Chapter 7

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7.1 Overview of Study

7.1.1 Introduction

This study was motivated by the increasing pressure on organisations to maintain and develop the skills of their employees to enable them to confront the challenges that face competitive organisations in a globalised environment. Warehouse workers, the unit of analysis of this study, experience the unfortunate situation that they only have the option of classroom training to learn new skills and competence. Their absence from the workplace affects production negatively and prompted managers and decision makers to consider e-learning as an alternative. e-Learning is widely promoted to be the training solution due to its anywhere anytime advantage, and due to the empowering influence of computer technology. e-Learning is dependent on access to the networked infrastructures of the world, computer access and literacy of the learner. It also requires expertise to facilitate, and above all, a total different motivation from classroom training. Self-driven learners are believed to be the main driving force of the learning process.

The study emanated from the consideration to introduce e-learning to warehouse workers in the SCM environment, and as with most instructional designing projects, it should commence with a needs analysis. A thorough target group analysis involved the exploration of the e-readiness of warehouse workers. Sceptics cautioned that the intrinsic motivation for self-driven learning does not exist in communities such as that of warehouse workers, even more so when employed within a developing country, while others suggested that leadership and facilitation with clear goals may influence them to adapt to the demands of e-learning. This study sought to explore the e-readiness of warehouse workers. The initial problem – to define the dimensions of e-readiness to be considered when exploring the e-readiness of warehouse workers – guided the conceptual framework of this study. The research question related directly to Reeves' (1999) guidelines for designing learning on the www. My initial thesis was that the warehouse workers were a community that may respond to challenges of e-learning according to their own attitudes and individual differences, origins of motivation and cultural habits of mind – as suggested by Reeves (1999).

This chapter concludes this research by presenting an overview, discussing the conclusions and relevance, presents the limitations and recommendations of the study.

7.1.2 Overview

I constructed the rationale and purpose of my study in Chapter one. Apart from my personal interest to explore viable strategies of e-learning for the warehouse workers, SCM organisations were interested in the advantages e-learning may hold for its workforce. I described globalization and how

the resulting digital divide affected the warehouse workers. It included the paradox in which the warehouse workers find themselves being surrounded by technology and the dynamics of a global organisation, and their exposure being limited in the use and knowledge of ways to learn with computers. I reported that computer technology offered individualized learning, is regarded as the great enabler and that it is believed to hold the key to bridging the digital divide.

I explained that e-learning was widely promoted to be the solution where learners can not leave their work stations for classroom training. Advantages such as learner-centred approach, asynchronous learning, own tempo, just-in-time and cost effectiveness seemed to be an attractive option to organisations. I also referred to the specific qualities potential learners should have to become self-driven learners with computers. This background and rationale of the study generated my initial research question: What were the aspects contributing to the e-readiness of warehouse workers?

I further explained that my plan was to explore the e-readiness of the warehouse workers by adopting an interpretive approach. I explained the theoretical framework, declared my epistemological preference and plans to adopt an interpretive approach. I referred to my plan to work with individuals and to find out how they regarded technology, whilst making sure that a clear understanding can be formed as to how they perceive the technology as a possible learning tool and platform. My study was subjective and interpretive, and made me aware that I may find several possible answers to a single question. I adopted a qualitative approach for this study based on the belief that people are unique, interpret and construct knowledge of social reality from their own points of view. I described my intentions to employ a case-study design to gain an in-depth understanding of the situation and meaning of the e-readiness of the warehouse workers (Merriam, 1998). Chapter one concluded with a brief description of my data-analysis procedures and the possible limitations of the study.

The literature review discussed in Chapter two provided a richer understanding of the demands e-learning may pose for the target group for whom it was intended. I described the views of authors such as Bowles (2004), Anderson and Elloumi (2004), Alessi and Trollip (2001), Johnson and Aragon (2001), Khan (2005), Bagnasco, Chirico, Parodi and Scapolla (2003) on e-learning and identified their perceived demands of e-learning on the learners and facilitators. Most sources emphasised the importance of the learner as the centre of the e-learning process and verified the need of a thorough target group analysis before e-learning is undertaken. The advantages and disadvantages of e-learning were debated. Advantages that appealed to the SCM environment included asynchronous, anywhere-anytime and own-tempo learning, real-time interaction with co-students and instructors, and control over the learning process (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Bowles, 2004).

This chapter also referred to the concern of the South African government by implementing legislation to address the digital divide. Organisations and movements such as the ICT Black Employment Charter (2004) called for a joint development of skills in the ICT sector. These views were in line with international reports that regarded South Africa as a developing country that needs to bridge the digital

divide. The WEF (2003) regarded South Africa as a category one country that has implemented legislation to support the growth of access to and affordability of ICT. Reports such as DOT Force (Digital Opportunity Task Force, 2001) and InfoDev (Information for Development Program, 2003) recommended the involvement of the local communities, to get a clear indication of what they expected, how they wanted to go about in achieving a shared goal regarding ICT.

Chapter two further debated the effects of globalisation, the digital divide, and the responses by modern organisations. Castells (as cited in Huckle, 1997) described a "Networked Society", to describe companies' dependency on the availability of technology to compete and survive against other firms in the world. Academics seem to agree that globalisation affects cultures directly. Some view it to be threatening, while others believe it can be seen as an opportunity to bridge the digital divide. Gurstein (2003) proposed the concept of Community Informatics (CI) to empower people, develop communities, and make organisations prosperous in a bid to bridge the digital divide. I referred to case studies where computer technology has been introduced to developing communities. Recommendations from these case studies were that local people should be involved in the planning and the design of e-learning strategies, and that a thorough analysis of the target groups should be conducted before the project is undertaken. It is also believed that facilitators should understand the position and perspectives of the target group, before implementing an e-learning initiative.

I explained the demands that e-learning may impose on organisations and the warehouse workers. e-Learning requires that e-learners have access to computers, connected to the network and/or internet, with quick access to the learning information (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Bagnasco *et al*., 2003; Khan, 2005; Nichols, 2003). I have described the demands e-learning has on the soft- and hardware to be used, the learning process, managers and facilitators and on the learners themselves. It became evident that the warehouse worker's as a possible target group for e-learning, should be subjected to an analysis to determine their e-readiness.

The review described e-readiness and included actual reports of e-readiness of countries and regions across the globe. I reported how these e-readiness reports led me to assessment tools of e-readiness and how the literature guided me to identify key concepts of e-readiness per assessment tool.
I explained how the literature on computer-based training advocated a thorough needs analysis of the target group before designing of instruction should begin. The advice thus obtained led me to use three basic inputs from a model developed by Reeves (1999) to guide instructional designers when planning training on the www.

I reported on the existing e-readiness assessments and what dimensions the literature regarded to be the main categories of e-readiness of countries and regions. I reported how I constructed a synthesis of six key e-readiness theory codes to explore the e-readiness of warehouse workers. I further explained my intention to use these key dimensions or theory codes to explore the e-readiness of the warehouse workers.

I concluded chapter two with a conceptual framework based on a model designed by Reeves (1999) to introduce a readiness barometer that may represent the eventual e-readiness of warehouse workers.

Chapter three reported on the research design and methodology. I explained that my interpretation of e-readiness was based on a qualitative case study, and motivated the selection of my epistemological point of view with the intent on understanding the emotional, technical, educational and social aspects that may determine the e-readiness or lack thereof of warehouse workers. I defined my intention to conduct an exploratory investigation into the e-readiness of the warehouse workers. I selected an interpretive approach to conform to my interest to understand the e-readiness as experienced by the warehouse workers, and to see the environment through their eyes. I provided full descriptions of the unit of analysis, selection, venues, the research strategies and support systems.

I reported extensively on the data-collection strategies in three phases. Phase one included the Delphi technique to obtain consensus of e-readiness aspects as regarded by e-learning experts in South Africa. I added my plans to work from Reeves' (1999) model of www learning to structure the findings from eight SMEs. My initial question regarding the aspects contributing to the e-readiness of warehouse workers were posed to the SMEs and their responses were structured according to Reeves' three identified inputs from potential learners on the www. I reported how I used Atlas.ti™, a CAQDAS to generate a HU – Elements of e-readiness - to construct a list of conceptual codes of e-readiness.

In this chapter I further reported on the procedures for phase two, which included the interviews and observations of the warehouse workers. It reported on the questionnaires conducted with the warehouse workers to generate a biographical background and general information on the warehouse workers. It included the observations of and interviews with workers where they performed their daily tasks on the mainframe system, attended ABET classes and did a tutorial to generate a total of thirty-five data sets. Phase three referred to the interviews with warehouse managers and other managers related to the warehouse workers.

I related how the documents, biographical data, interviews with the subject matter experts, interviews and observations with the warehouse staff yielded a large number of data. I combined all these data-collection strategies to generate one single integrated data set and saved it as a second HU on Atlas.ti™ – e-Readiness of warehouse workers. The qualities of Atlas.ti™ enabled me to generate meaningful information from the raw data sets. By storing them as a "case record" it organised the large number of case data into "a comprehensive primary resource package" (Merriam, 1998, p. 194).

I described how I used deductive and inductive reasoning to identify key aspects or conceptual theory codes that emerged from the literature and interviews. I concluded this chapter with acknowledging aspects with regard to the reliability and validity of this study and the actions I took to minimise the

risks. I also added the anticipated limitations and ethical considerations of the study to ensure that the rights of the participants will be protected and considered throughout the study.

Chapter four described the findings of the first phase of the study as revealed by a deductive analysis of the data to present a localized view on e-readiness of warehouse workers. The chapter started by giving an account of e-readiness and how the literature viewed e-readiness and what aspects of e-readiness were assessed. I explained how I positioned Reeves' model to generate three basic inputs from learners to structure the interviews with the SMEs. The SMEs were requested to give their accounts with regard to cultural habits of mind, aptitude and individual differences and origins of motivation (Reeves, 1999) and to identify possible aspects of e-readiness.

I described how I used Atlas.ti™ to generate a list of e-readiness elements and how I categorised the readiness elements in terms of Reeves' three input areas. I explained how I used the Delphi technique to obtain consensus from the SMEs regarding the importance of the identified elements of readiness. I added how the SMEs rated their own identified aspects of e-readiness to achieve consensus and generate a list of critical aspects of e-readiness. The list was used to structure the interviews and observations intended for the warehouse workers during phases two and three.

I illustrated the most prominent aspects of e-readiness in terms of organisational and personal inputs in table format. By means of inductive and deductive content analysis (Busch *et al.*, 1997) and a grounded theory approach, I was able to identify an inventory of conceptual codes of e-readiness. I explained how I used Reeves' (1999) three inputs as a basis to structure my research, with specific reference to the following categories as deduced from the literature:

- technical experience
- access to technology and infrastructure
- attitudes, habits and individual differences
- organisational influences
- motivation
- cultural influences.

Together with these theory codes (categories) and the identified conceptual codes generated from the data provided by the SMEs, I was able to construct possible patterns to direct the data analysis of the collected data during phases two and three.

I explained that I generated six sub-questions to explore the collected data. These sub-questions were:

- What technical experience do the warehouse workers have with technology that may impact on their e-readiness?
- What affective experience do the warehouse workers have with technology that may impact on their e-readiness?
- What aptitudes with regard to the use of the computers could be observed from warehouse workers to imply their e-readiness maturity?
- What origins of motivation may induce warehouse workers to become e-ready?
- How does access to technology contribute to the e-readiness of warehouse workers?
- In what way does the organisation culture influence the e-maturity of the warehouse workers?

By exploring patterns that may exist or be implied between the theory codes and the SMEs conceptual codes list of e-readiness I constructed my interpretation of e-readiness of the warehouse workers.

In Chapter five I presented the research findings as these have been explored by means of a deductive- inductive content analysis of the research data. I followed a grounded-theory approach structured by the six sub-questions generated in the previous chapter. The six sub-questions based on the theory codes constructed from the literature were used to direct and guide the analysis. I reported on the experience warehouse workers had with computer technology, their affective experience and origins of motivation. It also included references to the guidance and support warehouse workers receive, the access they have to computer technology and lastly the way the organisation culture supports them to be e-ready. The findings of the six sub-questions resulted in an inventory of twenty conceptual codes of e-readiness. These conceptual codes were instrumental in the exploration of the readiness of the warehouse workers in terms of technical experience, affective experience, aptitude, origins of motivation, managerial guidance and organisation contributions.

Chapter six presented a synthesis of the research findings and resulted in the seven main findings of this study. I reported on the emergence of an inventory of twenty conceptual codes of e-readiness and how a pattern or trend was explored to grasp the readiness of the warehouse workers. This chapter presented the theory codes as an e-readiness barometer to portray the levels of e-readiness of the warehouse workers. I reported that the initial classification of the conceptual codes did not yield logical patterns of readiness, and this urged me to table all frequencies of the conceptual codes of e-readiness as classified against the theory codes. I explained the purpose of the table and how a discernable pattern emerged after the response frequencies of the inventory of conceptual codes had been analysed. The patterns and information I generated from this table resulted in the seven main findings of this research. As a result of my research I have determined the following about the e-readiness of warehouse workers:

- Warehouse workers encounter computer technology to such an extent that they have the experience to be introduced to e-learning
- Warehouse workers do not experience anxiety to such an extent that it prevents them to be involved with computer technology
- Warehouse workers are dependent on knowledgeable e-learning leadership and guidance from the organisation to transform to self-driven learners
- e-Learning is a viable option to the warehouse workers due to available infrastructure and connectivity within the organisation
- Warehouse workers' learning preferences are affected by their experience (encounters) with computers and may eventually contribute to them becoming self-driven learners
- Warehouse workers are motivated by computer technology to such an extent that their receptiveness for e-learning is positively affected; and
- The organisation holds the key to the e-readiness of the warehouse workers by providing access, finances and time. Knowledgeable guidance and support is needed to realize e-learning.

7.1.3 Conclusion – e-Readiness of the warehouse worker

Reeves (1999) reminded instructional designers to expect different inputs from their target groups when planning and designing learning on the web. The model implied that different inputs can be expected as determined by the learners' individual differences and habits of mind, origins of motivation

and cultural habits. This model served as a conceptual framework for my research by implying that the warehouse workers who already find themselves in a technical environment, may respond in their unique ways to a challenge such as e-learning. I have illustrated the e-readiness of the warehouse workers as a "readiness barometer" (Figure 2.7 in § 2.12) to argue that certain conditions may prevail that is implied by the inputs defined by Reeves' model. The strengths or weaknesses of these prevailing conditions may determine the e-readiness of the warehouse workers, either as individuals or as a community. The strength or weaknesses of the e-readiness concepts may differ from group to group or from one individual to the next, hence the concept "e-readiness barometer". Figure 7.1 positions my findings within the conceptual framework described in Chapter 2.

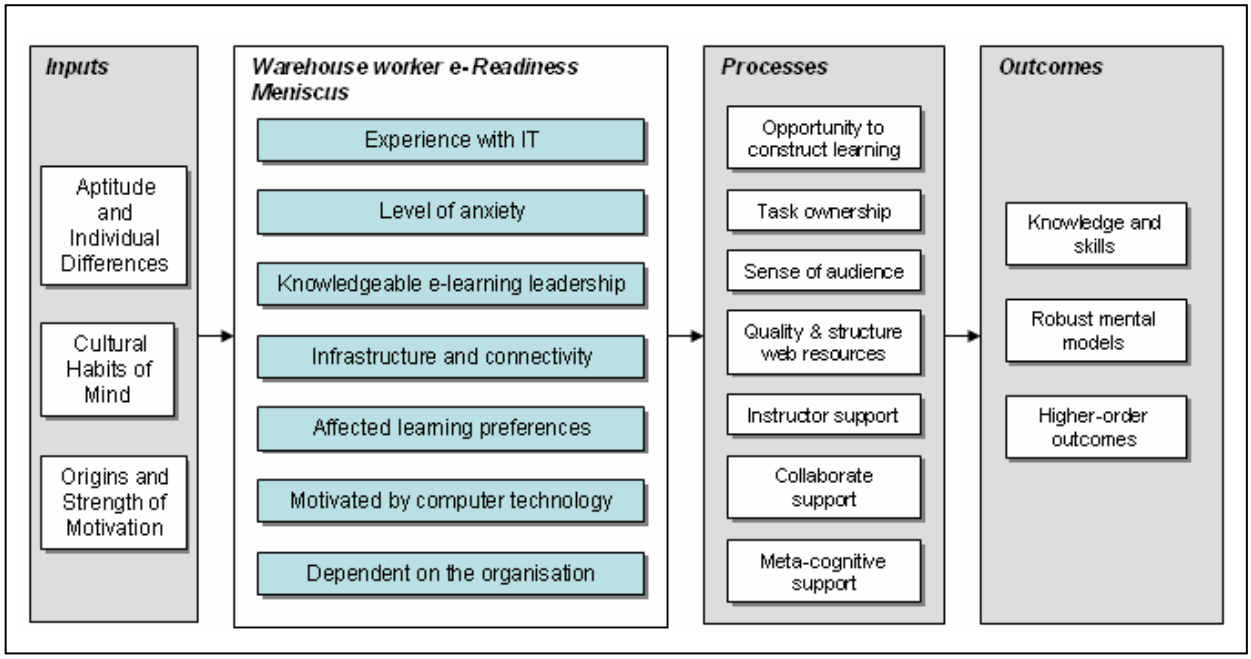

Figure 7.1 Readiness barometer determined by strengths and weaknesses of identified conceptual codes of e-readiness

The readiness filter as illustrated in Figure 7.1 positions the readiness filter between Reeves' inputs and processes. Reeves developed the model to assist instructional designers to think substantially about the goals, pedagogical dimensions and outcomes of using the web (1999). My findings focused mainly on a specific community, not yet ready for www learning, but that is on the verge of being swamped with learning strategies related to computer technology. To assist writers and instructional designers with the aim to design learning interventions for warehouse workers, I hope to make them aware of Reeves' model and to consider the important aspects such as aptitude, individual differences, cultural habits of mind and origins of motivation. I also hoped to contribute to the design of e-learning for warehouse workers by reminding writers and instructional designers to take heed of the workers':

- experiences with IT
- levels of anxiety relating to computer technology
- available guidance by knowledgeable leadership
- access and connectivity to the IT infrastructure
- learning preferences as these are affected by computer technology
- motivation to work with technology

- dependency on the organisation to get involved with relevant e-learning.

I regard the study to be fundamentally a target-group analysis within the ADDIE (analysis, design, development implementation and evaluation) cycle used by instructional designers (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Khan, 2002). I have referred to the digital gap that exists between developing and developed communities and the urgency that drives researchers worldwide to bridge this divide. I related to the reports that found that South Africa is technologically the best connected country in Africa (WEF, 2006), and the call by South African Government officials to address the divide by empowering the workforce in South Africa by introducing them to technology. I have also drawn from previous exercises to empower developing communities to learn that a bottom-up or shared initiative in introducing technology should be pursued. This obliged me to adopt an interpretive approach with the goal to understand the perceptions of the unit of analysis. I aimed to explore their readiness for a learning strategy that they do not know yet.

My interpretation resulted in seven main concepts that should be considered when planning e-learning for warehouse workers. In my opinion these seven concepts may contribute to establish the e-readiness of most warehouse communities working in SCM industries – not only in South Africa, but also in Africa and other developing communities.

7.2 Limitations of this study

The eventual findings that emerged from this exploration favour the warehouse worker to be e-ready. Such an observation fuels the need to scrutinize the findings and identify possible limitations. I concur with the general assumption that empirical data can be analysed and interpreted in different ways, and that different approaches may lead to different results (Mouton, 2002). I have described my epistemological approach in chapter three and substantiated the reasons for my choice of methodology. Limitations may occur in the used methodology and in the execution of the project.

7.2.1 Methodological limitations

I have preferred to conduct this research from an interpretive point of view to heed the warnings of previous projects to take a "bottom-up" point of view or as stated by Wright *et al* (2004): "Seek first to understand, then be understood" (p. 4199). Interpretive research studies individuals from the inside and how they interact with their immediate surroundings and their respective environments (Cohen *et al*., 2002; Merriam, 1998; Vockell, 2005). I wanted to explore and understand their anxiety, attitudes and perceptions regarding technology, and chose to approach the research question subjectively. By assuming an interpretive approach, I was able to conduct the research from an empathic, personal and involved point of view. The limitation herein was that it left me utterly biased in exploring the phenomenon from the warehouse workers perspective. The fact that I was prejudiced was not necessarily bad for the study because one of the intentions of this qualitative research was to experience the readiness for e-learning from the warehouse workers' perspectives. The limitation lies in that the participants could have been judged to support preconceived assumptions. As stated

above, the same data can and may infer different responses from other researchers with their own research objectives. The limitation lies in the fact that this research is a personal interpretation of a phenomenon, but can be valued in that interpretive studies precedes theory building (Cohen *et al*., 2002). This study can thus be regarded to be my contribution of the theory of e-readiness of a community such as warehouse workers.

The interpretive approach has left the study with several unanswered questions. Interpretive studies are known to yield "multifaceted images of human behaviour" (Cohen *et al*., 2002 p. 23). The study has confirmed the multifaceted nature of humans as realized by the "readiness barometer" which implied different levels of readiness of the participants. It is for this reason that interpretive qualitative case studies need to be "thickly described" to reflect the "multiple realities constructed by the participants in the inquiry" (Lincoln & Guba, 2002 p. 207). Schofield (2002) reasoned that "interpretive validity" is "inherently a matter of inference from the words and actions of participants in the studied situations" (p. 49) and that participants' meanings relied on the constructions of the researchers to relate their perceived accounts of the truth. The unanswered questions therefore may be the individuals' personal accounts and different perceptions relating to e-readiness.

A positivist-objectivist research approach such as the functionalist social paradigm may have yielded different information on the e-readiness of warehouse workers. The capacity to negotiate e-learning lessons could have been tested and evaluated, and the results could have shed light on the ability to interpret information from the computers, to complete tasks, to understand the online instructions, while this research has only resulted in a reflection that the warehouse workers may understand information, do understand online instructions, based on their experience with current computer technology. Although I am interested in such a functionalist exercise, this research also focused on the social reality the warehouse workers constructed around them and I was especially interested in their affective experiences of computer technology.

This study is also limited in that it does not respond to the puzzle whether e-learning may be beneficial for warehouse workers or not. Radical humanists may be interested to learn whether the warehouse workers are aptly transformed or prepared to undertake e-learning. The emancipatory flavour of the radical humanist approach, especially where the warehouse workers as a developing community in South Africa is involved, may urge some researchers to investigate the progress that this community has shown over the last decade. The research problem invites radical humanists to assess the progress of the South African empowerment initiative especially regarding the warehouse community. Although an interesting prospect, the aim of this study was to explore the status quo, to understand the position of the warehouse workers before any interventions are designed or planned.

If the e-readiness of warehouse workers had been researched with a radical structuralist approach, questions may have been asked with regard to the methodology of e-learning to address the e-learning needs of the warehouse worker. According to Shulman (1986) "technology and user behaviour co-evolve as a structurational process during the course of human-computer interactions".

Information could have been found about how the e-learning strategy changed or altered the behaviour of the warehouse workers, and how the technology could be changed to address specific needs.

There are definite limitations regarding the interpretive approach I chose to make for this study. This study aimed to explore the e-readiness of the warehouse workers to understand their position, and to learn, to construct concepts and theories that may be applied in the design of e-learning strategies for communities in developing countries. The interpretive approach enabled me to obtain a view of the behaviour, expectations, affective behaviour with regard to computer technology.

Qualitative case studies are further limited due to the fallibility of the researcher. It may have been possible that I have missed nuances, suggestions or sensitive issues expressed by the participants (Merriam, 1998). As sole narrator and interpreter of the data the study is a reflection of my view and perceptions. I was aware that I do not share the same culture nor do I speak the same home language as most of the participants. It may have happened that I missed some of the finer points that are usually understood by members of the same culture. However, I have tried to eliminate these limitations as far as I could, by creating a relaxed friendly atmosphere at all times. I purposefully did not write notes all the time during the interviews but tried to converse as naturally as possible, and relied as much as I could on my instincts.

I have used a content analysis to search for patterns and trends in the data. The limitations for this type of strategy are that the text is only representative of the group that has been interviewed. Generalization of the outcomes of this research may not be possible. Findings may only relate to warehouse workers that find themselves in a similar situation as the interviewed unit of analysis.

7.2.2 Project limitations

A second type of limitation is the shortfalls inherent in the research project. The first limitation can be attributed to the skill and ability of myself as a researcher. Although many hours were spent to prepare the interviews and observations, situations occurred where my lack of experience was exposed. I realized this when transcribing the first few interviews, and learned that I spoke too much and sometimes missed valuable opportunities to extract relevant data from the participants. I adapted my interview and observation approaches accordingly, and tried to improve with each further interview or observation. It made me very conscious of my limitations and inexperience. This awareness motivated me to use more methods of data collection such as the tutorial experiment described in chapter three.

A next limitation was probably my “whiteness” against the backdrop of a unit of analysis that was primarily black. Although there were other cultures involved, e.g. coloured and Indian workers, most were black. The cultural differences were visible, not only because of the colour of our skins, but also because I was employed as an administrator, while they were all working in the industrial section of

the business. My whiteness may also have portrayed an advantage of knowledge regarding learning with computers while most of the warehouse workers had never even encountered the term e-learning. I acknowledge that the cultural differences may have resulted in the possibility of distorted interpretations (Mouton, 2002), in that I may have interpreted some of their views according to my own beliefs. When I started the interviews with the warehouse workers, the first respondent was visibly anxious and unresponsive. Most responses were monosyllabic, "yes" or "no". I realized the tension, and decided to postpone the interviews. Fortunately, in my capacity as a training officer, I was during this time involved in a project that introduced a new picking initiative, known as "voice picking" (Appendix 3.13) to the warehouse workers. During this project, I worked closely with most of them and was able to earn their trust. It proved to be successful because we had a much improved relationship after the voice-picking project. I realized that I had earned the trust of some of the participants as illustrated in the following response:

> *… he seriously thanked me for selecting him to be involved. I told him that I am the one who was in debt, but he took my hand and solemnly shook it in the typical black South African male way, and said "thank you my brother..."* 2:397 (2722:2726).

I was also constantly aware of the "research expectancy effect" where the interviewer subtly communicated an expectancy that the subject responds to (Mouton, 2002). Interviewees almost always conceded that they would be able to learn with computers, while the observations suggested that they were uncertain and tentative with the tutorials. I also realized that most of them have never been exposed to computer-based training before, and could not really express a valid opinion on their capacity to learn with computers. I used their views that they were able to learn by means of computers as an indicator to explore their anxiety and to comb for traces of technophobia, and did not apply these opinions as indicators of their skills. However, I have to admit that the researcher expectancy effect may have played a role in many of the responses I received.

There can be many views and interpretations derived from this same data, but in the context of the situation these warehouse workers found themselves at this time, and with the purpose of my study this was my version of understanding and delineating the e-readiness of warehouse workers.

7.3 Value of the research

The WEF reports that IT can lessen the digital divide, and discussed what steps governments need to take at national level or how far specific countries' governments have progressed to close the digital gap. The ITC Charter bemoaned sustainable plans for IT use:

> *Development initiatives have been essential to providing basic access to underserved populations, but have failed to provide sustainable, replicable models for community ICT use, and often err with top-down approaches that are not grounded on the needs, interests, and active direction (or even participation) of local residents (Bridges.org South Africa, 2001).*

The first contribution of this research is that it adds a readiness assessment from the perspective of the developing community, as opposed to WEF, Ifinedo, DOT force e-readiness reports on national

levels. It addresses the needs of the warehouse workers and discussed their needs of coping with technology. Warehouse workers have given an account of their anxieties, frustrations, motivators and experiences with computers. The findings of this research can be aligned with reports at macro level, and contributes to sustainable planning and implementation of achievable ICT use for developing communities.

A second contribution is that it complies to suggestions by the DOT force reports that "systemic, coordinated" approaches should be taken to address the digital divide:

> *Bridging the Digital Divide and turning Digital Opportunities into a development force is not an automatic process. As indicated before, coordinated action by all stakeholders is required. Such action should be both systemic and of a "catalytic nature" (i.e. stimulating changes in attitudes, focus and policies). The main responsibility for relevant actions remains in the hands of developing country governments, enterprises and non-governmental organisations, working in tandem (Digital Opportunity Task Force, 2001 p. 10).*

The report suggested that joint efforts should be launched to prepare developing communities for the divide. Together with the legislative efforts of the South African government and the views of the ITC Charter, this study provides information at the micro-level that will be beneficial for a coordinated exercise to bridge the divide. The experiences, affective views, motivations, dependencies and organisational contributions shown by this study provides a bottom-up approach to plan training and learning with computer technology.

This study has also shown that the communities of developing countries can be included and involved in decisions to plan, and prepare for training where computer technology is concerned. This perspective is presented in lieu of the WEF's comment that "Development initiatives ... often err with top-down approaches that are not grounded on the needs, interests, and active direction of local residents" (Bridges.org South Africa, 2001). This study has indicated the warehouse workers' awareness of computer technology, and that a basic knowledge and skill exist that may contribute to needs analyses when e-learning is planned.

The findings in this study may also serve as an indicator to training managers and facilitators when planning or contemplating e-learning for a community such as the warehouse workers. The technical and affective experiences, anxiety, guidance, motivation and support available to the target group will prove to be useful in the final decision of a training strategy. These seven aspects may be investigated to determine the e-readiness of the group and decide on the viability of e-learning.

Finally, instructional designers will benefit from the findings by determining the e-readiness level of each of these seven dimensions, to decide on an instructional design for the target group. For instance, when technical experience is low and anxiety levels high, the design may have to include an approach to install confidence and promote technical skills at first. Instructional designers may benefit by having these specific dimensions to think of when planning, designing and developing e-learning for their respective target groups.

7.4 Recommendations for further research

I believe that this study presented only one version of a possible variety of qualitative interpretations of the same data. It has identified patterns and theories that may be reflected in multifaceted ways (Cohen *et al.*, 2002). Even so, it has succeeded in uncovering certain concepts, patterns and sets of meanings that yielded insight and understanding in human behaviour. During the course of the research several related questions arose, which may be pursued with extended research. I hereby recommend further research in the light of my main findings. Below are the topics of the recommended research:

Topic 1: Developing communities' experience with IT

- What cognitive skills are accrued by a community such as the warehouse workers that may stand them in good stead to construct their own learning?
- How can a community such as warehouse workers apply their skills and aptitudes to become successful e-learning students?
- How does experience with technology expand a community such as the warehouse workers' horizons?
- What role does the accrued experience of IT play in the instructional design of e-learning for a community such as the warehouse workers?

Topic 2: Developing communities levels of anxiety relating to computer technology

- How can instructional designers gain from the lack of anxiety when developing e-learning for a community such as the warehouse workers?
- What e-learning challenges can be designed for an e-ready community such as the warehouse workers?
- How can the organisation benefit from the accrued confidence of a community such as the warehouse workers?

Topic 3: The role of guidance by knowledgeable leadership

- What roles do the knowledge and expertise of the management and facilitators play in the adoption of e-learning within an organisation?
- How can a community such as the warehouse workers be transformed from procedural learners to self-driven computer-based learners?
- Identify the stages to transform an organisation from the archaic classroom training culture to a self-driven e-learning culture. Who should be involved? What are the risks and pitfalls?

Topic 4: The role of access and connectivity to the IT infrastructure

- Access to computer technology enhances the e-readiness of a community. How can this important attribute be optimally utilised to bridge the digital gap for a community such as the warehouse workers?
- Communities such as the warehouse workers are aware of the Internet and its existence. Yet it is underused. How can the Internet be utilised to develop constructive thinking skills for such a community?

Topic 5: The influence of computer technology on learning preferences

- How do the experiences with computers influence the existing learning preferences of a community such as the warehouse workers? Which learning strategies are known to them? Are they exposed to constructive learning?
- Constructivist learning is associated with computer learning. Does this attribute naturally accrue with computer experience or are there strategies to be followed to develop this skill? If so, how?

Topic 6: Developing communities' motivation to work with technology

- Reeves described origins of motivation as one of the main inputs that may influence instructional designers for WBT. In what way are communities such as the warehouse workers motivated to work with technology? When do computers have the opposite effect on them?
- In what way can instructional designers involve communities such as the warehouse workers to design e-learning strategies that may be intrinsically motivational? What do they suggest to include and exclude? What should be avoided?

Topic 7: The role of the organisation to establish e-learning as a learning culture

- How can the organisation integrate a culture of self-driven learning into its business plan? What are the main aspects to be included in the business plan? How can it be managed?
- How does the community of practice (Wenger & Por, 2004) within the organisation prepare a community such as the warehouse workers for e-learning?
- How can instructional designers and learning facilitators develop a self-driven learning culture within the organisation once a community such as the warehouse workers prove to be e-ready?

7.5 Personal reflection of this study

Opportunity does not present itself to all of mankind in the same way, but I believe if you take an active interest in your surroundings, you may just create your own. The idealist in me fervently believes that if you show enough interest in a fellow human being, he may rise to the occasion. The past thirty months have been a journey where I have experienced the flicker of hope that education may bring to

people not normally associated with learning and training. Thinking back, several incidents or processes come to mind, making this journey special, worthwhile and very enriching.

I received the first taste of this opportunity when I was introduced to computer-based training in 1995 at the University of Pretoria. Ever since I graduated with a Master's degree in CBT in 1997, I became an active disciple of self-driven learning with computer technology. When I was employed as IT training manager at IHD, I became aware that the organisation presented several opportunities for e-learning. I have to concede, I never thought of the warehouse workers as a possible target group. They did not even have desks or computers! As instructional designer, I had to develop a course for them to introduce new warehouse and business procedures. I had taken pride in my project and developed a course that would require the warehouse workers to be in the classroom for four full days. This was when I learnt that they could not leave their work stations for more than two hours. e-Learning could have been the ideal solution, but to warehouse workers? This was when I really started noticing what they do, how do they do it, and with what. Opportunity and challenge were beckoning.

I needed direction and advice to design e-learning for warehouse workers, but did not know where to start. The University of Pretoria led me to enroll for the PhD, and search for these directions. The first direction appeared in the form of Prof Dr Seugnet Blignaut, my supervisor, who recognised the real problem and suggested that the e-readiness of the warehouse workers would probably be the best place to start. My thesis was born. Since then I have been subjected to slavery, friendship, motivation, coaxing, guidance and above all professional advice and wisdom. I have learnt a lot of lessons, among others to "see through the eyes" of fellow South Africans, reflected on the way our cultures deal with our country's diversity and how the organisation deals with employee aspirations.

7.5.1 Learner expectations

The magnitude of what I was trying to do struck me during the very first interview I conducted with a young logistic assistant in Cape Town. He was very tentative at first, but slowly responded and warmed to the conversation. I unexpectedly realized that, by asking questions on training, I also created expectations that their training needs and aspirations will be addressed soon. The longer we spoke, the more I realized that this young man was very dependent on career guidance and knowledgeable support:

> *I want someone who is flexible, man, who can see maybe like* [that] *a young man like me having this kind of a desire, like coming to you and tell you I want to go to school but I've got a problem with this and this. Maybe I'm not sure about my career. I want to speak to someone who will motivate me not only motivating verbally but giving me some document - you can choose this, do this, trying to collect some information, and it's like setting some goals man. When do you want to do this, will you be able to do this and showing that kind of interest in a person* 2:316 (2257:2269).

It made me feel bad, and as an educator, felt the responsibility growing in me, that this research should really lead to something. Although the initial beneficiary of this study was myself, the responsibility was mine to think in terms of this young man too. That was only the beginning. The

interviews I conducted in Johannesburg had almost the same effect. Several participants expressed the same hope that the interviews may lead to better career opportunities. I was privileged to learn their aspirations, and in some cases their frustrations of not getting enough opportunities.

Another incident had a similar effect on me. When I completed a tutorial observation of an older male respondent, his gratitude and solemnity of what the little exercise meant to him, caught me totally unawares. When he greeted me, I realized that he experienced the exercise in a special way, that I had recognised a potential in him, which he hoped to pursue. Regardless of the explanations I presented before the interviews and observations started.

> *Afterwards, he seriously thanked me for selecting him to be involved. I told him that I am the one who was in debt, but he took my hand and solemnly shook it in the typical black South African male way, and said "thank you my brother..." I felt awkward, and a sense of responsibility came over me like I have rarely felt before. I had to remind myself that I am merely exploring, but still could not help to feel subjective... and responsible* 2:341 (2722:2729)

I realized by then that this research may result in specific findings and recommendations, but may not necessarily change the position and future plans of some of these workers. Unless the lessons learnt are made known and plans are put in place to make knowledgeable facilitators available to structure the career development of the warehouse workers. Maybe they needed relevant education, not training.

However, I do realize that the other side of the coin was also true – several participants expected that it was solely the organisation's responsibility to provide in their training needs. This was one of the more serious allegations the SMEs had in their accounts of warehouse workers' possible motivation to take responsibility for their own development. These individual differences were quite evident during the interviews. Some participants demonstrated a keen interest and urgency to learn, while for some, it was regarded to be something the organisation wanted, and not necessarily themselves. Here again, I believe if the challenge is presented in the right way, and that attention, relevance, confidence play an important role to win participation (Keller, 1978; Main, 1993). Facilitator expertise and knowledge may be much more important than generally believed in these organisations.

Training facilitators are not qualified for the responsibilities they are expected to perform in corporate organisations. Most organisations in South Africa present regular training to its staff. Training issues that are currently pursued with a lot of energy are the training of AIDS awareness and Safety and Health Environments within the organisations. Business procedures are also taught and regularly discussed with all employees. The strategies and methodologies are left to trainers and training management to decide upon. It is my view that – like the case study in this research - very few organisations employ qualified educators with the knowledge and skill to promote life-long learning and develop e-learning strategies. Most business leaders employed by organisations receive business and economic qualifications with very little contributions from education. Trainers with limited training experience and knowledge of adult education are often appointed to perform duties that are aimed to steer the future of the employees and eventually benefit the organisation. The complexity

and responsibility of this task has grown with leaps and bounds with the introduction of self-driven training and all other forms of computer training. It is my view that the South African Department of Education should offer recognized qualifications to develop corporate educators who have the capacity to develop career plans, structure relevant curricula and to provide infrastructure for e-learning within organisations.

7.5.2 Dealing with cultural differences

When I started the study, I anticipated that cultural differences may become a contentious issue. Unexpectedly none of the interviews indicated that the diverse cultures in South Africa posed problems relating to e-readiness. Most participants indicated that as long as the cultures were respected, employees get along.

- *I've got my own culture. When I deal with people, I try to put my own culture backward* 3:210 (1309:1312)
- *Culture can dictate something from my work, I need to play by the rules. I need to respect your culture* 3:91 (486:488)
- *Do you need to consciously change the way you work with your people?*
  P: [Emphasizing] *I do. Not for a cultural reason, but just gently because people are different and I handle them differently* 3:134 (746:750)
- *I can't say much with regard to e-learning, but in any learning, it works better if you understand the culture, or if you can manage the cultural diversity* 3:81 (428:430).

The cultural diversity in South Africa did not seem to be a major constraint for the warehouse workers. It was a pleasant surprise that, although most were very aware of the cultural differences, I can not recall any negative views with regard to cultural differences.

7.5.3 Personal reflection

Opinions of experts varied, the participants' behaviour and views confirmed the individual differences with regard to self-driven learning. Some workers were interested and keen to learn, while others were not motivated at all. The intrinsic motivation to learn is not an attribute one finds within all people. e-Learning and self-driven learning should be a choice. Illiteracy has long been regarded to be one of the most critical factors that prevents development, and the lack of e-learning opportunities to an e-ready student is very similar as keeping books away from literate students. Training facilitators provide students with learning guides. What about e-learning? Education starts by empowering the learner with the capacity to decide for himself. Very little choices can be made in classroom training, the odds are stacked against the student. e-Ready students deserve the opportunity to participate.

> *I commute daily between Johannesburg and Pretoria on the N1, the busiest stretch of road in South Africa. Twenty years ago, all drivers were mostly male. Today, I share the road, not only to both genders, but also with most other races in SA. Female drivers, from all races have joined to contribute their fair share to congest the N1. I can not recall that it required a special project or that special attention was given to female drivers, especially black female drivers. Today, one just realizes that they gradually became part of the N1. I don't plan to start this*

thesis all over again, but I believe it will be quite safe to assume that their presence on the N1 has become a reality, because there were motivation, infrastructure and opportunity. Competency and experience comes with time.

Today, together with all other vehicles, truck drivers, abnormal carriers, taxis and all other users of the N1, they are just another group of the commuting fraternity. They are among the fast, the slow, the dreamers, the impatient, the young, the old. My point is, they share the road.

7.6 Final thoughts

These findings reconfirmed the importance of a thorough target-group analysis when planning e-learning. Warehouse workers represent the labour force in South Africa, and are mostly associated with manual labour. Their increasing involvement in computer-technology procedures make them likely candidates for e-learning. Although the WEF reports annually on the e-readiness of developing countries such as South Africa, it does not refer directly to the e-readiness of the labour forces of these countries. Developing countries are carefully monitored to assess whether the pace of technology may exacerbate the technological deficits in these countries.

The contribution of this study is that it reports on the influence of the pace of technology at micro level of a developing country. The e-readiness of the warehouse workers was found to be surprisingly positive. It supports the latest growth competitive index ranking by the WEF that rated South Africa in 2005/6 still as the most e-ready country in Africa. South Africa is currently rated at number thirty seven (World Economic Forum, 2006). This research explored the e-readiness of the warehouse workers and found that they are not technophobic and have experienced the computer to such an extent that they are confident to pursue more challenges. There seems to be a determination and motivation to work with computers. It emerged that they are dependent on knowledgeable guidance and direction. Bold leadership may entice an organisation and its employees into an e-learning strategy and present a platform where the warehouse may construct meaning based on their e-readiness of computer technology.

I believe the value of this research lies in the profile of the worker that emerged. Instructional designers will be able to use the identified aspects of e-readiness to prepare first e-learning interventions, or to put strategies in place to gradually develop the e-learning skills and the capacity to construct own meaning from computer-technology. Training departments can focus on these seven findings to justify a strategy when planning e-learning to developing communities.

This study was conducted in proportion to my personal epistemological stance that reality is constructed from within the individual and consequently different versions may exist.