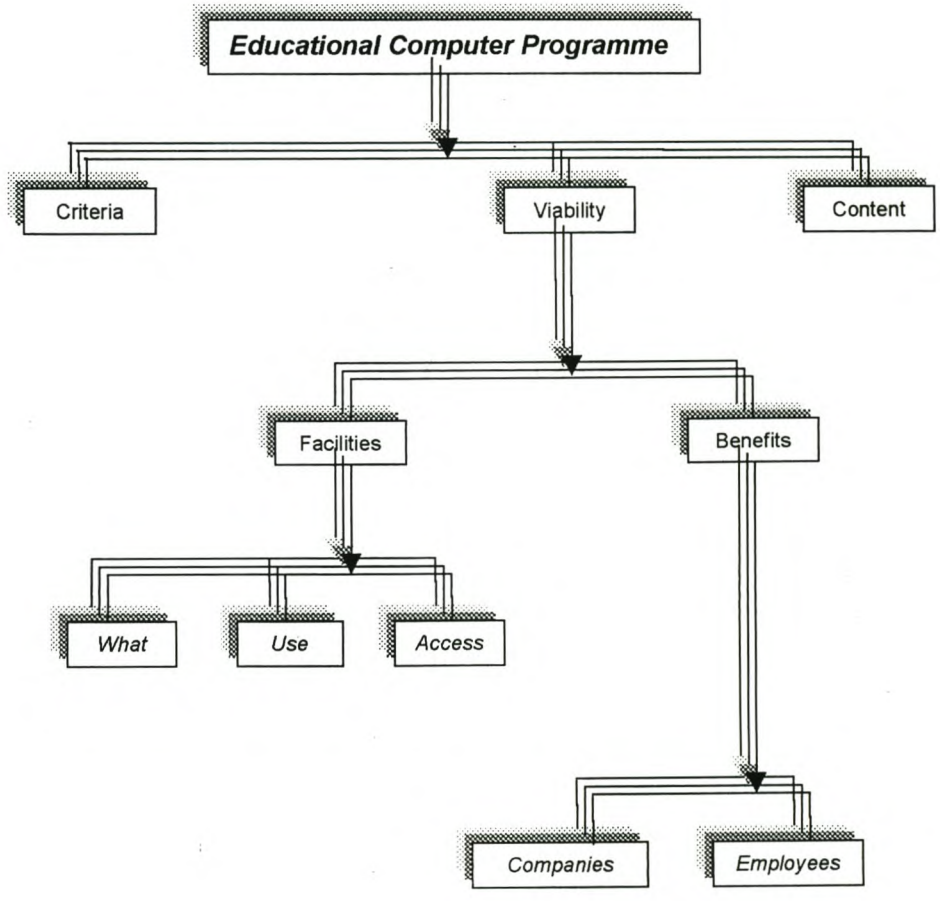
or by fax to *(021) 808 4808*

ADDENDUM C

DENDROGRAM

The Development of an Educational Computer Programme to be used by Companies as part of an Employee Housing Assistance Programme





ADDENDUM D

COVERING LETTER

20 September 1999

«CONTACT»
«COMPANY_NAME»
«ADDRESS_1»
«ADDRESS_2»
«ADDRESS_3»
«CODE»

Dear Sir/ Madam

EMPLOYEE HOUSING ASSISTANCE PROGRAMME

Your company has been identified as a prominent leader in its business field. You have subsequently been chosen to participate in this research project.

The University of Stellenbosch is conducting research among companies to: (a) determine to which extent companies in South Africa offer assistance to their employees on housing and housing related issues, and (b) to establish whether they regard an educational computer programme, to be used as part of such assistance, as a viable option.

You are kindly requested to complete the enclosed questionnaire as accurately as possible. All information provided will be used for research purposes only and will be treated with the **strictest confidence**. It should not take more than **ten minutes** to complete.

Prompt replies will be appreciated. Please direct any questions or queries to the researcher, **Alex Fullard** by fax **(021) 808 4804** or by telephone **083 303 3364**

Those companies who reply promptly will be given direct access to the pilot computer programme.

Please return questionnaires in the self addressed envelope or by fax to *(021) 8084804*

before 10 October 1999

Thank you for your participation and time.

Yours faithfully

for PROF. R. VAN WYK
PROJECT LEADER

ADDENDUM E

FACSIMILE REMINDER

REMINDER URGENT REMINDER

Attention: The Human Resource Manager

Dear Sir / Madam

Please remember to post or fax the EMPLOYEE HOUSING ASSISTANCE SURVEY QUESTIONNAIRE as soon as possible to the researcher (Alex Fullard).

We are aware of the tremendous time pressures and deadlines in companies today, however it would be appreciated if you could allow 10 minutes of your time, to complete the questionnaire which was sent to you and return it by postage or fax to the details provided, before

Friday 22 October 1999

The data received will then be processed and used in the design of an educational computer programme for the use by companies in their Employee Housing Assistance and Advice.

If you have not received a survey questionnaire, please contact the researcher as soon as possible (questions and queries can also be directed to the researcher)

Thank you for your input and time.

Yours sincerely

PROF R. VAN WYK
(Study leader)

University of Stellenbosch
Dept. Consumer Sciences
Private Bag X1
MATIELAND
7602

Tel: 083 3033364

Fax: (021) 808 4808

ADDENDUM F

PILOT MODULE QUESTIONNAIRE

EDUCATIONAL COMPUTER PROGRAMME FOR EMPLOYEE HOUSING ASSISTANCE

(OPINIONS ON PILOT MODULE)

Please indicate your opinion by circling the most appropriate number on the grid provided

		DEFINITELY NO				DEFINITELY YES
1.	The computer programme was **easy to use**.	1	2	3	4	5
2.	The **colours** of the screen made the programme more interesting.	1	2	3	4	5
3.	~~Was~~ the meaning of the **pictures** were clear and easy to understand?	1	2	3	4	5
4.	The **text** (writing) was easy to understand.	1	2	3	4	5
5.	The **movement** of the pictures and text made the programme more interesting.	1	2	3	4	5
6.	The programme ran at the correct **speed** for me to follow.	1	2	3	4	5
7.	**Sound** (voice) would make the programme easier to understand.	1	2	3	4	5
8.	It was easy to **move from one screen** to the next.	1	2	3	4	5
9.	**The questions** at the end of each lesson were easy to understand..	1	2	3	4	5
10.	It was easy to fill in the **answers** to the questions at the end of each lesson.	1	2	3	4	5
11.	The computer programme was **fun** to do.	1	2	3	4	5
12.	It was more **exciting** to use a computer programme than too learn by reading a book or listening to a person lecturing.	1	2	3	4	5

Do you think that this programme was a good idea and should be developed further?

YES NO