

**e-Readiness of warehouse workers:  
an exploratory study**

by

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Submitted in partial fulfilment of the requirements for the degree

**Philosophiae Doctor**

in the

**Department of Curriculum Studies**

**Faculty of Education**

**University of Pretoria**

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**December 2006**

## Acknowledgements

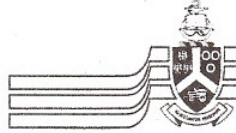
Several people have inspired and contributed to this thesis.

- Prof. Dr Seugnet Blignaut, who acted as supervisor for this study. My most sincere gratitude for the professional way in which this research was guided and managed. Thank you for the way the project, as well as the person was managed. I am honoured that this thesis was supervised by a qualitative research leader and learnt much from this experience.
- Prof Dr Piet de Kock, who edited and proofread the thesis. Those words of encouragement were never lost
- Prof Dr Toy White, who acted as critical reader
- International Healthcare Distributors (IHD) who granted me the opportunity to do this research within the organisation
- All the employees of IHD whom I have interviewed and observed to make this study possible. The knowledge and friendships I gained go far beyond this research
- The eight subject matter experts who shared their knowledge and guided me in what e-readiness entails
- Colleagues at work who assisted where they can to edit, advise and gave their support throughout this project
- The Faculty of Education of the University of Pretoria by providing guidance and advice in the form of workshops for postgraduate students
- My father Theunis who have always enforced the importance of reading and developing an enquiring mind.
- A final acknowledgement to my wife Isabel, who has been the silent power behind this thesis. Thank you for all the advice, encouragement, but above all the love and loyal support.

### **Dedication:**

I dedicate this thesis to my family: Isabel, Dorette and Herman.

# Ethics Clearance Document



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.....

PD de KOCK

1 June 2006

# Table of Contents

Acknowledgements .....	i
Ethics Clearance Document.....	iii
Declaration of Authorship .....	iv
Certificate of Proofreading and Editing .....	v
Table of Contents .....	vi
List of Figures .....	x
List of Tables .....	xiii
List of Appendices .....	xv
List of Appendices .....	xv
Abstract .....	xviii
List of Abbreviations .....	xx
<b>Chapter 1 .....</b>	<b>1</b>
<b>Orientation .....</b>	<b>1</b>
1.1 Introduction .....	1
1.2 Research problem.....	1
1.3 Effects of Globalisation .....	2
1.3.1 Globalisation .....	2
1.3.2 Digital divide .....	3
1.3.3 Warehouse workers exposed .....	3
1.4 Rationale .....	5
1.4.1 e-Learning.....	5
1.4.2 e-Readiness.....	6
1.5 Scope of the study .....	6
1.5.1 Context .....	6
1.6 Research questions .....	8
1.7 Theoretical framework .....	9
1.7.1 Positioning the research .....	9
1.7.2 Functionalism.....	10
1.7.3 Radical humanism .....	10
1.7.4 Radical structuralism .....	11
1.7.5 Interpretivism .....	12
1.8 Perspective orientation .....	13
1.9 Research methodology.....	15
1.9.1 Qualitative research strategy .....	15
1.9.2 Case study.....	16
1.9.3 Unit of Analysis.....	17
1.9.4 Methods of Data Collection .....	17
1.9.5 Assumptions .....	19
1.10 Data analysis procedures .....	20
1.11 Limitations of the research.....	21
1.12 Reliability and validity.....	21
1.13 Ethical considerations .....	22
1.14 Thesis structure .....	23
1.15 Motivation to effect this research .....	23
<b>Chapter 2 .....</b>	<b>25</b>
<b>Literature Review .....</b>	<b>26</b>
2.1 Introduction .....	26
2.2 e-Learning definitions, models and theories .....	27

2.2.1	Definitions of e-learning .....	27
2.2.2	e-Learning models and e-readiness attributes .....	28
2.3	Advantages and disadvantages of e-learning.....	35
2.3.1	Advantages.....	35
2.3.2	Disadvantages and myths of e-learning .....	36
2.4	e-Learning and the digital divide .....	37
2.4.1	South African legislation and the ICT Black Employment Charter .....	38
2.4.2	Reports on the divide.....	39
2.4.3	Supply-chain management industry depending on technology.....	40
2.4.4	Globalisation .....	41
2.4.5	Digital divide .....	43
2.5	Bridging the gap with the introduction of technology .....	45
2.5.1	Case studies of developing communities .....	45
2.5.2	Lessons learnt from previous studies .....	47
2.5.3	Involve the learners .....	48
2.6	e-Learning demands on organisations and employees.....	49
2.6.1	Demands on business goals .....	49
2.6.2	Technological demands on the organisation .....	50
2.6.3	Software demands to manage the e-learning process.....	50
2.6.4	Demands on the learning process.....	51
2.6.5	e-Learning systems place a specific demand on managers and support staff .....	52
2.6.6	Demands on the learner .....	53
2.6.7	Selecting an e-learning approach.....	54
2.6.8	New skills needed.....	55
2.6.9	Time to change the strategy .....	55
2.7	e-Maturity and e-Readiness.....	56
2.8	Previous e-readiness assessments .....	59
2.8.1	e-Readiness of developing nations .....	60
2.8.2	e-Readiness of selected African states .....	60
2.8.3	e-Readiness of Cape Town students .....	62
2.8.4	Organisational readiness as investigated by Powell .....	62
2.9	Assessing e-readiness.....	63
2.9.1	e-Readiness of e-businesses .....	64
2.9.2	Student Online Readiness Tool.....	64
2.9.3	Guglielmino and Guglielmino on individual e-readiness.....	65
2.9.4	Reeves' model to guide instructional designers for www learning .....	65
2.10	Synthesis of e-Readiness .....	70
2.10.1	Experience with technology.....	71
2.10.2	Access to technology.....	72
2.10.3	Organisational contributions .....	73
2.10.4	Motivational aspects .....	75
2.10.5	Life style, attitudes, habits and individual differences .....	76
2.10.6	Cultural influences .....	78
2.11	Theory codes of e-readiness for warehouse workers.....	79
2.12	Research question .....	79
2.13	Conceptualizing the e-readiness of the warehouse worker.....	80
2.14	Summary of Chapter 2.....	81
<b>Chapter 3</b>	.....	<b>83</b>
<b>Research design and methodology</b>	.....	<b>84</b>
3.1	Introduction .....	84
3.2	Interpretive approach to understand the aspirations and objectives .....	84
3.3	Qualitative research .....	85
3.4	Case study as preferred research design.....	89
3.5	Warehouse workers as the unit of analysis .....	90
3.5.1	Selection Procedure .....	91
3.6	Research methodology .....	93
3.6.1	Data collection strategy .....	93
3.7	Phase 1 Identifying the categories of e- readiness.....	95
3.7.1	Previous e-readiness research and reports .....	96

3.7.2	Subject-matter experts.....	98
3.7.3	The Delphi technique.....	98
3.7.4	Rate the importance of identified elements of e-readiness .....	100
3.8	Phase 2 Interviews and observations with warehouse workers .....	101
3.8.1	Utilising a questionnaires to obtain background information.....	102
3.8.2	Interviews.....	103
3.8.3	Observations.....	105
3.9	Phase 3 Interviews with warehouse managers and supervisors.....	109
3.9.1	Making use of Atlas.ti™ to prepare the data analysis .....	110
3.9.2	Defining theory codes and conceptual codes of e-readiness.....	111
3.10	Validity.....	112
3.11	Reliability.....	113
3.12	Data-analysis .....	114
3.13	Ethical issues .....	116
3.14	Limitations.....	117
3.15	Summary.....	118
<b>Chapter 4</b>	.....	<b>120</b>
<b>Identifying the Aspects of e-Readiness</b>	.....	<b>121</b>
4.1	Introduction .....	121
4.2	Results of subject matter expert ratings .....	123
4.2.1	Cultural influences on learning .....	123
4.2.2	Environmental learning culture .....	126
4.2.3	Attitude and Aptitude Influences Personal Learning .....	128
4.2.4	Attitude and Individual Differences Influenced by Environment.....	130
4.2.5	Origins of Motivation – Personal attributes.....	133
4.2.6	Origins of Motivation Influenced by the Environment.....	134
4.2.7	Summary of SME evaluation .....	136
4.3	Emerging theory codes to structure the research for e-Readiness .....	137
4.4	Summary.....	138
<b>Chapter 5</b>	.....	<b>140</b>
<b>Data Analysis and Initial Findings</b>	.....	<b>141</b>
5.1	Introduction .....	141
5.2	Technical experience with computer technology (Sub-question 1) .....	142
5.2.1	Technical experience with computers .....	142
5.2.2	Conclusion about technical experience of warehouse workers .....	152
5.3	Affective experience with technology (Sub-question 2).....	154
5.3.1	Affective experiences.....	155
5.3.2	Anxiety of warehouse workers as affective experience.....	155
5.3.3	Experience with technology also led to warehouse worker frustrations.....	157
5.3.4	Warehouse workers' attitudes as affected by computer experience.....	160
5.3.5	Conclusions on warehouse workers' affective experience of computers to determine e-readiness .....	168
5.4	Observed aptitude as evidence of e-readiness (Sub-question 3) .....	169
5.4.1	Conclusion about warehouse workers' aptitudes for e-learning.....	183
5.5	Origins of motivation determine e-readiness of warehouse workers (Sub-Question 4) .....	185
5.5.1	The types of motivators that affects the warehouse workers .....	185
5.5.2	Extrinsic motivation contributes to e-readiness of warehouse workers.....	186
5.5.3	Computer use as extrinsic motivator .....	187
5.5.4	Facilitator contributions as extrinsic motivator.....	193
5.5.5	Relevancy of training as extrinsic motivator .....	193
5.5.6	Financial support as extrinsic motivator .....	196
5.5.7	Allocated time for training as extrinsic motivator .....	198
5.5.8	Intrinsic motivation .....	200
5.5.9	Conclusion about the origins of motivation that influence warehouse workers' e-readiness .....	202
5.6	Access and infrastructure as contributors to e-readiness (Sub-question 5).....	203
5.6.1	Access to computer technology.....	204



5.6.2	Computer access at home.....	205
5.6.3	Computer access at work.....	205
5.6.4	Access to technology as a motivator.....	207
5.6.5	Conclusion about theory code access contributing to the e-readiness of warehouse workers.....	208
5.7	Contributions and constraints of the organisation's culture (Sub-question 6).....	210
5.7.1	Cultural differences and diversity.....	211
5.7.2	Business language and communication.....	214
5.7.3	Support and guidance available to warehouse workers.....	214
5.7.4	Importance of a relevant learning plan.....	217
5.7.5	Financial support and time for training.....	218
5.7.6	Conclusion about organisation culture contributing to the e-readiness of warehouse workers.....	220
5.8	Conclusion Chapter 5.....	221
<b>Chapter 6.....</b>		<b>222</b>
<b>Synopsis of e-Readiness Findings.....</b>		<b>223</b>
6.1	Introduction.....	223
6.2	Synoptic overview of the research.....	223
6.3	Executive Summary of Findings.....	231
6.3.1	Computer use, encounters with IT and computer literacy.....	231
6.3.2	Anxiety and attitude as a result of experience with IT.....	233
6.3.3	Managerial contributions, guidance, support and knowledge of e-learning.....	234
6.3.4	Infrastructure and connectivity.....	236
6.3.5	Learning preferences adapt with new skills.....	237
6.3.6	Access to computer technology as origin of motivation.....	238
6.3.7	The organisation holds the final key.....	239
6.4	Conclusion Executive Summary.....	241
<b>Chapter 7.....</b>		<b>242</b>
<b>Conclusion.....</b>		<b>243</b>
7.1	Overview of Study.....	243
7.1.1	Introduction.....	243
7.1.2	Overview.....	243
7.1.3	Conclusion – e-Readiness of the warehouse worker.....	248
7.2	Limitations of this study.....	250
7.2.1	Methodological limitations.....	250
7.2.2	Project limitations.....	252
7.3	Value of the research.....	253
7.4	Recommendations for further research.....	255
7.5	Personal reflection of this study.....	256
7.5.1	Learner expectations.....	257
7.5.2	Dealing with cultural differences.....	259
7.5.3	Personal reflection.....	259
7.6	Final thoughts.....	260
<b>References.....</b>		<b>262</b>

## List of Figures

Figure 1.1	The old supply chain model (Jansen van Rensburg, 2003) .....	3
Figure 1.2	The new supply chain model (Jansen van Rensburg, 2003) .....	4
Figure 1.3	Basic Components of Supply Chain Management (Diagram by the Author) .....	7
Figure 1.4	Formulating the sub-questions .....	9
Figure 1.5	Four paradigms of social research (Burrell & Morgan, 1979 p.22). .....	10
Figure 1.6	Data Collection Instruments .....	17
Figure 2.1	Instructional strategy framework for online learning environments .....	30
Figure 2.2	Three levels of e-Learning model (Bagnasco et al., 2003).....	34
Figure 2.3	Localisation and globalisation (Cronje, 2004) .....	44
Figure 3.1	Four paradigms of social research .....	86
Figure 3.2	Methodology structure .....	88
Figure 3.3	Phased approach to collect data .....	94
Figure 3.4	Identifying the categories of e-readiness.....	97
Figure 3.5	Collecting data from the warehouse workers .....	102
Figure 3.6	Screen lay-out of the EBMS tutorial with information and navigation areas .....	109
Figure 3.7	Data Collection Phase 3 Warehouse managers and supervisors.....	110
Figure 4.1	Data Collection Phases .....	122
Figure 4.2	Categories of e-readiness (McMillan & Schumacher, 2001, p. 477) .....	138
Figure 5.1	Experience with technology includes technical and affective involvement .....	142
Figure 5.2	Encounters with computers as experienced by the warehouse workers .....	143
Figure 5.3	Work-related computer experience .....	144
Figure 5.4	Receiving assistant using the mainframe system .....	145
Figure 5.5	Examples of e-mail replies from warehouse workers.....	150

Figure 5.6	Warehouse workers' technical encounters with computers .....	153
Figure 5.7	Relations of warehouse workers' affective experiences with computers .....	155
Figure 5.8	Experiences of anxiety by warehouse workers when using computers .....	156
Figure 5.9	Experience with computers led to warehouse worker frustration .....	158
Figure 5.10	Affective encounters with computers affect attitudes of warehouse workers .....	161
Figure 5.11	Warehouse workers' attitude towards technology affects their e-readiness .....	162
Figure 5.12	Confident attitudes developed through experience with technology .....	164
Figure 5.13	Determination to learn is regarded to be a valuable attitude for e-readiness .....	166
Figure 5.14	Attitude and e-readiness of submissive learners .....	167
Figure 5.15	e-Readiness aptitude – observed codes of computer literacy .....	170
Figure 5.16	Computer literacy a required aptitude for e-readiness.....	171
Figure 5.17	e-Readiness aptitude and knowledge of e-learning.....	174
Figure 5.18	Warehouse worker aptitude during tutorial observation .....	176
Figure 5.19	Tutorial with information box and instructions triangle displayed .....	178
Figure 5.20	Warehouse workers' aptitudes regarding learning styles and preferences .....	180
Figure 5.21	e-Readiness aptitude, attitude and ability to work independently.....	182
Figure 5.22	Two types of motivation .....	185
Figure 5.23	Frequencies of respondent responses relating to motivation .....	186
Figure 5.24	Extrinsic origins of motivation as experienced by warehouse workers.....	187
Figure 5.25	Dependency on guidance and support .....	191
Figure 5.26	Concepts relating to guidance and support according to warehouse workers .....	192
Figure 5.27	Motivation grows with clear career-related objectives .....	196
Figure 5.28	Financial support as motivator for e-readiness .....	197
Figure 5.29	Time available for learning as motivator for e-readiness .....	198

Figure 5.30	Computer technology access for warehouse workers .....	204
Figure 5.31	Access to technology contributes to e-readiness of warehouse workers .....	208
Figure 5.32	Organisation culture effecting the e-readiness of warehouse workers.....	211
Figure 5.33	Dealing with cultural diversity at the workplace .....	213
Figure 5.34	Organisation guidance and support to establish e-readiness.....	215
Figure 5.35	Importance of knowledge by facilitator or training manager .....	216
Figure 5.36	Knowledge of training leads to relevant training and career plans .....	218
Figure 5.37	Allocated time for training related to the e-readiness of warehouse workers.....	220
Figure 6.1	Technical experience with computer technology.....	224
Figure 6.2	Affective experience with computer technology .....	225
Figure 6.3	Warehouse workers' aptitude with computer technology .....	226
Figure 6.4	Origins of motivation relating to e-readiness of warehouse workers.....	227
Figure 6.5	Access to computer technology relating to e-readiness of warehouse workers .....	228
Figure 6.6	Organisation e-maturity as contributor to e-readiness of warehouse workers.....	229
Figure 7.1	Readiness barometer determined by strengths and weaknesses of identified conceptual codes of e-readiness .....	249

## List of Tables

Table 1.1	Paradigms of social research .....	12
Table 1.2	Subjective–objective dimension .....	13
Table 2.1	Attributes of e-learning .....	31
Table 2.2	Internet use in South Africa April 2000.....	39
Table 2.3	Summary of country-specific recommendations .....	39
Table 2.4	Becoming a learning organisation.....	50
Table 2.5	Industrial age versus information age .....	52
Table 2.6	Readiness domains with clusters.....	59
Table 2.7	Aspects of readiness .....	63
Table 2.8	Experience with technology .....	71
Table 2.9	Access to technology and infrastructure.....	72
Table 2.10	Organisational contributions to e-Readiness .....	74
Table 2.11	Origins of motivation .....	75
Table 2.12	Life style, attitudes, habits and individual differences.....	76
Table 2.13	Cultural aspects to consider for e-Readiness .....	78
Table 3.1	Characteristics of qualitative research compared with this exploratory study of e-readiness.....	87
Table 3.2	Biographical data of IHD warehouse workers.....	90
Table 3.3	Participants per distribution centre.....	91
Table 3.4	Elements of e-readiness emerged from SME interviews .....	100
Table 3.5	Educational levels of warehouse workers that completed the questionnaire.....	103
Table 3.6	Interview structure types .....	104
Table 3.7	Interviews conducted.....	105

Table 3.8	Number and types of observations conducted .....	106
Table 4.1	Cultural Influences on e-readiness: Personal .....	124
Table 4.2	Cultural Influences on e-Readiness: Environment .....	126
Table 4.3	Attitude and Individual Differences for e-Readiness: Personal .....	129
Table 4.4	Attitude and Individual Differences on e-Readiness: Environment .....	131
Table 4.5	Origins of Motivation as Elements of e-Readiness: Personal .....	133
Table 4.6	Origins of Motivation as Elements of e-Readiness: Environment .....	135
Table 5.1	Computer activities at work .....	146
Table 5.2	Warehouse workers' e-mail experience .....	148
Table 5.3	Warehouse workers' access to internet .....	150
Table 5.4	Technical experience as related to conceptual codes .....	154
Table 5.5	Theory code "Affective experience" relating to conceptual codes .....	169
Table 5.6	Warehouse workers' own account about their knowledge of e-learning.....	175
Table 5.7	Warehouse workers' responses to preferred training strategies .....	179
Table 5.8	Theory code "Aptitude" relating to conceptual codes of e-readiness.....	184
Table 5.9	Warehouse workers' views on own career plans.....	189
Table 5.10	Theory code "origins of motivation" relating to conceptual codes .....	202
Table 5.11	Theory code "access to technology" relating to conceptual codes.....	209
Table 5.12	Theory code "organisation culture" relating to conceptual codes .....	221
Table 6.2	Warehouse workers motivation as a result of access to computers .....	238
Table 6.3	Warehouse workers motivation as a result of access to computers.....	239

## List of Appendices

(Appendices available on CD)

- Appendix 1.1 Permission to Conduct Research with IHD Warehouse Staff
- Appendix 2.1 Case Studies of the Introduction of Technology to Developing Communities
- Appendix 3.1 Application for Ethics Approval
- Appendix 3.2 Groups for Data Collection
- Appendix 3.3 List of Subject Matter Experts (SMEs)
- Appendix 3.4 Warehouse Worker Questionnaires
- Appendix 3.5 Questionnaire with Additional Questions
- Appendix 3.6 Knowledge Regarding e-Learning
- Appendix 3.7 Main Frame Observation (video)
- Appendix 3.8 Structure of SME Interviews
- Appendix 3.9 Hermeneutic Unit 1: Elements of e-Readiness
- Appendix 3.10 Rating of e-Readiness Aspects
- Appendix 3.11 Structure of Warehouse Worker Interviews
- Appendix 3.12 Hermeneutic Unit 2: e-Readiness of Warehouse Workers
- Appendix 3.13 Observation of Voice-pick Procedure (video)
- Appendix 3.14 Tutorial Working and Learning with EBMS
- Appendix 3.15 Data Collection Instruments
- Appendix 4.1 Highest Frequency of Codes
- Appendix 4.2 Highest Rated Elements by SMEs
- Appendix 5.1 Main Frame Observation (video 1)
- Appendix 5.2 Main Frame Observation (video 2)
- Appendix 5.3 Main Frame Observation (video 3)
- Appendix 5.4 Main Frame Observation (video 4)
- Appendix 5.5 Main Frame and e-Mail Observation (video 1)
- Appendix 5.6 Main Frame and e-Mail Observation (video 2)
- Appendix 5.7 Main Frame and e-Mail Observation (video 3)
- Appendix 5.8 Main Frame and e-Mail Observation (video 4)

Appendix 5.9 Main Frame and e-Mail Observation (video 5)

Appendix 5.10 Main Frame and e-Mail Observation (video 6)

Appendix 5.11 Examples of Received e-Mail Messages

Appendix 5.12 IHD Information Security Policy

Appendix 5.13 Observation of Frustration (video)

Appendix 5.14 Observation of Confidence (video)

Appendix 5.15 Older Respondent Working on Main Frame System (video)

Appendix 5.16 Respondent 1 Working with Tutorial (video 1)

Appendix 5.17 Respondent 1 Working with Tutorial (video 2)

Appendix 5.18 Respondent 1 Working with Tutorial (video 3)

Appendix 5.19 Respondent 1 Working with Tutorial (video 4)

Appendix 5.20 Respondent 1 Working with Tutorial (video 5)

Appendix 5.21 Respondent 1 Working with Tutorial (video 6)

Appendix 5.22 Respondent 1 Working with Tutorial (video 7)

Appendix 5.23 Respondent 1 Working with Tutorial (video 8)

Appendix 5.24 Respondent 1 Working with Tutorial (video 9)

Appendix 5.25 Respondent 1 Working with Tutorial (video 10)

Appendix 5.26 Respondent 1 Working with Tutorial (video 11)

Appendix 5.27 Respondent 1 Working with Tutorial (video 12)

Appendix 5.28 Respondent 2 Working with Tutorial (video 1)

Appendix 5.29 Respondent 2 Working with Tutorial (video 2)

Appendix 5.30 Respondent 2 Working with Tutorial (video 3)

Appendix 5.31 Respondent 2 Working with Tutorial (video 4)

Appendix 5.32 Respondent 2 Working with Tutorial (video 5)

Appendix 5.33 Respondent 2 Working with Tutorial (video 6)

Appendix 5.34 Respondent 2 Working with Tutorial (video 7)

Appendix 5.35 Respondent 2 Working with Tutorial (video 8)

Appendix 5.36 Respondent 2 Working with Tutorial (video 9)

Appendix 5.37 Respondent 2 Working with Tutorial (video 10)

Appendix 5.38 Respondent 2 Working with Tutorial (video 11)



Appendix 5.39 Respondent 2 Working with Tutorial (video 12)

Appendix 5.40 Respondent 2 Working with Tutorial (video 13)

Appendix 5.41 Respondent 2 Working with Tutorial (video 14)

Appendix 5.42 Respondent 2 Working with Tutorial (video 15)

Appendix 5.43 Respondent 2 Working with Tutorial (video 16)

Appendix 5.44 Respondent 2 Working with Tutorial (video 17)

Appendix Thesis

## Abstract

The purpose of this research was to investigate the e-readiness of warehouse workers in a supply chain management environment. Organisations increasingly contemplate e-learning as a training option to develop their employees. Globalisation of commercial ventures increasingly demands that organisations become more competitive by introducing Information Technology (IT). e-Learning is seen as a stepping stone for empowering employees.

Supply-chain management organisations use unskilled warehouse workers to perform manual duties such as registering, storing and quick location of stock for distribution. IT supports these logistic procedures – emphasising the need to introduce e-learning to warehouse workers. Questionnaires confirmed that the unit of analysis was multi-racial, mostly black, between eighteen and sixty years old and of both genders. Their limited educational qualifications are representative of many similar developing communities of work across Africa.

e-Learning requires access to technology, computer literacy, self-discipline, the drive to develop and the confidence to use technology to achieve objectives. Warehouse workers as developing communities are trapped by the digital divide amidst calls to bridge the divide by introducing IT to such communities. Questions are raised whether they have the discipline, motivation, and skills to learn from such a complex learning strategy. Interviewed corporate learning experts cautioned that specific infrastructures and personal attributes are crucial. Insufficient computer experience, anxiety and technophobia, may cause warehouse workers to become unlikely candidates for e-learning.

My inquiry was an interpretive, qualitative case study, intent on understanding emotional, technical, and social aspects influencing e-readiness. I collected my data in four phases. Phase one was a questionnaire to collect biographical information of the warehouse workers. During phase two, by means of a Delphi technique, I established consensus from a group of e-learning experts of what e-readiness encompasses. Phase three consisted of interviews with and observations of workers performing their daily tasks and also while completing a computer-based tutorial. In phase four I conducted interviews with warehouse managers on their perceptions of the e-readiness of their workers.

From the literature I extracted Reeves' (1999) three learner inputs, as well as six fundamental categories of e-readiness. With these nine theory codes, I followed an inductive-deductive grounded theory approach to analyse the data. I constructed six sub-questions as basis for the enquiry. I tallied the frequencies of the conceptual codes of e-readiness and created an inventory of applicable conceptual codes according to the theory codes. Patterns of technical and affective experience, aptitude, origins of motivation, access to computer infrastructure and organisation culture culminated as my seven main findings on the e-readiness of warehouse workers. I determined inter alia that warehouse workers do not suffer from technophobia, nor are they really intimidated by technology.

However, they need guidance and expert facilitation to become successful e-learners. They are aware that they are dependent on the organisation's infrastructure to develop their skills and capabilities. Therefore, the e-maturity of an organisation can greatly benefit from warehouse workers' involvement in e-learning.

**Keywords:**

Warehouse workers

e-readiness

developing communities

digital divide

computer experience

access to technology

technophobia

motivation

organisation-dependent

e-maturity

## List of Abbreviations

ABET	Adult Basic Education and training
APEC	Asian Pacific Economic Cooperation
ASTD	American Society for Training and Development
ATM	Automatic teller machine
Becta	British Educational Communications and Technology Agency
CAT	Computer assisted training
CAQDAS	Computer assisted qualitative data analysis system (Atlas.ti™)
CBT	Computer based training
CI	Community Informatics
CID	Centre for Information Development
CSPP	Computer Systems Policy Project
CTI	Computer Training Institute
DC	Distribution Centre
DOT Force	Digital Opportunity Task Force
EKP	Enterprise Knowledge Platform®
EBMS	Electronic Business Management System
GCI	Growth Competitiveness Index
HR	Human Resources
ICT	Information and Communication Technology
IDP	Individual development plan
IHD	International Healthcare Distributors
IKS	Indigenous Knowledge System
ILS	Instructor led systems
ILT	Instructor led training
IS	Information Systems
IT	Information Technology
NEPAD	New Partnership for African Development
NZCER	New Zealand Council for Educational Research
PC	Personal Computer
SA	South Africa
SAPICS	Professional Society for Supply Chain Management
SC	Supply Chain
SCM	Supply Chain Management
SME	Subject Matter Experts
SOP	Standard operating procedures
UCT	University of Cape Town
UNISA	University of South Africa

WBT	Web based training
WEF	World Economic Forum
WITSA	World Information Technology and Services Alliance
www	World wide web

## Definitions

ABET	Adult Basic Education and training programme by Mediaworks used as a training tool to develop the education of learners in developing countries. Can be done online or by completing exercises in assignment books. Includes literacy and numeracy programmes
Atlas.ti™	Qualitative data analysis system
ATM	Automatic teller machine
CBT	Computer based training lessons that enable learners to learn with computer technology
DC	Distribution centre – remote warehouses belonging to the organisation to serve other regions of the country
Delta	The Delta system is the customized application designed and developed to manage all the logistics procedures of IHD
Digital Divide	The technological difference between developed and developing countries and communities
EBMS	Electronic Business Management System – an interactive, online facility available on the organisation intranet. It explains all the business procedures by means of flow diagrams and interactive explanations. Staff are expected to follow these guidelines to execute the business procedures
EKP	Enterprise Knowledge Platform (EKP) is a series of e-learning lessons from Laraghskills® that are available to all aspiring employees
IDP	Individual development plans – initiative from the South African Departments of Labour and Education to ensure that employee skills are developed at work. It entails a formal “development plan” to structure the training and learning of the employee
IHD Warehouse	The warehouse where the pharmaceutical goods are stored and picked to be delivered to customers
Internet	The electronic information network available across the world
Intranet	The electronic information network within the organisation – available to all employees
Mainframe system	The Delta system, a customized electronic application designed and developed to manage all the logistics procedures of IHD

MS Outlook®	Microsoft Outlook® e-mail application
Warehouse worker	The employees of the SCM industry responsible for the receiving, packing, and dispatching of goods
Web based	Applications or training that relate to the world wide web (www)

# Chapter 1

## 1.....ORIENTATION

- 1.1 Introduction
- 1.2 Research problem
- 1.3 Effects of Globalisation
  - 1.3.1 Globalisation
  - 1.3.2 Digital divide
  - 1.3.3 Warehouse workers exposed
- 1.4 Rationale
  - 1.4.1 e-Learning
  - 1.4.2 e-Readiness
- 1.5 Scope of the study
  - 1.5.1 Context
- 1.6 Research questions
- 1.7 Theoretical framework
  - 1.7.1 Positioning the research
  - 1.7.2 Functionalism
  - 1.7.3 Radical humanism
  - 1.7.4 Radical structuralism
  - 1.7.5 Interpretivism
- 1.8 Perspective orientation
- 1.9 Research methodology
  - 1.9.1 Qualitative research strategy
  - 1.9.2 Case study
  - 1.9.3 Unit of Analysis
  - 1.9.4 Methods of Data Collection
  - 1.9.5 Assumptions
- 1.10 Data analysis procedures
- 1.11 Limitations of the research
- 1.12 Reliability and validity
- 1.13 Ethical considerations
- 1.14 Thesis structure
- 1.15 Motivation to effect this research

# 1 Orientation

## 1.1 Introduction

In South Africa, like many other countries, unskilled labour is mostly used to perform the duties of warehouse operations in the supply chain management (SCM) environments. Main business areas are supported by several information technology systems that assist with the automation of procedures. Specified technological competencies are required to ensure that stock is correctly registered, stored and successfully located electronically for quick distribution. Naturally, the knowledge and skill levels of the workers need to be regularly retrained because Information Technology (IT) systems play a major role to support the business to be competitive. Training courses are often developed and planned, but they fail to meet their intended objectives due to the unavailability of staff for training. Very few modern companies can afford it to have their workforce attend training sessions where the workers have to leave the functional environment for long periods. Some corporate companies plan to introduce e-learning to prepare and train their employees. From the following quotes the importance of computer literacy becomes evident:

Clearly, knowing how to effectively deploy technology in the workplace has become a mission-critical business skill (Derryberry *et al.*, 1998, p. 2).

ICT<sup>1</sup> infrastructures have given birth to a context that is increasingly directed at empowering employees at all levels in the organisation (Weeks & Lessing, 2002 p. 66).

Unfortunately the biggest mistake companies make when moving to e-learning is failing to prepare their employees to become self-directed learners (Sheila Paxton, Business Wire, 2001).

These observations directed my research. Information technology drives businesses and empowers those who manage them, and is believed to possess an ability to empower those who participate. But do they?

e-Learning is highly dependent on the learners' ability to use computers, the Internet, multimedia to construct meaning from different sources of knowledge, learners' attitudes towards learning, and motivation to learn on one's own.

## 1.2 Research problem

The purpose of my research is to explore the e-readiness of warehouse workers in a SCM environment. Instructional designers and corporate training facilitators are not clear whether e-learning is a viable training strategy for these learners, especially for learners in developing countries with little experience in technology. There is a definite need, because classroom training is a costly

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<sup>1</sup> Information and Communications Technology.



exercise for most companies, therefore they are increasingly interested in e-learning as a possible training solution. The cost-saving factor appeals to companies, but is it a feasible decision to impose a learning strategy on a group of people who may not be ready for it yet? Instructional designers and training facilitators are not always clear whether this is a viable option. This study aims to explore the e-readiness of a specific warehouse community in South Africa.

## 1.3 Effects of Globalisation

### 1.3.1 Globalisation

The SCM environment moves across national boundaries and traditional business zones to survive against strong competition and is compelled to use leading-edge technology to survive in the global commercial jungle (Bantock, 2004). Business executives respond to the needs of their clients and customers through the efficient and effective use of technology, and become part of the global market:

The need to work smarter and faster, access and use information when and where it is needed all point to deploying information technology to improving learning and performance. Supporting the training and professional development needs of an organisation's workforce via technology has become an important strategy for increasing and maintaining a company's competitive advantage (Derryberry *et al.*, 1998 p. 7)

Global firms use technology to outperform and overtake their competitors. Technology is used to gain an advantage with pricing, products, partnerships and the management of basic business functions (Poirier, 1999; Turban, McLean, & Wetherbe, 2001). Software planning enabled the SCM environments to pursue modern best practises, making it clear that technology has become the driving force for these firms (Helming & Zonnenberg, 2003). A successful SCM company is regarded as accurate and trustworthy in its deliveries and performs reliably for both customers and clients. Information technology can be seen as the 'adhesive' to get all role players to pursue a common goal (Hunter, 2003).

This poses a simultaneous opportunity and threat, in that businesses may prosper, but related communities or groups that do not share the same level of expertise may be disadvantaged in some way or another. They feel that they cannot compete on an equal footing (Hammond, 2001; Weeks & Lessing, 2002). Van Audenhove (2003) adds that the implementation of technology is too easily regarded as a magical gateway to prosperity while there are too many factors that need to be addressed. The "fundamental dualism" describes a competitive and technologically advanced Western world, while the developing world lacks the infrastructure and needs to import technology and the accompanying skills (Van Audenhove, 2003 p. 65). This paradox of rich technological environments versus limited technological environments may be evident in SCM companies in that the highly technical organisation relies on members of the previously disadvantaged communities in South Africa. The technology may be a challenge, and an opportunity to develop, but at the same time it can also be threatening to the warehouse workers, due to the lack of previous exposure.

This lack of exposure and awareness then gives rise to the effects of the digital divide, and definitely affects the learning by warehouse workers.

### 1.3.2 Digital divide

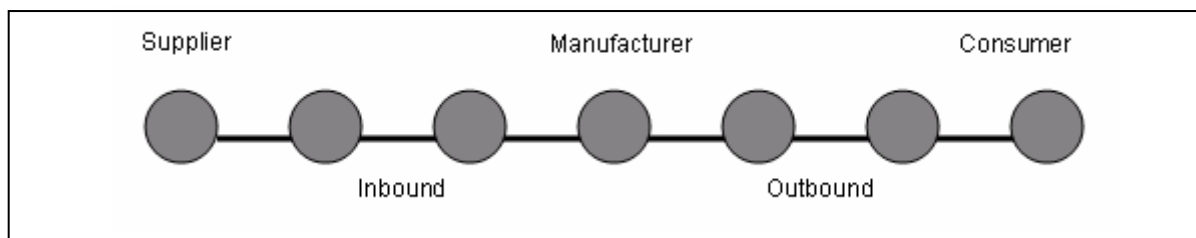
The digital divide refers basically to individuals, communities, cultures, nations who have access to IT and those who don't. Those who do not, refers mostly to developing countries, and especially to disadvantaged communities with insufficient electronic infrastructures (Bridges.org, 2001; Digital Opportunity Task Force, 2001). Many refer to an existing gap:

...the digital divide refers to the gap between individuals, households, businesses and geographical areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies and their use of the Internet for a variety of activities (Weeks & Lessing, 2002 p. 67).

The gap grows and expands due to the extensive use by the higher socio-economic communities. Kubichek (2001) highlighted the disparity in the growth rate of computer ownership and use thereof, to expose those communities who are not in the position to obtain the technology. Access to, and the competency to use technology seems a general reason for the existence of the digital gap (Bridges.org, 2001; Digital Opportunity Task Force, 2001; Kubichek, 2001; Weeks & Lessing, 2002). South African SCM companies participate in the global market, and are vulnerable to the effects of the digital divide.

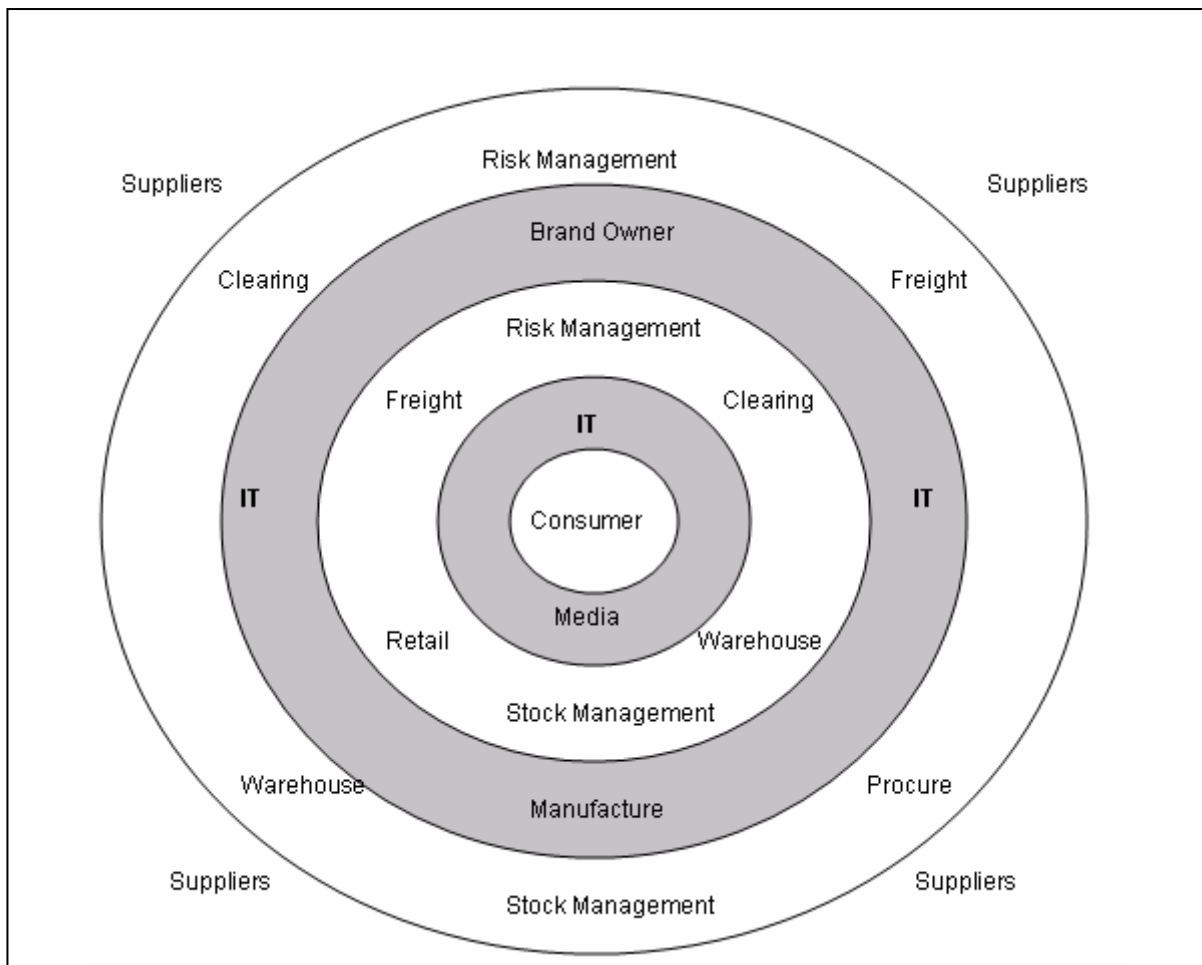
### 1.3.3 Warehouse workers exposed

The SCM industry is fast becoming dependent on information systems (IS) and some forms of automation that require a specific IT literacy and a level of IT competency from the warehouse workers (Logistics News, 2003, p. 137). The progress and growing dependency on IT in SCM industries is illustrated by D. Janse van Rensburg, Director IT and Logistics, during a breakfast seminar for the Professional Society of Supply Chain Managers (SAPICS) (Jansen van Rensburg, 2003). He referred to the transformation the SCM business experienced during the last decade, and the implications that it had for business and its resources. Figure 1.1 (Jansen van Rensburg, 2003) illustrates a linear model, which seems to be very simple compared with the complex model illustrated in Figure 1.2.



**Figure 1.1** The old supply chain model (Jansen van Rensburg, 2003)

The new SCM model is visibly different and more complex (Figure 1.2). Most activities are technology and business procedures driven to supply solutions to businesses.



**Figure 1.2** The new supply chain model (Jansen van Rensburg, 2003)

Specific skills, inputs and responses are required to ensure that stock is correctly registered, stored and successfully located electronically for quick distribution. In my capacity as training consultant at International Healthcare Distributors (IHD), a pharmaceutical distribution company in Johannesburg South Africa, I have been involved in developing several training courses on some of the functional systems. Training courses are presented with mixed success. Employees are not always available for training, or are only allowed to leave their functional environments for a short while. Instructor-led training requires the staff to leave their functional areas to receive training (Miltiadou & Savenye, 2003). This absence from the work area has an immediate negative effect on the speed of procedures and can affect profits. At IHD, if the workers are consequently not at their posts, deliveries of pharmaceutical goods may be late. Lives may be at risk if medication is not received on time. Therefore, training is compromised to the eventual detriment of the development of the workers. Calls for training, and more specifically electronic training, are heard more and more often (Derryberry *et al.*, 1998; Jordan, 2000). Technology with its electronic learning tools can offer individualized learning and is regarded as the great enabler and holds the key to closing the digital divide

(Czerniewicz & Brown, 2005; Derryberry *et al.*, 1998; Gawe & De Kock, 2002; Herselman & Britton, 2002; Ifinedo, 2005; Jordan, 2000; Krebs, 2000; Van Audenhove, 2003). Terry Bantock (2004) from Imperial Logistics adds that companies are set to “gain a competitive advantage” by using the latest technology and superior skills (p. 5).

Howard Stafford from IBM SA states that e-learning is the right way to train for the future (Computing SA, 2002), while Michiel Barnard from CTI openly acknowledges that the race to set up e-learning centres is on (Business IT Africa, 2002). Companies increasingly invest in e-learning (Haney, 2003). Against this background comes a concern from Sheila Paxton that attention should be given to the readiness of the learners before or when computer assisted learning is planned (Business Wire, 2001).

## **1.4 Rationale**

IHD and many other SCM companies around the world are on the verge of implementing e-learning as a continuous, just-in-time, needs-driven training solution.

### **1.4.1 e-Learning**

e-Learning is defined in many ways. Calls are heard for one or other form of computer-based training – “continuous training” (Llorens, Salanova, & Grau, 2002), “e-learning” (Kay, 2002), “interactive learning systems (ILS)” (Baldwin & Sabry, 2003), “web-based training” (Powell, 2000), “information and communication technologies (ICT)” (Van Audenhove, 2003) amongst several other descriptions such as online training, computer-based training, etc. Some of these processes differ slightly, but all can basically be described as a training strategy where technology is actively involved.

e-Learning refers to the activity where a learner uses the Internet to access and interact with learning content and the facilitator, and to collaborate with co-learners in the quest to achieve a clearly defined learning objective. It includes getting support online, and constructing meaningful concepts which result in personal growth and development (Alessi & Trollip, 2001; Anderson & Elloumi, 2004).

e-Learning is 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 seem to be an attractive option for the South African supply chain industry (Powell, 2000). The opportunity to learn by means of technology is surely an exciting prospect, especially to the warehouse workers who seldom get a chance to do more work on computers. Usually, when new applications are introduced to the workplace, a classroom training course is organized to prepare the users for the new application. The value of learning with technology is evident in the way the Association of African Universities describes e-learning:

A shorthand for the computers, software, networks, satellite links and related systems that allow people to access, analyse, create, exchange and use data, information, and knowledge in ways that, until

recently, were almost unimaginable. It refers to the infrastructure that brings together people, in different places and time zones, with multimedia tools for data, information, and knowledge management in order to expand the range of human capabilities (Herselman & Britton, 2002 p. 270).

Alessi and Trollip (2001) and Anderson and Elloumi (2004) recognise the premium e-learning places of the learner. The learner will need knowledge and skills to use the Internet, collaborate with co-learners and interact with the facilitator. It includes getting support online and constructing meaningful concepts to result in personal growth and development (Alessi & Trollip, 2001; Anderson & Elloumi, 2004). Learners need to be proficient in the use of technology, because they will have to learn on an individual basis, motivate and monitor themselves, and decide for themselves what the next steps will be in their assigned career paths. "Electronic learning provides a means of responding to an individual's self-determined need for improvement wherever there is access to an Internet or a network connection" (Derryberry *et al.*, 1998 p. 11).

Rarely, if ever, does one come across a corporate strategy where the readiness or preparedness of a potential user group is investigated prior to introducing new applications. The learner should be ready to adapt to this self-driven way of teaching and learning. Powell insists that several factors should be thoroughly investigated before web-based training (WBT) is implemented. Among these factors is the question: Who is being taught? He continues by discussing the importance of the business culture and the characteristics of the learners within the organisation. Aspects to consider are computer literacy, reading abilities and ability to learn (Powell, 2000). It would be unfair not to consider the readiness of the target group.

## 1.4.2 e-Readiness

e-Readiness refers to the necessary infrastructure, access to this infrastructure, policies to support the use thereof to participate in the international global network (African Education Knowledge Warehouse, 2003; Mutula & van Brakel, 2005). The Southern African Developing Countries Task Force regarded e-readiness in terms of:

e-Readiness and the level of competence in areas such as e-governance, e-services, e-business, ICT awareness, infrastructure, and policy and regulatory frameworks. This involved primary in-country research of all the SADC Member States on the status of e-readiness (African Education Knowledge Warehouse, 2003, p. 2).

Are warehouse workers in a position where e-learning as a learning strategy can be imposed onto them with confidence? Do they have the infrastructure, access and policies to support them to develop as self-driven learners?

## 1.5 Scope of the study

### 1.5.1 Context

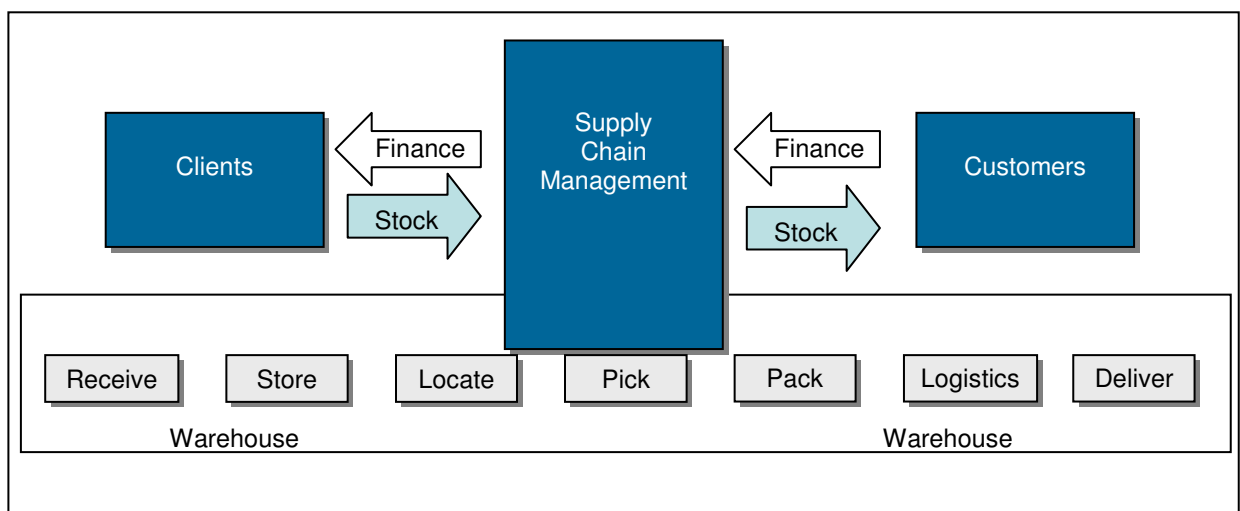
International Healthcare Distributors (IHD) is a pharmaceutical distribution company situated in

Johannesburg, South Africa. They offer logistics service to world renowned pharmaceutical companies like Bayer, Boehringer Ingelheim, Sanofi Aventis, Bristol Myers Squibb, Eli Lilly, Roche, Schering, Schering Plough, Pharmaco, Pfizer and Wyeth. IHD operates nationally from five distribution centres within South Africa (Johannesburg, Cape Town, Durban, Port Elizabeth and Bloemfontein) and employs approximately five hundred people around the country (IHD Website, 2006).

IHD is a company that relies heavily on technology to ensure the accuracy of the receiving, storing and especially the delivery of stock to pharmacies, hospitals and healthcare centres across Southern Africa. IHD takes pride in its offering:

[IHD]...strives to be the front runner in employing advances to meet all challenges. Examples of such advances include batch tracking of products from manufacturer to end dispenser, fully air conditioned warehousing, stringent cold chain maintenance and the development of Futurewave, an Internet based ordering system". It also refers to its proficiency and highly technological abilities: "...development and launch of Futurewave heralded the first non-proprietary, electronic ordering system for pharmaceuticals via the Internet. IHD aims to combine information technology abilities with logistics strengths for effective e-commerce (IHD Website, 2006).

IHD is a global company that needs to excel in its offering to attract clients and customers, and aggressively pursues the latest technological methods and solutions. A large number of its workforce includes warehouse workers who are responsible for the receiving, registering and storing of stock (Figure 1.3). When orders are placed, they use technological systems to locate, pick and pack the stock for delivery.



**Figure 1.3 Basic Components of Supply Chain Management** (Diagram by the Author)

Progress in technology and integration in the workplace holds specific consequences for the workforce. The social structure of the workforce, together with the technological innovations, bring about change in organisations (Llorens *et al.*, 2002).

Poirier (2003) identifies an interesting paradox;

Proponents indicate strong endorsement and support for things technical and collaborative. At the same time, the preparedness for the ingrained business cultures to accept and assimilate the necessary transformation process is often lacking.

He believes that technology can be successfully utilised, but warns that the lack of computer skills may affect the success of the venture (Poirier, 2003). The way corporate companies conduct learning becomes more and more important because it needs to support business strategies (Jordan, 2000).

Research by the ASTD Global Network SA found that a substantial portion namely thirty seven percent of South African companies presently use some form of technology-assisted training to train their employees. Serious concerns are raised regarding the fact that less than fifteen percent of these companies spend time on training employees on how to acquire the necessary skills to become self-directed learners. This is a "...skill of utmost importance if companies want to see a decent return on investment for the money spent on e-Learning initiatives" (Rourke, 2003, p. 40).

Stafford of IBM (SA) comments that companies can have the best and most advanced technology available, but if no investment is made in its people, the investment will prove to be costly (Computing SA, 2002).

## 1.6 Research questions

This study aims to investigate the readiness of warehouse workers, with the assumption that e-learning is about to be introduced in their environment as a learning strategy. Available literature has given me excellent guidelines on the perceptions, ways and methods e-readiness can be measured. I have used a selected group of documents to assist me in determining the main categories of e-readiness.

Research Question

How ready are warehouse workers for e-learning?

Human life is complex, and various influences and variables exist in the environment upon which we react, interact to develop an ability, skill, personality and knowledge about ourselves and our environment. When e-learning is planned, we will react according to these influences and variables. This research aims to explore the e-readiness of a warehouse community employed at a leading pharmaceutical company in South Africa. It is a company that is driven by modern technologies to remain at the leading edge of supply chain management. It is expected that the surrounding technology and fast pace of technology influences the warehouse workers either directly or indirectly.

Figure 1.4 is an illustration of the formulation of my research question, and how I went about to

structure my information-collection strategy. It shows the two main sources that assisted me in formulating the sub-questions to determine the e-readiness of warehouse workers. From the literature and subject-matter experts it was possible for me to define the main categories of e-readiness.

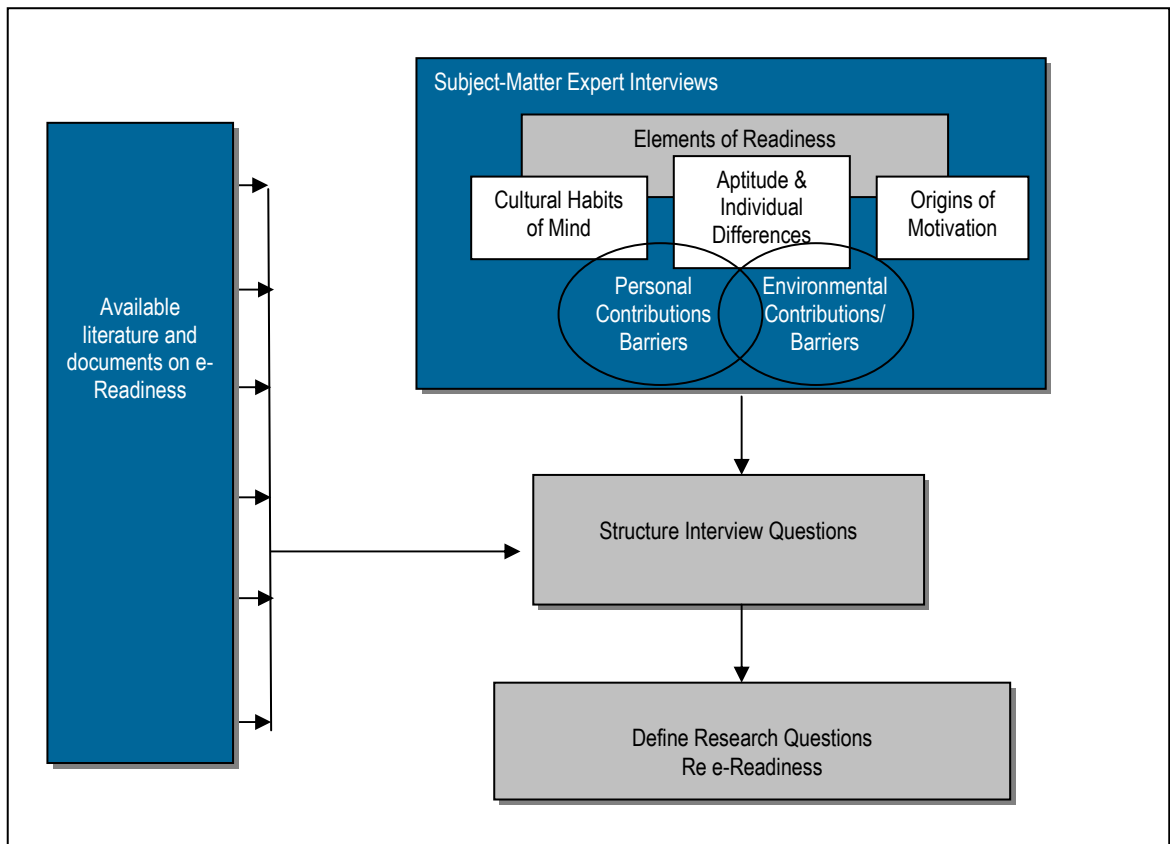


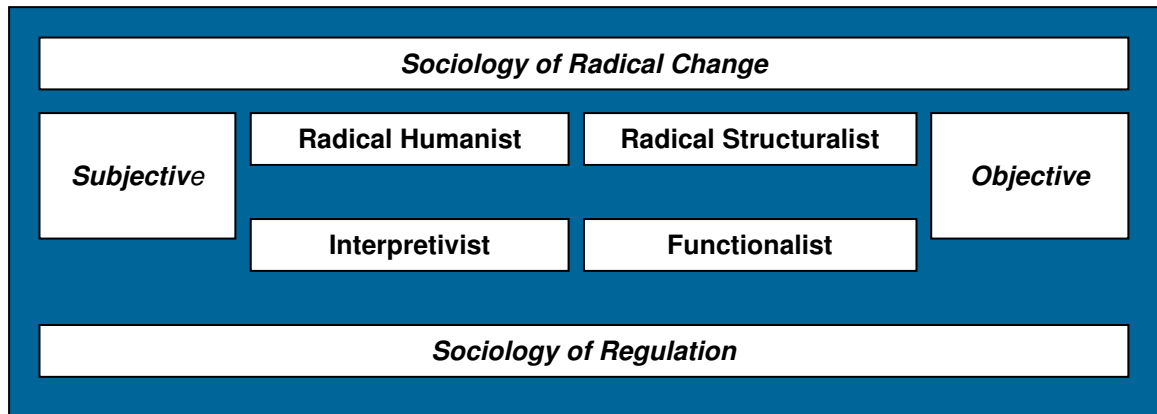
Figure 1.4 Formulating the sub-questions

## 1.7 Theoretical framework

### 1.7.1 Positioning the research

Many academics refer to Burrell and Morgan's (1979) four paradigms when explaining or defining social research (Batterham, 2002 p. 160; Cohen, Manion, & Morrison, 2002; Cronje, 2000; Lehane *et al.*, 2004; Mills, 2001; Nurminen, 1997; Ritchie & Lewis, 2003). Burrell and Morgan's four paradigms for social research are illustrated in Figure 1.5.





**Figure 1.5** Four paradigms of social research (Burrell & Morgan, 1979 p.22).

When the social phenomenon, e-readiness, is investigated, one needs to orientate it within the four paradigms of social research (Mills, 2001). Considering the target population and the state of readiness to be investigated, I am aware of the fact that I can place it in any one of the four quadrants of Burrell and Morgan’s model of Social Theory. Morgan insists that although all paradigms may be supported by an individual, it is when a report is written that you are committed to take a stance from a specified position “because the whole medium requires that you take a position and define and articulate exactly where you are” (Mills, 2001). I will briefly discuss how my research relates to functionalism, radical humanism, and radical structuralism, and conclude with interpretivism, my preferred philosophy for this research.

### 1.7.2 Functionalism

Functionalism refers to the social paradigm where a rational explanation is given to reality (Boshier, 2000). According to this author, a positivist, objective epistemology is concerned with social order. Functionalism is described as the theory when the design of an object is governed by its use rather than a pleasant appearance. Shulman (1986) describes functionalism as a paradigm that reasons that social structures exist in organisations, institutions and technologies, and are independent of people. From this objectivist point, human behaviour is influenced.

Ample reasons exist to conduct the research from a functionalist perspective. Morgan (in Mills) declares that the really important distinctions between the paradigms are the ontological issues, where reality is described to be either subjectively or objectively constructed (Mills, 2001).

### 1.7.3 Radical humanism

e-Readiness for the warehouse worker surely has an emancipatory flavour, because the South African warehouse worker falls largely in the previously disadvantaged community (ICT Charter, 2004). Supporters of the radical humanist paradigm will probably support the notion that with regard to e-readiness, social reality is definitely external to individuals, and may contribute to change (Cohen *et al.*, 2002). Considering the South African political history, and the reality of the digital divide, they may have a point. Morgan explains that in this paradigm, individuals by themselves, and in conjunction

with others in their social environment, consciously try to reorganise their experiences by challenging domination (Mills, 2001).

Boshier (2000) describes it aptly by stating that radical humanists want to free people from social constraints. One is tempted to categorise this research from a radical humanist point of view, when he says that “they seek transformation, emancipation...” (Boshier, 2000). The workforce in South Africa has a large number of workers that are under-educated, and although actions and structures are put in place to develop and endow this workforce, it may not be enough (ICT Charter, 2004). Radical humanism is active where people want to rectify the wrongs and want to “revitalise” their cultures, e.g Maori’s in New Zealand, as stated by Paulston in Boshier (2000 p. 1) by means of education. This may seem to be a valid motivation for this research.

As stated above, this research investigates a status, a condition. e-Readiness refers to the status of the workers in relation to electronic education strategies. If a radical humanist perspective is followed, the focus for this research may shift to the groups, their relationships with society, the reasons for the condition they find themselves in, and ways to bridge the gap. My research is mainly aimed at understanding the condition in which they find themselves, and how they perceive the expectations and work demands placed upon them.

#### **1.7.4 Radical structuralism**

Bent on a philosophy of social change, radical structuralists are committed to do away with existing structures (Boshier, 2000; Mills, 2001). Structuralists differ from radical humanists in that they criticise the structures, communities and social world, thereby implying a more objective, impersonal viewpoint (Boshier, 2000). Burrell and Morgan place this paradigm as objective, and intent on social change, as shown in Figure 1.5 (Batterham, 2002; Cohen *et al.*, 2002; Cronje, 2000; Lehaney *et al.*, 2004; Mills, 2001; Nurminen, 1997; Ritchie & Lewis, 2003).

e-Readiness implies the individual’s relation to technology. Shulman sees technology as a highly structured social entity, as it is developed and then changed according to user needs and specifications (Shulman, 1986). These structures are not fixed but go through a virtually endless development cycle to address the needs identified by users. It assumes that “technology and user behaviour co-evolve as a structural process during the course of human-computer interactions” (Shulman, 1986).

Shulman comments that the structuration theory probably describes the information systems processes best, because its strength lies in the ability to study changes.

IS researchers often are interested in change, whether engineering change, as in introducing new forms or functions within technology, or observing change, as in monitoring individual or organisational behaviour following introductions of a change in technology (Shulman, 1986).

Again this study on e-readiness can be placed squarely within this paradigm in that the social structures of the target group can be investigated in the way they contribute to the state of readiness displayed by warehouse workers. e-Readiness, the result of the use of technology, confirms this assumption. But once again, from the epistemological point of view, it will imply that the research will have to be more objective and positivist, while the aim of this research is to identify and understand the condition of e-readiness as subjectively experienced by the South African warehouse worker.

### 1.7.5 Interpretivism

The interpretive view of social research recognises human differences and how people perceive knowledge in their own unique ways. Knowledge is constructed by the individual through social interaction and experience (Lehaney *et al.*, 2004; Weber, 2004). Figure 1.5 illustrates this paradigm as subjective, and seen from a perspective of social regulation (Batterham, 2002; Cohen *et al.*, 2002; Cronje, 2000; Lehaney *et al.*, 2004; Mills, 2001; Ritchie & Lewis, 2003). With this I suggest that I need to understand the situation as it is, from a subjective point of view, and with the intention to experience the relationship the warehouse workers have with their technological environment.

Traditional researchers will investigate social sciences by trying to discover universal and natural laws that determine human knowledge and behaviour, while interpretivists share the same concerns, but seek the existence of knowledge in the individuals and their relation with the environment and with one another (Cohen *et al.*, 2002). My research is not intent on bringing on any changes, but mainly to understand and see the phenomenon from their point of view.

Interpretive research studies the individual subjectively and how he/she interacts with the world around them, how they cope, manage, and give meaning to their environment (Cohen *et al.*, 2002; Merriam, 1998; Vockell, 2005). They agree that the social world can only be understood from the perspective of the individuals who are involved in the phenomenon to be investigated. This concern for the individual (Cohen *et al.*, 2002) is an accurate description of the aim of this research. Where the normative paradigm is intent on devising general theories of human behaviour, this research will rather try to understand, and position it-self to address e-learning as a modern learning strategy with more clarity. Table 1.1 summarizes and compares the ontological epistemological preferences of the four research approaches (Batterham, 2002; Cohen *et al.*, 2002; Cronje, 2000; Lehaney *et al.*, 2004; Mills, 2001; Nurminen, 1997; Ritchie & Lewis, 2003).

**Table 1.1 Paradigms of social research**

Paradigm	Ontological epistemological preference	Description
Functionalist	Objective – positivist accepts regulation	Supports traditional empirical research
Interpretive	Subjective – anti-positivist accepts regulation	Social world created by the individuals themselves.

Paradigm	Ontological epistemological preference	Description
Radical Humanist	Subjective – positivist moves to change	Social world created by individuals, but does not accept the status quo, intent on change.
Radical Structuralist	Objective – anti-positivist moves to change	Supports the functionalist view, but uses this research to change social structures and organisations.

e-Readiness, as a condition in relation to technology is experienced individually, from different backgrounds, educational levels, study habits, learning styles, computer literacy, needs and aspirations. Research to identify the constraints, abilities and underlying aspirations, can assist in the strategies and methods to speed up the use of technology at this level.

## 1.8 Perspective orientation

I will use Burrell and Morgan's subjective-objective dimension to explain my research perspective as cited by (Cohen *et al.*, 2002) in Research Methods in Education. The subjective-objective dimension is shown in Table 1.2.

**Table 1.2 Subjective–objective dimension**

Subjectivist approach		Ontological		Objectivist Approach
Nominalism	←		→	Realism
Anti-Positivism	←	Epistemological	→	Postivism
Voluntarism	←	Human nature	→	Determinism
Idiographic	←	Methodological	→	Nomothetic

(Burrell & Morgan 1979)

When the ontological assumption regarding the position of the warehouse worker relating to e-learning is evaluated, the typical question arises: Is this social phenomenon due to the consciousness, or lack, of the social reality? Taking guidance from (Cohen *et al.*, 2002), ontology refers to either a nominalist or realist position regarding truth and knowledge. e-Readiness, as a relative condition, is very dependent on several intrinsic and extrinsic variables, and therefore this study chooses to regard the concept of e-readiness as nominalist, as this concept will only become meaningful when interpreted by an individual (Cohen *et al.*, 2002).

The epistemological assumption refers to the base of knowledge, whether it is “hard, real and tangible versus the anti-positivist view that it is softer or more spiritual and needs to be personally experienced” (Cohen *et al.*, 2002 p. 6).

Regarding the investigation into the readiness levels of warehouse workers, I assume an anti-positivist approach. There are several aspects of e-readiness that can only be understood if the investigation is conducted from an empathic, personal and involved point of view. I need to explore and understand

their confidence, attitudes and perceptions regarding technology. The aim of this research is to work with individuals and find out how they regard 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. This makes this research subjective and interpretive; i.e. aiming to find several possible answers to a single question.

(Cohen *et al.*, 2002) describe subjective studies to be anti-positivist: Anti-positivism accepts people to be creative and deliberate, to create meaning to their environments by building and maintaining relationships with it. These relationships allow them to construct a meaningful social world, so that they can cope with the dynamics of that world. Every time an individual is confronted with a situation, he or she gives meaning to that event by reacting in a unique way, therefore taking care of the social relations in unique ways. This uniqueness is what the interpretivist is interested in, to try to understand a phenomenon from the different interpretations given to a situation (Cohen *et al.*, 2002).

Ritchie and Lewis state, "A social researcher has to explore and understand the social world through the participants' and their own perspectives" (Ritchie & Lewis, 2003 p. 7). True understanding is believed to be possible when the investigator shares the frame of reference (Cohen *et al.*, 2002). Merriam (1998) defines research, where an understanding of the meaning people construct is investigated, as qualitative research.

When human nature as an assumption is evaluated, Burrell and Morgan (1979) distinguish between voluntarism and determinism. Determinism refers to the objectivist point of view that external environment issues determine human behaviour, while voluntarism imply that the human being is the initiator of his own actions (Cohen *et al.*, 2002). I concur with the latter that individuals are immersed in their social environments and build conscious relationships with their environments. In the context of this study, I believe that the e-readiness level of the warehouse workers is determined by each and every person's ability to deal and cope with technology. This is in sync with Cohen *et al.*'s view that supporters of the subjectivist approach will view the world as "softer, and humanly created...select from a comparable range of emerging techniques... personal constructs, for example" (Cohen *et al.*, 2002 p. 6-7).

The corresponding methodology for subjectivists as described by Cohen *et al.* (2002) would then be idiographic in order to understand individual behaviour. I have adopted this interpretive method to interpret the way the warehouse worker experiences his/her world.

In interpretive research, the target group is investigated in naturally occurring situations, and not in a controlled environment (Vrasidas, 2001). The actions, thoughts, attitudes and relevant social relations of the incumbents will have to be investigated. Merriam describes this phenomenon as an interpretive or qualitative research methodology interested in discovering factors by means of interviews, observations and reviewing documents (Merriam, 1998).

Merriam defines qualitative research as “an umbrella concept covering several forms of inquiry that help us understand and explain the meaning of social phenomena with as little disruption of the natural settings as possible” (Merriam, 1998 p.5). She then states that all types of qualitative research are conducted from a mindset that knowledge is constructed by individuals as they experience, or live, their environments. “Qualitative researchers believe that reality is a social construction, individuals and groups ascribe meanings to specific entities, such as events, persons, processes, or objects” (McMillan & Schumacher, 2001 p. 395). This “meaning” includes their feelings, beliefs, ideas, thoughts and actions.

Erickson (1986) regards the term "interpretative" as inclusive of a wide spectrum of approaches as he deems it to be even more inclusive than ethnography or case studies. Erickson's definition accurately describes the purpose of this research when he argues that “central research interest in human meaning in social life and in its elucidation and exposition by the researcher” (Erickson, 1986 p. 119). Weber (2004) states that the truth – or some kind of notion - already existed prior to the investigation, and by means of interviews, observations, interaction and understanding, the actors review this assumption to report the truth as it has been found.

e-Readiness describes a condition, a result of specific procedures and systems that are or are not in place. Where variables such as technology (infrastructure), skills, connectivity, and opportunities available can be measured, it is the subjective aspects that will really determine the level of readiness experienced by the target group. These include physical and emotional readiness, habits, knowledge, confidence, cultural and personal perceptions regarding technological issues. Reflection on what is, and what can be, is investigated. The objective "real" and “subjective understanding” are interlaced (Lehane *et al.*, 2004) and each provides the conditions for the other. Therefore, e-readiness has to be constituted through human experience and understanding, and qualifies to be subjected to qualitative research.

## **1.9 Research methodology**

### **1.9.1 Qualitative research strategy**

e-Readiness refers to the preparedness of warehouse workers to get involved in e-learning. I will use a qualitative case study to construct an in-depth description of their responses and attitudes to e-learning. According to McMillan and Schumacher case study designs are suitable for exploratory research “which examine a topic in which there has been little prior research” (2001 p. 399). When a learning strategy with computers is planned, it is imperative that instructional designers conduct a thorough needs analysis (Alessi & Trollip, 2001; Reeves, 1999). This analysis includes the understanding and determination of the target group's needs, skills levels and competencies to be subjected to computer training. The exploration of the readiness of warehouse workers is therefore

similar to a target-group analysis when computer-assisted training is planned. The skills level of the target-group forms the main purpose of this research. Reeves (1999) has urged instructional designers to conduct this analysis from three basic points of departure when planning training on the world wide web. They are “Aptitude and Individual Differences, Cultural Habits of Mind, and Origin of Motivation” (Reeves, 1999).

This research is exploratory, and lends itself to a flexible design, with the intention to adapt the strategy as information emerges. Merriam (1998) cites Glaser and Strauss (1967) to confirm the collecting of data by deciding on the next person, place and what to collect, as the information becomes available. As stated by Ian Hart: “Remaining open to the possibility of unpredicted outcomes is a central tenet of qualitative research” (Hart, 1997 p. 3). I will follow a semi-structured approach to enable me to construct my interpretation of the research problem (Mouton, 2002).

My selection of the qualitative research model is based on the belief that people are unique and always interpret and construct their knowledge of social reality from their own points of view. The warehouse workers give meaning to the social phenomenon individually and collectively to form their own attitudes, “beliefs, thoughts and perceptions” (McMillan & Schumacher, 2001 p. 395). I will 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).

### **1.9.2 Case study**

The case study is selected as a strategy because I have worked with a specific defined community which can be described as a single unit with shared values, attitudes and principles. This methodology was selected to enable me to explore and present an in-depth understanding of the e-readiness of the target audience (Merriam, 1998). A case study concerns itself with a rich, chronological description of events, and seeks to understand the perceptions of the actors during the events (Cohen *et al.*, 2002).

For my research, I have opted to do an interpretive investigation, because I needed to “see” the status or condition of the warehouse worker through his own eyes. I needed to understand the barriers the worker perceives as preventing him/her from working with technology, the anxiety he/she experiences when opening a file, and the joy and motivation resulting from a successful action on a computer. Phenomenologically approached studies opt to understand behaviour from the “insiders” point of view (Hart, 1997 p. 3). I chose to work from an interpretive perspective, to concentrate on understanding the warehouse workers. The study will be qualitative to enable me to present a richly described account of my understanding of the warehouse workers’ e-readiness. Elements of critical enquiry and phenomenological approach have also been used in this research, in that the phenomenon e-learning is under scrutiny all the time, and the subjective perceptions of the learners explored.

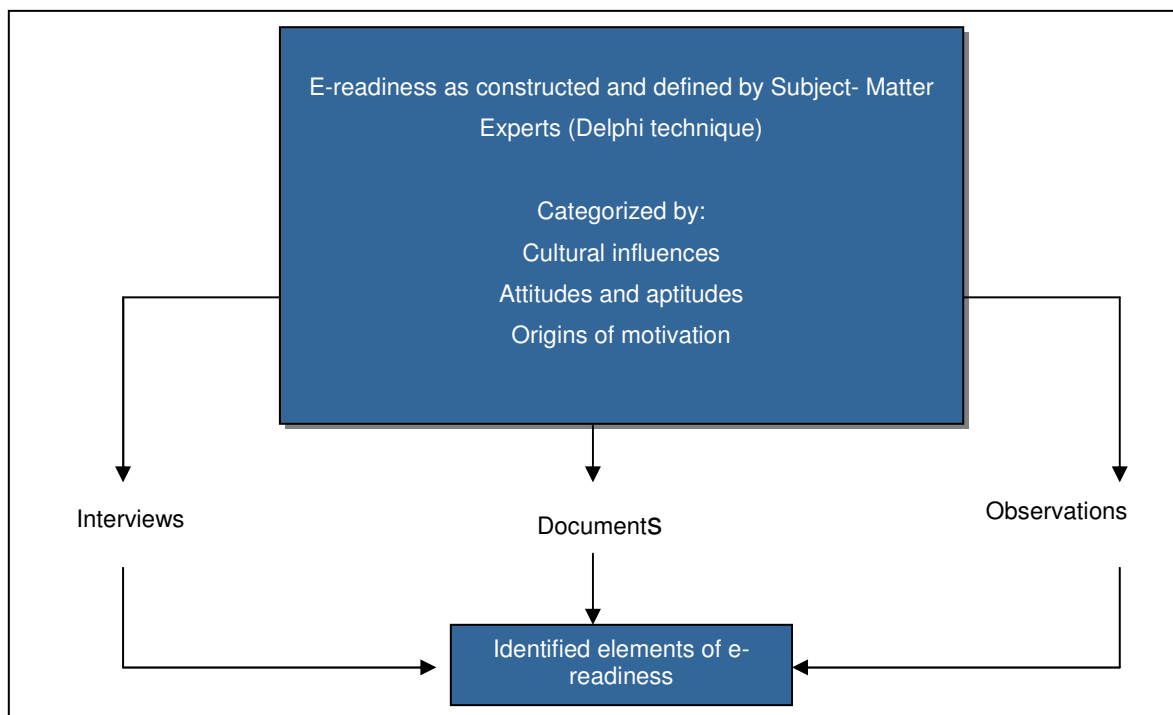
### 1.9.3 Unit of Analysis

The unit of analysis is the warehouse workers working for IHD in five DC's in Johannesburg, Cape Town, Durban, Port Elizabeth and Bloemfontein. They represent all races in South Africa, both genders and ages range from eighteen to approximately sixty years old. Most have high school educations. They are responsible to receive stock, register the arrival, prepare the stock for storing and move the stock to the assigned areas within the warehouse. They are also responsible for the picking, packing and despatching of the stock. These procedures are supported by computer systems.

### 1.9.4 Methods of Data Collection

Typical data-collection instruments for qualitative research are interviews, observations, document analysis (Hart, 1997; McMillan & Schumacher, 2001; Merriam, 1998; Radnor, 2001). I have used all three these instruments to collect data to explore the e-readiness of the warehouse workers. The levels of the interviews have been adapted and structured according to the technological knowledge and learning levels of the participants. I have collected the data in four phases:

- Preparation phase: Biographical data collection with questionnaires
- Phase 1: Define the e-readiness categories
- Phase 2: Interview, observe warehouse workers to probe, explore for elements of e-readiness identified in phase 2
- Phase 3: Interviews with business managers to determine environment readiness and support.



**Figure 1.6 Data Collection Instruments**



### **Preparation phase**

The preparation of the research started with a questionnaire to warehouse workers from all five DCs in SA (Appendix 3.3). The purpose of the questionnaire was to establish the racial numbers, education levels, whether they work with technology and to confirm their status as warehouse workers. This phase preceded all other data collection procedures. Some of the questionnaires had been updated and redistributed to participants later during the data collection process to precede interviews with warehouse workers.

### **Phase one**

This is the phase known as the subject-matter expert phase. I had to determine previous and existing concepts of e-readiness, to enable me to define the main categories of e-readiness to explore. I obtained guidance from the literature to explore and determine e-readiness, and consequently eight e-learning experts in South Africa were consulted to ensure that I keep the South African context and related aspects of e-learning in mind. These subject-matter experts (SME) are all leaders in their fields and have extensive experience in the field of corporate training. I interviewed them to determine the basic elements that I need to explore when working with the warehouse workers.

From the literature I determined that six basic categories of e-readiness may be used to determine the readiness of warehouse workers. These categories are:

- Technical experience
- Access and infrastructure
- Attitudes, habits and individual differences
- Business culture
- Origins of motivation, and
- Organisation influences

This “category list” has been generated by identifying readiness categories from existing literature, and comparing, analysing and synthesising them to form the above list. I used this list to categorise the codes I generated from the interviews with the SMEs. I integrated the codes I generated from the SME interviews with the category list. The SME codes confirmed that my categories were appropriate to explore e-readiness of the unit of research. I used a combination of the SME results and the category list to generate my sub-questions for this study.

### **Phase two**

I interviewed fifteen people and observed ten warehouse workers during their activities in the warehouse. The interviews included supervisors and managers who are responsible for the activities in the warehouse. One of the participants was the human resources training manager, who is responsible for the development of staff at IHD. Interviews were held with participants from Johannesburg, Cape Town, Durban, Port Elizabeth and Bloemfontein. During this time a group of warehouse workers had been interviewed and observed to obtain their understanding and experience of e-learning. I used the information I obtained during the previous phases to guide my conversation

with the participants. The conversations were recorded on Atlas.ti™ a computer assisted qualitative data analysis system (CAQDAS). I gradually developed ideas and inspiration as I progressed with the data collection (Hart, 1997).

I used three different types of observations: adult basic education (ABET) observations, warehouse business activity observations, and business procedure tutorial observations. The three ABET observations differed slightly from one another. The first was to observe a group of warehouse workers where they were busy doing computer based training (CBT) of adult basic education learning. I observed their general behaviour, attitudes and skill with the technology. With the second group, I concentrated on the computer actions only to determine the skill levels, while the last ABET observation was to observe an individual only. The second group of observations were to watch and video record the actions of five warehouse employees where they were busy with their daily activities in the warehouse. In all cases were they busy with technology. I hoped to observe their competency and skill levels with the technology. The last observation was to observe their behaviour and success while working on a tutorial destined for e-learning in the warehouse. I designed a tutorial on Macromedia Captivate® to learn employees how to find information on the Enterprise Business Management System (EBMS). EBMS is an application on the IHD intranet, available to all employees where users can determine and learn the standard operating procedures (SOP) of the company. The rationale is if all the employees know where to find information, they will be able to learn the business procedures on their own. I observed two employees during the completion of this tutorial. These observations were the only ones where I interacted with the participants.

I transcribed the observations on Atlas.ti™ as with the interviews, to form one large hermeneutic unit or integrated dataset. The hermeneutic unit is the data file that contains all the primary data, the interview and observation transcripts, codes, memos and structures. I used the normal procedure by creating categories about the data, coded the segments, indexed references to group them into meaningful combinations, sorted the groups to locate patterns and interpreted the findings according to my research objectives (Hart, 1997).

### **Phase three**

During this phase I concentrated on the interviews conducted with the supervisors and managers, the organisation contributions to determine the readiness levels of the warehouse workers. I referred to the same hermeneutic unit – warehouse worker interviews as generated during the previous phase. The difference during this phase was that I concentrated on the organisations' point of view to explore the readiness of the warehouse workers. The same conversations were used to yield a different type of information.

### **1.9.5 Assumptions**

I assumed that:

Warehouse workers are ready to be subjected to e-learning:

Their experience with technology has given them a basic platform to be introduced to technology. They have already been introduced to technology and use it – although limited – in their everyday work environment. This means that technology is not a total new medium for them to work on.

Their attitudes, habits and individual differences enable them to use and perceive technology in their unique ways. e-Learning is dependent on the learner's intrinsic motivation and drive to learn. Learners have their own perceptions of technology and respond differently to this medium. Individual attitudes may be a key principle to ensure the success or failure of e-learning.

Warehouse workers' readiness levels are subject to the provision of the motivation, access to technology and infrastructure of the business: The access and infrastructure the warehouse workers have to technology, influences the viability of technological training. The organisation provides its employees with the infrastructure to communicate and receive information. This same network of information is regarded to be critical for the success of e-learning.

Business culture plays a role in the readiness level of the warehouse workers. Time allocated for learning, a clear objective to motivate and guide learners are critical to ensure the learners are motivated and informed. Opportunities and guidelines for growth within the business come from good guidance.

The drive to use technology for learning is determined by the origins of motivation. The momentum of the learning process comes from the motivation, whether it is extrinsic motivation in the form of promotion, salary increase or recognition, or intrinsic to provide personal sense of achievement and growth. Motivation may persuade the learner to become a successful self-driven learner.

## **1.10 Data analysis procedures**

I have opted for content analysis as my main data analysis technique. "Content analysis is a research tool used to determine the presence of certain words or concepts within a texts or sets of text" (Busch *et al.*, 1997). Although historically a quantitative technique (Merriam, 1998), I have used it to identify categories and allowed the categories to "emerge" from the data throughout the study. For my interpretive study, I have searched and explored the transcribed texts for explicit and implicit information (Busch *et al.*, 1997). I have used the CAQDAS application Atlas.ti™ to organize my data in two single data sets. The first hermeneutic unit (HU), titled "subject matter expert interviews", is the data collected from subject matter experts to guide me in the identification of e-readiness. The second HU, titled "warehouse worker interviews", was the data collected from the warehouse workers and the managers involved with the workers. I used information from them to generate categories of codes, and eventually patterns to respond to my research questions.

Content analysis needs to be stable, accurate and reproducible to conform to reliability (Busch *et al.*, 1997). I have taken great care to ensure that the same, procedure has been used to generate codes, and that the procedures were stable throughout the coding process. Atlas.ti™ proved to be invaluable for this purpose. I was able to use a standard norm throughout my coding procedure to ensure stability and reproducibility. Validity refers to the way conclusions are drawn from the categories (Busch *et al.*, 1997). I have discussed all categories as they relate to the identified patterns, which in turn answers my research questions.

## 1.11 Limitations of the research

This research dealt with the e-readiness of the warehouse workers. To ensure validity, reliability and to keep focus, the status of some aspects need to be cleared. Only warehouse workers were included in this research project, and I did not include any other of the staff employed at IHD, even though they may come from the same community. The time frame for this research is 2003 to 2006. The findings and methods relate to the current time and circumstances only and do not make any predictions.

I often had the urge to write and suggest possible solutions during the time I explored and identified the e-readiness of the research unit. This research focuses only on the identification of the readiness of the warehouse workers as they experience it on this day and time. As an experienced instructional designer, I often had to suppress the urge to make suggestions to overcome an identified problem or learning difficulty during interviews and observations.

Although culture is prominent in the research, I focused on the cultures as found within the corporate environment, and how the own culture, integrated with the business culture may influence a worker. I do refer to learning styles, but I have not investigated or tested the different learning styles at all. I am merely referring to learning styles to indicate the approach learners take to technology as learning strategy.

## 1.12 Reliability and validity

“In qualitative research reliability includes fidelity to real life, context- and situation-specificity, authenticity, comprehensiveness, detail, honesty, depth of response and meaningfulness to the participants” (Cohen *et al.*, 2002). Reliability in interviews is achieved by minimising the bias of the interviewer as far as possible. The reliability of observations is also threatened if the observer is ignorant of all factors, such as cultural habits. Merriam discusses the following methods to address reliability in qualitative research: Crystallize the results using multiple methods of data collection and analysis; Audit trail: give a clear and specific explanation of how “data is collected, categories derived, and ... decisions were made” (Merriam, 1998 p. 207).

The results of this research were obtained by investigating several workers from five different DCs in South Africa. Peer participants assisted to confirm or reject findings. Crystallisation is obtained by conducting interviews with participants from all the DCs in South Africa, by conducting observations during the execution of three different activities, and to compare findings with one another. My own views and theoretical orientation has been defined clearly.

In my research, the construct "e-readiness" is carefully defined, so that a clear and exact understanding is formed before any interviews or observations are undertaken. This is one of the reasons I have decided to conduct interviews with the subject-matter experts first, to get a clear understanding of what an "e-ready" learner will present. It becomes clear that the position the researcher takes, the ability to ignore personal biases, and above all, the ability to understand the participants' views, attitudes, habits and actions within the context of the researched situation, relates directly to the validity of the research.

The concept readiness implies a condition, that is not always measurable in terms of numbers, but it includes a subjectivity that enlarges the risk. Figure 1.7 is a diagram of data-collection strategies and explains how the interviews, observations and documents will be used once the construct e-readiness has been defined and outlined by the subject-matter experts.

## **1.13 Ethical considerations**

I have obtained the required approval from the IHD executive committee and warehouse management to obtain the participation of the warehouse workers for this research study (Appendix 1.1 - Permission to conduct research with IHD warehouse staff).

I specifically followed the unwritten rule by contacting the warehouse supervisors first whenever I needed to interview workers. I had a signed consent but I still believed that I had to show the necessary respect by including the managers and supervisors in the research process. They were informed of my research and had a positive attitude towards the project. Before each interview, I went to the supervisor and asked him/her if I may interview an available employee. It also meant that my units of analysis were selected for me according to the availability of staff. I had no say in selecting any respondent, as long as they were working in the warehouse.

Before each interview, I explained the purpose of my study and allowed the respondent to decide whether he/she would be available for the interview or not. I also gave them the permission to terminate the interview at any time if necessary. The interviews were all conducted in a place where the participants felt comfortable, in a meeting room adjacent to the warehouse they worked in. They regularly met in these meeting rooms with their supervisors.

## 1.14 Thesis structure

The basic structure of the thesis is

- Chapter 1: Orientation
- Chapter 2: Literature review
- Chapter 3: Research design and methodology
- Chapter 4: Identifying the concepts of e-readiness
- Chapter 5: Data analysis and initial findings
- Chapter 6: Synopsis of e-readiness findings
- Chapter 7: Conclusion

## 1.15 Motivation to effect this research

e-Learning is widely promoted to be the answer where time is limited for learners. The advantages, such as a learner-centred approach, asynchronous learning, own tempo, and cost effectiveness seems to be an attractive option for the South African supply-chain industry. A fully-fledged e-learning strategy might be optimistic, but if the readiness of the warehouse workers is investigated and confirmed, strategies to implement e-learning can be considered. This will then determine the procedures that need to be addressed to establish an e-learning strategy for warehouse workers.

I believe this study is worthwhile for the following reasons:

- South African warehouse workers are already exposed to technology
- warehouse workers can be empowered if PC literacy skills are acquired
- PC skills will imply that less limitations exist regarding information availability and capacity building
- instructional designers and training personnel might get a better understanding of how to approach the learners and how the learning content is to be transferred
- training departments in supply-chain management industries might benefit if light can be shed on how to transfer knowledge to warehouse workers without having to jeopardise production and profits
- supply-chain management policy makers might be able to decide on a practical training policy due to definite results, rather than general beliefs.

I have heard many resigned responses made in meetings where electronic training was discussed for specified communities in organisations. “It wouldn’t work – it just isn’t worth the effort” is not an indication of the training staff’s lack of determination, but more an understanding of the complexity of the problem.

Problems in Africa are severe and difficult to overcome but success stories are evident. We must support Africa’s development through active participation. All African countries are qualified to reach this goal. But to reach it we need to work together to turn the digital gap into a digital opportunity Dr Ahmed Nazif, the Egyptian Minister of Communication and Technology (Mutasa, 2004).

Hammond gives a stern warning:

If these dangerous trends continue - if development does not accelerate and if the benefits of economic progress and new technology do not reach those at the bottom of society – then rather than increased prosperity for all, another, grimmer vision of the future may prevail. It suggests an unstable future, one ridden with conflict and environmental problems, in which islands of prosperity are surrounded by oceans of poverty and frustration. In such a world, even prosperous regions will fear for their security, for when all else fails, the poor will learn to export their misery and anger (Hammond, 2001 p. 2).

I believe the value of this research lies in the profile of the worker that will eventually emerge. The

digital divide is real and growing; the less technology is used, the wider the gap becomes. If technology is to be directed at empowering employees, now is the time that educators and trainers take notice and ensure that the employees, to whom the empowerment is directed, are ready for this challenge.

## Chapter 2

### 2..... LITERATURE REVIEW

- 2.1 Introduction
- 2.2 e-Learning definitions, models and theories
  - 2.2.1 Definitions of e-learning
  - 2.2.2 e-Learning models and e-readiness attributes
- 2.3 Advantages and disadvantages of e-learning
  - 2.3.1 Advantages
  - 2.3.2 Disadvantages and myths of e-learning
- 2.4 e-Learning and the digital divide
  - 2.4.1 South African legislation and the ICT Black Employment Charter
  - 2.4.2 Reports on the divide
  - 2.4.3 Supply-chain management industry depending on technology
  - 2.4.4 Globalisation
  - 2.4.5 Digital divide
- 2.5 Bridging the gap with the introduction of technology
  - 2.5.1 Case studies of developing communities
  - 2.5.2 Lessons learnt from previous studies
  - 2.5.3 Involve the learners
- 2.6 e-Learning demands on organisations and employees
  - 2.6.1 Demands on business goals
  - 2.6.2 Technological demands on the organisation
  - 2.6.3 Software demands to manage the e-learning process
  - 2.6.4 Demands on the learning process
  - 2.6.5 e-Learning systems place a specific demand on managers and support staff
  - 2.6.6 Demands on the learner
  - 2.6.7 Selecting an e-learning approach
  - 2.6.8 New skills needed
  - 2.6.9 Time to change the strategy
- 2.7 e-Maturity and e-Readiness
- 2.8 Previous e-readiness assessments
  - 2.8.1 e-Readiness of developing nations
  - 2.8.2 e-Readiness of selected African states
  - 2.8.3 e-Readiness of Cape Town students
  - 2.8.4 Organisational readiness as investigated by Powell
- 2.9 Assessing e-readiness
  - 2.9.1 e-Readiness of e-businesses
  - 2.9.2 Student Online Readiness Tool
  - 2.9.3 Guglielmino and Guglielmino on individual e-readiness
  - 2.9.4 Reeves' model to guide instructional designers for www learning
- 2.10 Synthesis of e-Readiness
  - 2.10.1 Experience with technology
  - 2.10.2 Access to technology
  - 2.10.3 Organisational contributions
  - 2.10.4 Motivational aspects
  - 2.10.5 Life style, attitudes, habits and individual differences
  - 2.10.6 Cultural influences
- 2.11 Theory codes of e-readiness for warehouse workers
- 2.12 Research question
- 2.13 Conceptualizing the e-readiness of the warehouse worker
- 2.14 Summary of Chapter 2



## 2 Literature Review

### 2.1 Introduction

e-Readiness reports indicate that the readiness of countries, regions and communities for computer technology is a worldwide concern (African Education Knowledge Warehouse, 2003; Bridges Organization, 2001; Economist Intelligence Unit, 2005; Mutula & van Brakel, 2005). The concern grew from the effects of the digital divide where a technological gap is visible between so-called developed countries and communities and the lesser technological developing countries and communities. Global entities like the WEF regularly monitors the e-readiness of countries around the world (African Education Knowledge Warehouse, 2003; Global Internet Policy Initiative, 2001-2005; WITSA, 2000; World Economic Forum, 2003; World Economic Forum Consultation Report, 2002). e-Readiness implies that the learners are capable and skilled to use e-learning strategies for their own learning goals.

Strategies of e-learning, new trends such as integration of the latest technologies, implementation and integration in academic and business institutions are discussed in many e-learning related articles. I found fewer sources to guide me to assess the preparedness of a specific group or community. Compared to the theories and strategies of e-learning, not many have focused on the e-readiness aspects (Ifinedo, 2005). Academic research guided me to understand the concept of e-learning, and what the demands on the learners are when they need to be transformed from instructional learning to constructive learning (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Johnson & Aragon, 2001; Reeves, 1997; Reigeluth, 1996). I am also drawing from the e-learning theory (Anderson & Elloumi, 2004; Nichols, 2003) to assist me in determining what e-learning will demand from the learner. The e-readiness of the warehouse workers can be interpreted against the background of the demands of e-learning.

This literature review focused on the basics of e-learning, what it is, the organisational demands it has and how the infrastructure of e-learning can be used to facilitate learning. It includes the technological requirements and demands it has on corporate companies and the changes it requires from the learners when they move from the known traditional instructive learning to an online learning culture. The requirements of e-learning were used to identify the aspects to look out for to determine the readiness of the warehouse workers. The information from previous and existing readiness reports identified specific aspects to concentrate on to assess the e-readiness of a community. Most of the available reports refer to the readiness of a country or a community at macro level, while less information was found at the micro level of specified communities.

This chapter concludes with a model from Reeves (1999) that has been designed to guide instructional designers in their planning and development of www learning. This model refers to three input areas: aptitude and individual differences; cultural habits of mind; and origins of motivation that

may influence the learning processes to ultimately achieve the needed objectives or outputs (Reeves, 1999). I used this model as a conceptual framework to operationalise my research. The main focus of the research was to determine the e-readiness of the warehouse workers to enable instructional designers in corporate companies to design relevant, attainable online training for the warehouse fraternity.

## **2.2 e-Learning definitions, models and theories**

e-Learning is defined in many ways, and all sources recognise the role of technology, but the emphasis differ according to the purposes of the envisaged training.

### **2.2.1 Definitions of e-learning**

The New Zealand Council for Educational Research emphasised the electronic media in their definition of e-learning:

... learning that takes place in the context of using the Internet and associated web-based applications as the delivery medium for the learning experience (NZCER, 2004 p. 21).

while the Australian Flexible Learning Framework focused more on the learning strategy:

... a component of flexible learning describing a wide set of applications and processes which use any available electronic media in the pursuit of vocational education and training. It includes computer based learning, web based learning, virtual classrooms and digital collaboration (NZCER, 2004 p. 21).

Kahn focused more on the design and delivery of e-learning in his definition: “e-Learning can be viewed as an innovative approach for delivering well-designed, learner-centered, interactive, and facilitated learning environments to anyone, anyplace, anytime...” (2005 p. 3) and added further that learning may be facilitated by means of technology and other available methods.

In addition to these definitions, the Association of African Universities identified the potential to empower the people of Africa, and valued the importance of learning with technology:

A shorthand for the computers, software, networks, satellite links and related systems that allow people to access, analyse, create, exchange and use data, information, and knowledge in ways that, until recently, were almost unimaginable. It refers to the infrastructure that brings together people, in different places and time zones, with multimedia tools for data, information, and knowledge management in order to expand the range of human capabilities (Herselman & Britton, 2002 p. 270).

This definition is understood against the backdrop of the technological level of African countries (Bridges.org, 2005; Ifinedo, 2005), where technology has not been a priority, because of poverty and other more urgent issues. This definition sees access and availability of technology as a means to empower the people of Africa.

To add to my purpose to explore the e-readiness of warehouse workers, I referred to Bowles (2004 p. 19) where he describes e-learning as follows:

- e-learning encompasses any form of learning transacted by way of digital technologies. (For me this is an indication that e-learning does not necessarily include the most advanced technology that

is available, but can be utilized with what is available and accessible in the warehouse. The SCM industry relies on technology, and do not necessarily need to adjust or update their technology for the sake of training. It may be quite possible to use the technology that is in place)

- e-learning delivery systems are subject to the dynamics of socio-technological evolution
- New training strategies through cellular (mobile) phones and other wireless technology should be considered, or at least how the target groups relate to these. Some learners adjust to technology much easier than others, while traditional face to face training may still be the more comforting strategy for others; and.
- e-learning may be synchronous or asynchronous, self-paced or instructor-led, a process or a single event, online or offline, or any combination of these modes.(Bowles, 2004 p. 19).

The warehouse workers are needed in the warehouse for their entire shifts, barring their lunch and tea breaks. Orders are placed during the day which means that it is difficult to predict when they may leave the premises for a period of training, which makes the asynchronous, self-paced, attributes of e-learning attractive. They do have “slower” days and times, but to leave their premises entirely may be risky.

Bowles concluded by defining e-learning as a “learning experience” that enables the learner to transfer and obtain knowledge by means of technology (2004 p. 19). It included the activity where a learner uses the internet to access learning content, interact with the facilitator and collaborate with co-learners in the quest to achieve a clearly defined learning objective. It includes getting support online, and constructing meaningful concepts which result in personal growth and development (Alessi & Trollip, 2001; Anderson & Elloumi, 2004). Learners need to be able to interact with the technology and learning content to achieve a desired objective.

These definitions applied to the situation of the warehouse workers. The SCM industry relies on technology to process their business activities and to communicate by means of a structured network, intra- and internet infrastructure. If warehouse workers can access and identify relevant training objectives by means of this infrastructure, it implies that they may already have a level of readiness to benefit from e-learning.

## **2.2.2 e-Learning models and e-readiness attributes**

e-Learning is dependent on effective communication, to ensure that knowledge is successfully transferred and implemented. Bowles (2004) says that e-learning has too easily been described as merely a cost-effective way to present training in modern companies. Company networks were described as an easy way to access information and computer-based lessons were stored on compact disks (CD) with the purpose to be viewed at a learner’s own time and pace, and where it may be convenient. The problem was that the trainer or facilitator is not part of the learning process to lend support. Warehouse workers may not be able to learn without a proper introduction to this strategy.

### **Models of e-learning:**

Anderson and Elloumi (2004) argue that e-learning, as most learning environments, is “framed with the convergence of four overlapping lenses” (Bransford, Brown & Cocking 1999, cf Anderson & Elloumi, 2004 p. 35) The four perspectives are: learner-centred, knowledge-centred, assessment-centred and

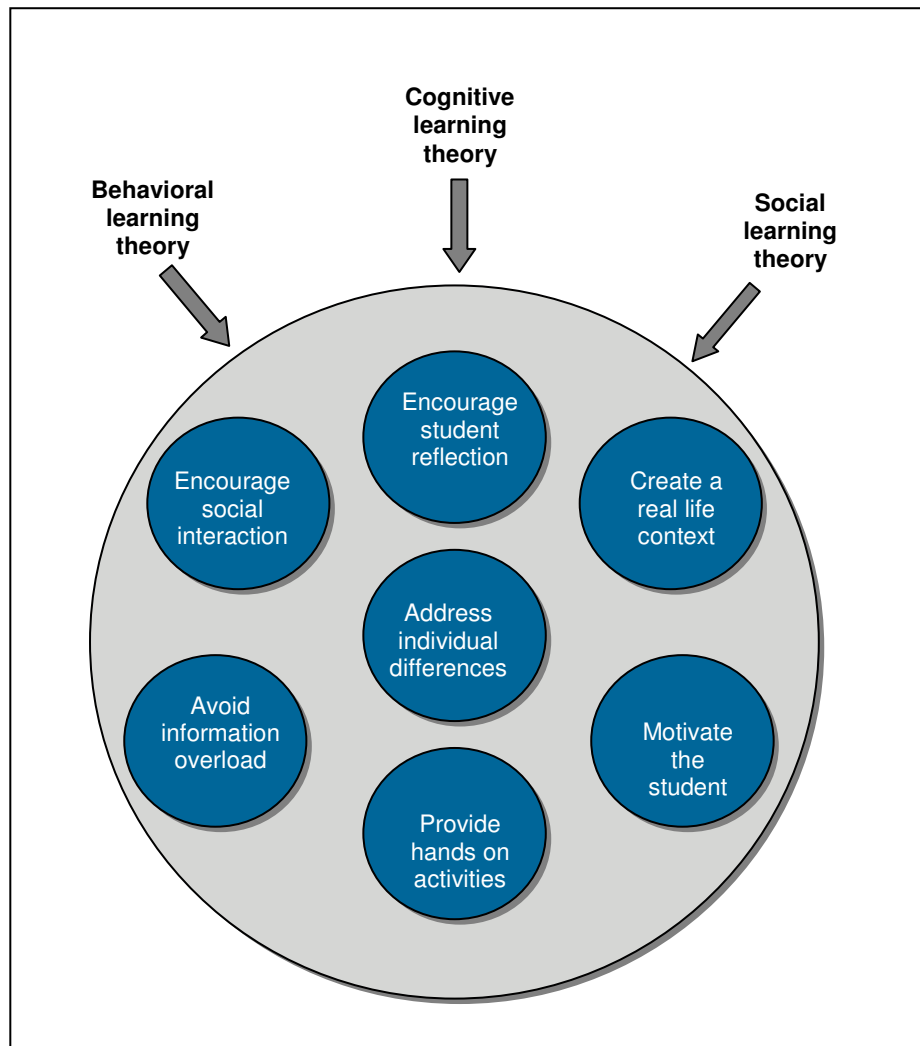
community-centred. Online learning, or e-learning is just another form of learning, and is also subject to these four perspectives.

The first perspective, learner-centred learning refers to the notion that a teacher, or in this case the online learning facilitator makes an effort to understand his learners; to understand and determine their prior knowledge, learning preferences and misconceptions. Learning should be focused on the learner, to adapt and accommodate the learner's specific preferences and cultural differences. In other words: "... probing for learner comfort and competence ..." (Anderson & Elloumi, 2004 p. 36).

The second perspective suggested by Bransford, et al (1999) is the knowledge-centred aspect. It refers to the way knowledge is interpreted and understood within the specific context. Thirdly, learning environments should be assessed all the time to provide and ensure quality. Formative assessments also serve to motivate and ensure the relevance of the online material. The fourth perspective, the community-centred lense considers the social learning behaviour of learners, how they may interact to construct knowledge, support and challenge each other (Anderson & Elloumi, 2004).

The main actors in the learning process are the learner, instructor and content. Due to the diversity and different levels of the learners, e-learning may be presented in various formats to achieve objectives. Where learners need more guidance and structure, the interaction may be more learner-teacher, as opposed to a learner-content relationship where the learners are able to work independently. A learner-learner relationship is based on collaborated learning with support and assistance from their peers (Anderson & Elloumi, 2004).

Johnson and Aragon (2001) included the three basic learning theories: the behavioural, cognitive and social learning theories in their strategy framework for an online environment (Anderson & Elloumi, 2004). It means that the online learning or e-learning system needs to make provision for these principles as illustrated in Figure 2.1.



**Figure 2.1 Instructional strategy framework for online learning environments**  
(Johnson & Aragon, 2001)

The principles refer to social interaction, student reflection, allow for unique habits and individual differences, and motivate and create a real life context for the student. A conditioned and e-ready student will be able to utilise such a platform to his own advantage. Table 2.1 illustrates some of the activities involved in e-learning. It illustrates what the online learner can expect (Johnson & Aragon, 2001).

**Table 2.1 Attributes of e-learning**

<p><b>Content and strategies providing for individual differences</b></p> <ul style="list-style-type: none"> <li>Content in multiple formats</li> <li>Individual locus of control over learning material and technology</li> <li>Collaborated knowledge and skill development</li> </ul>
<p><b>Motivation, drawing from Keller’s (1988) ARCS model (attention, relevance, confidence and satisfaction) to keep learning interactive and participative</b></p> <ul style="list-style-type: none"> <li>Games can be included to serve specific educational and motivational purposes</li> <li>Simulations to re-enact real job-related situations</li> <li>Multimedia can be included to serve pedagogical purposes</li> </ul>
<p><b>Keeping the user motivated and interested</b></p> <ul style="list-style-type: none"> <li>Chunk learning content into manageable segments</li> <li>Organize instruction around learning cycles</li> <li>Graphic organizers can help students orientate themselves, and hyperlinks can make content quickly accessible</li> </ul>
<p><b>Contextual Learning: knowledge is seen to be a product of the context and content, and this is where meaning and value are created</b></p> <ul style="list-style-type: none"> <li>Social groups can be formed with peers to form virtual learning teams</li> <li>Reality can be simulated by re-enacting case studies</li> <li>Projects are collaboratively effected</li> </ul>
<p><b>Social Learning: accepting the premise that learners learn best by interacting in a social group</b></p> <ul style="list-style-type: none"> <li>Personal connection with peers, instructors</li> <li>Feedback and peer reviews assist understanding of new content</li> <li>Facilitate interaction – implying that asynchronous and synchronous communication by means of e-mail and chat rooms are used to facilitate information</li> </ul>
<p><b>Active Learning: can also be described as “learn as you go” or “discovery learning”</b></p> <ul style="list-style-type: none"> <li>Organize online course around existing projects and responsibilities</li> <li>Think-pair-share is an active learning technique to assist learners to organize prior knowledge, brainstorm questions, and master new knowledge</li> <li>Small group discussions as synchronous communication techniques</li> </ul>
<p><b>Reflective Learning: acknowledged as a higher-order thinking skill, reflection allows learners to “correct distortions in their beliefs and critique”</b></p> <ul style="list-style-type: none"> <li>Extensive and timely feedback</li> <li>Online diaries or reflective notes (journals) kept.</li> </ul>

(Johnson & Aragon, 2001)

Table 2.1 lists several attributes that the e-learner should have to participate in e-learning. The attributes listed in this table may serve as a guide to explore the e-readiness of the warehouse workers. It is a useful reminder of the demands that may be placed on individuals involved in e-learning.

Khan (2005) proposed eight dimensions of e-learning: institutional, management, pedagogical, technological, ethical, interface design, resource support and evaluation. He acknowledged the diversity of the learners and referred to the paradigm shift needed by “Instructors, trainers, administrators, technical and other support staff” (p. 13). Khan created the e-learning framework to

guide instructional designers through the processes to develop, design, implement and evaluate e-learning.

The institutional dimension refers to the academic, administrative (including corporate administration) and student affairs. It includes the needs and readiness assessments to determine the preparedness of the target group. The readiness assessment includes financial, infrastructure, cultural and content readiness of the institution that plans to implement readiness (Khan, 2005). Khan focused on the needs and readiness of the institution and not the readiness of specific learners at that stage.

Khan's management dimension refers to the management of people, processes, and the interaction of people with the content through technology. The technological dimension takes care of infrastructure, hardware, software and managing the access to the infrastructure. The pedagogical dimension refers to the content, transfer of knowledge and knowing the audience well enough to design a strategy (Khan, 2005). The audience analysis is of particular importance because with e-learning, the learners are culturally diverse and respond differently to the learning procedures. It is imperative to understand the learners in terms of cultural backgrounds, ages, interests and educational levels. Designers need to understand how they respond to the instructional methods, and how they will apply the acquired knowledge. Once this is known, designers may have a better idea of the strategy of and approach to e-learning (Alessi & Trollip, 2001; Khan, 2005; Mager, 1991). Surveys, interviews observations and documents may yield information on:

- age
- educational level
- cultural background
- physical and learning disabilities
- learner interest
- experience
- personal goals and attitudes
- learning preferences
- preferred learning styles
- motivation
- writing skills
- reading skills
- mathematical skills
- communication skills
- keyboarding skills
- word-processing skills
- ability to work with culturally diverse learners
- familiarity with instructional methods
- familiarity with instructional delivery systems
- previous experience with e-learning (Khan, 2005 p. 184).

These characteristics can be made applicable to warehouse workers and were used as a basic framework of my interviews and observations. It was possible for me to observe keyboarding skills and the experience with technology. An aspect that assisted me to focus on the skills of the target audience was the fact that the purpose of the intended training was known. Warehouse workers performed basic repetitive procedures to support the business function. When I explored their learning preferences, it was possible to isolate specific preferences, e.g learning with simulations, guided exercises, or training that directly relate to the learning objective.

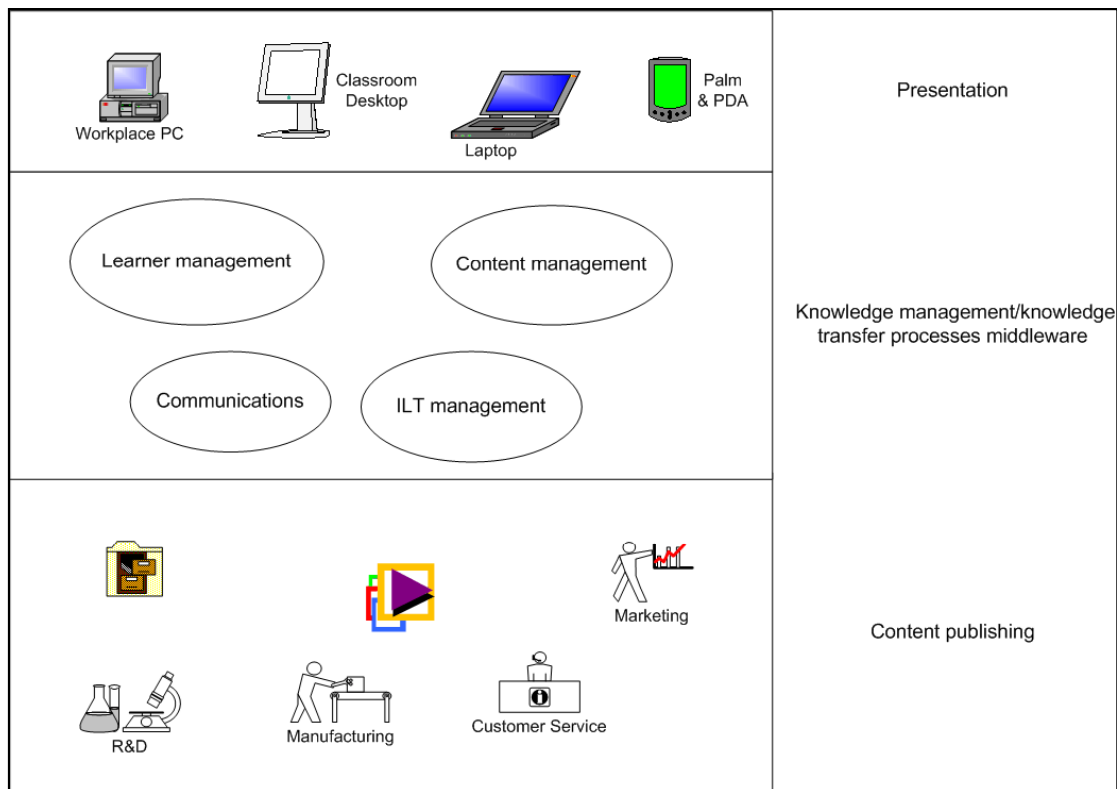
Khan's next dimension of e-learning referred to ethical issues. Designers need to consider the social and political influences, cultural backgrounds, geographical and learner diversities, effects of the digital divide, etiquette and legal issues (Khan, 2005 p. 293). Especially in countries like South Africa with its political history and cultural diversity, special care should be taken that all cultures are valued and consulted before learning strategies are imposed. South Africa is still regarded as a developing country (World Economic Forum, 2003) regardless of the fact that it was rated to be the most e-ready country in Africa (Bridges.org, 2005; Ifinedo, 2005; World Economic Forum, 2003).

Interface design dimension is important in that it is the "look and feel" of the e-learning and may play an important part in the acceptance of the strategy. Lohr (1998) (cf. Khan 2005) suggested three roles of the interface: to orientate the learner with regard to content, assist learners and to navigate, to provide feedback. The interface design plays an important role to make the learner feel comfortable and in control. Especially when the users have limited computer knowledge, interface designs can be very intimidating. When the learner is able to identify a topic easily, it paves the way for further exploration (Khan, 2005). It is important that learners should grow in confidence, learn as they go and accept feedback.

The next dimension listed by Khan is the resource support dimension. The importance to support learners whenever they need assistance is seen to be very important, especially where inexperience may lead to anxiety (Khan, 2005). Support include technical, counselling and guidance (Adendorff, 2005). Learners initially need a lot of guidance on time and stress management (Khan, 2005). Khan's ninth dimension referred to the evaluation of processes, products and the people. The evaluation includes the formative and summative evaluation of the plan, design, strategy, delivery, support and success of the e-learning. The assessment of the readiness of the target audience – in this case the warehouse workers – should be conducted thoroughly before the e-learning strategy is decided.

Bagnasco, Chirico, Parodi and Scapolla (2003) included three levels in their model of e-learning. Level 1 – the presentation level where the learner/user gets access to the learning material. The middle level includes the managerial structures to organize and control access to and from learners, managers, authors, instructional designers and IT engineers. The third level refers to the area where content or learning material is prepared (Bagnasco *et al.*, 2003).





**Figure 2.2 Three levels of e-Learning model** (Bagnasco *et al.*, 2003)

Bagnasco *et al* (2003) designed the three levels to guide the implementation of e-learning in a workplace. Khan's model can be integrated into these three levels to indicate the responsibilities of the instructional designers with regard to institutional, management, pedagogical, technological, ethical, interface design, resource support and evaluation dimensions. For the instructional designer to be able to present the e-learning in level one, thorough planning and development should precede the implementation. Khan's (2005) dimensions cover a wide spectrum of aspects which need to be addressed to realize e-learning.

As the receiver of the presentation, the warehouse worker as primary user needs to be competent in the attributes as listed by Johnson and Aragon. The e-learner needs to be competent and skilled to use the presentation optimally and benefit from the interaction. Competencies include taking control and learning from multiple formats, know how to open and use multimedia to construct knowledge, communicate and collaborate with co-learners. He/she also needs to manage time and exercise discipline to complete projects in time. The learner becomes an active participant and the primary driver in his learning programme. To present e-learning to any group without a proper needs analysis, in this case more a target group analysis, can be a costly mistake (Alessi & Trollip, 2001; Khan, 2005; Mager, 1991). The profile or characteristics of the target group should be thoroughly analysed before any investment in e-learning is made. Khan proposed a list of characteristics to be investigated by means of observations and interviews to determine the viability of e-learning for a potential target group.

Aspects to consider throughout this analysis are the fact that e-learning has advantages, but also some disadvantages. Only when the disadvantages and advantages are juxtaposed against the readiness of the target group, can instructional designers make a knowledgeable decision on the viability of e-learning.

## **2.3 Advantages and disadvantages of e-learning**

e-Learning holds many advantages such as own tempo learning, individual style of learning, own time and include cost saving for companies (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Bowles, 2004). But disadvantages exists, therefore e-learning can not be imposed onto a learning community unless all benefits and disadvantages have been considered.

### **2.3.1 Advantages**

Macpherson, Homan and Wilkinson (2005) reduced the advantages into two main themes, namely cost advantages, and flexibility in delivery. Cost refers to the much-used argument of taking the content to the learner, and flexibility refers to access, method of delivery, speed and strategies of instruction. Cost and development time, due to repeatable use, and easy updating are seen as advantages in the corporate environment as are flexibility, customisation, and collaborative learning (Alessi & Trollip, 2001; Bennet & Bennet, 2004; Mashile & Pretorius, 2003). Communication with experts in the field of study is possible with e-learning (Anderson & Elloumi, 2004).

Advantages include asynchronous, anywhere-anytime, 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). The advantages e-learning holds for “a geographically dispersed workforce” are probably one of the most appealing features of e-learning. Corporate companies started to post courses onto their intranets and the World Wide Web (www) to present training. Traveling and bringing students to a centralized learning venue is a costly exercise for companies, and the idea of decentralized, online training seems to be very good financial option to take.

Academic institutions and corporate companies have different objectives for e-learning. Bowles (2004) mentions that learning in academic institutions has been organized around self-contained subjects, while the corporate sector make more use of smaller units of knowledge, also referred to as knowledge objects. This makes the re-using of knowledge objects possible. Re-using refers to the practice where course knowledge objects played a role in a specified learning environment; it can be reapplied in another context for another learner. Corporate companies are interested in this because it saves costs, and has an impact on quality (Cook & Heacock, 2003; Gill, 2003). These knowledge objects or building blocks (Ifinedo, 2005) can be easily updated and maintained. When broken down into smaller units, also known as chunks, it may be usable in other themes. Themes or content can be broken down when e-learning is used as strategy to train.

The SCM business areas are divided into functional areas and can be broken into knowledge objects or chunks. The warehouse functional procedures are performed by different teams respectively (refer to figure 1.3). The receiving team has their own basic procedures to perform, and this differs from the procedures performed by the manifesting team where stock is packed, invoices generated and sent to the logistics teams for delivery. Procedures are short and system supported, but need skill and accuracy to provide for the demands of the SCM industry. e-Learning's attribute of chunking can be successfully utilised in the SCM environment. Wiley (cf. Bowles, 2004) cautioned that the knowledge objects can not be assembled and connected indiscriminately, it requires expertise to keep the structure meaningful and the objectives clear. Skilful instructional design and expertise is needed for this.

Where earlier e-learning was restricted to text based tutorials, increased bandwidth has enabled current e-learning lessons to make more use of multimedia (Cook & Heacock, 2003). Learners have the privilege to receive information in creative ways. The warehouse workers used practical procedures and were used to physical processes. The use of multimedia in an e-learning strategy may appeal to them.

### **2.3.2 Disadvantages and myths of e-learning**

Opportunities to develop and design online learning appears to be endless, but can only be beneficial if the needs, skills and e-readiness of the learners are fully understood and taken into account. To imply that these technologies may automatically benefit the warehouse worker may be very naïve and uninformed. Bowles (2004) stated that e-learning programs have sometimes been criticized to be ineffective, and "poorly conceived and designed" (p. 17). Some delivered a lot less than initially promised. Technology became available, and in many cases the technology took precedence over the intended learning where "one-size-fits-all electronic solutions" (Bowles, 2004 p. 17) were introduced to save money.

Gill warns that e-learning has become the "big new thing in the training and education field" (2003 p. 20) and created a wave that urged trainers and companies to get involved as soon as possible. Vendors' participation at the 2001 Online Learning Conference increased from approximately 3000 in 1999 to approximately 9000 in 2001. These quick, immediately available solutions are viewed with suspicion and adds fuel to the fire of some e-learning critics, and do not appeal to professional educationists and training facilitators (Bowles, 2004; Cook & Heacock, 2003).

Not all content lends itself to be broken down into chunks without compromising the true meaning of the learning strategy. When learning objectives are broken down, special attention and care should be taken to ensure that the knowledge objects do not become isolated from one another. It may lead to the LEGO block analogy (Bowles, 2004).

Wiley (cf. Bowles, 2004) warned that the knowledge objects cannot be assembled and connected indiscriminately, it requires expertise to keep the structure meaningful and objectives clear. Skilful instructional design and expertise is needed for this.

Bandwidth refers to the amount of data that can be transmitted in a fixed amount of time. Bandwidth is a major issue for e-learning because it determines the speed at which sound images, video and text can be sent or received (Bowles, 2004 p.14). In many developing countries, bandwidth is controlled by the government because the financial implications are huge. This puts a restriction on the extent to which e-learning can be developed and dispersed, because if the bandwidth restricts the sending of multimedia, it restricts the instructional design of the learning objectives. "For users of the internet, the content and services that can be accessed are dictated by the bandwidth available" (Bowles, 2004 p.14). In South Africa, companies are dependent on the government's stance on the public radio frequencies. Up to 2006, Telkom, the national telecommunications department, has been the sole provider of communication technology in South Africa. WEF reported the communications in South Africa to be insufficient even though the country has been identified as a category 1 country regarding its e-readiness, but lacks a second or even third provider (World Economic Forum, 2003). All companies in South Africa are subjected to the available bandwidth. The government has been under pressure to appoint a second provider and talk is that such a provider will start doing business later in 2006. During his opening of parliament speech on 3 February 2006, president Thabo Mbeki promised that a second telecommunications network will become a reality in 2006.

Gill pointed out that the preoccupation with e-learning led to several myths regarding e-learning: classroom training can not be transformed into e-learning; e-learning classes are as good or even better than face to face presentations; all learners learn well with e-learning; e-learning courses are cheaper to deliver; working and learning are separate activities (2003 p. 21). To imply that e-learning will be the solution for teaching warehouse workers without good and accurate research may lure one to get trapped by all the myths listed above.

The warehouse learners each have idiosyncrasies, are motivated in unique ways, have different learning styles, therefore a thorough research is necessary of how they will adapt to e-learning before it is implemented in any way. This includes the requirements that e-learning will pose to them, and the skill and competencies they will need to be successful.

## **2.4 e-Learning and the digital divide**

Considering the complexity of e-learning, the question may be asked whether it may be a viable option to introduce warehouse workers to this learning strategy. Educationists may feel morally compelled to teach and introduce learners to e-learning, while the corporate companies will consider the financial obligations first. Globalisation caused companies to move away from a localised environment and introduced employees to an environment with "porous boundaries across the globe" (Thomas & Inkson, 2004 p. 7). A community such as the warehouse workers is exposed to the requirements of a

highly technological environment, and consequently find themselves immersed in the digital divide. The effects of this digital divide is a world-wide concern (Huckle, 1997; Rao, 2001; Resnick, 2002). In South Africa, legislation and Employment Charters insist that the black South African communities be involved in technology as soon and often as possible (ICT Charter, 2004).

### **2.4.1 South African legislation and the ICT Black Employment Charter**

Questions are asked about developing communities' capacities and infrastructures to assist in establishing e-learning. This gives reason for policies to be drafted and put into place (Henrici, 2004). Workplace Learning is promoted and supported by the SA Department of Labour and the Skills Development Act. South African legislation demands continuous training and development of local employees:

- Employment Equity Act 55 of 1998, which strives to promote equity in the workplace
- which provides a strategy to develop and improve the skill-base of the SA workforce
- Skill Development Levies Act 9 of 1999, which obliges employers to pay one percent in levies for training and development of its employees
- Preferential Procurement Policy Framework Act 5 of 2000, which promotes organisations to award contracts in a free and fair manner, and
- Broad Based Black Economic Empowerment Act 53 of 2003, to promote economic transformation (ICT Charter, 2004).

The ICT Black Employment Charter drafted in May 2004 warned that South Africa has dropped from 97th to 107th position worldwide in its provision of skilled labour, despite an aggressive national skills development policy (ICT Charter, 2004). The Charter also bemoans the fact that only twenty nine percent of African school leavers are able to secure jobs, despite skill shortages. It calls for a joint development of skills in the ICT sector, and sets the following goals:

- ensure that skills development and training programmes mirror job demands
- ensure that the institutions that supply ICT's are on track to provide what the market needs
- promote awareness of career opportunities
- set clear and precise guidelines for effective skills development initiatives, and
- assist the Information System Education and Training for Technology Sector for Education and Training Authority (ISETT SETA) and other SETA's relevant to the ICT sector in formulating partnerships between enterprises, training providers and itself to embark on learnerships to address skills shortages (ICT Charter, 2004).

The ICT Charter observed that South Africa is dropping behind other developing nations such as India, Taiwan and China in establishing a viable and solid ICT infrastructure. The Charter argued that the ICT sector in South Africa contributes less than ten percent of the gross development product (GDP), as opposed to leading developed countries. They added that only ten percent of the companies really promote and implement empowerment of their employees. The Charter pleaded for an "entrepreneurial focus" to develop a society that can adapt to modern demands and eventually create jobs and opportunities for their communities (ICT Charter, 2004).

### **2.4.2 Reports on the divide**

The Southern African Development Community (SADC) – World Economic Forum (WEF) Consultation Report regarded South Africa as a developing country that needs to bridge the digital divide. The

majority of the population in South Africa is black, and statistics indicate that they lag far behind their white counterparts in access to technology and Internet usage (Ifinedo, 2005; Wasserman, 2003).

**Table 2.2 Internet use in South Africa April 2000**

Population group	% Internet use at work	% Internet use at home
White male	12,2	12,8
White female	10,6	12,2
Black male	0,2	1,8
Black female	0,2	0,4

(Wasserman, 2003 p.89)

The World Information Technology and Services Alliance (WITSA), a consortium of IT industry associates from countries around the world, reported in 2000 that the shortage of a skilled workforce is a threat to the modern industry. Training and education for employees is regarded as a priority for sustained growth in the future – by means of interactive media and distance learning. Life-long learning is seen to be essential for everyone (WITSA, 2000).

In January 2002, the WEF reported on the e-readiness of the SADC, stating that the integration of information and communication technologies can be a solution to poverty and may be a key instrument in empowering the developing communities (World Economic Forum, 2003; World Economic Forum Consultation Report, 2002). The WEF Reports used policy, infrastructure and ground initiatives to probe e-Readiness, and found that education is an issue that affects all these areas. This is in line with the Digital Opportunity Task (DOT) Force and WITSA reports that identified training and education as a key factor to bridge the divide. WEF (2002) found the following regarding the South African e-readiness situation:

**Table 2.3 Summary of country-specific recommendations**

Policy framework	Infrastructure	Ground-initiatives
Liberalise ICT industry, Implement empowerment policies in line with RDP objectives.	Prepare for roll out of second national operator. Utilise universal service fund for rural connectivity and tele-centre sustainability.	Provide more e-education and training, as well as entrepreneurship development projects in rural areas.

(World Economic Forum Consultation Report, 2002)

The New Partnership for African Development (NEPAD) e-Readiness programme lists South Africa, along with Egypt, Botswana, Mauritius and Tunisia, as category 1 developing countries. NEPAD is a government initiative to join forces to address economic and sociological issues in Africa. Category 1 comprises countries that have introduced legislation that helps the growth of access and affordability of ICT. They are also regarded to be amongst the most socially and economically advanced countries in Africa. But, “it is important to note that even within these countries there remain a digital divide, usually based on geographical (rural/urban), socio-economic or cultural factors” (World Economic Forum, 2003 p. 13).

In *Digital Opportunities for All: Meeting the Challenge* (Digital Opportunity Task Force, 2001), the G8 countries propose the following plans to assist in bridging the divide; firstly, by accepting that technologically advanced countries have a responsibility to assist developing communities to grow. What is of particular importance is Action Plan 3, as stated by the Digital Opportunities Task (DOT) Force: “Enhance human capacity development, knowledge creation and sharing” which calls for:

- promoting ICT among children in developing countries
- training teachers and growing digital literacy by promoting e-learning as a powerful educational strategy
- expanding opportunities for training, education and knowledge sharing
- concentrating on deprived and illiterate communities
- developing networks with relevant education communities
- enhancing life long and distance education to promote vocational training, and
- growing and developing an awareness of knowledge and learning (Digital Opportunity Task Force, 2001 p.3).

The annual report of the Information for Development Program (InfoDev) of 2003 lists several “Lessons learned” (p. 9) and recommends some guidelines to implement technology in developing communities. One of these lessons is the involvement of the locals, to get a clear indication of what they expect, how they want to go about in achieving a shared goal. Even more important is to empower them to develop their own content and methodology (Information for Development Program, 2003). Guidelines to establish technology in developing communities:

- technology is a tool to be used to reach an objective
- local communities need to be involved, to determine what information should be included, and which technology will be the more appropriate
- community should discuss how the integration will affect the power balances and existing culture
- involve the community continuously during progress to adapt where necessary
- develop content for large groups
- utilize locally available technology and keep it simple
- link ICT projects to local objectives, public and private organisations
- ensure that infrastructure is in place, and
- incorporate plans to monitor, evaluate, and assess impact of the interventions frequently. (Information for Development Program, 2003 p. 16).

The involvement of the local community, or the intended target group is advised:

What is important is the claim that a bottom up pattern of development – driven by the private sector, moderated and monitored by civil society, and enabled by government – creates new opportunities and the potential for empowering positive change in human society on a scale unprecedented since the end of the Middle Ages. We can’t prove it, of course, but if bottom up development is at least a plausible and hopeful paradigm for a better world, then it deserves careful study and active experimentation (Hammond & Jenkins, 2001).

The indications from existing reports are that developing communities should be allowed to participate in technology, and that their input should be considered when any training with technology is planned.

### **2.4.3 Supply-chain management industry depending on technology**

Organisations initially functioned as single units, but due to the introduction of computer technology, the traditional borders disintegrated gradually. Customer demands across the globe grew, clients and customers have the privilege of updated information and knowledge of products, procedures, growth and offerings (Turban *et al.*, 2001). Organisations closed new partnerships and information networks

to ensure that they are on the forefront of industry, to compete for business and to be attractive to potential clients. Large sums of money are being invested in information technology to be competitive (Turban *et al.*, 2001). This practice makes organisations world players and places them in the midst of globalisation.

#### **2.4.4 Globalisation**

Technology exposes developing communities to the digital divide (Huckle, 1997). The digital divide is prominent due to globalisation. Globalisation is seen as the result of the movement of people and businesses across traditional borders, where people of diverse cultures interact and do business (Stalder, 2000; Thomas & Inkson, 2004). Communication and modern transport enable people of different cultures to meet and do business on a daily basis in order to survive in a highly competitive world. Cultures are more aware of one another, and perceive that the environment has changed (Thomas & Inkson, 2004). With the creation of the internet, the cultural borders have diminished even further, to such an extent that a fear has grown that smaller cultures may be entirely swallowed by a global seamless culture (Ntuli, 2002; Wasserman, 2003).

Castells refer to this as the “Network Society” (Huckle, 1997) and explains this society as the result of the internet and communication technology (Huckle, 1997; Stalder, 2000). Castells describes this networked society as:

- determined by “an Information economy”, where companies depend on the availability of technology to compete and survive against other firms in the world
- global economies that arose due to the fact that the economy is timeless and without any cultural or physical borders.
- “network enterprises” which comprise international firms and institutions that are linked to form networks of information and knowledge sharing.
- fourthly, the information network brought a change to employment structures where individual skill, self employment, intrinsic motivation plays a major role.
- social polarisation and even exclusion of societies, where the societies without technology are exposed and feel threatened.
- information cultures where societies with access grow a unique culture because of their connected status.
- a powerful platform for politics and to convey important information.
- timeless and not bound to time zones or cultural borders, and
- formation of social domination of the societies that has access to technology as opposed to the marginalization of the societies who do not have this privilege (Huckle, 1997).

Gunn (2005) argues that globalisation is fundamentally concerned with change. These changes can be either rejected as a result of being threatened, seen as an interaction between cultures or modified to benefit the smaller cultures (Cullingford & Gunn, 2005; Wasserman, 2003). Examples of these changes are mobile and wireless technology. Mobile, wireless communication media has entered the market in the last few years. These changes include handheld devices such as personal digital assistants (PDA) which are small computers and storage devices. Mobile or cellular phones have developed into powerful communication tools with their ability to send and receive multimedia. The “wireless and mobile” technologies have even developed further than the www, in that access is possible from any place in the world that is supported by this technology. Mobile technology takes the access to information even to a higher level (Bowles, 2004).



The integration of technologies has developed into a powerful information and communication infrastructure. The www and computer technology now integrate with television, radio and telephone technology. Where telephone connections were dependent on physical wires and infrastructure, wireless technology is much faster with “rapid connectivity and accelerated access” (Bowles, 2004 p. 12). SCM companies need to attract customers and accept the new technology to improve their competitive edge. To attract new clients they need to show a proficiency and capability to accommodate the needs of the potential client. The introduction of these modern technologies serves as a constant reminder to companies and training institutions in how their respective disciplines can benefit.

### **Differing views on globalisation**

Critics acknowledge that it has given rise to the digital gap to reveal differences between the “haves”, and “have nots” (Gurstein, 2003; Hoppers, 2002; Khan, 2005; Ntuli, 2002; Thomas & Inkson, 2004; Wasserman, 2003). Gurstein warns that a belief exists in the United States of America that the gap is being closed after technologies have been made accessible to poorer communities, but in reality thirty to forty percent of the population in the USA is still without access, and remind us of the millions in developing countries who do not even have access to electricity (Gurstein, 2003). Hountondji and Hoppers give an African perspective by regarding globalisation as a threat to Indigenous Knowledge (IK) (Hoppers, 2002). Slavery and apartheid has left marginalised communities suspicious and wary of globalisation:

Moreover, for a great majority of the population of Africa, the loss of cultural reference points has culminated in the fundamental breakdown of African societies, with dire consequences for the social and human development project as a whole. Finally, globalisation is threatening the appropriation of the collective knowledge of non-Western societies into proprietary knowledge for the profit of a few (Hoppers, 2002 p. 3).

Cullingford regarded the globalisation process not to be “downward on developing nations” but rather as a trans-cultural process where both local and dominant cultures should participate. Gunn explained it as “not in one direction”, because it influences all cultures, and is not only concerned with the present, but also the future. He added that improved technology has influenced the entire world and not only isolated nations. Where nations acted autonomously in earlier times, this is not the case anymore (Cullingford & Gunn, 2005). Harrison (2002) cf. Gunn (2005) sees the globalisation process in terms of three main influences:

- technology opened the information gateway between countries, companies and sped up the business procedures.
- global finances that made the closing of transactions and payments quicker and more accessible from different geographical locations, and
- “the establishment of global free markets leads to improved efficiency in industry and an improvement in standards of living...” (Cullingford & Gunn, 2005 p. 1).

The concern many people have is that the technology is mostly owned by an elite group, and they may use this vantage point to enrich themselves (Hoppers, 2002; Wasserman, 2003). It again results in the argument of those who have against those who don't, which is the basic essence of the digital divide. Thomas and Kerr (2004) speak of a “porous” environment where traditional cultures are not

visible in businesses anymore, and argue that it places a huge premium on interpersonal skills to respect and utilise the cultures for the benefit of the business.

The warehouse workers find themselves in the centre of this argument. They are subjected to technology in that they have to perform electronic business tasks to support modern companies. The companies on the other hand need to conform to the requirements of modern businesses, be competitive or lose out. Warehouse workers in South Africa are virtually “representatives” of the divide.

### **2.4.5 Digital divide**

The description digital divide implies ‘absence of technology’, According to Weeks and Lessing (2002):

... the digital divide refers to the gap between individuals, households, businesses and geographical areas at different socio-economic levels with regard both to their opportunities to access information and communication technologies and their use of the internet for a variety of activities.

The gap grows and expands due to the extensive use of computer technology by the higher socio-economic communities (Van Dijk, 1997), or as pointed out at the Kyushu-Okinawa Summit in July 2000:

This digital divide is, in effect, a reflection of existing broader socio-economic inequalities and can be characterized by insufficient infrastructure, high cost of access, inappropriate or weak policy regimes, inefficiencies in the provision of telecommunication networks and services, lack of locally created content, and uneven ability to derive economic and social benefits from information-intensive activities (Digital Opportunity Task Force, 2001).

The difference between the developed and developing learners leaves educators with a responsibility. As Gawe and De Kock commented:

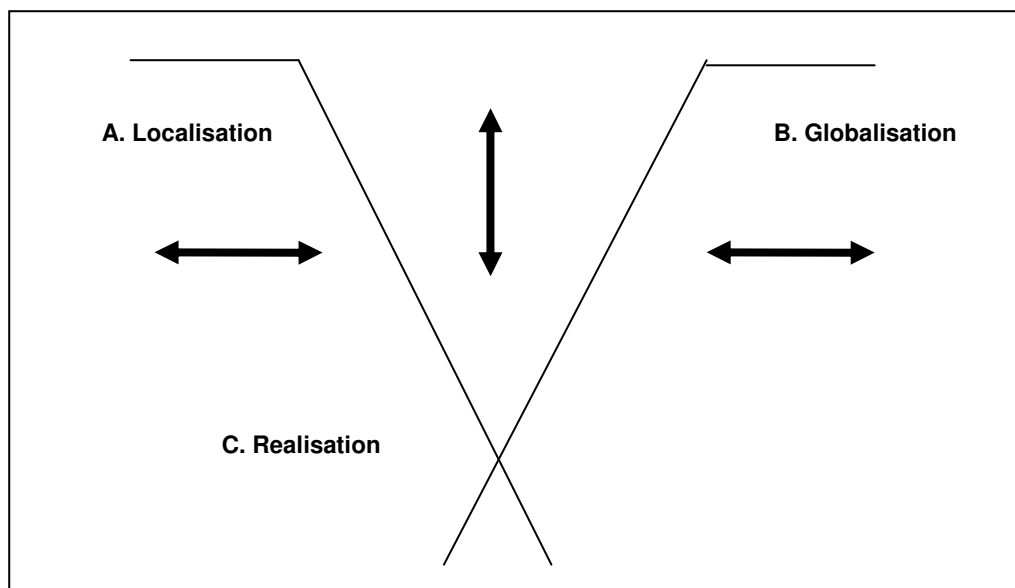
Globalisation is not about a choice between playing and looking on, but at times when as human beings we find ourselves confronted with overwhelming circumstances, we bury our heads in the sand (Gawe & De Kock, 2002 p. 36)

The WEF (2002 p. 8) urged developing nations to pursue e-Readiness and promote the use of technology. Technology can be a solution to economic and social problems when people are empowered and know how to get by on their own. There is always the possibility of being left further behind, or as put by Warschauer (2002) “lack of access to computers and networks harms life chances”.

Gurstein (2003) proposes the concept of Community Informatics (CI) to empower people, develop communities, and make organisations prosperous. Evidence of the digital divide exists to indicate that a special and innovative strategy must be followed to enable developing communities to become digitally prepared to close the existing gap. Gurstein (2003) wrote that geographically-based communities have their own characteristics, requirements, and opportunities that require their own unique ways to implement ICT. As described by Herselman and Britton “The imperative and overwhelming task facing both the global and development community is finding ways to bridge this divide and wire the poor, whose livelihoods could be enhanced through access to technology”

(2002 p. 271).

Cronje (2004) illustrates the divide in Figure 2.3, by showing two extremes – localisation and globalisation opposing one another. If globalisation does not consider local needs and requirements, the gap may deepen, and developing communities' situations may worsen. On the other hand, if local communities ignore, or do not address the existing gap, they may find themselves wanting and prone to marginalisation. The very same “technologies that cause the rift are perhaps the very tools that can be used to bridge this ever-growing and urgent divide” (Herselman & Britton, 2002 p. 271). The ideal scenario would be that the developed world recognises the technological needs of local communities, and include them on several levels of integration and development to work in a strategic and effective operation to bring the processes of globalisation and localisation closer together.



**Figure 2.3 Localisation and globalisation** (Cronje, 2004)

Gurstein suggested that a community may be empowered through CI to overcome the effects of the digital divide. It involves a process of investigation in “how and under what conditions can ICT be made useful and usable to the range of excluded populations... particularly to support local economic development ...” (Gurstein, 2003 p. 4). Ifinedo wrote that African countries can not afford to stand by and watch as technology is used by the rest of the world. Avgerou (1994), cited by Ifinedo (2005), wrote that the developing countries are increasingly disadvantaged by a lack of technology, shortfalls of skills, and telecommunications

The warehouse workers are a community on their own, with their own characteristics and working culture. The longer they are excluded from using technology to their own advantage, the more difficult would it become to stay abreast with fast-changing techniques and technology to support the day to day functioning at the workplace. Strategies should be launched to identify their readiness and to include them in the network society. If the readiness factors are known, a plan can be designed to launch e-learning initiatives for developing communities.

As governments seek to transform their societies and empower local communities, the challenge becomes one of how to *operationalise empowerment* itself in a context in which diverse knowledges are barely tolerated and exist only in sufferance and subjugative deference to mainstream, essentially Western form of knowledge – that is safely installed as the only way of seeing, and the only tool by which the masses of humanity can receive accreditation and a license to *be* (Hoppers, 2002 p. 14).

Here Hoppers (2002) takes a very strong standing by regarding Western influences as threatening. She also added “The legacy of Western rationalism is no longer unchallengeably dominant, and it’s universal validity is now under question” (2002 p. 14). This suspicion may be directed against academics such as Ifinedo (2005), Poirier (2001) and the InfoDev program (Information for Development Program, 2003) who supported the urgent integration of technology, by stating that Western influences need to be integrated into the environments of the developing countries to act as an empowering agent. Whether this is accurate or not, it shows that there are communities that need to be introduced to technology, but certainly not at the cost of their own cultures and values.

## **2.5 Bridging the gap with the introduction of technology**

e-Learning is increasingly implemented across the globe. Academic institutions move towards e-learning strategies and do research to assess the viability, while corporate companies introduce technology in areas to speed up development in developing areas.

### **2.5.1 Case studies of developing communities**

Appendix 2.1 illustrates several case studies where technology is assessed or implemented to assist in the development of communities. The purpose of these case studies is to indicate the unique problems that may arise when technology training is planned and/or implemented. The first report, by Mashile and Pretorius (2003), investigated online learning and the readiness for this educational strategy at the University of South Africa. The second study by Burton (2002) reported on two case studies of rural communities and their experiences with technology, while the third study, by Coco and Jolly (2003), showed a disadvantaged Australian community’s preparedness level for technology. Then follows Herselman and Britton (2002) who discussed the impact of ICT on lower socio-economic groups, and Heydenrych (2000) investigated the readiness of Unisa as institution to present their academic courses online. This is followed by comments and concerns from Llorens, Salanova and Grau (2002) to indicate the readiness of the labour force to learn and adapt in a competitive, global business environment.

Mashile and Pretorius identified student characteristics to be a core element to ensure success. They acknowledged that the divide cannot be addressed without technology, and “new technologies are gradually reducing the gap between teaching and learning” (Mashile & Pretorius, 2003 p. 133). They believe they created an awareness of this medium for studying and vocational purposes. Learners from deprived socio-economic backgrounds developed valuable computer skills.

Burton discusses the challenge posed to South African communities in *Development at any Cost: ICT’s and People’s Participation in South Africa* (2002). Burton reminds us that although e-Readiness

is a growing concern worldwide, a sound foundation to build a new knowledge base is not yet in place in South Africa. He argued that the economic infrastructure of South Africa was characterised by:

- high levels of poverty
- high levels of illiteracy
- a society driven by global economic demands, but held back due to historical exclusions
- slow and uneven development
- cultural diversity (Burton, 2002 p. 43).

Jordan's (n.d.) plea to "learn or perish" comes to mind. Burton argues that the previously disadvantaged groups should be armed with knowledge in the form of technology. This can involve them in the globalisation process.

On the international front, Coco and Jolly undertook a research study at Indy State in Queensland, Australia. From their findings one learns that the project has been partially successful, but frustrations surfaced because the "solution" to bridge the divide was not met with the same enthusiasm and vigour that the researchers had hoped (Coco & Jolly, 2003). Regardless of limited success, an awareness of computers has been created, the viability to install and run a computer centre has been established, and several aspects can be learned from this study. It is interesting to note that the readiness level of the community had, however, never been determined before.

In South Africa, Herselman and Britton regarded the origin of the divide to be educational, and investigated the role of ICT in education. Technology, if used correctly, can accelerate learning. Educational techniques include "distance learning, home schooling, multimedia classrooms and service projects" (2002 p. 271). Several interesting restricting factors emerged from this study:

- a feeling of exclusion from the developing communities
- lack of confidence when compared to advantaged communities
- threat to traditional indigenous culture
- access to technology is wanting (Herselman & Britton, 2002 p. 271).

Macpherson et al (2005) and Powell (2000) investigated the implementation of e-learning in corporate environments. Questionnaires and interviews led them to the employees who were earmarked for e-learning in their respective companies. These researchers determined that disadvantages were largely ignored and that it is advisable that "organisational readiness" should be established before the implementation of e-learning. Learners often do not have the skills to sustain their own development. They also found that despite the slow progress, e-learning is being implemented more and more by a lot of companies. They found that management support is crucial for the success of e-learning. Research should be conducted within the company to ensure that relevant training is made available (Macpherson *et al.*, 2005).

## **2.5.2 Lessons learnt from previous studies**

Where do these studies leave this research? Several aspects emerged that were experienced in all of these case studies:

- target group needs and characteristics should be known before implementation
- technology can be used to develop and empower individuals and/or communities
- the gap widens the longer the issue is ignored

- prior research must ensure that the problem is understood.

These findings illustrate that the exercise to implement technology was not in vain, but showed the way to improve the strategies and how to involve the learners from the start. The following recommendations emerged from these cases:

- Technological education and training should continue regardless of setbacks (Burton, 2002; Coco & Jolly, 2003; Herselman & Britton, 2002; Heydenrych, 2000; Llorens *et al.*, 2002; Mashile & Pretorius, 2003)
- Training must be relevant for the individuals and the environment (Burton, 2002; Coco & Jolly, 2003; Herselman & Britton, 2002; Heydenrych, 2000; Llorens *et al.*, 2002; Mashile & Pretorius, 2003)
- The target group needs to be involved in needs analysis and planning stages (Burton, 2002; Coco & Jolly, 2003; Herselman & Britton, 2002; Heydenrych, 2000; Llorens *et al.*, 2002; Macpherson *et al.*, 2005; Mashile & Pretorius, 2003)
- It is imperative that the initiators understand the situation, the target group's position, aspirations, habits, attitudes, levels of competencies, objectives and integrate these with the business goals (Burton, 2002; Coco & Jolly, 2003; Herselman & Britton, 2002; Heydenrych, 2000; Llorens *et al.*, 2002; Mashile & Pretorius, 2003).

A bottom-up approach is advocated, meaning that no strategy should be considered before a thorough needs analysis has been conducted. This analysis needs to focus more on the learner, to ensure that the needs of the learner is addressed and not "ignored in the enthusiasm of technology" (Macpherson *et al.*, 2005). Llorens, Salanova and Grau (2002) added that the needs analysis should not focus on a short-term solution, training for the workforce should be permanent or focused on the future. To be permanent, it means that e-learning should become a habit at the workplace, and part of the cultural society. Holstrom reiterated the value of e-learning:

Distance education can transform lives of the less privileged among us. e-learning can be empowering and self actualizing, building a bridge across the digital divide to span not only technological deficits, but also educational, social, economic, and career –opportunity gaps (2003 p. 61).

e-Learning is promoted, discussed, sold, used, and in some cases commanded, as a learning strategy in many organisations without giving enough thought to the user's skill or readiness to utilise this new learning strategy. Hence the comments in the information technology monthly magazine Business IT Africa of January 2002:

Education and training, especially in the African context, has traditionally been hamstrung by the need to reach large numbers of learners in remote areas and with a minimum of trainers. Technology has long sought a way to alleviate these strains, through the early development of computer-based training and now with its online counterpart, e-learning. The race is now on to set up e-learning centres in remote, rural and disadvantaged areas; the implementation of which is expected to have an immediate and measurable impact on the South African economy (Business IT Africa, 2002, p. 16).

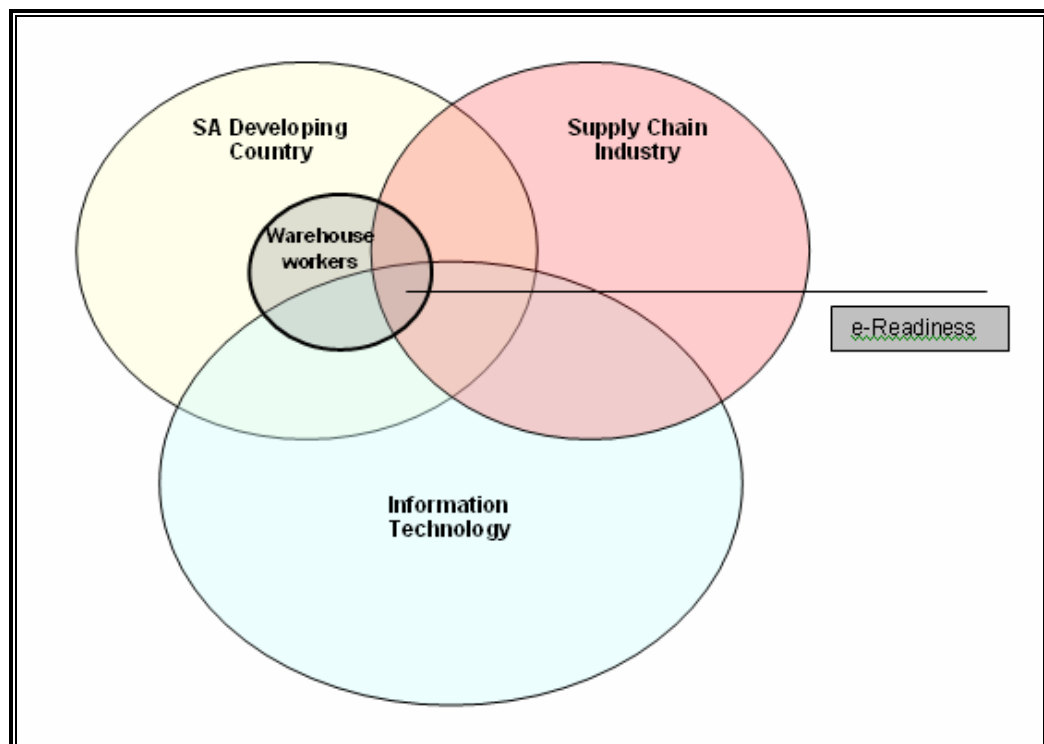
Needs analysis means that all aspects of the target group should be investigated; especially the preparedness or readiness for the planned education strategy. It also serves as a good indicator to know where intended training should start, and how to structure the course (Mager, 1991).

### **2.5.3 Involve the learners**

The recommendations listed above lend sufficient support for an approach where the target group should be involved in their own destiny. This is described by many sources as a bottom-up approach, or in the words of Heydenrych (2000 p.8), "What is needed in the new, evolving South African society is that learners indeed become collaborative developers of their courses through reflection and

interaction with their lecturers.” Nulens (2003), who studied mass media influences to close the divide, recognises the strength of a unique society and its ability to create an own development process “based on principles such as basic needs, self reliance, ecological and sustainable development, participative democracy, and indigenous culture” (p. 73). He warns against a top-down strategy. Several resources need to be involved and consulted in a process to promote access to technology (Warschauer, 2002). This involves the management, learners, technical staff, and training department. Llorens et al (2002) appealed to the training fraternity to plan from the worker’s perspective. Czerniewcz and Brown (2005) remind us that efforts to bridge the divide are primarily about people, and not technology. Mashile and Pretorius (2003) cautioned that non-participation will be counter-productive.

Figure 2.4 positions the warehouse workers’ e-readiness in the context of South Africa, the Supply Chain Management industry and Information Technology.



**Figure 2.4 The e-Readiness of the warehouse worker in context**

From the above, it can be argued that no innovation, plan, or project to address the digital gap can be really successful if the problem is addressed from the top, or from a distance. Jonassen (1994) has hinted that the designing tools should be taken away from the designers and given to the learners, reasoning that such a constructivist approach may result in a more substantive learning curve.

## 2.6 e-Learning demands on organisations and employees

The main objective of e-learning in the corporate environment is to train aspects of the business processes. The business goals of the company should be clear and supported by the various business areas (Kaplan & Norton, 1998). All training should be aimed to support the business goals of the company, whether it is e-learning or any other strategy (Cook & Heacock, 2003; Gill, 2003; Kaplan & Norton, 1998). Organisations use e-learning in two ways. First to measure performance, and secondly as a training tool (Cook & Heacock, 2003). For whatever reason the business may need e-learning, it demands changes from the organisation itself, the human resources including the learners for whom the training is intended. Organisations need to implement and provide the infrastructure, while instructional designers decide on the best strategy. The workers will then use their skills and competencies to complete the learning tasks. The process needs to be supported by the training facilitators and functional managers.

### 2.6.1 Demands on business goals

Performance tools measure the skills and competencies of the employees and assist managers in identifying the skills gaps or “competence information” (Drucker, 1998; Kaplan & Norton, 1998) to reveal the training that will be needed for the individual. It is important that strategic business goals on all levels are known, to define what employees need to learn to support the business objective (Kaplan & Norton, 1998). Strategies to determine the competencies and skills gaps can be supported by e-learning if the organisation has a culture to support e-learning (Gill, 2003). e-Learning offers a “wonderful addition to the arsenal of learning tools in the workplace” and, warns Gill, “...only if goals are clear and learning has been aligned with those goals, and if educationists and training facilitators provide a mix of learning opportunities to achieve those goals” (2003 p. 24).

Oberstein and Alleman (2003) agree that employee development can be one of the best investments made by an organisation. A new focus is needed for training. It needs to be integrated into the business strategy, and performances evaluated according to the effect they have on business indicators (Oberstein & Alleman, 2003). Manager guidance becomes very important to ensure success, to keep training relevant and to keep the learner motivated (Fidishun, 2000; Lieb, 1999). Table 2.4 is a short summary of the changes Oberstein and Alleman (2003) envisage in corporate training.

**Table 2.4      Becoming a learning organisation**

A shift needs to be made from here....	...To here
Training stand alone, and is not tied to other business domains	Training is integrated
Content driven	Driven by business strategy
Evaluation is based on ratings	Tied to business and performance measures
Centralized decision making	Decision-making is customer driven. Target audience shares decisions according to development needs and priorities



Training is responsible for organisational learning and development	Individuals at all levels are accountable for development
Classroom training	Anywhere, anytime, via alternative and innovative delivery methods
Training funded annually	Training funded by users who recognise its value and are happy with it

(Oberstein & Alleman, 2003)

Centralised, classroom training, conducted by one facilitator is being replaced by business-driven and shared learning. Learners need to be aware of what is needed for their business areas, realize their own shortfalls and manage their own training. The skills and competencies required for e-learning should be developed and promoted. Warehouse workers were subjected to centralized classroom-based, content driven training. To assume that e-learning can easily be the 'solution' because it has the capability to be available 'any time, anywhere' may be a costly mistake. e-Learning demands a much deeper analysis.

### **2.6.2 Technological demands on the organisation**

e-Learning is dependent on access to the electronic infrastructure (Khan, 2005). Networks formed the backbone of communication in corporate companies for a long time. The internet and company intranets shifted the communication and access to information to a new level (Bowles, 2004 pp. 9-10 ). The World Wide Web (www) offers an easy accessible platform through which learners can gain access to a huge range of information. Learning can now be presented on the web with various forms of multimedia (Bowles, 2004). e-Learning requires that all learners have access to the necessary infrastructure to access instructions, content and be able to communicate with facilitators. e-Learning requires that e-learners have access to a computer, connected to the network and/or internet, with quick access to the learning information. (Figure 2.2) (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Bagnasco *et al.*, 2003; Khan, 2005; Nichols, 2003).

### **2.6.3 Software demands to manage the e-learning process**

To provide in the demands of e-learning, the technological infrastructure should be able to promote at least three functions: production of multimedia learning material, management and delivery of the content, and the interaction between the various role players in the learning process (Trentin, 2003). Delivery and management refer to the facilitators while the interaction involves the learners, content and facilitators.

Learning management systems (LMS) are widely promoted to aid the training manager in delivering content, monitoring activities, communicating with the learners, reporting progress to the learner and to his/her manager, having training available whenever the learner is (Bowles, 2004; Trentin, 2003). Training facilitators are guided to generate content, store it in an online environment, arrange it into meaningful curriculums relating to the functional systems of the business environments, and make it accessible to all aspiring learners in the company (Bowles, 2004; Trentin, 2003).

LMSs are often credited to be the 'business solution' while little is written or said about each of these applications' unique features. Each of these systems has its own interface that needs to be learnt and mastered by the users before it becomes functional. Experienced computer users, for whom these are mostly intended, learn the dynamics of these systems within a short while. Learning is communication, and if a gap exists between sender and receiver, there is no communication. Warehouse workers, as intended receivers of information, should be able to relate to the LMS or method of delivery. Thus, not only is the computer literacy and access to infrastructure important for the warehouse worker, but also his/her readiness to understand and react to the prompts and instructions on an LMS. The warehouse worker needs to be able to use and interact with the technology to promote his own learning.

#### **2.6.4 Demands on the learning process**

e-Learning does not only refer to learning by means of technology, but includes the learning process too: "... encompass both the learning transaction and the technology used for producing and transmitting knowledge, with the emphasis on the latter" (Bowles, 2004 p. 16). The learning process needs to be the priority, and not the use of the technology, just because companies have invested in it. The main focus is still the transfer of knowledge.

Rosenberg (2001) stated: "...use of internet technologies to deliver a broad array of solutions that enhance knowledge and performance" ( cf. Bowles, 2004 p. 16). This "array" of solutions suggests that the content should be presented in such a way that the learner takes charge, decides on a strategy, be motivated to start and finish, directs his own progress and tempo, is aware of the reasons and purposes of his training (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Khan, 2005). Adult learners need to take charge, and direct their own development (Atherton, 2005; Fidishun, 2000; Lieb, 1999). Fidishun (2000) recognized the fact that technology can not just be used blindly for all learners. Special attention should be given to those learners who are not used to take control of their own learning. Where learners have limited access and different levels of expertise with technology, the onus should be on the instructional designer to design a strategy to benefit these learners.

Online technologies promote interactivity and engagement. Learners and instructors have the ability to "meet" simultaneously, and regularly exchange information to discuss learning issues. Text-based online "chat" procedures are regularly employed in e-learning to communicate. Bowles (2004) and Trentin (2003) describe that the purpose of e-learning is to deliver content, and to enable the learner to study alone, or with co-learners. This is a paradigm shift for the warehouse worker as a learner. They got used to classroom training and had little options but to accept the way they were trained. This movement, or shift, from "industrian to information" has been devised by Reigeluth (1996) in an article to describe the new paradigm of instructional theory.

#### **Table 2.5 Industrial age versus information age**

Industrian Age	Information Age
Standardisation	Customisation
Centralised control	Autonomy with accountability
Adversarial relationships	Cooperative relationships
Autocratic decision making	Shared decision making
Compliance	Initiative
Conformity	Diversity
One-way communications	Networking
Compartmentalisation	Holism
Parts-oriented	Process-oriented
Teacher as "King"	Learner (customer) as "King"

(Reigeluth, 1996)

Reigeluth (1996) shows how the focus moved to the learner, who needs to take control of his own learning, participate in the decision-making processes and above all, take responsibility for his/her learning plan. e-Learning approaches require the learners to be responsible, able to make decisions, communicate to generate solutions and make recommendations. For the warehouse worker, who has been subjected to a traditional classroom approach, this is a very new concept.

Several skills and competencies can be identified from the probable approaches to e-learning. From the above it can be reasoned that good communication skills: typing, understanding the mail and "chat" facilities, have a good grasp of the interface where the content is presented, be motivated and know how to manage own learning, know how to access the content, and be in control of the technology and the learning process at all times.

### **2.6.5 e-Learning systems place a specific demand on managers and support staff**

The e-learning strategy is complex and must be carefully planned before it is used as a learning solution (Trentin, 2003). Organisations often appoint one facilitator in corporate companies with the responsibility to manage all the training. Very few companies in South Africa has the luxury of an e-learning manager, instructional designer, author and facilitator (Adendorff, 2005). However, it is widely acknowledged that the quality of the instructional design is the ultimate deciding factor for learning success. Properly designed e-learning systems can determine learner needs and levels of expertise, to enable the learner to achieve the specified objectives (Anderson & Elloumi, 2004; Johnson & Aragon, 2001; Reeves, 1999). Anderson and Elloumi warn: "...the delivery medium is not the determining factor in the quality of learning: rather, the design of the course determines the effectiveness of the learning" (2004 p. 6).

Trentin (2003) listed several demands on support staff to ensure an effective e-learning environment. Among these demands are analysis of education needs, design, tutoring, mentoring, knowledge and competency of students, knowledge and competency of the organisation to support the learning and several others. The demands on the support staff was not the main purpose of this research, but what was important is that the facilitator, support staff and/or managers have a good understanding of the needs of the learners. From the learners' perspective, it is important that an open and understanding

relationship exist between facilitator and learner. The reason being that when the learner needs assistance, he/she knows how to and whom to contact for guidance (Adendorff, 2005; Khan, 2005).

### **2.6.6 Demands on the learner**

Sheila Paxton, executive vice president and president of the Frontline Technology Centre, claimed that many e-learning initiatives fail because companies fail to prepare their employees to become self-directed learners. If no reason or motivation exists to become involved in online training, it will be doomed for failure (Business Wire, 2001). One of the most important factors for e-learning is motivation (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Johnson & Aragon, 2001; Khan, 2005; Nichols, 2003; Reeves, 1999). Motivation can provide the important direction and drive to get involved and stay focused. Paxton identified seven factors that need to be in place if companies plan to implement e-learning. Among these are the motivational issues, guidance and supervision, access to infrastructure (Business Wire, 2001).

Unsuccessful e-learning is related to weakly designed courses, strategies not aimed to accommodate the different learning styles, and a general failure to understand how to teach with technology. Adult learners learn differently and instructional designers should acknowledge the fact that adults are usually experienced in their fields, take interest in what and how they are to be trained and participate in the design and implementation of their training. Adults prefer to be consulted before being trained, and expect feedback when they ask for it (Dunn, 2000). Knowles, Holton and Swanson (1998) agreed that adults “resent situations where they feel others are imposing their wills upon them” (cf. Fidishun, 2000). They argued that the previous schooling of learners made them dependent. Authors like Ntuli (2002) blamed a dominant Western culture and stated that the Africans were forced to become submissive. Learner behaviour is regarded to be the responsibility of the educator “to move adult students away from their old habits and into new patterns of learning where they become self directed, taking responsibility for their own learning and the direction it takes” (Fidishun, 2000). Fidishun warned that some learners would not want to learn outside the classroom and may experience negative emotions to direct their own learning. Specific attention should be given to these learners by giving them short, directed, online tasks to gradually prepare them for e-learning (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Fidishun, 2000).

Llorens *et al* (2002) proposed that specific competencies have to be present to realise the successful facilitation of Computer Assisted Training (CAT). According to these authors, the main complex competencies and learning skills for CAT are:

- adaptability to change
- creativity and innovation
- empathy
- identification of opportunities in the given context
- effective management of time and aims
- potential for teamwork
- high self-esteem
- mental flexibility (Llorens *et al.*, 2002 p. 208).

In addition, Powell (2000) described the typical receptive learner to be self-disciplined, independent and responsible. Alessi and Trollip (2001) believed that the skill and ability to formulate mental models is a crucial component of learning “complex skills and phenomena” (p. 28) and especially the ability to be aware of what you know and do not know (meta-cognition).

The warehouse workers are adults and that would mean that planning to train them should include all the principles that apply for adult learning. An aspect, which may be a complex one, is the fact that, as members of a developing community, they may not have the confidence to question the strategies imposed upon them, and to concur with Ntuli (2002), their prior experience may have left them to be submissive. It does not mean that they do not have to take responsibility for their own learning, it emphasises the need to understand the target group before courses are designed. The demands on these learners may be more complex or maybe less known than generally believed to be.

### **2.6.7 Selecting an e-learning approach**

The selection of the e-learn model is dependent on the needs analysis, and the instructional design can only be determined once the needs analysis has been completed (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Johnson & Aragon, 2001; Khan, 2005; Nichols, 2003; Reeves, 1999) “... the adoption and rooting of e-learning practices also depends on the final users’ awareness of the different methods using ICT as support for the learning processes” (Trentin p. 41). Meaning that the strategy that is going to be implemented for warehouse workers can only be successful if they are aware of their choices and options and have the skill and competency to put the delivered information to good use. Some demands placed on the learners are their competency to manage their own time to make good use of e-learning’s just in time, anywhere anytime-advantage completed (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Johnson & Aragon, 2001; Khan, 2005; Nichols, 2003; Reeves, 1999). There is pressure on the learner to know and be familiar with the relevant technologies and related services to ensure that the content can be accessed and opened. The learner also has to be able to find the information and make good progress with e-learning. The needs analysis include a goal analysis to learn what the learner will be confronted with (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Johnson & Aragon, 2001; Khan, 2005; Mager, 1991; Nichols, 2003; Reeves, 1999). Only then can an accurate assessment of learner readiness be determined. The warehouse workers work in an environment where procedures are physical but driven by technology. They need to perform actions that are controlled by computers. When e-learning is implemented, the dependency on technology will heighten. Instructional designers need to understand the demands e-learning will have on the workers to ensure that e-learning is functional and serves its purpose.

Instructional designers need to be educated and capable to select the correct approach. Educational and learning programs can be designed and presented through technology-based instruction to promote and develop cognitive thinking and own learning styles, and explored in order to meet the objectives. Alessi and Trollip (2001) believed that although people learn mostly spontaneously by

means of constructivism, there is a place for objectivism too – referring to tutorials and drill applications. Keller (1988) indicated that confidence is one of the most fundamental principles of motivation, and if a drill or tutorial generates confidence, it can form a solid foundation from which the learner can experiment. This is supported by Anderson and Elloumi (2004) who argue that learners should be confronted with a variety of activities to achieve a lesson outcome and to accommodate individual differences and learning/working styles.

Training facilitators need to be capable to develop a strategy that suits the needs of the learners (Adendorff, 2005). Although the required warehouse procedures that workers perform are simple, the educational challenge is huge.

### **2.6.8 New skills needed**

Learners need to be transformed from instructive learners to constructive learners. Macpherson, Homan and Wilkinson (2005) are concerned that the overwhelming support and acceptance of e-learning prevents discussions of the soundness and impact on quality of learning material, computer technology and learner related issues, especially in the corporate environment. Specific concerns are expressed regarding the skills learners may or may not have for self-directed learning, anxiety experienced by new users, working alone, motivational issues and evaluation (Macpherson *et al.*, 2005). A clear message is sent out that specific skills, attitudes, perceptions, study and learning habits, intrinsic motivation, communication skills, and many other more personal, technical and ethical abilities are required from the e-learner (Bork, 2001). Any plan or project that has e-learning in mind should consider the readiness of their target group thoroughly before investing any time and money.

### **2.6.9 Time to change the strategy**

Irving (2000) discusses the evolution of education from a student-lecturer system to a multi-tiered, technologically-based system where teachers are guided to develop and design lessons that are “inquiry-based”. Skills are mastered with time, and the more technology is used, the more constructivist the learning strategy becomes. Becker and Ravitz (2002) confirmed that increased computer use leads to increased constructivist practice (cf. Irving, 2000)

Educators often strive to promote and find strategies to develop higher-order thinking skills. This refers to the ability to disassemble information, arrange it into meaningful units of information, and assemble it again to present the learner with a further perspective of the initial problem. The last, and highest, skill to be achieved according to Bloom (1956) would be the ability to reflect, evaluate, and rate the new acquired information (Irving, 2000). Meta-cognition refers to the ability to be aware of one's own limitations and attributes, the competency to reflect on what has been done and where it will lead to, and lastly, the ability to self-assess whether or not the result was successful (Alessi & Trollip, 2001).

The learner must be ready to learn from several types of technological learning strategies that have been developed within the available infrastructure. The design of the learning solution must comply with the available infrastructure. Again it emphasises an adept, expert educationist and instructional designer who take the trouble to invest in a thorough target group analysis, to find out how ready the warehouse worker is for e-learning (Bowles, 2004). To determine the warehouse workers' skill and ability to adapt to:

- “learning transacted by way of digital technologies” ((Bowles, 2004 p. 19)
- collaborated learning or to seek support by communicating online
- synchronous or asynchronous learning
- self paced and self motivated learning
- combinations of online and offline instructions (blended approaches)
- a habit to motivate the self
- the discipline to learn alone
- work on computers, and
- get instructions form online communication.

Simultaneously, the organisation needs to:

- provide access and infrastructure
- provide relevant and clear objectives
- support and guide the learners to achieve clear objectives
- guide learners through communication
- accept that workplace and environment is one, and
- share in the responsibility of training.

These are some of the aspects that need to be present in a successful e-learning environment. There are specific demands on the learner and specific support and infrastructure demands on the organisation. When e-learning is planned for warehouse workers, a target group analysis should reveal whether the learners are prepared or “e-ready” for such a learning strategy. I have consulted several existing e-readiness assessments to explore what have been reported, how it was conducted and what aspects were considered to be the most prominent.

## **2.7 e-Maturity and e-Readiness**

Before any attempt is made to incorporate e-learning in the corporate environment, a thorough assessment of the readiness of the learners should be undertaken (Strayer, 2003). The uniqueness of e-learning as an alternative training and learning strategy is acknowledged by the different approaches learners should take to participate. Among others the capacity to study in isolation, be skilled in the use of technology, interact indirectly and particularly, they need to be able to depend on their own abilities to motivate themselves (Johnson & Aragon, 2001; Macpherson *et al.*, 2005). The question is asked as to whether the “average worker has the qualities to engage and benefit from e-learning” (Macpherson *et al.*, 2005 p. 22).

Ifinedo describes the concept e-readiness “to define how nations across the globe fare in terms of creating, diffusing, adopting and using the various components of a networked economy” (2005 p. 3). Khan positions the e-Readiness in his institutional dimension where financial, technical infrastructure, cultural and content readiness of the institution should be assessed before

implementation (Khan, 2005). The Bridge Organisation (2001) analysed several organisations' perspective of e-readiness and the assessment tools to define e-readiness. e-Readiness assessment tools have been developed by the Centre for Development at Harvard University (CID), Computer Systems Policy Project (CSPP Readiness Guide), the Asian Pacific Economic Cooperation (APEC), Electronic Commerce Steering Group, and McConnell International (Bridges Organization, 2001; Ifinedo, 2005). This study explores a communities' e-readiness, which makes CSPPs definition of an e-ready community appropriate:

An e-ready community has high speed access in a competitive market; with access and application to ICT in schools, government offices, businesses, healthcare facilities and homes; user privacy and online security; and government policies which are favourable to promoting connectedness and use of the Network .

The ability of an organisation, school, community or even nation to utilise the computer technology to its fullest potential is described by the British Educational Communications and Technology Agency (Becta) as "ICT Maturity" (Becta, 2005). This maturity includes the computer support to improve processes, products and delivery of quality services. Organisations have a common concern about their sustainability, reliability and profits, and strive to improve constantly. They are also aware that changes, even small, cumulative changes can lead to a "qualitative change in how the organisation operates" (Becta, 2005). Five levels of e-maturity are identified to ensure the optimised level of computer technology:

- *localised use* on the level of the individual
- *internal co-ordination* to ensure that management of computer learning is in accordance with the organisation plan
- *process redesign* to apply new technology in existing processes
- *network redesign and embedding* to ensure that new technologies become part of the everyday processes
- *redefinition and innovative use* where new technology offer new learning services in new ways to learners (Becta, 2005).

The e-maturity of an organisation can therefore be seen as the ease with which it deploys the technology in the areas that may benefit from it. Booz, Allen and Hamilton (2002) described an e-mature business to be an organisation that encourages IT skills, have trust in the internet, are comfortable with cost, aware of the benefits and uses access to computer technology to its fullest potential. The potential readiness of warehouse workers may be a result of the e-maturity of the organisation.

Choucri, Maugis, Madnick and Siegel defined e-readiness in terms of access that may lead to opportunities if the learners have the capability to utilise the strategies:

We define e-readiness' as the *ability* to *pursue* value creation *opportunities* facilitated by the use of the internet. Simple as this statement might seem, it does enable us to parse it into operational variables for purposes of analysis and measurement. Specifically, we seek to measure the *degree* of ability and the *capacity* to pursue, in the *context* of specific opportunities identified. Jointly, these three basic factors are the foundations of our conceptual framework and serve as anchors for attendant data analysis (Choucri *et al.*, 2003 p. 4).

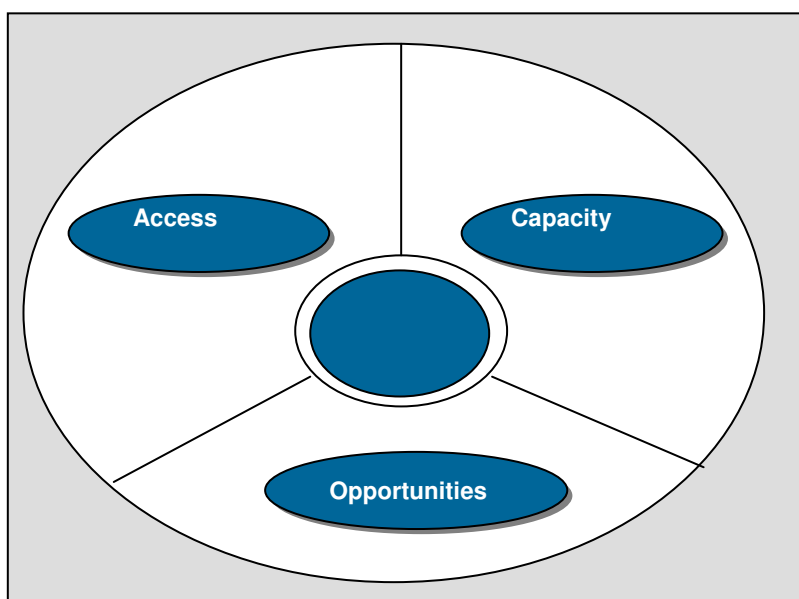
The readiness of the warehouse workers will depend on how they use the "connectivity" to the company network, intranet, understand the online instructions and whether they have the skill to communicate by e-mail. e-Readiness of the organisations depend not only on the infrastructure and



skill of the learners, but also on the learners attitudes, anxieties and cultural influences (Macpherson *et al.*, 2005; Reeves, 1999).

Choucri *et al* (2003) sided against a “one size fits all” type of e-readiness assessment, and argued that a contextualised approach should be able to shed more light on the e-readiness of a community. The essence of their approach is to measure the “degree of the abilities” and the “capacity to pursue” opportunities by using technology within a specific context. e-Readiness can have different meanings in different conditions. The point of departure then would be “Who asks the questions, why are they asked and for what purposes?” (Choucri *et al.*, 2003 p. 5). Readiness may be used in totally different contexts and therefore if e-readiness is explored, it means that the purpose for this should first be well defined. Choucri *et al* (2003) added that earlier literature identified many variables relevant to e-readiness, but few identified the relevance to what, how and why.

A basic conceptual framework has been generated to illustrate the basic logic of e-readiness. It identifies the access to infrastructure, the necessary capacities for e-learning, and lastly the variables that may be the “final proof” of readiness (Choucri *et al.*, 2003).



**Figure 2.5** Domains of e-Readiness (Choucri *et al.*, 2003)

Figure 2.4 illustrates three domains of e-readiness: access, capacity and opportunities. Choucri *et al* (2003) posits that the readiness profiles of countries or communities depend on the “individual access and capacity conditions”. The differing variables and diversity of characteristics result in different opportunities and create a specific profile of readiness. “Profiles of readiness” are not fixed, but are dependent on socio-economic factors, experience, attitudes, individual differences and habits. Choucri *et al* (2003) defined sets of clusters to identify the factors that may influence the profiles of e-readiness.

**Table 2.6** Readiness domains with clusters

Domain	Cluster
Access	Infrastructure Services
Capacity	Social factors Economic factors Policy factors
Opportunities	Opportunity penetration Specific applications

(Choucri *et al.*, 2003 p. 8)

Choucri *et al* hypothesize:

If *access* conditions are in place, then *capacity* considerations come into play. If both access and capacity are in place, *then* value creation *opportunities* can be pursued. In other words, there can be no viable *opportunity* creation in the absence of access and capacity conditions (Choucri *et al.*, 2003 p. 8).

This access, capacity and opportunity relate to the e-maturity of the organisation and may influence the employees' e-readiness. Access, infrastructure and skills were some of the attributes that were investigated in previous e-readiness assessments.

## 2.8 Previous e-readiness assessments

To guide me to explore the e-readiness of the warehouse workers, I consulted previous e-readiness assessments. Works from Piskurich (2003), Ifinedo (2005), Arif (2001), Macpherson (2005), University of Georgia (Board of Regents University of Georgia, 2003), Bridges.org (2001) and Huang, Huang Zhao and Huang (2004) have been used to assist me in identifying the aspects of e-Readiness. The first examples below refer to the e-readiness of a country and how the government has intervened to support and steer the general e-readiness of their nation, followed by an example where the e-readiness of specified nations in Africa are assessed. Then follows a discussion of a case study where the e-readiness of students in Cape Town were explored to decide on the viability of e-learning. To conclude the e-readiness of institutions I discuss Powell's (2000) e-readiness of an organisation.

### 2.8.1 e-Readiness of developing nations

Ifinedo (2005) argued that a belief among cynics is that Africa will never be able to cope in the information driven world. He presents evidence in the form of India who took it upon themselves to change:

India went from nowhere to where it is today by focusing on areas where it posses comparative advantages (see Nair and Prasad 2002). Similarly, other countries in East Asia have streamlined their national IT policies towards improving the lot of their citizens... seizing on opportunities wherever possible in the global economy (Ifinedo, 2005 p. 65).

Such a country is Malaysia. Since 1997 the government of Malaysia launched a national project to advance the country's national e-readiness, to be comparable with the developed countries of the world (Manecksha, 2001).

The Asia Pacific Economic Cooperation (APEC) Electronic Commerce Readiness Assessment Guide assessed countries' e-Readiness within and outside the Multimedia Super Corridor (MSC) referring to the countries that were operating on the technological superhighway, like Germany and the USA. They identified numerous parameters relating to e-readiness and divided it into six categories. These categories were "basic infrastructure and technology, access to necessary services, current level and type of use of the Internet, promotion and facilitation activities, skills and human resources and positioning for the digital economy" (Manecksha, 2001).

The Malaysian government then focused on education as one of the critical areas to promote the use of technology. Teachers were assessed regarding their IT skills, knowledge about IT and attitudes towards technology. Teacher attitudes were assessed according to software applications, and general IT skills; e.g. whether they felt confident or anxious, etc. (Luan *et al.*, 2001). Teachers were trained in the use of technology and how to influence their learners to become confident with the use of computers and the internet. In 2004, the e-readiness of policy makers within organisations, providers of e-learning, lecturers and facilitators of e-learning and learners were assessed. The learners in this case referred to students in tertiary institutions only. By this time, Malaysia was already established as one of the leading technological countries in Asia (Abas, 2004).

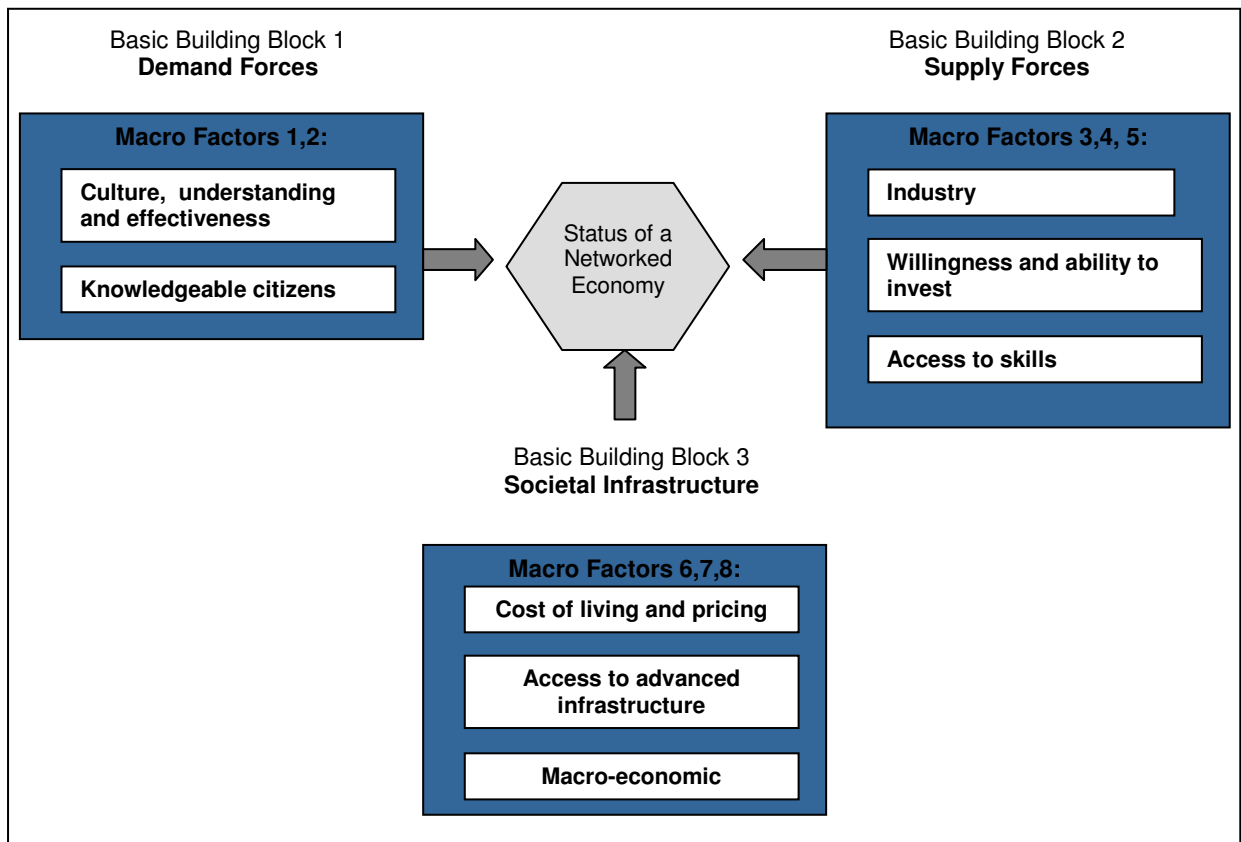
The value in this project is motivational. It indicates that a joint effort to establish a platform for e-learning, can be very beneficial. The identified categories of readiness are: access to infrastructure and technology, use of the Internet, motivational aspects to promote the use of technology, skills and support to enable the learners to use the technology. These categories can be utilised to assist in the assessment of e-readiness of warehouse workers.

## **2.8.2 e-Readiness of selected African states**

Ifinedo (2005) conducted a report on nine African countries' e-readiness. The purpose of this assessment was to generate a rating for each country to enable them to compare themselves against other African states, and to rate themselves against the more technologically advanced countries in the world. Ifinedo used a diagnostic formula developed by Bui (2002) to measure the readiness of nine selected African countries. These nine countries were selected from each of the main regions on the continent, and included South Africa from the Southern African region.

Ifinedo's main input areas were defined as three basic building blocks: demand and supply forces and societal infrastructure. The building blocks included culture, knowledge, access to skills, and access to infrastructure; all of which were important for my research. These building blocks played a major

role in determining the countries' status as networked economies. Results indicated that South Africa fared the best and is rated to be the most e-ready country in Africa (Ifinedo, 2005).



**Figure 2.6 Building blocks of e-Readiness** (Ifinedo, 2005)

The assessment consisted of fifty two indicators categorised under: culture, understanding and effectiveness, knowledgeable citizens, industry competitiveness, skilled workforce, investments, cost of living and pricing, advanced infrastructure and macro-economic environment (Ifinedo, 2005).

This research was conducted at a high level, and presented a holistic view of these countries' e-readiness. The importance for my study was that the cultural issues, e.g. language proficiency may be important to explore when researching the e-readiness of warehouse workers. Also the reference to "knowledgeable citizens" guided me to consider the learner's education levels to assess e-readiness of warehouse workers. Organisational support and provision of an infrastructure, along with a skilled workforce, are important aspects of e-learning. The last factor, "advanced infrastructure" is almost already answered for me in Ifinedo's research. South Africa is rated to be the most e-ready country in Africa, which is a good indicator that the organisations in South Africa are privileged to work in a world where connectivity is not a major problem anymore (Ifinedo, 2005). People in South Africa have telephones, mobile phones, do have access to PCs at work, to make them a "connected" environment.

However, the reality of the e-readiness assessment by Ifinedo, is that it does not reflect on the readiness of a specific group or community. It was conducted at a high level, and referred to South

Africa as a whole. Whether a learner attended a private school or a rural over-populated school, this report does not reflect the socio-economic differences of communities within a country. Countries differ on a national level, but individuals differ in culture, background, experience, social structures and frames of references (psychology.org, 1978; Reeves, 1999).

### **2.8.3 e-Readiness of Cape Town students**

Arif (2001) considered the readiness levels of students at the University of Cape Town (UCT). Taking the background and history of the South Africa population into consideration, and accepting that more and more students in South Africa come from previously disadvantaged communities, the perceptions of the students regarding online learning were investigated.

The opportunity to learn by means of technology appealed to most of them, but they became aware of the difference, and even regarded it to be strange: "Learning from the screen is not a natural process" (Arif, 2001 p. 33). Responses regarding the use of technology were mostly positive, as most participants agreed that this strategy should be applied in most courses. But a concern was raised on the different types of support. They were not accustomed to being alone and without guidance. Arif argued that the difficulty in learning online resulted from the students' mixed levels of readiness, and lack of preparation. "...many students were struggling to understand the basics of computer technology, let alone dealing with the web environment..." (p. 37). Arif concluded by asking whether students were:

- prepared to use the computer technology?
- skilled enough to navigate and access content on the web?
- equipped for self-assessment and judgement in order to adapt to new directions in learning?
- ready for a change from old studying ways to new?" (Arif, 2001 p.37)

e-Readiness, a much needed condition, needs to be researched and investigated before any changes from the traditionally used learning strategies are considered (Arif, 2001; Macpherson *et al.*, 2005).

### **2.8.4 Organisational readiness as investigated by Powell**

Powell (2000) queried organisations' readiness for web based training (WBT) to assess the preparedness of organisations before being lured into the technological attractions of online learning. He warned that e-learning may be a "disaster" if not carefully analysed before implemented in any organisation. Powell stated:

Training can be delivered using a multiplicity of media, such as the traditional classroom and computer-based training. Choosing Internet technologies to deliver training should occur only after careful consideration of a number of factors. These factors include what is taught, who is taught, where the teaching takes place, how the teaching is supported, and when the teaching takes place (Powell, 2000).

Powell insisted that organisations need to focus on the reasons of training, why it should be done, who are involved and how the instruction will be structured. A thorough needs analysis was seen to be critical before this learning strategy should be introduced (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Johnson & Aragon, 2001; Khan, 2005; Mager, 1991; Nichols, 2003; Powell, 2000; Reeves, 1999).

**Table 2.7 Aspects of readiness**

What is taught	Who is taught	How the teaching is supported	When does the teaching take place	Where the teaching takes place
Domain of learning	Culture of the organisation	Administration	Just-in-time	Technical infrastructure
Stability of content	Size of the organisation	Technical support	Anytime	
Importance of content consistency	Learner characteristics	Corporate support	Frequency	
Content complexity	Number of Learners	Union/labor support		
Media complexity	Geographic dispersion of learners	Developmental support		
Requirements for special equipment	Number of training sites			
Format of current materials	Consequence of time off the job			
Confidentiality	Preferences of learners			

(Powell, 2000)

Table 2.7 lists all components to be analysed, e.g. the what, who, where, when and how to indicate the considerations to be made before e-learning is implemented. My research focuses on the who, with the assumption that the SCM environments do have the infrastructure to provide in the technological requirements. The strategy and methodology can only be determined when the instructional designers know who they are dealing with. From Powell I learnt that the learner are subjected to the culture of the organisation, support and guidance from management, may have their own characteristics and learning preferences, and need to have time and a venue available for training. Learner characteristics include the ability to work and focus despite distractions. The e-learner needs to be a skilled reader, competent to use and learn from technology (Powell, 2000)

## 2.9 Assessing e-readiness

The previous section focused on examples where e-Readiness had been assessed and to learn from the literature how e-readiness has been assessed in specified environments. This section focuses on the tools and aspects of e-readiness that had been assessed and investigated to determine the e-readiness of possible target groups. It included studies conducted by Guglielmino and Guglielmino (2003), the University of Georgia's Student Online Readiness Tool (SORT) (Board of Regents University of Georgia, 2003), and the investigations of e-readiness by Huang, Huang, Zhao and Huang (Huang *et al.*, 2004).

### 2.9.1 e-Readiness of e-businesses

Huang et al. (2004) wrote that organisations may gain a competitive advantage if e-business is implemented, but that it holds an implementation risk if such organisations do not know their e-readiness for such a venture. These authors proposed three main dimensions to be assessed to determine the e-readiness of an organisation. They are:

- internal needs for e-business
- external environment
- IT diffusion and change management (Huang *et al.*, 2004 p. 368).

These three dimensions of e-readiness conform mostly to the demands of a business and not to a specific sector of the organisation, as with my study. What I found useful is Huang et al's summaries of dimensions of e-readiness as listed by other e-readiness assessments:

- the Asia-Pacific Economic Cooperation (APEC) listed six key domains of e-readiness: infrastructure and technology; access to services; level and type of use of the internet; promotion and facilitation activities; skills and human resources; and positioning of the digital economy
- the Harvard University's Centre for International Development (CID) developed an assessment model for regions or countries. This model identified the following main dimensions: Network access, network learning, networked society, networked economy and networked policy
- MIT developed a model for the diverse needs of e-business applications. Their model includes three main dimensions: access and infrastructure; capacity which includes social aspects, economic, regulatory and opportunity
- Cisco used a Net-ready model to assess the e-readiness of an organisation. Four main dimensions are identified: leadership, management, competence of the organisation and IT diffusion
- PriceWaterhouseCoopers' developed the e-business maturity model to assess organisations' readiness for e-business. The dimensions they used are: strategy; organisation and competencies; performance management; delivery and operations; value network processes; security and privacy; systems; technology; tax and legal.

From these assessments it was learnt that each of these methods made use of specified dimensions as key aspects to assess the readiness of organisations, regions or countries. The skill and capacities of the workforces are mentioned but not much is written about the readiness of a group of people within these organisations.

### 2.9.2 Student Online Readiness Tool

The Student Online Readiness Tool (SORT) is an online facility created by the University of Georgia USA. This readiness assessment tool is at the convenience of potential students to measure and assess their own readiness to study online (Board of Regents University of Georgia, 2003). The following key dimensions are listed for students to assess own readiness:

- Technology Experience: assesses mostly the confidence to work with the computer and related activities
- Access to Tools: Access to a PC, printer, internet, PC specifications, and networking to determine whether the student will be able to collaborate successfully during the studies
- Study Habits: Questions are asked to determine the student's study habits. Self discipline, time management and ability to meet deadlines are discussed
- Lifestyle: Does the lifestyle support studying. Does he/she have the necessary support?
- Goals and Purposes: Determining whether the student has the motivation to keep his studies relevant and to have the drive to keep on and finish
- Learning Experience: To make the student aware of his/her preferences, questions are asked on how he/she thinks.

Students are supposed to answer these questions online, to assess themselves. Only the first two topics can really serve as a valid online assessment tool, because study habits, lifestyle, goals and purposes and learning experiences can not really be assessed by means of a questionnaire. I do agree however, that they guide the student to reflect on his own habits, attitudes and learning preferences.

The value of SORT's readiness assessment is that it succeeds in covering several of the important aspects of readiness to be considered. I regard it to be on a high level, but if the learner's experience with technology, access to infrastructure, attitudes and lifestyles are known, it may be possible to make an assessment of the e-Readiness of that individual.

### **2.9.3 Guglielmino and Guglielmino on individual e-readiness**

Individuals' e-readiness can be assessed by evaluating their technical experience and competency, i.e. the competency to work with computers and communicate successfully. These competencies should be supported by the capability to direct own learning, by means of the appropriate knowledge, attitudes, skills and habits (Guglielmino & Guglielmino, 2003). The learner's readiness levels may be supported by the readiness of the organisation, in the way management guides and supports learning processes. The learners' skill and aptitude to work with technology, together with the skills they display may be an indicator of their proficiency with technology. Guglielmino and Guglielmino (2003) emphasised the importance of learning style to assess whether the learner is adept in directing his own learning programme. Learning styles of warehouse workers may not be very easy to define, due to the fact that the warehouse workers have not been subjected to many other learning strategies other than classroom training (Hoppers, 2002; Ntuli, 2002).

The following section refers to a model designed by Reeves (1999) to serve as a guide to instructional designers when planning and developing training on the www. It does not refer directly to dimensions of e-readiness as the examples listed above, but due to the fact that I deal with a specific community and that their input will eventually determine the instruction, Reeves' model was critical for my study. Reeves identified three inputs that learners present when challenged with online learning. I regarded these inputs as the dimensions to be considered when individual e-readiness was explored.

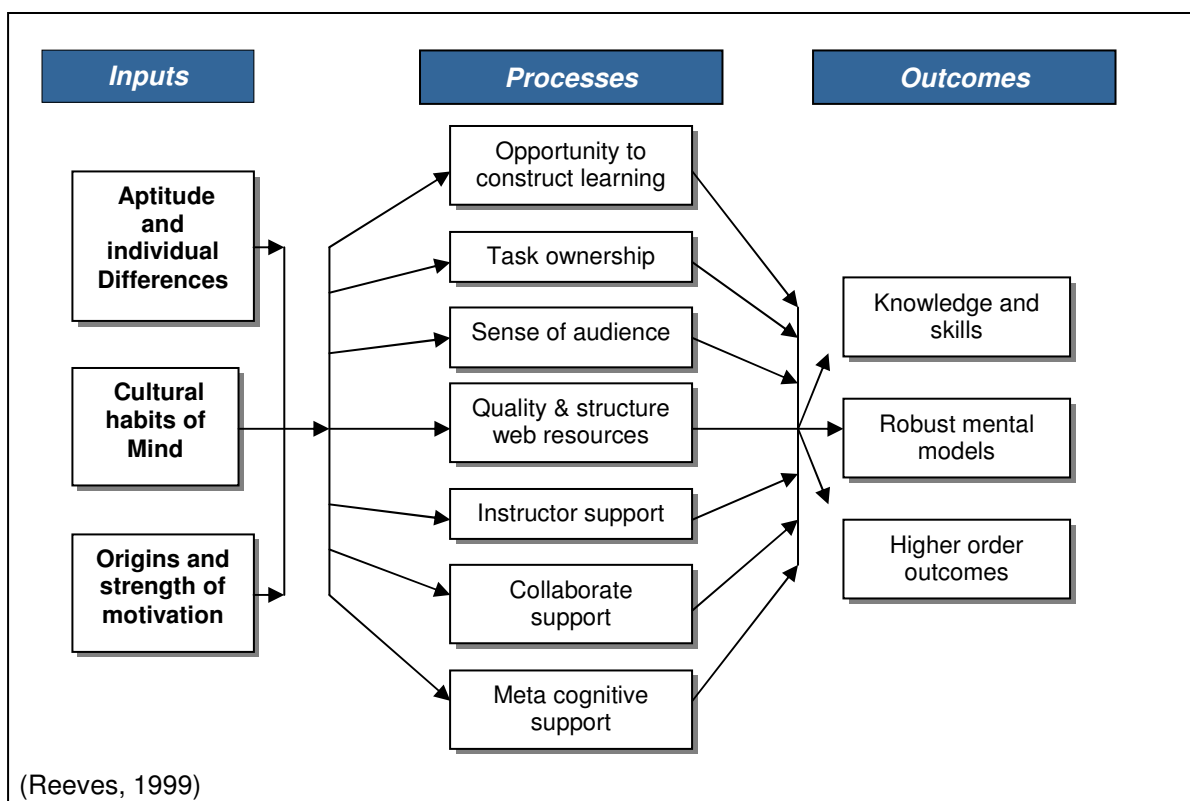
### **2.9.4 Reeves' model to guide instructional designers for www learning**

Whenever e-learning is planned, one of the most critical aspects to consider, is the needs analysis of the target group (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Choucri *et al.*, 2003; Kearsley, 2002; Khan, 2005; Mager, 1991; Reeves, 1999). Reeves (1999) developed a model to guide instructional designers when planning learning on the www. Although this is not a formal e-readiness tool, the inputs identified by Reeves have been identified to guide me in my study to explore the e-Readiness of warehouse workers.



Reeves warned that e-learning in the form of www learning, may fall in the “graveyard of previous technology innovations” if the needs of the training do not relate to the “unique offerings” of e-learning (Reeves, 1999). Needs analyses guide training managers and instructional designers to compare the needs of the target audience with the instructional solutions that are envisaged (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Gill, 2003; Khan, 2005; Mager, 1991; Reeves, 1997). Reeves defined the inputs, process factors that facilitators may use to support learning on the web, and lastly the goals.

The inputs as defined by Reeves are: aptitude and individual differences which refer to the competencies and skill of a learner with regard to task completion, learning, computer literacy, etc. The second input refers to the cultural habits of mind. I apply this principle to my research problem where the warehouse workers hail from different cultures and react to technology in different ways. The third input refers to the origin and strength of motivation. e-Learning implies that the learner should be motivated to learn on his/her own. Different types of motivation play a role to get the learner to participate in his own learning programme. Warehouse workers are subjected to different types of motivation by their environments and careers (Reeves, 1999). Figure 2.6 indicate the inputs needed to put the processes in motion.



**Figure 2.7 Model of WWW-based learning environment factors**

Reeves’ model organises the readiness to be investigated from three readiness perspectives:

- Cultural habits of mind
- Aptitude and individual differences
- Origin of motivation (Reeves, 1999).

Culture is regarded as one of the most misunderstood influences of learning because what drives learning in some cultures does just the opposite in others. Although it has received more attention in

recent years, it is not nearly sufficient when e-learning is planned and designed (Reeves, 1999). Paxton (2001) also acknowledges that culture is essential in the acceptance of a self-driven learning initiative, because it is this social drive that may encourage, or discourage, learning. Any attempt to prepare learning in a technologically driven environment can only be successful when the multicultural settings of the learners are acknowledged (Khan, 2005; Reeves, 1999; Thomas & Inkson, 2004). Hofstede (1991) defined culture as “the collective programming of the mind which distinguishes the members of one group or category of people from another” (cf. Cullingford & Gunn, 2005 p. 54).

Facilitators should be aware of, and understand, cultural differences (Jones, 2005; Khan, 2005; Slay, 2002). Even aspects such as age, gender, ethnicity, individualism, income differences and social status should be carefully considered during a needs analysis so that a mismatch is avoided (Hancock *et al.*, 2005; Martin & Litton, 2001). According to McInnerney (2004) socialisation can be added to the cultural influences as some cultures have an active, open and continuous social interaction with one another. Cultures that thrive on social support are now confronted with online learning, where isolation can so easily lead to dropouts and failures (McInnerney & Roberts, 2004). Corporate cultures with their own beliefs, values and understandings complicate the matter further (Jaynes, 1997).

To move learners from a traditional classroom learning environment to an e-learning strategy, may be a challenging exercise (Khan, 2005). It is important to assess the learners' preferences, because the change would require them to be psychologically, sociologically and environmentally ready. Khan regarded the acknowledgement of the different cultures as an ethical issue. Problems may arise when communication is attempted across cultures “when at least one of the parties trying to exchange information is unaware of, or chooses to disregard, a significant difference in expectations concerning the relationships between communicators” (Khan, 2005 p. 295).

Online learning designers have to consider all these cultural influences, and need to understand how the learner perceives the intended strategy from his/her own cultural point of view (Reeves, 1999).

Instructional designers will have to heed the warnings as listed by Thomas and Kerr when they say:

“Many of us fail in intercultural situations in all sorts of ways, such as:

- being unaware of the key features and biases of our own culture
- feeling threatened or uneasy when interacting with different cultures other than our own
- being unable to understand or explain the behaviour of different cultures
- being unable to transfer knowledge about one culture to another culture
- not recognizing when our own cultural orientation is influencing our behaviour
- being unable to adjust to living and working in another culture” (Thomas & Inkson, 2004 p. 11).

Ntuli, Hontoundji and Hoppers have indicated that the Western culture can be experienced to be threatening, especially from an African point of view. Technology and globalisation is not regarded as the “great enabler”, due to the threat it holds for Indigenous Knowledge Systems (IKS) and the indigenous cultures (Hoppers, 2002). Thomas and Inkson refer to “McDonaldization” (p. 12) to describe the fear of cultures of being assimilated by the United States at the expense of their own cultures. They regard the solution to be one of understanding and acknowledgment that cultures differ and that different views exist with regard to business and communication (Thomas & Inkson, 2004).

They concluded that the knowledge and recognition of culture culminate in an intelligence of cultures, namely “cultural intelligence or CQ” (p. 16). This CQ requires the manager of employees to have knowledge of culture, practice mindfulness and develop behavioural skills to be sensitive and knowledgeable when working across intercultural borders (Hoppers, 2002).

It is this CQ that Reeves calls upon when referring to “cultural habits of mind”. Instructional designers of e-learning should be sensitive, knowledgeable and skilled in their interaction with cultural differences.

Reeves defined aptitude as the “characteristics a student brings to a learning environment”. No two individuals learn the same way, therefore “the locus of control, learning styles, anxiety, tolerance for ambiguity, prior experiences, interests, attitudes and disabilities” (p. 4) need to be understood (Reeves, 1999). Constructivist pedagogy acknowledges individual differences and learning styles and adapts the training environments accordingly. Readiness, regarding the learner’s prior knowledge, aptitudes, motivations and other less visible characteristics, need to be considered. “In most educational contexts, we can not be guaranteed that learners will be homogeneous in terms of aptitudes, prerequisite knowledge, motivation, experience, learning styles, eye-hand coordination, etc” (Reeves, 1997 p. 10). Images and interactivity may appeal to some learners, whereas graphics and images might not be conducive to some learners’ learning success (Chang, 2003).

This is why the target group analysis should focus on characteristics like “age, educational level, cultural background, physical and learning disabilities, learner interests, experience, personal goals and attitudes, learning preferences, learning styles, motivation, reading and writing skills, computer skills, ability to work with diverse cultures, familiarity with differing instructional methods and previous experience with e-learning” (Khan, 2005 p. 184). Kolb (1984) identified perception and processing as important components that contribute to a learners’ experience (cf. Anderson & Elloumi, 2004). Perception refers to the way learners make sense of the information delivered to them, and processing refers to the way the information is understood and utilised. Learners differ from one person to the next. e-Learning can cater for individual differences and styles by determining the preferences of the learners first and then provide appropriate learning activities based on the identified preferences (Anderson & Elloumi, 2004). Individual differences include “patterns of thinking and reasoning about information, how individuals process information to make sense of the world, preferences for information processing, and how past skills or ability influence the learning process” (Johnson & Aragon, 2001). These differences place a huge demand on designing skills (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Gill, 2003). The target group needs to be analysed thoroughly to guide the design of the intended e-learning.

Whereas researchers such as Suanpang, Petocz and Kalceff (2004) investigated students' attitudes before and after being confronted with online learning, this study will investigate the readiness levels before even starting with learning. Reeves drew from Carrol (1963) where “aptitude” was the single

expected input to achieve academic results. Reeves extended the aptitude to “Aptitude and Individual Differences” to guide instructional designers for e-learning instruction. “The diversity of student [warehouse worker] in e-learning poses a challenge to the instructor” (Khan, 2005 p. 299). This positions my research on a pre-design stage, where the profile of the warehouse workers needs to be explored.

Motivation is regarded to be one of the most important aspects of learning. The intrinsic (originating from within the learner) and extrinsic (instructor- and performance-driven) motivation are important for learning. Learners should be motivated to learn (Anderson & Elloumi, 2004; Reeves, 1999). Will the mere use of technology motivate the learner enough to enable him/her to become more involved? Does the learner respond to interactivity, hypermedia, completed goals or satisfaction when a job has been completed? (Reeves, 1997; Reeves, 1999; Weber, Schoon, & Gonzales, 1999).

It is important that the learner should be clear on the goals he or she is pursuing. Do they receive ample guidance and motivation from their leaders? Is there a constructive reason for them to get involved in the training? (Kaplan & Norton, 1998; Khan, 2005). Bonk (2001, 2002) (cf. Khan, 2005) attributed the high attrition rate in e-learning to the lack of motivation. Keller (1983) proposed the ARCS (attention – relevance – confidence - satisfaction) model to guide instructional designers when designing and developing software or e-learning strategies (Alessi & Trollip, 2001; Anderson & Elloumi, 2004). Dennen (2001) listed ten key elements to motivate learners when busy with e-learning. For the purposes of my study, I have listed only the elements that I regard to be present when the e-readiness of a target group is explored:

- tone/climate to set the possible scene for the e-learning strategy. It includes the expectations of learner, business and facilitator
- meaningfulness, which makes the training effort relevant to the learner as well as the business objectives. The learner should feel that he can benefit from the experience
- choice, which will make the learner aware that he has the control to decide on the strategy and whether to be involved or not
- curiosity where the learner should be interested in the possible strategy. e-Learning has the advantage that the interaction with technology has already grasped the attention of the warehouse workers
- tension. Learners experience various levels of anxiety when being confronted with something that they have not experienced before, e.g. computer learning
- peer interaction. To establish the existing structures of support, to validate whether a learner will be able to get along without an instructor or facilitator as with classroom training
- goal-driven. Referring to the learner’s motivation to be involved and to be clear on what his contribution may be. This may lead to a feeling of accomplishment and achievement (cf. Khan, 2005 p. 200).

The warehouse workers share many attributes as a community that are subjected to the same organisational culture, are similarly motivated, but still respond in their unique individual ways to challenges. Reeves’ three inputs to guide instructional designers for www learning are important for my study for the purpose that it explains the ways a community or individuals may respond to the key dimensions of e-Readiness identified in the previous section.

The following section is a synthesis of the existing literature on e-readiness. The key dimensions or categories of the e-readiness assessments are discussed and grouped to guide this study in identifying my own theory codes of e-readiness.

## **2.10 Synthesis of e-Readiness**

The research objective was to explore the e-Readiness of the warehouse workers. The first problem that came to mind was which aspects could be considered to indicate e-readiness of a community such as the warehouse workers. As South Africans, they are part of the developing world, and the effects of the digital divide ensure that most of the e-readiness dimensions are equally important to them.

I found it unfortunate that most of the listed e-readiness assessments (such as SORT, Harvard's CID, MIT and Cisco (§ 2.9.1) were described from a developed world perspective, even when it is stated that it is aimed at the developing world. It was taken for granted that prospective learners could determine their own e-readiness by accessing the internet, clicking on the right button, and by answering the pre-empted questions. None of the learners' anxieties or intrinsic fears, hopes, frustrations or preferences could be assessed in this manner. Developing communities may have more barriers to e-learning than only lack of access to hardware and networks.

I have selected the e-readiness assessment SORT (Board of Regents University of Georgia, 2003), to structure this synthesis of e-readiness dimensions. SORT is a web-based assessment battery that aims to assist potential students to reflect on their own ability to study online. It is one of few e-readiness tools that assess the e-readiness of individuals, therefore my decision to use it as the main structure to synthesize my theory codes (categories) of e-readiness. Characteristics like learning habits and motivation are addressed, while aspects like experience with technology and learning experiences imply a focus on the individual, which I intended to explore.

I have compared key dimensions of the discussed e-readiness assessments above with the dimensions listed by SORT to explore the possible theory codes that may contribute to determine the e-readiness of warehouse workers.

### **2.10.1 Experience with technology**

Experience can only grow and develop when the learner is involved with and uses the technology. Access to technology is seen to be an important attribute to be ready for e-learning, but what if the learner does not have constant access, but is exposed to technology so that he does not experience the typical anxiety and fear of technology that is so often attributed to new users? This specific dimension as listed by SORT has prompted me to use this tool as a guideline. Experience does not necessarily address the financial constraints and the privilege of having access to technology. To me,

experience includes the fact that exposure to technology may have accumulated in other forms than the mere link to a network or web. The literature consulted refers to experience either directly, or implies it by stating that a knowledge of technology has to be present to be ready. Table 2.8 lists the key elements, which implies experience, as raised by these authors.

**Table 2.8 Experience with technology**

Experience with Technology	
Elements of e-Readiness	Author
Anxiety Fear for the computer Prior experiences Locus of control Interests in the computer and the use thereof	Reeves (1999)
Prior experience	Merrill (2002a)
Technical experience Technical knowledge Technical attitude Technical skill Technical habits	Guglielmino and Guglielmino (2003)
Confidence to use keyboard and mouse Confidence to browse internet/intranet Confidence to solve and do troubleshooting Confidence to use e-mail	SORT (Board of Regents University of Georgia, 2003)
Employees knowledge of IT Capability Acceptance and usage of IT	e-business assessment (Huang <i>et al.</i> , 2004)
Capacity	MIT (Huang <i>et al.</i> , 2004)
Capacity	Choucri, Maugis, Madnick & Siegel (2003)
IT usage	Cisco Net-ready (Huang <i>et al.</i> , 2004)
Knowledgeable citizens Skilled workforce	Ifinedo (2005)
Mixed levels of readiness	Arif (2001)

Reeves (1999) does not refer directly to technical experience when he advises web instructional designers, but implies that individual differences, habits and attitudes play a role when e-learning is planned. He includes elements like anxiety, fear for the computer (my own understanding is that it can also be from lack of experience), locus of control and interests and use of the computer. I interpret these as experience that may influence the readiness of a learner. Ifinedo (2005) mentions “knowledgeable citizens” as an important building block to ensure e-readiness. “Knowledgeable” implies a much deeper wisdom than mere “knowledge of” something, I therefore place this in the experience category. Piskurich (2003) mentions the attributes of competency explicitly with technical knowledge, attitude, skill and habits. Lastly the University of Georgia (Board of Regents University of Georgia, 2003) recognised that any aspiring student wishing to enrol for an online course, needs to be technically competent, which will ensure confidence. Merrill emphasizes that prior knowledge is an important principle of instruction.

Others like Guglielmino and Guglielmino (2003) agree about the experience with IT as a prerequisite for e-readiness, while Huang et al believe that knowledge of IT will lead to the needed experience. MIT and Choucri et al use “capacity” to describe the potential to address learning with technology. Ifinedo rated the African countries’ readiness by indicating the importance of knowledge and a skilled

workforce to be ready of e-learning. Arif, who studied online learning with Cape Town students, declared that mixed levels of knowledge with regard to technology exist, but that this knowledge was important for learning purposes.

Therefore, the first theory code on my list would be experience of technology. Learners gain IT experience through different processes. Whether it is referred to as “capacity” or “acceptance and usage of IT”, is not important, it is the confidence and awareness that grows from the exposure that may position a learner to be receptive for training with technology.

### 2.10.2 Access to technology

Access or connectivity is described to be the main artery of IT. Access includes connection to an available computer, relevant software (at the least), a network, intra/internet, network servers, and multimedia. Experience can only grow and develop when users have access to a network or a computer to work on. If the physical infrastructure is lacking or limited, it will definitely influence the readiness of any group, regardless whether they are part of a developing world or not. This is why I have listed Reeves’ input “Origins of motivation” under this heading as well, because the access and connectivity is a motivator in itself. Ifinedo (2005) identified a second building block, namely the societal infrastructure, which includes access to advanced technology by means of telephones, cell-phones and computers per 100 people. Paxton identified the importance of logistics, infrastructure and the physical environment to prepare learners (Business Wire, 2001). Piskurich (2003) listed the importance of infrastructure, support and structures. The Student Online Readiness Tool stresses the importance of connectivity, availability of multimedia and network connection for all aspiring students (Board of Regents University of Georgia, 2003). Table 2.9 lists the elements of readiness that can be categorised under access and infrastructure.

**Table 2.9 Access to technology and infrastructure**

Access to Technology / Infrastructure	
Elements of e-Readiness	Author
Origins of motivation	Reeves (1999)
Societal infrastructure: - Telephones per 100 people - Mobile (cell-) phones per 100 people - Computers per 100 people Internet providers per 100 people	Ifinedo (2005)
Logistics and infrastructure Physical environment	Paxton (Business Wire, 2001)
Access and technical support Support for the individual Transition structures in place	Guglielmino and Guglielmino (2003)
Consistent and convenient access to tools Connected to the inter/intranet Multimedia available on PC's Network connection	SORT (Board of Regents University of Georgia, 2003)
Technical infrastructure	Powell (2000)
Basic infrastructure and technology Access to necessary services	APEC (Huang <i>et al.</i> , 2004)
Network access	Harvard (Huang <i>et al.</i> , 2004)

Access to Technology / Infrastructure	
Elements of e-Readiness	Author
- information infrastructure - internet availability - network speed and quality	
Communication infrastructure	e-business assessment (Huang <i>et al.</i> , 2004)
Access and infrastructure	MIT (Huang <i>et al.</i> , 2004)
IT infrastructure and diffusion	Cisco Net –Ready (Huang <i>et al.</i> , 2004)
Value network processes, technology	PriceWaterhouseCoopers (Huang <i>et al.</i> , 2004)
Access is a prerequisite for capacity and opportunities	Choucri, Maugis, Madnick & Siegel (2003)

All the other sources list access and infrastructure to be an important dimension of e-readiness. Modern companies' strengths and capabilities are rated by their connectedness to other resources and role-players in the global network. While employing the infrastructure to compete and survive in the global world, the infrastructure can be put to good use and to the benefit of its employees. This is what PriceWaterhouseCoopers regard to be "Value network processes". Infrastructure and diffusion as stated by Cisco Net-Ready has the responsibility to use the communication network to its full potential due to solid and good communication infrastructures. This attribute introduces the value of good organisational or societal policies to ensure the procurement and implementation of sound technological policies.

All consulted reports and recommendations refer to a solid infrastructure and access of IT for training facilitators, managers and learners. From the literature I concluded that access to technology is a critical factor to be present if a community requires to be ready for e-learning.

### 2.10.3 Organisational contributions

The concept "worker" does not only refer to the status of an employee, but it also includes the dependency on a higher authority. Employees are dependent on the policies and culture of the specific organisation. How important is the role of the organisation to prepare or create "e-ready" learners? The employer is central in the status of the workers, for it is the business processes that mostly need to be learnt and mastered. The fundamental need for training is mostly business related. The business contributes to or constrains the readiness of the warehouse workers. The company can be seen as the basic motivator or initiator of training. Table 2.10 refers to the importance of the organisation as seen in the literature.

**Table 2.10 Organisational contributions to e-Readiness**

Organisation / Business Contribution	
Elements of e-Readiness	Author
Motivation as posted by the organisation	Reeves (1999)
Industry competitiveness - Provide access and infrastructure Skilled workforce - Provide training and support	Ifinedo (2005)



Organisation / Business Contribution	
Elements of e-Readiness	Author
Supervisory support Marketing and promotion Organisational culture	Paxton (Business Wire, 2001)
Support for the Individual: <ul style="list-style-type: none"> <li>- Assessment of training needs</li> <li>- Transition structures built into learning designs</li> <li>- Variety of delivery options</li> <li>- Technical support</li> <li>- Funding</li> </ul> Content support Organisational communication <ul style="list-style-type: none"> <li>- manager &amp; supervisor communication</li> <li>- newsletters &amp; bulletin boards</li> <li>- website</li> <li>- training notices</li> </ul>	Guglielmino and Guglielmino (2003)
Goals and purposes <ul style="list-style-type: none"> <li>- Clear goals and objectives</li> </ul> Relevant objectives	SORT (Board of Regents University of Georgia, 2003)
Size of the organisation Technical support Corporate support Developmental support	Powell (2000)
Network society	Harvard (Huang <i>et al.</i> , 2004)
Adopting and diffusion of IT in the organisation	e-Business assessment (Huang <i>et al.</i> , 2004)
Leadership management Competence of the organisation	Cisco Net-Ready (Huang <i>et al.</i> , 2004)
Organisation and competencies	PriceWaterhouseCoopers (Huang <i>et al.</i> , 2004)

Reeves' (1999) referral to "origins of motivation" may include the contributions of the organisation to assist the employees to learn. The company holds the key to provide steps of development or to create the stepping stones that are needed to provide in the needs of the warehouse workers. A competitive and skilled workforce is needed to understand the role of the organisation. Paxton stated in the Business Wire (2001) that supervisory support, marketing and promotion is important to urge participants, and obviously the organisation culture which all play major roles in preparing the employees for learning. Piskurich's Quicklist (2003) refers directly to the importance of the organisation's role in assessments and establishing training needs, structures to be built into learning designs, variety of delivery options, technical and content support. Funding and financial support are also seen as a responsibility of the organisation. SORT encapsulates the business contributions by referring to the goals, purposes and specifying that relevance and clarity of goals are important. Other aspects like technical, development and corporate support provided by the organisation may assist learners to be receptive for growth and learning (Powell, 2000). Leadership and guidance by management can be one of the main driving forces behind the e-Readiness of a community (Huang *et al.*, 2004).

The warehouse workers, as employees are dependent on the company to provide direction, to guide, and prepare them for the future. This future is not only that of the organisation, but also that of the

worker. Organisation support and guidance was identified to be one of the aspects to be explored to determine the readiness of the warehouse workers.

### 2.10.4 Motivational aspects

Reeves' (1999) "origins of motivation" implies that there can be many motivators that arise from different circumstances with differing goals and objectives. Table 2.11 illustrate the motivators as obtained from the literature.

**Table 2.11 Origins of motivation**

Origins of Motivation	
Elements of e-Readiness	Author
Origins: - Extrinsic: job, salary, promotion, etc - Intrinsic: intellectual curiosity Intrinsic: motivated to control multimedia	Reeves (1999)
Intrinsic motivation	Ifinedo (2005)
Learner motivation Rewards and recognition	Paxton (Business Wire, 2001)
Level and type of recognition Financial support Assessments/diagnosis for learning needs Variety of delivery options	Guglielmino and Guglielmino (2003)
Goals and purposes - clear goals and objectives Relevant objectives	SORT (Board of Regents University of Georgia, 2003)
Promotion and facilitation of activities	APEC (Huang <i>et al.</i> , 2004)
Learner characteristics Corporate support	Powell (2000)
Availability of networks	Harvard (Huang <i>et al.</i> , 2004)
Effective motivation and incentive system	e-Business assessment (Huang <i>et al.</i> , 2004)
Performance management	PriceWaterhouseCoopers (Huang <i>et al.</i> , 2004)

The fact is that it is these motivators that may inspire an individual to take action and proceed to the next performance level. Differences in motivation may cause one person to be a self-driven learner while his neighbour may be negatively motivated. Paxton (2001) reports learner motivation and the importance of recognition to invoke more motivation, while Piskurich (2003) added the level and type of recognition to drive learners. Lack of computer skills can be a negative influence, while financial support can be seen as a motivator, while delivery strategies can motivate learners to move on. SORT (2003) again lists the importance of relevant, and achievable goals and objectives to motivate learners. Goals must be understood, or as described by Huang *et al.*: "effective motivation" to imply that learners know what are expected of them and have the inner drive to take responsibility for their destinies.

While an organisation and its infrastructure may grant access, it is only when the right motivators are in place, when progress to a next level is made. To get the warehouse worker to believe in, and to utilise the infrastructure, he needs motivation. This motivation may include clarity on learning

objectives, learning paths, methods and strategies to achieve the objectives and the possibility of accreditation. I needed to explore whether the existing motivators are such that the workers are ready for e-learning or not. My fourth identified theory code is motivation, or as described by Reeves “origins of motivation” (Reeves, 1999).

### 2.10.5 Life style, attitudes, habits and individual differences

If the infrastructures are created and organisational strategies allow it, do the warehouse workers have the learning discipline, the life style, the drive to learn on their own? This is arguably one of the most important aspects to ensure success for e-learning. Reeves (1999) listed “aptitude and individual differences” as one of the main factors to be analysed before web-based training (WBT) can be designed for e-learners. It refers to aspects such as interests, attitudes, learning style that influence the learner’s preparedness to negotiate online learning. The consulted literature indicates the importance of learner attitude to prepare an individual for e-learning. Piskurich’s Quicklist (2003) highlights the importance of self-directed learning readiness and habits to support the ability to learn by one self. SORT acknowledges the importance of learner motivation by questioning the study habits, life style, goals and purposes and learning preferences of the aspiring learner (Board of Regents University of Georgia, 2003). Table 2.12 lists these authors’ most important elements of e-readiness with regard to attitudes, habits and individual differences.

**Table 2.12 Life style, attitudes, habits and individual differences**

Life Style, Attitudes, Habits and Individual Differences	
Elements of e-Readiness	Author
Locus of control Learning style Anxiety Tolerance for ambiguity Prior experience Interests Attitudes Disabilities	Reeves (1999)
Learning styles Intrinsic motivation	Ifinedo (2005)
Learner motivation	Paxton (Business Wire, 2001)
Self-directed learning readiness <ul style="list-style-type: none"> <li>- Knowledge to learn on own</li> <li>- Attitude regarding self-driven learning</li> <li>- Skill to learn on own</li> </ul> Habits supporting self driven learning Variety of delivery options Learning styles	Guglielmino and Guglielmino (2003)
Study habits <ul style="list-style-type: none"> <li>- Ability to read and understand material</li> <li>- Confident to express thoughts in writing</li> <li>- Not easily distracted</li> <li>- Monitor own progress, keep deadlines</li> <li>- Willing to interact with instructor and co-learners</li> <li>- Able to manage time effectively</li> <li>- Refrain from postponing tasks</li> </ul> Life style	SORT (Board of Regents University of Georgia, 2003)

Life Style, Attitudes, Habits and Individual Differences	
Elements of e-Readiness	Author
<ul style="list-style-type: none"> <li>- Assigned hours for study</li> <li>- Flexible and ability to adapt</li> <li>- Supporting friends and family</li> </ul> Goals and purposes: <ul style="list-style-type: none"> <li>- Clear objectives</li> <li>- Understand objectives</li> <li>- Understand relevance</li> <li>- Determined to finish</li> </ul> Learning preferences <ul style="list-style-type: none"> <li>- Explore rather than reading?</li> <li>- Read to confirm</li> <li>- Write memos?</li> </ul> Alone or group?	
Learner characteristics Geographic dispersion Learner preferences	Powell (2000)
Capacity <ul style="list-style-type: none"> <li>- social aspects</li> <li>- literacy</li> <li>- computer literacy</li> <li>- poverty index</li> <li>- economic aspects</li> </ul>	MIT (Huang <i>et al.</i> , 2004) /Choucri (Choucri <i>et al.</i> , 2003)
Employee knowledge of e-learning	e Business assessment (Huang <i>et al.</i> , 2004)
Learners respond differently Mixed levels of readiness	Arif (2001)

Guglielmino and Guglielmino (2003) developed the self-directed learning readiness assessment to assess learners' styles and attitudes regarding self driven learning. Learning style is regarded to be a critical motivator to enable a learner to accept training where he/she will have to draw on own resources to progress. An important aspect that may influence the attitude of the learner is knowledge of e-learning. It can be asked if the learner has ample knowledge of the technology or the strategy to warrant a valid opinion?

Warehouse workers have seldom been exposed to training strategies other than classroom training or on the job demonstrations. I asked the question whether it would be fair to judge their current attitudes if they did not know enough of the strategy? This was an aspect I decided to explore during the interviews. Attitude may be an indication of their readiness, but I realized that there may be too many variables to define their attitudes accurately. Regardless of this, I decided to use attitude as one of the main contributors, to get to a point where I may understand their attitude, and not really to explain it.

### 2.10.6 Cultural influences

Some cultures are intent on questioning, critique and some follow a more shared understanding of their environments. Hoppers (2002) described African learners to be submissive. Reeves (1999) advised instructional designers to be sensitive to these cultural preferences and diversity when designing learning for the web. Ifinedo (2005) identified culture as a demand force when the e-readiness of the African countries was measured. Paxton stressed the importance of the

organisational culture to prepare the employees for computer training (Business Wire, 2001). Piskurich (2003) hopes to see “evidence of organisational commitment to learning and to electronic delivery of learning”, which I interpret as the guidance employees expect to find from their employers.

The warehouse workers are a diverse, multicultural group of people. I accept and understand that each hail from their own individual cultures, and that these cultures may have a direct influence on their motivation and success, but for the benefit of this study, I will mainly concentrate on the business culture, with necessary references to the individual cultures where deemed necessary.

The organisation is the initiator of the learning culture. The business is the responsible entity to develop the habit and influence attitudes on learning. Time for learning has to be provided by the company, therefore I regard it as a part of the organisation’s culture. When learners refer to the lack of or availability of time for training, it becomes the organisation’s culture. Table 2.13 lists the cultural aspects of readiness as seen by these authors.

**Table 2.13 Cultural aspects to consider for e-Readiness**

<b>Cultural elements of importance to e-Readiness</b>	
<b>Elements of e-Readiness</b>	<b>Author</b>
Habits problem solving critique shared understanding diversity multiculturalism Sensitivity	Reeves (1999)
Culture understanding Adult literacy rate Secondary school enrolment Tertiary enrolment Achievement in science Education in business schools Flexibility to adapt to challenges	Ifinedo (2005)
Organisational culture Rewards and Recognition	Paxton (Business Wire, 2001)
Learning style Habits Knowledge of self-directed learning	Guglielmino & Guglielmino (2003)
Habits and lifestyle	SORT (Board of Regents University of Georgia, 2003)
Type of use of the internet	APEC (Huang <i>et al.</i> , 2004)
Culture of the organisation Corporate support When training takes place (time) Learner characteristics	Powell (2000)
Capability and intention of businesses to accept and use IT Effective motivation and incentive system	e-Business assessment (Huang <i>et al.</i> , 2004)
Leadership Management	Cisco Net-Ready (Huang <i>et al.</i> , 2004)
Submissive learners	Hoppers (2002)
Opportunity to plan own learning	Hsu & Shiue (2005)

Hsu and Shiue (2005) argue that distance learning should appeal and attract the attention of learners, and that they should get the opportunity to be involved in the planning of their own development.

## 2.11 Theory codes of e-readiness for warehouse workers

The literature supports the premise that e-readiness is based on the relation of the learner to:

- have access and are connected to an IT infrastructure
- have experience of technology
- utilise the platform provided by the organisation
- be motivated to become a self-driven learner
- exercise learning styles and attitudes to take responsibility of training
- experience a culture of learning and support.

These indicators are explicitly or implicitly mentioned in most of the e-readiness assessments I have consulted. My intention was to explore the warehouse workers' e-readiness from an interpretive view, and to report on their positions regarding each of these categories. I have opted to refer to them as theory codes of e-readiness, that still need to be confirmed in my exploratory study of e-readiness of the warehouse workers.

## 2.12 Research question

When I initially started this research, I realized that I needed to understand my target group in several ways. I need to find a way how to make them perceptive to e-learning, to make the training work for them. I have now looked at what e-learning is in the form of models and how a globalised world has influenced businesses to become world players. The warehouse workers have not escaped the effects of the digital divide, and find themselves caught in an environment where technology commands the success of the organisation. They fulfill a major role in the success of the SCM industry, but have to rely on classroom training when they need to learn new systems and procedures required for the business.

e-Learning is hailed to be a solution to employees who can not leave their working areas due to the “anywhere anytime” – advantage of e-learning (Bowles, 2004). My research question is:

How ready are warehouse workers for e-learning?

Choucri *et al* (2003) argued that e-readiness depended on access and capacity. If these fundamentals were present within a community, it may lead to opportunities and growth. Reeves' model (Reeves, 1999) identified three inputs that instructional designers should consider before designing or developing an e-learning solution. My sub-questions as point of departure:

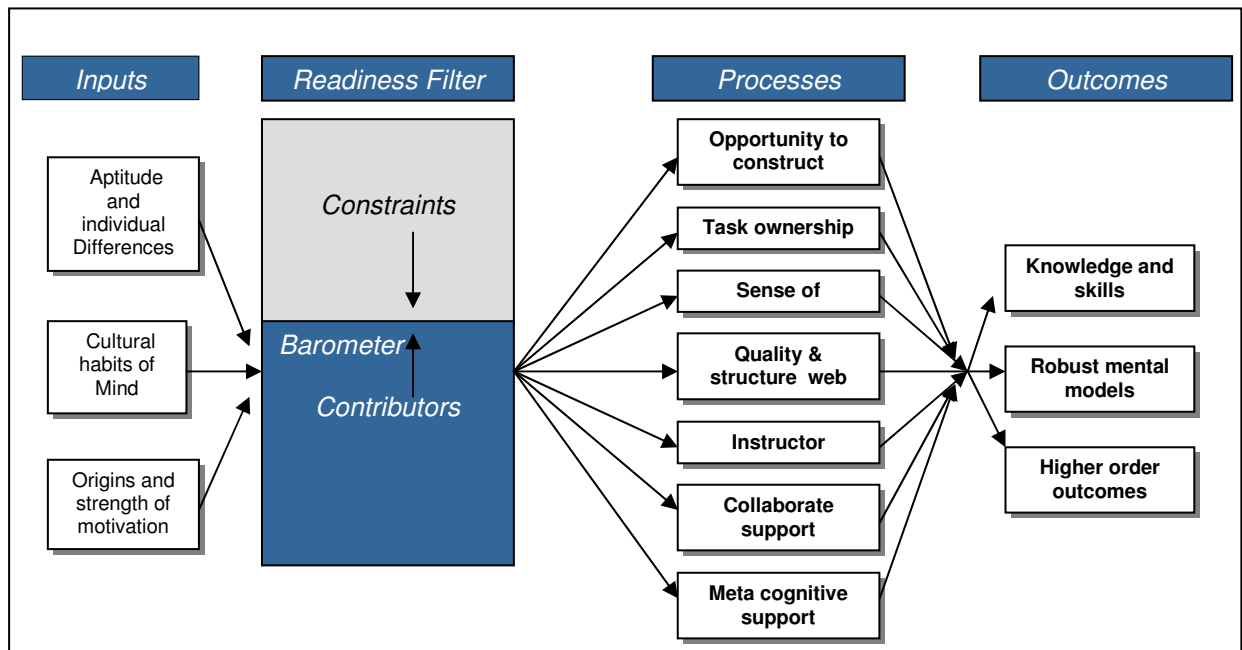
- What individual elements with regard to attitude and habits may contribute to or constrain e-readiness?
- How do cultural habits of mind influence the e-readiness of warehouse workers?
- How do origins of motivation affect the e-readiness of the warehouse worker?

I chose to use this model as my main inspiration and to guide my research because it discerns that a condition exists before e-learning or for that matter, any learning is implemented. It reveals the fact that learners will react to learning stimuli in unique ways, have their own perceptions, fears, anxieties as influenced by their unique habits, attitudes and cultures. It further indicates the importance of motivation to become active in the learning process. To conclude, this model shows the e-learner in the e-ready position.

## **2.13 Conceptualizing the e-readiness of the warehouse worker**

The concept of e-readiness relates to the presence of e-learning and the application of information technology to induce learning. e-Learning is a training strategy widely used in the educational, business and private sectors of developed communities world wide. When computer-based training is developed as a training solution, one of the assumptions is that the target group would be computer literate and able to understand most of the underpinning knowledge and skills needed to make CBT successful. It meant that the users had to be receptive for this medium, and able to express and demonstrate the skills and knowledge to make full use of this strategy.

Needs analyses have to include a thorough interpretation of the available infrastructure, the access the community has to technology, and the influence of culture on learning habits, attitudes and learning styles. Any learner can be introduced to e-learning, and it can probably be used as a strategy, but eventually his/her readiness levels are going to determine the success of the outcomes as detailed in Reeves' model. I have added a "readiness barometer" to Reeves' model to illustrate that different levels of readiness may exist per learner, as determined by his culture, individual habits, learning style and attributes, and origins of motivation. The motivations, aptitudes, attitudes and cultural influences differ from person to person, for some it may be strength, for others it may be a constraint. It concurs with the readiness "profile" suggested by Choucri et al (2003). It is my intention to explore these aspects that contribute to e-Readiness for warehouse workers. (Figure 2.7).



**Figure 2.8 Readiness barometer as conceptual framework**

The instructional designer needs to be aware of the most prominent contributors with regard to culture, aptitude and individual differences, and motivation. This exploratory study aimed to interpret the contributors and constraints of e-learning for warehouse workers. Simultaneously it may involve warehouse workers, as adult learners, in the planning and design of a learning plan. This exploratory study then is to understand the cultural barriers, catalysts, and individual differences that may influence e-learning.

## 2.14 Summary of Chapter 2

The corporate workforce needs to be prepared for technology, hence the urgent call that technology needs to be used to develop a skilled and knowledgeable workforce. Whether it is called e-learning, distance learning, virtual learning, web-based learning, or Internet learning, it still refers to the process where learners interact with the learning content, other learners, and the instructor through technology (Anderson & Elloumi, 2004; Bennet & Bennet, 2004). The objective is “how to learn”, rather than “what to learn” (Bagnasco *et al.*, 2003).

Ducasse (1958), described the purpose of education as “...[to] raise self to levels of greater and more secure happiness and beneficence” and agreed that it is possible for individuals to “take their education in their own hands” (Park, 1968 p.14). e-Learning can be the solution for the warehouse worker to raise their own education levels by partially taking responsibility for their own development (Bowles, 2004). However, due to the effects of globalisation and the resulting divide, a paradox exists because the same technology that is proposed as the solution seems to be the obstacle. The longer learners are ignored and marginalized with regard to computer technology, the more difficult it will become to introduce them to e-learning. e-Learning will put a premium on learning habits, aspirations, ability to self-motivate, and especially transform the learner from a passive to an active, self-motivated



learner. The learner needs to develop into an active constructor of knowledge and competence. In an online learning situation, he/she will be confronted with various stimuli with which to react.

Existing literature was consulted to identify key aspects of e-learning. Some documents assessed e-readiness on country level while few others assessed the e-readiness of organisations and regions. A synthesis of the key aspects of e-readiness resulted in the following theory codes of e-readiness of warehouse workers:

- access to an IT infrastructure
- experience of technology
- organisation support
- motivational aspects
- learning styles and attitude
- culture of learning and support.

To determine the e-readiness of a community is similar to a needs analysis of a target group. The challenge then becomes the responsibility of the instructional designer. Part of the needs analysis is to investigate the position of the learner, find out strengths and weaknesses, and the competencies that exist that could contribute to the e-learner's success, and which attributes are present that may hinder the development of e-learning. Therefore a thorough readiness investigation is needed to find the elements of readiness in the warehouse worker that may be conducive for e-learning. Reeves (1999) identified three input areas that are needed when learning on the www is planned: cultural habits, aptitude and individual differences, and origins of motivation. These three input areas will be used to categorise the investigation of warehouse workers' e-readiness. This research is planned as a qualitative investigation of the e-readiness of the South African warehouse worker. Only when the learner is understood from his/her own perspective and context can a strategy be designed to assist the warehouse worker to become a life-long, e-learner. The next chapter will explain the research methodology of this study.

## Chapter 3

### 3.....RESEARCH DESIGN AND METHODOLOGY

- 3.1 Introduction
- 3.2 Interpretive approach to understand the aspirations and objectives
- 3.3 Qualitative research
- 3.4 Case study as preferred research design
- 3.5 Warehouse workers as the unit of analysis
  - 3.5.1 Selection Procedure
- 3.6 Research methodology
  - 3.6.1 Data collection strategy
- 3.7 Phase 1 Identifying the categories of e- readiness
  - 3.7.1 Previous e-readiness research and reports
  - 3.7.2 Subject-matter experts
  - 3.7.3 The Delphi technique
  - 3.7.4 Rate the importance of identified elements of e-readiness
- 3.8 Phase 2 Interviews and observations with warehouse workers
  - 3.8.1 Utilising a questionnaires to obtain background information
  - 3.8.2 Interviews
  - 3.8.3 Observations
- 3.9 Phase 3 Interviews with warehouse managers and supervisors
  - 3.9.1 Making use of Atlas.ti™ to prepare the data analysis
  - 3.9.2 Defining theory codes and conceptual codes of e-readiness
- 3.10 Validity
- 3.11 Reliability
- 3.12 Data-analysis
- 3.13 Ethical issues
- 3.14 Limitations
- 3.15 Summary

## **3 Research design and methodology**

### **3.1 Introduction**

This research is aimed at the e-readiness of warehouse workers, and it was found that most of the e-readiness reports referred to countries' e-readiness, and did not yield significant information on the e-readiness of a community such as the warehouse workers. Research on e-readiness of a specific community is fairly new and prompted me to take an exploratory approach. Welman and Kruger describe exploratory research to "... determine whether or not a phenomenon exists, and to gain familiarity with such a phenomenon, not to compare it with other phenomena" (2001 p. 18).

The British Educational Communications and Technology Agency (Becta, 2005) has investigated the development of organisations (in this case schools) and determined levels of "ICT maturity" that may prepare that institution for modern demands. Becta (2005) argued that one level of maturity does not necessarily serve as a requirement for the next level, but that a next level is almost spontaneously developed from the fluency and confidence the users may have at the current level. Organisations support employees to reach a level of ICT maturity to meet new challenges on a next level. This research aimed to explore the level of readiness of the warehouse workers to learn and train with technology. The assumption is that when a maturity level of e-readiness is achieved the warehouse workers may spontaneously move or be challenged to progress to the next level.

I followed an interpretive approach to explore the e-readiness of South African warehouse workers with regard to IT. This case study has been supported with questionnaires, interviews, observations, and document referencing with regard to a specific group in South Africa – the warehouse workers of International Healthcare Distributors.

### **3.2 Interpretive approach to understand the aspirations and objectives**

Recommendations from previous research were that the target group needs to be involved in planning of training and that it was important that the initiators of learning understand the situation, the group's position, aspirations, habits, attitudes, levels of competencies, objectives and integrate these with the business goals (Burton, 2002; Coco & Jolly, 2003; Herselman & Britton, 2002; Heydenrych, 2000; Llorens *et al.*, 2002; Mashile & Pretorius, 2003) (Refer § 2.5.2). Warehouse workers display a social action with the world when expressing their readiness for online learning. Social action may be oriented to past, present, or predicted future behaviour of others, and this regular interaction has the potential to create cultural norms and social organisation (Erickson, 1986; Weber, online).

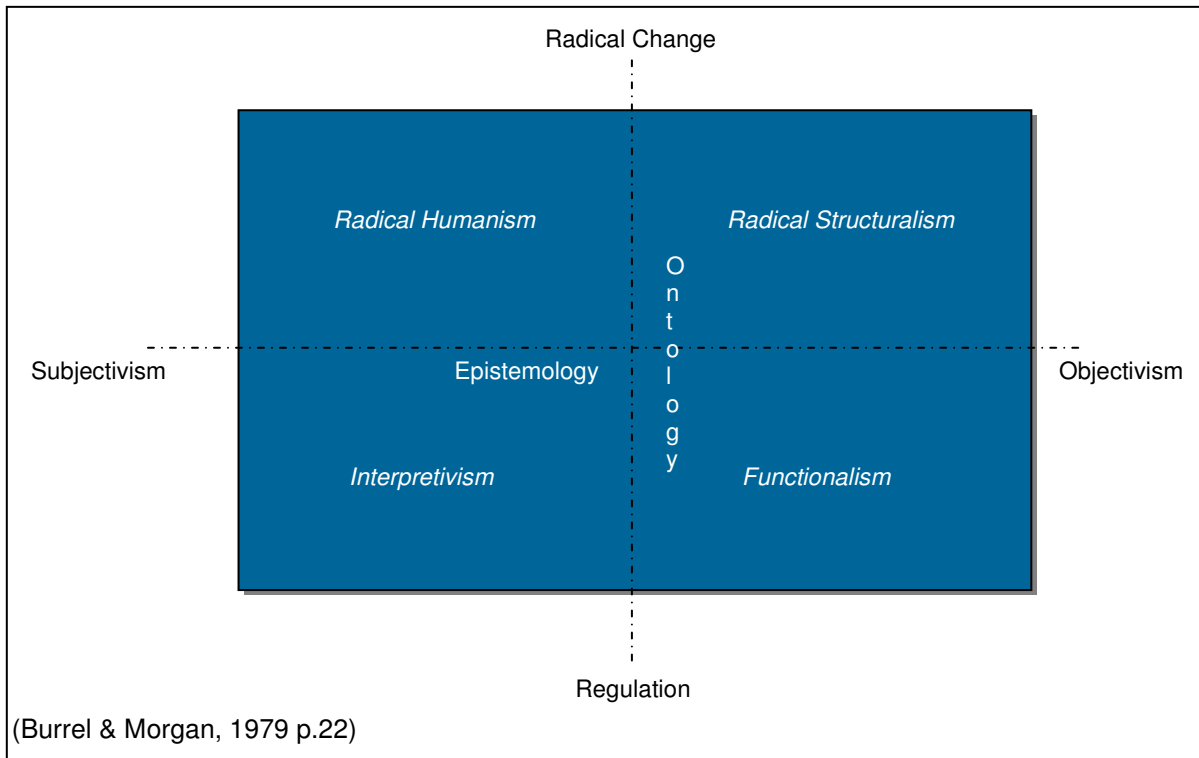
By adopting an interpretive approach, I concede that I believe that individuals construct meaning to their environment by experiencing the world from inside (Cohen *et al.*, 2002). One of the ways to understand this meaning is by being “emotionally empathetic or artistic appreciative” (Weber, online). This description provided a useful direction for this research. Weber further explained that actions can be understood by direct observational understanding to reveal the subjective meaning of action. “What motives determine and lead the individual members and participants in this situation to behave in such a way that the situation came into being in the first place?” (Weber, online). Erickson sees that the task of interpretive research is to “discover the specific ways in which local and non-local forms of social organisation and culture relate to the activities of specific persons in making choices and conducting social action together “ (Erickson, 1986 p.129).

The warehouse workers, as a social structure, are complex, multicultural and multi-faceted in their ways and habits. This study explores the relationship of a specific warehouse community within South Africa, and their readiness to learn and grow by means of Information Technology. Wright, Dereshiwsky, Emanuel and Martin listed seven habits of effective cyber instruction, and referred *inter alia* to one particular habit: “Seek first to understand, then be understood” (2004 p. 4199).

### 3.3 Qualitative research

Qualitative research attempts to understand and interpret the beliefs, actions, relationships and construed meanings people give to their environments (Cohen *et al.*, 2002; Erickson, 1986; Merriam, 1998; Radnor, 2001). Merriam cites Sherman and Webb (1988) and Patton (1985) when she summarises that qualitative research implies the lived experience, as related through the experienced perceptions of the individual (Merriam, 1998; Radnor, 2001). The findings and status of the e-readiness of the warehouse workers were interpreted from my point of view, as an active participant in the functional business of IHD.

According to Burrell and Morgan (1979), social research paradigms can be classified in the four categories indicated in figure 3.2.



**Figure 3.1 Four paradigms of social research**

Interpretive research studies individuals from the inside and how they interact with their immediate surroundings, and how they negotiate and manage their respective environments (Cohen *et al.*, 2002; Merriam, 1998; Vockell, 2005). By assuming an interpretive approach, I was able to conduct the research from an empathic, personal and involved point of view. I wanted to explore and understand their anxiety, attitudes and perceptions regarding technology.

I wanted to understand the barriers the worker perceives as preventing them from working with technology, the anxiety they experience when opening a computer, and the joy and motivation resulting from a successful session with the computer. My interpretation of e-readiness was subjectively explored: “We interpret experiences through the filters of existing knowledge and beliefs, and this existing knowledge and beliefs that we hold are a product of ourselves as active subject construing meaning” (Radnor, 2001). Also known as the “interactionist” approach, it means that the individual is influenced by the environment, just as much as the environment influences the learner (Radnor, 2001). “The events and situations need to speak for themselves” (Cohen *et al.*, 2002 p. 182).

An interpretive approach implied that my epistemological approach was anti-positivist and indicated an exploration from the perspective of the participants. Radnor (2001) admits that it is not possible to “get into someone else’s head”, but through “empathy, communication, understanding and the sharing of experiences”, one can learn a lot about a phenomenon. Table 3.1 lists Merriam’s (1998) characteristics of qualitative research and how these attributes compare to my research.

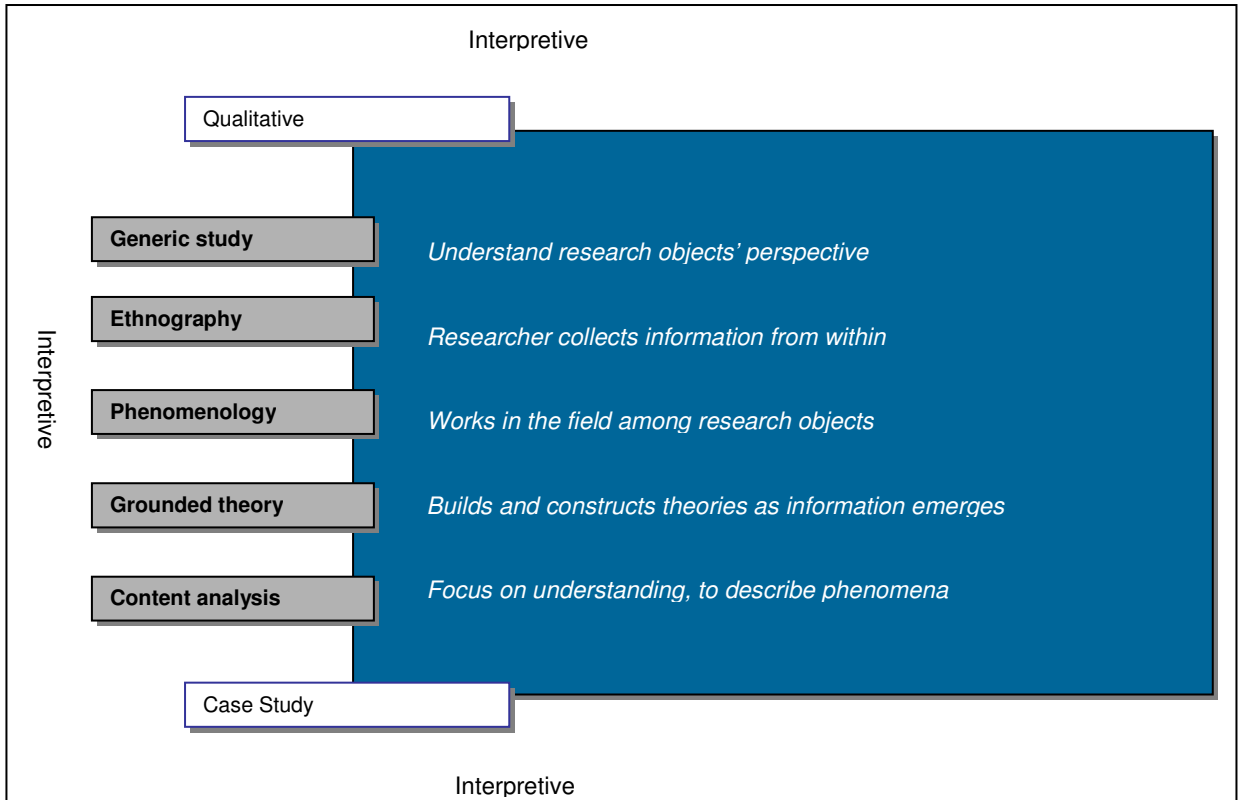
**Table 3.1** Characteristics of qualitative research compared with this exploratory study of e-readiness

Point of Comparison	Qualitative Research	e-Readiness Interpretation
Focus of research	Quality (nature, essence)	Investigation of the emotional, technological, educational, social and personal readiness to learn with IT
Philosophical roots	Phenomenology, symbolic interactionism	Interpretive approach, to understand and look into the positives, to identify constraints, understand barriers, find ideals and goals through interaction and involvement
Associated phrases	Fieldwork, ethnography, naturalistic, grounded, constructivist	Working in the field, involved, construct readiness profile
Goal of investigation	Understanding, description, discovery, meaning, hypothesis generating	Investigate, understand, discover, empathise, generate a profile of readiness
Design characteristics	Flexible, evolving, emergent	Flexible options, adaptable, intent on individual perceptions
Sample	Small, non-random, purposeful, theoretical	Warehouse workers of IHD – a pharmaceutical distribution company in Johannesburg
Data collection	Researcher as primary instrument, interviews, observations, documents	Researcher as primary instrument. Interviews, observations, focus groups, documents
Mode of analysis	Inductive (by researcher)	Inductive analysis, building and constructing an e-readiness profile as information is obtained
Findings	Comprehensive, holistic, expansive, richly descriptive	Descriptive and holistic reporting

(Merriam, 1998 p.9)

Qualitative research aims to understand the emotional, technical, educational and social aspects that may determine the e-readiness or lack thereof of warehouse workers. The warehouse workers as a unique community within South Africa lend themselves to be investigated as a case study. Interviews, documents and different types of observations have been used to collect data and evidence of e-readiness. Inductive and deductive modes of reasoning were used to analyse data and construct rich descriptions of the preparedness of e-learning of warehouse workers.

Figure 3.2 summarises the research design I had followed, namely an interpretive, qualitative case study to explore the e-readiness of the warehouse worker. Merriam (1998) described five types of qualitative research: generic, ethnography, phenomenology, grounded theory and case study.



**Figure 3.2 Methodology structure**

Generic refers to a study of a phenomenon, not really focusing on the group of people involved. Ethnography focuses more on the anthropologist's study of a phenomenon within a specific group or culture. The objective is to obtain socio-cultural explanations from the research (Merriam, 1998). Although the working culture of the warehouse worker may have been interesting to investigate, I believed it would distract the focus and purpose of this research. There was a temptation to do phenomenological research into the e-readiness of the warehouse worker, as this study could easily have investigated the e-readiness phenomenon. Phenomenology is regarded to be the study of conscious experience of things, or the meaning things have in the life of humans (Smith, 2005). As Merriam stated, the focus *"would be on the essence or structure of an experience"* (1998 p. 15). The phenomenological approach was rejected because my study focused more on the specific group or individuals and how they experienced and perceived the phenomenon.

The *grounded theory approach* implies that the focus of the research is to develop a theory as information evolves from the research (Merriam, 1998). This study included a grounded theory approach by conducting a deductive-inductive data-analysis strategy, and aimed to reveal the aspects that may determine the e-readiness of the warehouse workers. This study was not intent only on theory developing; but also aimed to explore, understand, and experience e-readiness as demonstrated by a specific group, which was why the case study had been selected as my preferred means of research.

I also made use of content analysis to determine the presence of certain concepts and meanings. I have transcribed the interviews and observations to construct integrated data sets to analyse. The content analysis enabled me to explore for meaningful aspects or indicators of e-readiness. During this content analysis, I made use of a grounded theory approach and deductive-inductive modes of reasoning to identify and explore the data (Busch *et al.*, 1997). The main focus was to get an in-depth understanding of the warehouse workers' e-readiness - as determined by their unique aspirations, frustrations, emotions, responsibilities, attitudes and work relationships with their respective environments.

### 3.4 Case study as preferred research design

A case study was selected due to the unique unit of analysis to be explored, in this case the warehouse workers of a supply chain environment in South Africa. The aim was to explore and reveal a unique relation with regard to their preparedness for e-learning (Merriam, 1998). She identifies several types of case studies in education. Ethnographic case studies focus on cultures and behaviours of specified groups. Historical case studies concentrate on primary resource material and tend to report on "institutions, programs and practices as they have evolved over time" (Merriam, 1998 p. 35). The main attribute for historical case studies is that they report on the phenomenon over a specified period in time. A third type of case study is the physiological study that concentrates mainly on human behaviour. Sociological case studies are interested in human behaviour and their relationship to societies and socialisation (Merriam, 1998). Exploring e-readiness implied that an understanding of social constructs needs to be investigated.

Merriam (1998) describes three different ways to report on the phenomenon. These are descriptive, evaluative and interpretive. *Descriptive* case studies in education are detailed accounts of the phenomenon, but are seen by critics as "lacking in depth." *Interpretive* case studies are seen to be more analytical, in order to form conceptual information, with the purpose of challenging theoretical assumptions when the data has been collected. *Evaluative* case studies include description and analysis, but conclude with an in-depth evaluation (Merriam, 1998).

I have selected the interpretive case study to allow myself to report on e-readiness as experienced by the warehouse workers themselves. To interpret meant that the unit of analysis' receptiveness for a specific learning strategy could be understood from their own perspective. Interpretation included an exploration of the emotional and physical limitations, frustrations, aspirations and other related personal aspects that may affect their preparedness for e-learning. The interpretation included an understanding of the limitations and/or advantages of the infrastructure where they find themselves. The interpretive case study intended to explore all aspects that may play a role to promote or constrain the e-readiness of the warehouse workers within this specific organisation. The warehouse workers are a community that acts within the confines of the organisation, shares the same infrastructure, management guidance and planning, is subjected to the same training and learning infrastructure, but



responds to the environment in their own individual ways. This is an interpretive case study, to understand individual perceptions within the confines of a specific group of workers.

### 3.5 Warehouse workers as the unit of analysis

The warehouse workers at International Healthcare Distributors (IHD), a leading pharmaceutical distribution company in Southern Africa, have been selected for this research. I am employed at IHD as an IT training manager, and have been investigating e-learning as a possible training solution for the past couple of years. The organisation accepts the role and responsibility to empower its employees, hence the urgency to investigate e-learning as a possible training solution.

IHD consists of approximately five hundred employees, of which almost two-thirds are warehouse workers. IHD distributes pharmaceutical products to the entire Southern African Region from five distribution centres. These centres, commonly known as “DCs”, operate in the main metropolitan regions in South Africa, i.e. Johannesburg, Cape Town, Durban, Port Elizabeth and Bloemfontein. The following table is a summary of a survey conducted of some warehouse workers representing all the DCs in South Africa. The main purpose was to get an overview of their experience, ages, gender, race and qualifications. Table 3.2 refers to the biographical information of warehouse workers.

**Table 3.2 Biographical data of IHD warehouse workers**

Number of warehouse workers in the survey	
Bloemfontein	11
Cape Town	16
Durban	16
Linbro Park (Johannesburg)	95
Port Elizabeth	10
Experience of worker	
6 months or less	3
6 months to 1 year	11
1 to 2 years	28
2 to 5 years	39
5 years and longer	67
Age group	
18 to 24 years	22
25 to 30 years	29
31 to 35 years	38
36 to 45 years	36
46 years and older	23
Gender	
Male	113
Female	35
Race	
African	101
Asian	11
Coloured	26
White	10

Highest educational qualification	
No formal school education	0
Grade 5 – Primary School	0
Grade 6 – Primary School	0
Grade 7 – Primary School	0
Grade 8 – Secondary School	3
Grade 9 – Secondary School	0
Diploma, but not Grade 10	4
Grade 10 – Secondary School	44
Grade 11 – Secondary School	10
Diploma, but not Matric	17
Grade 12 (Matric) – Secondary School	62
Post-Matric diploma	0
University degree	0
No response	8

The unit of analysis of the study can thus be described as multi-racial, mostly black, fairly experienced employees, aged between 18 and 60 years old. Both genders are included, educational backgrounds differ, and most indicated that they have a secondary school qualification.

### 3.5.1 Selection Procedure

Cohen *et al* (2002) state that the style of the research determines the sample size, and add that qualitative research normally works with a smaller sample size. These workers share the attributes, biographic particulars, educational background and skills levels of most warehouse workers in South Africa, but for the reasons of this study, the target population need only be representative of warehouse workers working for IHD South Africa.

I selected warehouse workers from all five regions in SA to ensure that they represent all the warehouse workers working for IHD. Interviews were conducted with at least two to four workers from the remote DC's while most of the interviews and observations were conducted in Johannesburg, where most of the warehouse workers are employed. Table 3.3 refers to the number of participants per DC.

**Table 3.3 Participants per distribution centre**

	Questionnaires	No of Interviews	Managers
Bloemfontein	6	1	1
Cape Town	6	2	0
Durban	6	0	0
Johannesburg	68	8	5
Port Elizabeth	16	5	0

It is for this purpose that a non-probability sample, or “purposeful” sample is selected (Patton as cited in Merriam, 1998). A community is seen as a group of people with a common goal at that time, or as described by McInerney and Roberts (2004): “a gathering of people within a single social structure”.

Several types of non-probability samples are identified – convenience, quota, purposive, dimensional and snowball (Cohen *et al.*, 2002). Convenience sampling refers to the availability of the nearest

group that forms part of the unit of investigation. Accessibility makes them the natural selection. Quota sampling implies that a representative section(s) or proportional weight of the research unit needs to be selected.

Purposive sampling refers to the selection of a sample with a specific intention. Where managerial and supervisory information is needed, the sample will obviously have to be from participants belonging to this category. Dimensional sampling is regarded by Cohen *et al* (2002 p. 104) as a “refinement of quota sampling”. Participants are selected from several viewpoints in a bid to represent all viewpoints within the intended research. In snowball sampling, informants identify the next group of participants by word of mouth. The case study is another example of a non probability sample. The research is limited to one specific group only. A non-probability sample avoids generalisation and seeks only to represent the group or community from which it has been selected. The warehouse workers have been selected as such a community because they share the same environment, working conditions and social structure. In this case study, all findings and obtained information applies to them only.

I have used a convenience sampling strategy for my study. Due to the availability of the workers, I had to accept the conditions of the day, and the availability of staff. Table 3.5 illustrates that they are in fact representative of South Africa’s major racial groups. All races are represented, from across the five main metropolitan regions in our country.

Access to the workers was not always easy due to work constraints and geographic distances of other DCs (except Johannesburg). I also had to conform to the prevailing culture in the warehouse by reporting to the manager and/or a supervisor first. I made a conscious decision to honour the seniority of the managers, supervisors while conducting any interviews and observations. I explained to each supervisor and manager what the purpose of my research was and left it to them to select an available respondent to interview or observe. This practice enhanced the validity and reliability of my research as it eliminated any preferences I might have had in selecting the participants. Each work area was very dependent on the workers, and management was not very keen to let the workers go during work hours. I also had the problem that the workers were all dependent on public transport, and not available after hours. I honoured the ethics of the organisation and all employees by applying for permission before conducting any interviews or observations (Appendix 3.1 – Application for Ethics Approval). I have also clearly explained the voluntary participation to all participants before including them in interviews or observations.

I had to consider the time for interviews and observations at all times, because the workload differed during the day. Warehouse workers were not readily available, and I had to consider their workload all the time. In most cases the interviews with managers were conducted after 14:00 in the day. Most supervisors and managers supported my research initiative, and were willing to participate.

## 3.6 Research methodology

Exploratory research is mainly concerned with why specific conditions prevail and why they are influenced by the surroundings. It is perceived to be a flexible research method that concentrates on the dynamics of “how things operate” (Ritchie & Lewis, 2003 p. 29). Cohen *et al* (2002) refer to Nisbet and Watt (1984) when they propose a staged approach to conduct case study research. An open and wide point of departure should be assumed at the start, without any prejudices. This should be followed by a narrower focus, as a result of the acquired information, until a draft interpretation is formed to investigate and understand further.

Qualitative data can be obtained by four methods: observations; interviews; documents; and research instruments such as interviews, questionnaires, surveys, and personality, attitude and cognitive tests (Erickson, 1989). To collect data by means of observation in the field, the researcher needs life skills and a good understanding of sociology (Erickson, 1986); i.e. the ability to identify relevant behaviour and any activity, dialogue or lack thereof that may be germane to the aspect being researched.

I have opted for an interpretive study, and planned to explore e-readiness through the eyes and words of the warehouse workers. Radnor (2001) advised that to “get into someone else’s head”, one needs “empathy, good communication, [and the] understanding and the sharing of experiences”. Or, as described by Welman (2001 p. 7) “experience the phenomena *in their* [and in my] *bones...*”. I have used a “hybrid data” (Mouton, 2001 p. 149) collection strategy. This included documentation, questionnaires, interviews and different types of observation to collect my data on the e-readiness of warehouse workers.

### 3.6.1 Data collection strategy

Denzin (2002) defined six steps in a research process:

- framing the research question
- opening and analysing previous conceptions of the problem
- orienting the phenomenon in the natural world and looking at it from different perspectives
- identifying and breaking the phenomenon into its smaller elements to reveal essential features and attributes
- synthesising and reconstructing the phenomenon
- relocating the phenomenon in its real context.

I have used the knowledge and expertise of subject matter experts (SME) to frame the research question and to obtain existing and previous conceptions of the research problem.

I have used the following steps to identify the elements of e-readiness of warehouse workers. The previous and existing concepts of the research problem will be as defined by a group of experts. (Appendices 3.2 and 3.3). Appendix 3.2 lists the groups that have been identified for data collection and describes the reason for their selection. Appendix 3.3 lists the subject-matter experts to be interviewed with regard to e-readiness. Their respective CVs have been added. The data-collection

instruments are observations, questionnaires and interviews. The basic data-collection strategy was conducted in four phases:

- Preparation phase: Biographical Information prior to interviews, observations (Refer § 3.5)
- Phase 1: Subject Matter Experts to determine a consensus of e-readiness characteristics and dimensions
- Phase 2: Interviews and observations of warehouse workers to explore for elements of e-readiness identified in phase 1
- Phase 3: Interviews with business managers to determine environment readiness and support.

Figure 3.3 is a diagram to illustrate the phased approach of my intended research and explains how the interviews, observations and documents were used once the construct e-readiness had been defined and outlined by subject-matter experts.

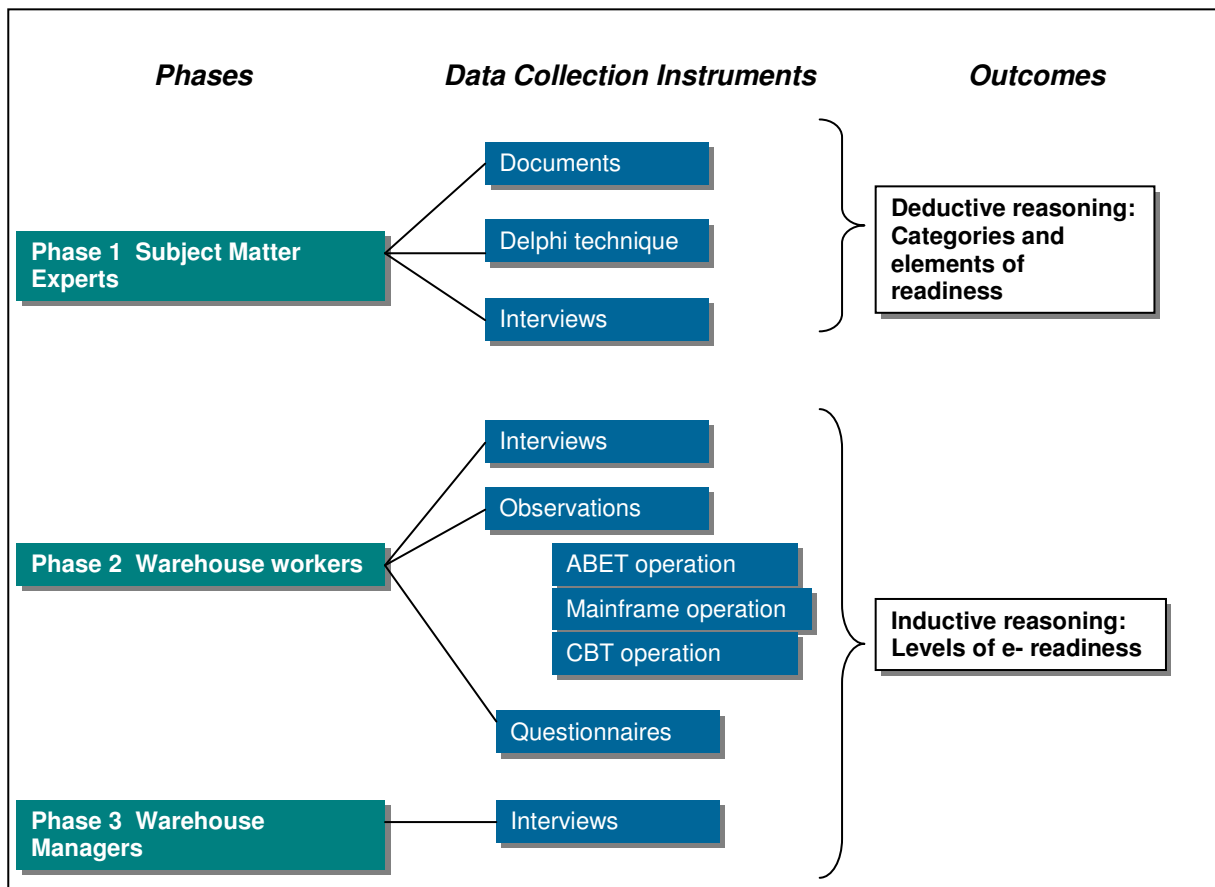


Figure 3.3 Phased approach to collect data

I have mainly used interviews and observations to collect data, supported by questionnaires and documents on e-readiness. Interviews were used to obtain an in-depth understanding of warehouse workers' perceptions of e-readiness, and observations to note their reactions when completing work and learning tasks on the computer. Existing literature has been researched to get to the latest findings and strategies on determining e-readiness.

I have used two questionnaires during this study. The first questionnaire (Appendix 3.4 – Warehouse worker information) formed the background study of the warehouse workers to obtain information with regard to their biographical information. The questionnaires also collected data with regard to learning

preferences and computer use within the organisation. The questionnaires were handed to as many participants as possible throughout the research process. The last versions of the questionnaire differed somewhat from the first, it was adapted to obtain more information regarding use of the habits and skill with computers (Appendix 3.5). The questionnaires were twofold: to obtain the biographic information of the unit of analysis, and to support findings that emerged during the interviews and observations. A second questionnaire was presented to ten Port Elizabeth warehouse workers only, namely to question their basic knowledge regarding e-learning (Appendix 3.6). It was already near the end of my data-analysis phase, it was during a stage when I wondered about the participants' knowledge of e-learning.

I have also used different types of observations. Some of the observations were recorded in video format files (Appendix 3.7). The results of these different observations had been explored and compared in order to ensure the validity and reliability of the research. From these observations I found evidence that explicitly indicated the presence or lack of e-readiness and in other cases I interpreted implications of e-readiness. Deductive and inductive reasoning were used to debate the e-readiness of the workers. Deductive reasoning is seen to be arguing from the broad to the specific (Mathematics Network - Question Corner, 1998; Mouton, 2002; Welman & Kruger, 2001). I have applied deductive reasoning to identify categories of e-readiness from the existing literature as described in § 2.10 and during the SME interviews. The purpose here was to identify aspects of e-readiness as identified by the experts and in the literature. Inductive reasoning is used to argue from the specific to the general (Mathematics Network - Question Corner, 1998; Mouton, 2002; Welman & Kruger, 2001). During phases two and three I applied inductive argumentation to construct the preparedness of the warehouse workers from data received from the warehouse worker interviews and observations. Eventually these findings may be generalised to apply to other warehouse communities in developing countries.

The next section explains the data collection procedures in three phases. Phase one aims at getting a consensus of what is meant by readiness, and to identify categories to structure the remainder of the research. Phase two explains the procedures during the interviews and observations with the warehouse workers, and phase three refers to the interviews with the warehouse managers.

### **3.7 Phase 1 Identifying the categories of e- readiness**

#### *Target-group analysis*

The main research problem implied that a training strategy is considered, and that the viability of this strategy is dependent on several variables, among these are the needs, nature and characteristics of the intended students (Alessi & Trollip, 2001; Davis, 2004 p. 112; Mager, 1991).

An understanding of the technological background of the intended students is crucial, including their expectations, their financial and other resources, their access to the web or other online networks, their bandwidth limitations, and any other pertinent information about their preparedness and ability to participate equally and fully in the learning experience (Davis, 2004 p. 99).

I found guidance from the available literature to determine what I needed to look for in the unit of analysis. Existing literature (i.e. Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Davis, 2004; Mager, 1991; Reeves, 1999) indicated the importance of an in-depth target-group analysis before designing e-learning for the specific learner group. Alessi & Trollip (2001 p. 439) advocate a comprehensive description of the target group to identify their “characteristics, competencies, limitations, and familiarity with the subject area”. Mager (1991 p. 52) emphasized the need for a thorough target-group analysis, because “Not only will careful thought about your students help determine the starting point of a course, but it will help to shape the course itself”. He continued that this will assist instructional designers in the use of appropriate and relevant vocabulary, examples, media and which procedures to adopt. “If you spend even a tenth as much time thinking about and describing your students as you do thinking about your subject, you will develop a powerful tool for insuring the effectiveness of your instruction” (Mager, 1991 p. 52).

Reeves (1999) proposed three main categories to be considered when instructional designers plan training on the web. They are “Cultural habits of mind, aptitude and individual differences and origins of motivation” (Reeves, 1999). These three concepts include many aspects that need to be considered when instructional designers plan e-learning. When these characteristics are known, it may assist instructional designers to analyse a specified target group. Some of these characteristics are: age, educational level, cultural background, physical and learning abilities or disabilities, learner interests, experience, personal goals and attitudes, learning preferences, learning styles, motivation, communication skills, computer literacy, previous experience, language preferences, receptiveness for other learning methods, etc (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Khan, 2005; Reeves, 1999). With this in mind I knew what aspects I had to address in my interviews with the subject-matter experts.

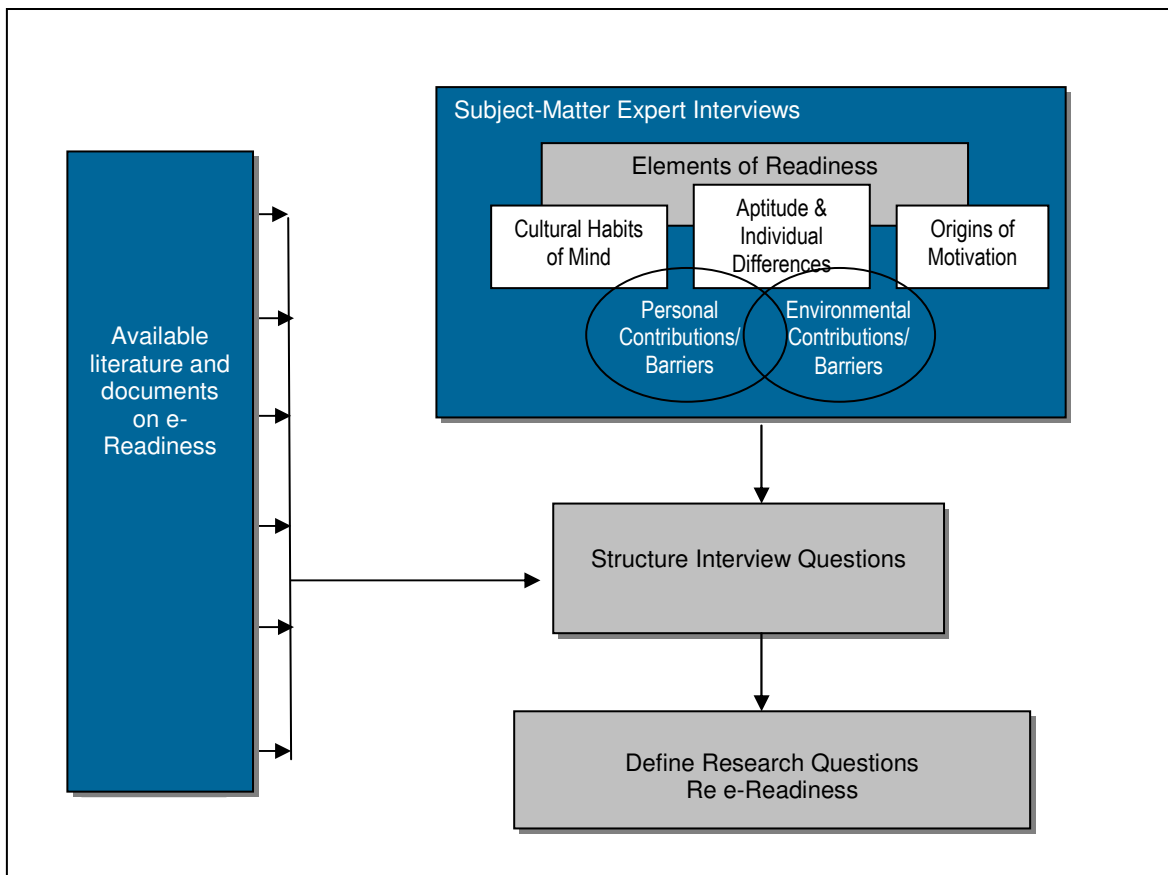
### **3.7.1 Previous e-readiness research and reports**

I consulted literature on e-readiness, e.g Ifinedo’s “Measuring Africa’s e-readiness in the global networked economy” (2005), World Economic Forum’s e-readiness report (2003), Paxton’s “Seven systems determine an organisations’s readiness for e-learning” (Business Wire, 2001), Piskurich’s “Quicklist for readiness for online learning” (2003), the University of Georgia’s student online readiness tool (SORT) (Board of Regents University of Georgia, 2003) to get an understanding of what I should be looking for when I needed to explore the readiness of warehouse workers (§ 2.10). I have identified six main categories or dimensions (theory codes) that have been listed by these authors and reports. I have identified them as the six main theory codes of e-readiness:

- experience with technology
- access to infrastructure
- attitudes, learning habits and individual differences

- organisation/business contributions and constraints
- origins of motivation
- cultural constraints and contributions (§ 2.10: Synthesis or e-readiness elements).

I now had two fundamental points of departure. The existing literature guided me to explore specified categories of readiness, while experts in the field of e-learning (Alessi & Trollip, 2001; Anderson & Elloumi, 2004; Khan, 2005; Mager, 1991; Merrill, 2002b; Reeves, 1999) emphasised that the characteristics of a target group needed to be understood before a specific learning strategy is imposed upon them. I realized that a learner’s characteristics will either contribute or hamper his receptiveness, for example, access to technology. What I was not sure about, is what was generally accepted characteristics of e-readiness? I consulted with eight South African e-learning experts to learn from them what aspects they regard as important to demonstrate the capacity for e-learning. I wanted them to agree to the concepts of e-readiness, so that a basic pattern would indicate whether a learner is e-ready or not.



**Figure 3.4 Identifying the categories of e-readiness**

Figure 3.4 illustrates the methodology for phase 1. It illustrates the two fundamental points of departure that has been used during this research. Available documents and literature were consulted to get guidelines for my study. Subject-matter expert inputs provided further information on the aspects of e-readiness that I should explore.



### 3.7.2 Subject-matter experts

I identified South African subject-matter experts who have tertiary qualifications and experience in teaching and learning with computers and designing e-learning in the South African context. Three have completed their PhDs in computer assisted education (CAE) and four have Masters in CAE. All of them are involved in corporate training (Appendix 3.3 - List of subject-matter experts). Their theoretical and academic knowledge about the subject (e-learning), and their experience regarding design and development of training for learners in corporate organisations in South Africa, prompted me to draw from their expertise. The group of experts has been selected due to their expertise and experience of implementing computer-based training at various levels of the corporate sector. They also:

- knew what e-learning was and had experience of this learning strategy
- were knowledgeable and experienced instructional designers who often needed to do needs analyses to determine the viability of a planned training intervention.

I used their guidance and experience to assist me in identifying the most important aspects of e-readiness.

My first interview did not yield the rich information I anticipated. I was naïvely hoping that the interview would reveal an image with an e-ready employee from the developing communities in South Africa. My questions were more structured and as far as I could detect, a little forced. I became aware of the fact that I had preconceived ideas, and wanted to enforce issues. The interview was mostly an account of the participants' encounters with learners. If I had hoped to get a detailed description of what an e-ready student resembled, I failed. But later, when doing the transcripts, I found that I had been on the right track. Interesting comments regarding learner cultures, e.g. to speak to supervisors and managers before going to their subordinates, were revealed. Learner attributes emerged that may not be found or discussed in any of the existing e-readiness assessment tools, but as far as the warehouse workers were concerned, it was of utmost importance.

This first interview set the tone for most of my later interviews. I decided to cover the six theory codes (categories) in the interviews, by just basically referring to them, as prompts to the experts. I thought that I would get more information by respecting their expertise and allowed them to speak freely. I did not want to come across as an interrogator, and decided to sit back to enjoy the ride. I got my rewards.

### 3.7.3 The Delphi technique

I conducted interviews with the SMEs between April and September 2005, and by means of the Delphi technique, I eventually identified a list of elements of e-readiness seen in a South African context. The Delphi technique has been developed to achieve consensus among a selected group of experts (Stuter, 2002). Cline (2000) described the Delphi technique as a method to obtain consensus on subjective matters where many different opinions may exist. Dunham (1998) portrayed the Delphi technique as a useful tool to facilitate judgements and decision making. He added that e-mail

communication can be effectively used to obtain information. It suited my plans, because the SMEs were not easy to reach, and once I had the initial interviews with them, we communicated telephonically or via e-mail.

I conducted open, loosely structured interviews with the identified group (Appendix 3.8 – Structure of SME interviews). I wanted to learn how the experts experienced the implementation of online learning in their respective environments. I structured the interviews around the theory codes (§ 3.7.1) of e-readiness, and prompted aspects like age, educational level, cultural background, physical and learning abilities or disabilities, learner interests, experience, personal goals and attitudes, learning preferences, learning styles, motivation, communication skills, computer literacy, previous experience, language preferences, receptiveness for other learning methods, etc. Although the basic questions included literacy, culture, learning habits and attitudes, the discussion was to encourage the expert to describe his/her experiences re the implementation of online learning. The SMEs were most obliging to discuss their experiences in establishing learning cultures in their respective working environments. Being qualified educators in the field, I found that they tended to be prescriptive in their narrations, and often prescribed the ideal or preferred situations that “should be happening or in place”.

The purpose of these interviews was to obtain a South African perspective of e-readiness, from each of the participants' point of view. I recorded the conversations and transcribed them on Atlas.ti™, a Computer Assisted Qualitative Data Analysis Software (CAQDAS) and by means of an inductive-deductive data-analysis approach identified a list of conceptual codes of e-readiness to be considered when e-learning is planned (Appendix 3.9 – Hermeneutic Unit 1: Elements of e-Readiness).

I categorised the identified readiness list according to Reeves' (1999) three input areas: cultural habits, individual differences and origins of motivation to create a structure to work from. While I worked through these elements, it emerged that there were elements of readiness that are controllable by the individual, while others are determined by the environment. The latter referred to all the factors where the workers were dependent on the business culture as contributors or constraints of their e-readiness. For example, where the business needs to provide the infrastructure, it will be regarded as an environment attribute, while the habit to learn, is regarded as a personal attribute.

The list of e-readiness elements have been categorised according to Reeves' model for developing learning for the www. During the interviews, it was argued that some attributes are the responsibility of and should be provided by the environment. This environment can be the workplace, or it can be at home, or the individual him/herself that needs to accept responsibility for learning to happen. For instance the “urgency and priority to learn” is an intrinsic motivator from a learners' point of view, but when the environment takes the responsibility, it refers to the presence of a solid and sound learning culture in the business. Many examples exist in these listed codes. Table 3.4 illustrates the three input codes as defined by Reeves (1999) with e-readiness codes that emerged from the SME interviews.

**Table 3.4 Elements of e-readiness emerged from SME interviews**

<p><b>Cultural Habits of Mind</b></p>	<p>Learner culture: Literacy, intrinsic motivation &amp; drive to develop self, family support, home infrastructure, access to technology, family basic needs, learning habits, educational levels, confidence to take initiative, taking responsibility, urgency and priority to learn, language, communication, social support, life style and habits, sharing of responsibilities;</p> <p>Workplace culture: Learning oriented, supportive, adapt to cultural differences, language barriers, provision of opportunity &amp; challenges, encourage creativity and participation, time and budget provision for training, managerial styles, career planning and PDP's, differentiated training strategies (blended), ground rules for learning, shared responsibility.</p>
<p><b>Attitude and Individual Differences</b></p>	<p>Learner attributes: Literacy, intrinsic motivation, skills and competence, ability to adapt, anxiety, confidence, apply acquired information, team work, communicate to achieve objectives, learning styles, understand instruction &amp; language, sense of achievement, urgency to develop self, response to ground rules, aspirations and intrinsic urgency to develop;</p> <p>External attributes: Managerial styles, training strategy, format of learning material, career options, Infrastructure and access to technology, learning content and presentation, training and learning management.</p>
<p><b>Origins of Motivation</b></p>	<p>Learner: Access &amp; literacy, intrinsic motivation, career focus, relevancy, clarity of objectives, culture, personal development plan (focus), feedback and support, orientation, extrinsic rewards and recognition, locus of control, ground rules for learning, work outputs benefit business, managers share responsibility;</p> <p>Environment: Access &amp; infrastructure, workplace opportunity &amp; challenges, career options, encourage creativity and participation, feedback and support, different training strategies &amp; guidance, facilitator communication, support and feedback, differentiated learning content and presentation, legislative issues – “Growth Charter”.</p>

Examples under cultural habits of mind include: family support under learner culture, while aspects like “provision of opportunity and challenges” are the responsibility of the organisation. Attitude and individual differences include aspects like anxiety and confidence from a personal point of view, and managerial guidance is an example of an aspect related to business culture. Motivational aspects like access are supported both by individuals and the organisation.

### 3.7.4 Rate the importance of identified elements of e-readiness

I then drew up a rating list by identifying the elements that had the highest frequency as coded in Atlas.ti™. I then listed the elements according to Reeves’ culture, individual differences and origins of motivation respectively. Personal and environment influences have also been identified. Experts were asked to rate the importance of each of these concepts as they personally experience it. I regarded all the elements to be important, but I needed to identify the most critical of them. The SMEs were asked to rate from “Neutral” – 1, to “Most important” – 5 (Appendix 3.10: Rating of e-readiness aspects). These lists were e-mailed to the experts with the request to rate each readiness factor. All

of the lists were sent with the request to circulate these among their colleagues. All eight of the SMEs sent their evaluations, and I have received two additional ratings from other colleagues for a total of ten responses.

The feedback from the SMEs were combined, analysed and culminated in a list of ninety-nine conceptual codes (my version of identified aspects) of e-readiness. I used the rated aspects of readiness to prepare and structure the interviews with and observations of the warehouse managers, supervisors and workers. I used it as a guide to explore and understand the material I encountered in my interactions with the participants.

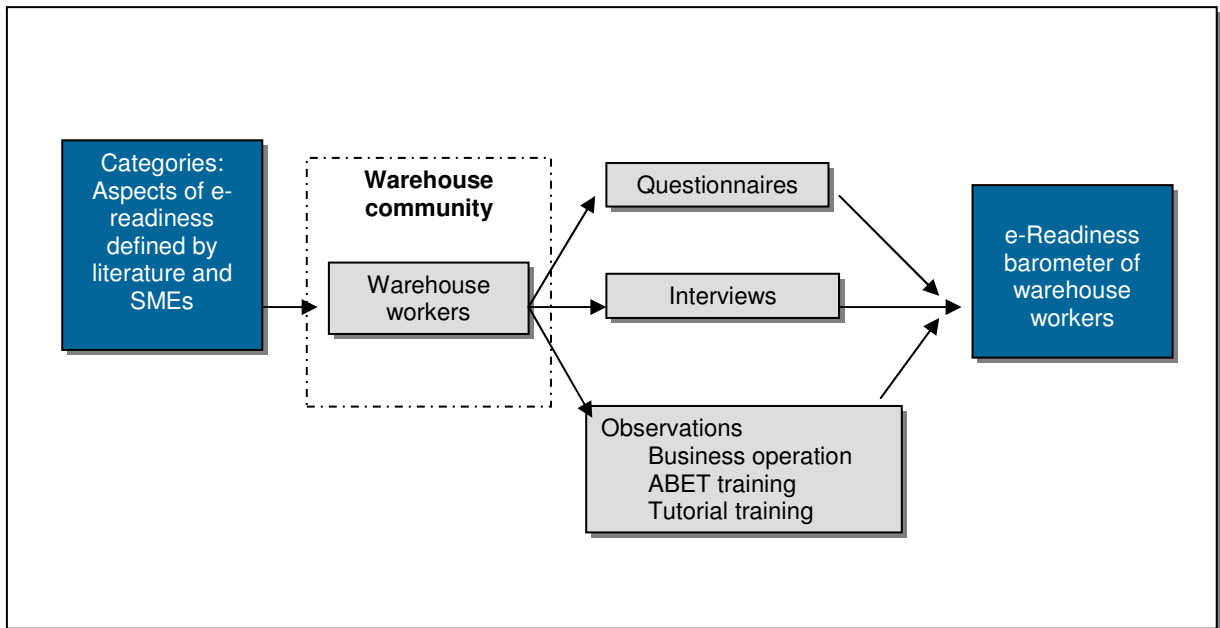
To summarize phase one: earlier reports on e-readiness and literature on target group analysis, guided my interviews with SMEs and to eventually determine categories of capabilities to have in an e-ready community. I was now able to focus on exploring specific attributes during my interviews and observations of warehouse workers in phases two and three.

### **3.8 Phase 2 Interviews and observations with warehouse workers**

Phase one provided me with a list of e-readiness categories to explore during the interviews and observations. Phase two included three different data collection strategies:

- Questionnaires: biographic and other relevant data
- Interviews with warehouse workers
- Observations of warehouse workers:
  - ABET observations
  - Operational (main frame) observations
  - Tutorial observations.

To analyse the data collected from the warehouse workers and their managers, I created a second hermeneutic unit (HU) with Atlas.ti™, “e-Readiness of warehouse workers”. This HU constituted the interviews with experts, warehouse workers, managers and observations of the warehouse workers. I initially created a total of 336 codes but managed to combine and eliminate some to end up with a total of 208 codes. These codes were then synthesized to a list of twenty-six concepts or theory codes of e-readiness. To limit problems with reliability and validity I used thesauruses and have taken the context into consideration where my judgment was called upon (Busch *et al.*, 1997). Figure 3.5 illustrates the data collection strategies with the warehouse workers. It also refers to the literature and SME inputs from which the interviews have been structured.



**Figure 3.5 Collecting data from the warehouse workers**

### 3.8.1 Utilising a questionnaires to obtain background information

Qualitative research depends mostly on interviews and observation to obtain rich and loaded data. Questionnaires are more related to quantitative research (Cohen *et al.*, 2002; McMillan & Schumacher, 2001; Merriam, 1998). I used a questionnaire in my research to learn more about my unit of analysis, merely to substantiate whether there were grounds for this research to be conducted. I did not generate any numeric data neither did I use the questionnaires to collect data to be analysed, compared or measured.

I conducted a questionnaire (Appendix 3.4) to learn the background of the target group and to explore the use of computers by the warehouse workers. I ran this same questionnaire three times with minor adjustments. The first questionnaire was done during August and September 2004 when I visited the DC's for work-related activities. The second time I ran the questionnaire was during the interview phase. After the first six interviews with warehouse workers, I decided to make the participants complete the questionnaire before conducting the interview. I used the information on the questionnaires to verify some of the data I received during the interviews. I included as many participants as possible to get the basic background of a warehouse worker. An updated list of questionnaires was given to a few participants after I had obtained more information regarding the attitude and relationship of warehouse workers to technology.

The purpose of the questionnaire was to obtain information on the following main aspects:

- Distribution centre and experience in years
- Biographical data
- Access to computers and networks
- Skill, experience and how (and if) computers are used.

The following categories were added with the second and third questionnaires:

- Use of other technology, e.g. cell phone
- Career plan information (Appendix 3.5).

*Biographic information of the warehouse workers*

The questionnaire was given to one hundred warehouse workers from all the distribution centres (DC) in SA. Sixty eight of the questionnaires were returned. The warehouse workers were well represented across the South African warehouse workers with six questionnaires returned from each of the regional DCs, while more than forty five responses had been received from Linbro Park, the headquarters in Johannesburg. Ages ranged from between eighteen to older than forty-six, with the largest sector being older than thirty-six years old. More than two thirds of the participants were male and the racial distribution was a fair reflection of the different races in South Africa. The educational levels of the workers are an important indicator for this research in that it may reflect their potential and yield some information on the current e-readiness level they may find themselves on (Appendix 3.4).

The educational levels as it emerged from the questionnaires are illustrated in Table 3.5.

**Table 3.5 Educational levels of warehouse workers that completed the questionnaire**

Education level	
No formal school education	1
Grade 5 or less	1
Grade 6 – Primary school	3
Grade 7 – Primary school	2
Grade 8 – Secondary school	5
Grade 9 – Secondary school	5
Diploma, but not Std 8	1
Grade 10 – Secondary school	9
Grade 11 – Secondary school	12
Diploma, but not Matric.	0
Grade 12 – Matric	25
Post-Matric Diploma	2
University Degree	2

The basic reason for this questionnaire was to explore if the workers were exposed to technology, and to learn whether they used the computers. I had to know if they were aware of the potential of the computers. I already explained in chapter one that the SCM industry is dependent on technology, and I was sure that they had to be aware of computers, but what I needed to determine was whether computers caused anxiety and negative attitudes. What the questionnaire pointed out to me was that almost all of them indicated that they used the computer in their basic line of work. This gave me a valid foundation to from which to explore e-readiness. Two of the questions referred to internet use, and their reactions to these questions guided me to recognise their basic knowledge of the internet and relating technology. It made the interviews more meaningful, and provided me with relevant, meaningful knowledge to use during the interviews.

### 3.8.2 Interviews

Interviews are one of the major and most common forms of data collection for qualitative research (Erickson, 1986; Merriam, 1998; Radnor, 2001). The main purpose is to explore interesting and relevant aspects related to the research topic or to understand how individuals make sense of their worlds. Interviews are recommended to ensure that the relevant phenomenon is addressed and to explore those things we can not directly observe such as feelings, thoughts and intentions (Erickson, 1986; McMillan & Schumacher, 2001; Merriam, 1998).

The three basic structures for interviews are summarized in Table 3.6.

**Table 3.6 Interview structure types**

Highly Structured/Standardised	Semi-structured	Unstructured/Informal
Wording of questions is predetermined	Mix of more – and less - structured questions	Open-ended questions
Order of questions is predetermined		Flexible, exploratory
Oral form of survey		More like a conversation

(Merriam, 1998 p.73)

The preferred choice of interview for this research was semi-structured, to probe and understand on the cultural readiness, habits and attitudes, and origins of motivation during the interviews. I had structured the interviews loosely around Reeves’ three identified input categories. This “loose structure” is also referred to as an “interview guide” (McMillan & Schumacher, 2001; Merriam, 1998). Open conversation was promoted during my interviews, especially to establish rapport between interviewer and interviewee (Erickson, 1986). The interview structure is available in Appendix 3.11 – Structure of interviews with warehouse workers.

The interviews with the warehouse workers were used to explore their views and experiences with regard to learning with computers, and the possibility to use computers to take responsibility for their own learning. I did not follow a pre-planned strategy, but allowed the atmosphere, signs of respondent anxiety and responses to guide the conversations. I obtained a general idea of the participants’ knowledge of the subject, and tried to focus on their demonstrated readiness as it emerged during the interview.

I recorded all the interviews and transcribed them to ensure comprehensiveness and to provide reliability. Although sources advocate that field notes be taken during the interviews, I minimized this, due to the sensitivity of the unit of analysis and to avoid a perception that they are being checked. I tried to promote an open, warm, conversational atmosphere to imply empathy and understanding. I did this to “convey acceptance to encourage elaboration of subtle and valid data” (McMillan & Schumacher, 2001 p. 449). I realized that they may have felt threatened and focused on creating an atmosphere of trust.

The first few interviews were awkward in that the participants felt that they had been singled out for a specific reason. Fortunately, I was involved in the implementation of a new business initiative known

as “voice picking” in the warehouse. I postponed all the interviews until this project had been completed. The project required me to work closely with the warehouse workers, and I won their trust and friendship during this time. It took almost a month before I started interviewing again, this time with a much improved rapport between interviewer and participants.

All the interviews have been stored as my second hermeneutic unit (HU) on Atlas.ti™ (Appendix 3.12 Hermeneutic Unit 2 e-Readiness of warehouse workers).

*Disadvantages*

I admit that the transcriptions were very time consuming and that interviews usually are one-sided accounts from the participants. Merriam (1998) warns that information may be exaggerated or distorted, therefore I followed recommendations by conducting several interviews and to substantiate specific opinions with observations or documentation. Other disadvantages of interviews are that interviewers may be biased and ask “leading” questions (McMillan & Schumacher, 2001). The participants did not know much about the concept e-learning, and I found that in some cases I had asked some leading questions to explain. The responses that elicited yes/no were ignored during the analysis. I tried to focus on the research problem to avoid invalid information. I was more interested in their skill and competency of e-learning. Table 3.7 illustrates where interviews were conducted.

**Table 3.7 Interviews conducted**

Distribution centre	No of participants	Managers/supervisor
Johannesburg	7	5
Cape Town	2	No interviews
Bloemfontein	1	1
Durban	No interviews	No interviews

Time, finances and distance prevented more interviews – especially in the regional DCs. I conducted interviews and observations where possible, but unfortunately interviews in Durban and Port Elizabeth were not possible due to economic reasons. But by this time I had found that the interviews were almost all following the same pattern, and I decided that it would suffice with the interviews and observations I had thus far.

**3.8.3 Observations**

Observational data presents the observer with first-hand knowledge of the unit of analysis in action. Skilled observers are able to pick up nuances, body language, non-verbal communication, and the results of the encounter being observed (Erickson, 1986; Merriam, 1998).

The literature describes four basic roles of an observer: the complete observer, observer as participant, participant as observer and complete participant (Cohen *et al.*, 2002; Merriam, 1998; Radnor, 2001). I have adopted the role as observer participant, due to my responsibility within our working environment. The observed group was aware that I was observing them during the execution



of their routine tasks. As facilitator with the responsibility to train and prepare the staff for business procedures, I am known to most of the staff, and they were more at ease, and I believe, more “natural” in their reactions during the observations, especially after the completion of the voice-pick project. I had the benefit that I knew most of the warehouse procedures, and had access to most of the warehouse workers. The procedures were familiar to me and consequently enabled me to focus on their demonstrated skills, and their reactions to technology.

Cohen *et al.* added that observations are often combined with other forms of data collection, and “together, elicit the participants’ definitions of the situation and their organizing constructs in accounting for situations and behaviour” (2002 p. 311). This is described as “immersed” in the particular context which will give the researcher the ability to generate “thick descriptions” to understand and interpret the target group’s construction of their reality.

To enhance the validity of my observations, I opted to observe the warehouse workers while they were executing four different activities. “The greater the number of observations, the greater the reliability of the data might be” (Cohen *et al.*, 2002 p. 314). I have observed how the warehouse workers conducted ABET training on computers, secondly I observed them during their normal operational functions when using and working with mainframe systems, thirdly I selected two individuals’ to explore and discuss their behaviour, emotions and expectations during a CBT lesson. The last observation was of a single worker in Bloemfontein completing a specific business operation. I also asked this respondent to show me his e-mail skills.

**Table 3.8 Number and types of observations conducted**

Distribution centre	No of participants observed	Activity
Linbro Park (Johannesburg)	5	Mainframe activities
Linbro Park	4	ABET operation
Linbro Park	2	Tutorial operation
Bloemfontein	1	Mainframe and e-mail procedures

I observed the warehouse workers during four different activities.

*ABET observations*

A selected group of warehouse workers were involved with Adult Basic Education (ABET) programme initiated by the Human Resources department. This ABET programme is presented by means of computer tutorials and learners are left on their own to complete it at specific times during the week, usually in the mornings. This gave me an opportunity to observe some of the warehouse workers while they were busy with e-learning. I conducted three observations on different mornings to observe their basic reactions and body language while they were busy with learning. I did not interact with them at all during these sessions (Appendix 3.12).

The HR training department of IHD has invested in the Adult Basic Education and Training 5.0 (ABET) program from Media-works to train the staff with limited education. The application had been loaded

onto a network server and allowed the enrolled employees to sign on, and to do basic language and numerical exercises. The selected group gets a specified time per day - usually between seven and nine am - three times a week, to go to the IS training room and attend the ABET classes. A group of ten students are currently enrolled for ABET training. The ABET training consists of a series of CBT lessons. Students complete these lessons entirely on their own, and no instructor is present during these sessions. The learner logs on with his name on a preloaded list. Once logged on, a list of courses opens. It seemed that each user's courses have been preloaded against his/her name. The ABET courses gave me an opportunity to observe the unit of analysis' behaviour when they had to do training in their "own" time and without the presence of a facilitator.

#### *Mainframe system observations*

My second round of observations was in the warehouse, to observe some of the warehouse workers conducting their everyday responsibilities on the mainframe system. I deliberately decided to include at least one observation of each main business operation area of the warehouse. I observed six of the warehouse workers while performing their tasks on the mainframe system. The activities I observed were: two pickers picking stock, one male performing receiving duties, a female employee during the manifesting (packing) of stock, and another doing stock replenishments. Their duties required them to use the mainframe system to manage and guide the procedures. I had also observed a single female using the latest voice-picking technology to pick stock by means of audio technology (Appendix 3.13 – observation of voice-pick procedure).

I used a Panasonic digital recorder to capture one minute video clips of the participants while completing their routines. The activities were later described in detail including my reflections and observations. I wrote my observations down and added it to the hermeneutic unit "e-readiness of warehouse workers" (Appendix 3.12).

#### *Tutorial observations*

Enterprise Business Management Systems (EBMS) is an interactive program accessible from the IHD Intranet and illustrates the business processes with flowcharts, and is available to all employees of the company. EBMS did not require developed computer skills, and most information can be accessed by clicking the mouse. It is highly interactive and enables the user to learn more about his business areas, as well as related processes up- and downstream. No typing skills are needed, the most important computer skills seem to be the ability to identify interactive areas, click to drill down and to interpret the screens and information accurately. I developed a tutorial "Working and learning with EBMS" on Macromedia Captivate®.

The tutorial was relevant to all employees at IHD. I didn't know if the warehouse management communicated this to their staff and whether the application was known to the workers. The information on EBMS was specifically of value for staff-related questions regarding leave, benefits, etc. It was for this reason that a question regarding staff leave has also been included in the tutorial. The

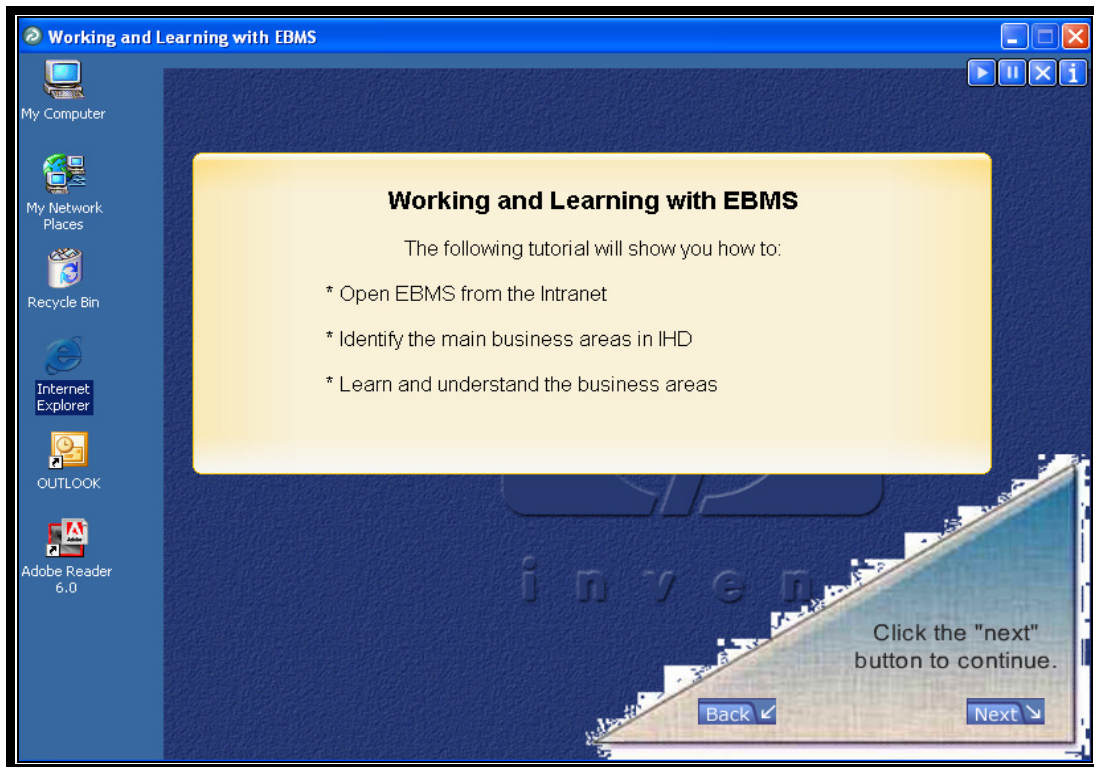
rationale was that if staff knew how to find information on EBMS, they would bother others less with unnecessary queries while having access to such information if they only knew how.

I anticipated that the warehouse workers may find it difficult at first to identify the business areas accurately, when confronted with the flowcharts. They work in very practical areas with logical and physical flow, while EBMS presented the business area in a very theoretical way. I expected them to be confused at first. I simulated the normal actions to open EBMS and the drilling down activities to find information on selected business areas. I expected the warehouse workers to initially struggle to find their way with the tutorial, unless given a thorough briefing. I knew that experienced web browsers and e-warehouse workers may not find any problems with this.

For the requirements of my research, I knew I had to adapt to the level of my target group, the warehouse worker. I did not know how informed they were regarding EBMS, or if they had access to the intranet to open this facility. I decided to develop and author this tutorial only when I had finished most of the interviews. This proved to be a wise decision, for I learnt that very few of the workers had ever worked or browsed on the intranet. The tutorial is titled: *Working and Learning with EBMS* (Appendix 3:14).

#### *Tutorial design and navigation*

The screen layout consists of three main areas. The content area which is the main focus area (displayed information), the navigation instructions area and the text area box that explains or informs the user of the content he sees. The navigation instructions, with “next” and “back” buttons are situated in a triangle at the right hand bottom of the screen. The navigation instructions are intended to stand out from the rest of the information, to provide new users with the quick assurance that they are in control. I reasoned that the sooner the users learn that they are in control and have the option to determine their destiny, the easier they will concentrate on the content to be learned. The text boxes in shades of light yellow, contrast with the main background information. It can easily be distinguished from the rest of the information displayed on the screen. The purpose is to explain and provide information regarding the displayed screen. Figure 3.6 illustrates the three main information areas of the tutorial.



**Figure 3.6** Screen lay-out of the EBMS tutorial with information and navigation areas

I have selected two warehouse workers to complete the tutorial while I observed their actions and interviewed them. Both were selected by their supervisor. Although the two participants were male and female, the aim of the research was to focus on their skill and perception of e-learning, therefore no conclusions were made to their differences or similarities with regard to their gender. The observations were made in my office, away from the warehouse activities. I recorded their actions with my digital video camera, and interviewed them while executing the tutorial. For both participants, several one minute videos were recorded and transcribed (Appendices 5.16 to 5.44).

#### *Disadvantages of observations*

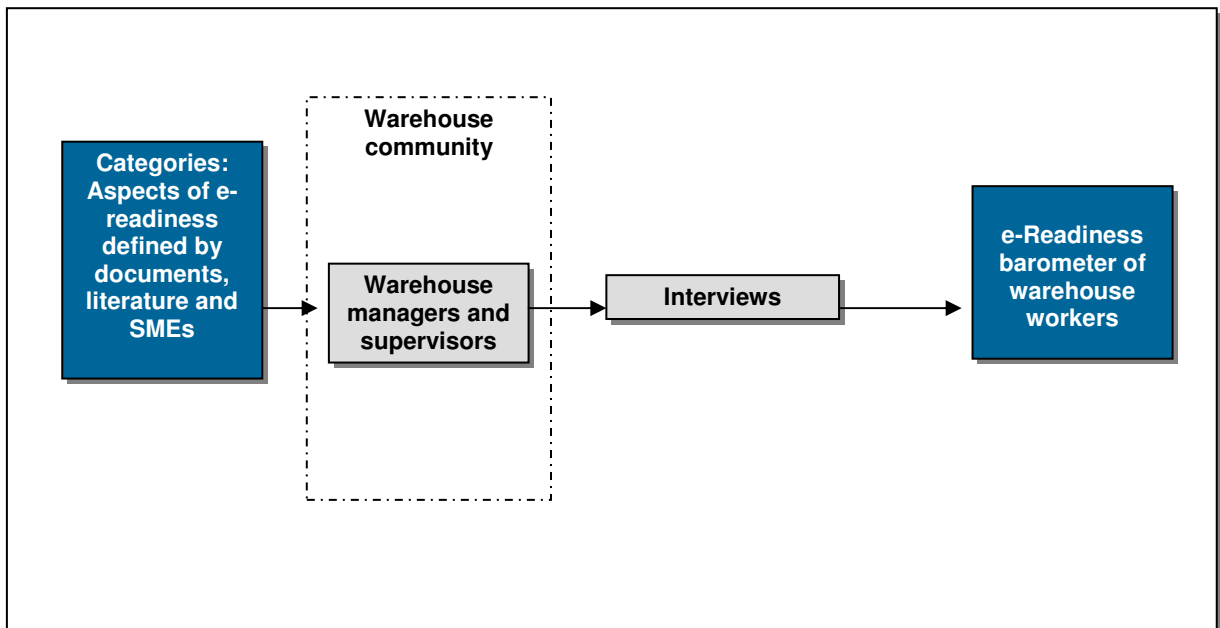
The observer can be biased and observe only what he wants to. Gans in Merriam (1998 p. 103) mentions "a tendency to over identify with the people to be studied". Another disadvantage may be that the observer's presence might change the behaviour of the participants (Merriam, 1998). I have found that I have been subjected to both these disadvantages, hence my decision to observe different activities, people and in different places. I also tried to identify and eliminate this over identification and conforming behaviour as far as possible by focusing on the displayed skill levels of the participants.

### **3.9 Phase 3 Interviews with warehouse managers and supervisors**

Lastly I conducted interviews with managers and supervisors of the warehouse workers. Table 3.3 indicates that six managers and supervisors were interviewed: one supervisor and two warehouse

managers, a manager of one of the regional DCs, the HR training manager and the network manager of the information systems department. I included the HR training manager to explore his understanding of training and his perception of the warehouse workers' e-readiness. The interview with the information services network manager aimed to probe the technical readiness of and access to technology by the employees in the warehouse.

Again the interviews were semi-structured, to allow the participants some kind of freedom and to eliminate a feeling of "being interrogated". Especially since they were responsible for the career plans of the staff reporting to them, and may experience a feeling that they are under scrutiny. I needed them to speak freely regarding their views and perceptions of learning with technology.



**Figure 3.7 Data Collection Phase 3 Warehouse managers and supervisors**

Figure 3.7 illustrates the activities of phase three. It was aimed to add to the data collected during phase two and to present another angle of the perceived e-readiness of warehouse workers. I wanted to probe and explore the guidance and direction the warehouse workers received with regard to their e-readiness.

### 3.9.1 Making use of Atlas.ti™ to prepare the data analysis

When all the interviews with the warehouse workers and managers were completed, I transcribed them and saved them on the CAQDAS Atlas.ti™ as HU "e-readiness of warehouse workers" (Appendix 3.12). The interviews and observations culminated in one integrated dataset and consisted of three primary documents. Primary document one (P1) refers to the input received from the SMEs, P2 is the warehouse worker transcriptions and P3 is the manager interview transcriptions. This HU became my main source of data to be analysed for the e-readiness of the warehouse workers.

Atlas.ti™ references indicate where these comments can be found in the hermeneutic units. I used the Atlas numbering code to identify quotes from the primary documents. A quote can be identified as 3:33 (195:200), which means it is quoted from primary document three, quotation number thirty three and ranges from lines 195 to 200 in the specified primary document. The comments made by participants during interviews and observations are quoted verbatim in italics. Afrikaans quotations are translated, with the original quotes added as footnotes.

I eventually made use of two HUs on Atlas.ti™. The first HU *Elements of e-Readiness* (Appendix 3.9) was generated from the SME interviews and used to determine the main categories of e-readiness as described in chapter 4. The second HU *e-Readiness of Warehouse Workers* (Appendix 3.12), was used to analyse the questionnaires, interviews and observations of the SMEs, warehouse workers and their managers as will be described in chapter 5.

### **3.9.2 Defining theory codes and conceptual codes of e-readiness**

I have identified six categories or dimensions of e-readiness from the literature. For the requirements of my study I refer to these as *theory codes*, to make a clear distinction of the literature-related dimensions of e-readiness. These six theory codes were instrumental in formulating my research questions during the data analysis.

The aspects of e-readiness that emerged from my data analysis were referred to as *conceptual codes of e-readiness* of the warehouse workers. I used Reeves' three inputs to structure the SME information and eventually identified ninety-nine conceptual codes of e-readiness. These conceptual codes were rated by the SMEs and together with the six theory codes obtained from the literature culminated in the six sub-questions to guide and structure the data analysis as described in chapter five. The analysis of the six questions eventually resulted in twenty conceptual codes of e-readiness, and was then related to the theory codes to generate the seven main findings of this study. Where I used deductive reasoning during the literature review to generate the categories of readiness, I used inductive reasoning to generate an e-readiness barometer of warehouse workers. Patterns and trends emerged during the data analysis and enabled me to define an opinion of the e-readiness of the warehouse workers. I used the information thus gained to determine the e-readiness of the warehouse workers.

The data I used did not represent any statistical inferences, nor did I want to reach any conclusions with regard to the number of occurrences of a specific code. I merely related my interpretation of the data and explored the importance of specified aspects of e-readiness, and how the warehouse workers and their managers responded to specified theory codes.

### 3.10 Validity

In qualitative research, validity refers to the depth of the investigation, the angles of approach, the data gathered, analyses and further investigation, the extent of crystallisation, the position of the researcher during the research, and the objectivity of the report.

Cohen *et al.* (2002) used principles from Lincoln and Guba (1985), Bogdan and Biklen (1992), Giddens (1979), Lave and Kvale (1995), and Geertz (1974) to provide a summary of naturalist research. The unit of analysis is investigated in its natural settings in a clearly defined context. The researcher finds him/herself totally absorbed and part of the social situation of the target group. They agree that the researcher, who is in turn to be interpreted by him/herself at a later stage, is interpreting the observed situation from a holist point of view. An inductive data analysis follows and reporting must always be provided from the participants' point of view (Cohen *et al.*, 2002).

Maxwell (in Cohen *et al.*, 2002) explains validity in qualitative research by means of five types of validity. *Descriptive validity* that ensures facts are true and not distorted, *interpretive validity* to ensure that the investigator has the ability to understand the situation accurately, and *theoretical validity* ensures the investigator has the ability to reflect the true meaning of events. *Generalisability* refers to the possibility to make the researched situation applicable to other environments, and lastly, *evaluative validity* that takes a single unit of research and subjects it to critical evaluation.

Validity is further obtained by classifying the *internal* and *external validity* of the research. Cohen *et al.* draw from LeComte and Preissle (1993) to identify several kinds of internal validity. Among these are the authenticity cogency of the data and soundness of the research design. Also included are aspects like credibility, auditability, dependability and confirmability of the data (Cohen *et al.*, 2002). This can be achieved by being balanced in the representation of results, by being authentic in the approach and succeeding in making the unknown known. New knowledge should emerge from this data and should give rise to new actions to be undertaken (Cohen *et al.*, 2002). Merriam (1998) classifies six strategies to ensure internal validity. These are *crystallisation*, that means that data obtained from several investigators, sources, methods should be used to compare findings with one another. Secondly, *member checks*, where the data and findings is verified by other participants. *Long-term observation* to gather data over an extended period to increase validity, *peer examination* refers to getting the opinions of colleagues and co-workers. Lastly, *researcher bias* should be cleared by clarifying the researchers' assumptions, views and theoretical orientation before starting the research (Merriam, 1998 p. 205). Crystallisation was used to validate data for this research.

This research is crystallised by investigating several workers from five different DCs in South Africa. Peer participants will assist to confirm or reject findings. Crystallisation is obtained by conducting interviews with participants from all the five DCs in South Africa, by conducting different observations during the execution of three different activities, and to compare findings with one another (Appendix

3.15). External validity refers to the applicability of the results and research findings to a wider environment, or generalising them for other situations. The depth and essence of the research makes it “comparable and transferable” to other situations (Cohen *et al.*, 2002 p. 109).

In my research, the construct "e-readiness" is carefully defined, so that a clear and exact understanding is formed before any interviews or observations were undertaken. This is one of the reasons I decided to conduct interviews with the subject matter experts first, to get a clear understanding of what an “e-ready” learner must be. The position the researcher takes, the ability to ignore personal biases, and above all, the ability to understand the participants’ views, attitudes, habits and actions within the context of the researched situation, relates directly to validity of the research.

### 3.11 Reliability

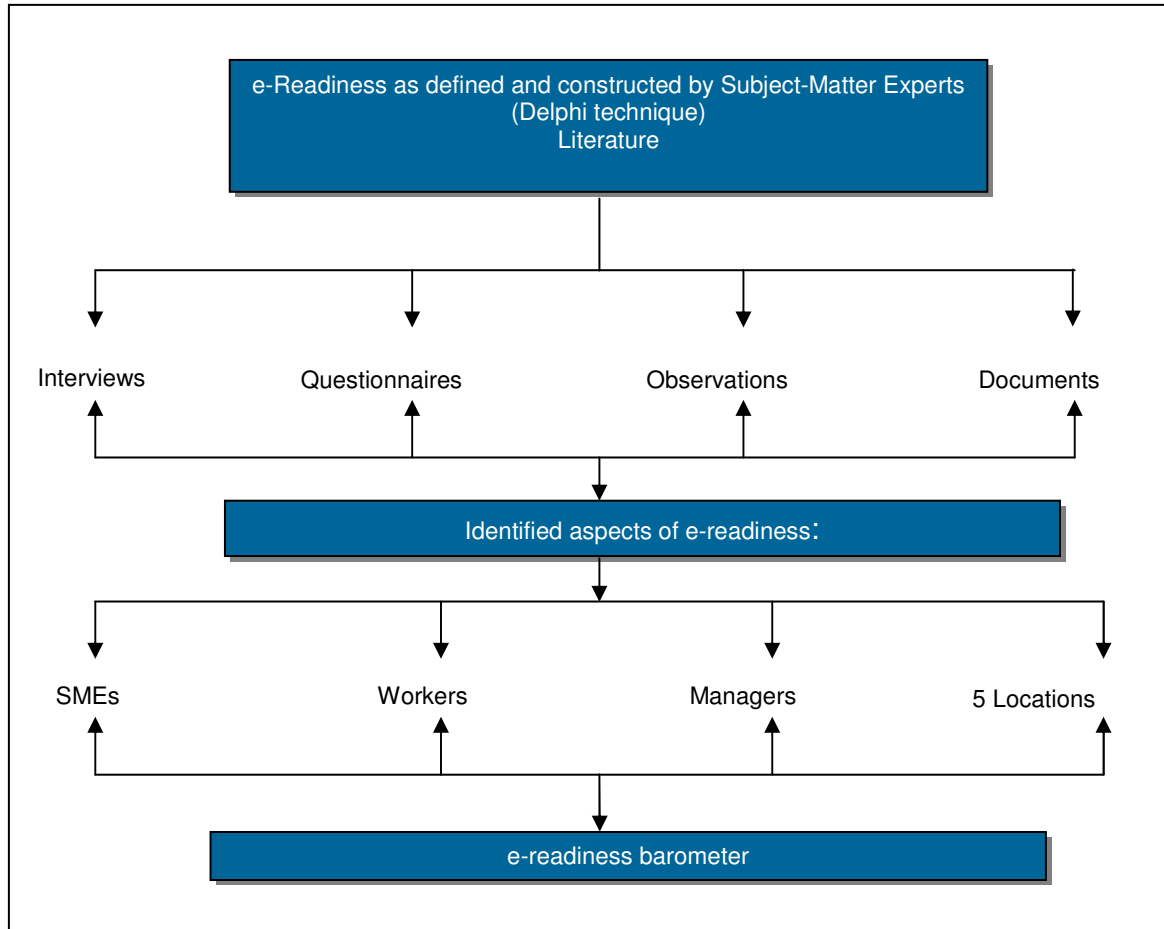
Reliability in qualitative research is not as clear as in quantitative research (Cohen *et al.*, 2002; Merriam, 1998) “In qualitative research reliability includes fidelity to real life, context- and situation-specificity, authenticity, comprehensiveness, detail, honesty, depth of response and meaningfulness to the participants” (Cohen *et al.*, 2002 p. 120). Replication in qualitative research is not possible as a repeat of the same research will not yield the same results because “human nature is never static” (Merriam, 1998 p. 205).

Reliability in interviews is achieved by minimising the bias of the interviewer as far as possible. The reliability of observations is also threatened if the observer is ignorant of all factors, such as cultural habits. Another aspect that may affect reliability in observations is the fact that “different behaviours may occur”, or the observer may become too involved to see the behaviour clearly (Cohen *et al.*, 2002 p. 129). Merriam (1998 p. 206) describes reliability for qualitative studies as “results [which] are consistent with the data collected”, and recommends the following techniques:

- researchers should be clear and unambiguous regarding their positions and theories for the research
- explain the sample selection and the social context of the data collection
- crystallize the results using multiple methods of data collection and analysis
- present an audit trail by describing clear and specific explanations of how data is collected
- categories derived, and how decisions were made (p. 207).

The concept readiness implies a condition which is not easily measurable in terms of numbers, and it implies a subjectivity that makes the risk very high. I am aware of these risks and aim to minimize the risk by the data collection strategy illustrated in Figure 3.8. It summarizes the data collection strategy where it started from the literature, drew information from the SMEs to guide the interviews with warehouse workers. Questionnaires and different types of observations were used to collect data. The unit of analysis included warehouse workers, managers and supervisors. These different approaches and collected perceptions of the warehouse workers were used to enhance the validity and reliability of this research.





**Figure 3.8 Reliability and validity ensured by several collection strategies**

### 3.12 Data-analysis

Content analysis is believed to be a suitable data-analysis technique for qualitative case studies: “in one sense, all qualitative data analysis is content analysis in that it is the *content* of interviews, field notes, and documents that is analyzed” (Merriam, 1998 p. 160). Merriam states “Although categories and ‘variables’ initially guide the study, others are allowed and expected to emerge throughout the study” (1998 p. 160). Specific words, concepts, implications of meanings have been identified in the form of codes, and then categorized to describe concepts of e-readiness (Busch *et al.*, 1997). Busch listed the possibilities for content analysis:

- identify the intentions, focus or communication trends of an individual, group or institution
- describe attitudinal and behavioural responses to communications
- describe psychological or emotional state of persons or groups.

Content analysis allows me to explore and possibly reveal the warehouse workers’ “... focus, attitudes, habits, motivations and definitely their psychological or emotional states” (Busch *et al.*, 1997).

The documents, questionnaires on the biographical data, interviews with the subject-matter experts, interviews and observations of the warehouse staff yielded a large number of data. 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). My adopted interpretive approach enabled me to understand and report the views and culture of the target group (Ritchie & Lewis, 2003).

For me to make general statements about relationships among categories of data, I had to look for patterns. These patterns are the relationships that may exist between categories (Busch *et al.*, 1997; McMillan & Schumacher, 2001). I have used this “integrated dataset” to code all identifiable concepts on Atlas.ti™. I then used these to create categories of codes. Categories are seen “as ways to group, display and discuss data thematically such that comparisons between conceptual content can be made or further discussions be pursued” (Ritchie & Lewis, 2003 p. 205). Chapters 4 and 5 describe how the data had been analysed, coded, categorised to explore patterns. These patterns are directly related to my research questions.

Phase 1 of my data collection strategy comprised the identification of readiness categories by means of secondary and primary data. I had the initial challenge that e-readiness is a general concept and people may have different perceptions of such readiness. I had to generate a general consensus of what is meant by “e-readiness”. I generated diagrams of the ratings received by the SMEs to ensure that the most important elements were addressed during this research. Phases two and three of my data-collection procedure have resulted in an integrated and single dataset on Atlas.ti™. This hermeneutic unit is labeled “e-Readiness of warehouse workers” (Appendix 3.12). All the interviews, observations and questionnaire data have been coded to assist me in categorizing the data in the conceptual codes of e-readiness as established during phase 1. Codes were generated for each item of text, to embody the central message of the selected text or word. They were not coded beforehand, to ensure the “emergence” of data from the target group’s point of view. These rich descriptions resulted in 348 identified codes. These codes were then sorted, reduced and organized to eliminate duplication. I eventually ended with 208 codes. Atlas.ti™ was then used to identify relationships and to identify categories that may be grouped into the main categories of e-readiness elements. Or, as described by Ritchie and Lewis: “the construction and assignment of labels, the bringing together of similar material, the summarizing of original text all require an interpretation of what has been said or observed” (Ritchie & Lewis, 2003 p. 237).

I then referred to relational analysis to identify relations between the identified patterns (Busch *et al.*, 1997). Cognitive mapping was used to draw maps and to explore the emerging relationships between categories and patterns. “Maps of mental models are representations of interrelated concepts that reflect conscious or subconscious perceptions of reality, language is the key to understanding these models, and these models can be represented as networks” (Busch *et al.*, 1997). Reliability had to be ensured to make the coding valid. According to Busch (1997) reliability can be ensured by deciding on a set of rules when coding. To make sure that I used a set and a stable structure to code text, I

deliberately read only the words or concentrated on shorter paragraphs to establish the meaning. Although I knew the context of the communication, I tried to create a first rule by merely identifying the content of that specific word or paragraph. Atlas.ti™ assisted me to get a list of codes that implied single words first. The second time round I highlighted paragraphs, and coded them. Only when I had finished most of my coding, did I address the deeper meaning of the communication to code the concepts.

To achieve validity for this research, conclusions have only been drawn as they relate to the codes and identified categories. Questions were represented in the identified patterns. All findings are discussed and explained from the patterns and their related categories and codes as they emerged.

### **3.13 Ethical issues**

“Qualitative researchers are guests in the private spaces of the world. Their manners should be good and their code of ethics strict” according to Stake (1994) (in Merriam, 1998 p. 214). Interviewing can make participants feel exposed and might threaten their privacy, or even give them a sense of false importance that their opinions are valued in certain circumstances. All interviewees have to be informed of the purpose of the research and their consent should be given before any interview is conducted (Cohen *et al.*, 2002). I have received informed consent from the supervisors and management by means of a signed document that permitted me to conduct research in the warehouse with selected workers (Appendix 1.1 - Permissions to conduct research with warehouse workers at IHD).

I have also explained at the beginning of each interview that the interview was voluntary and that the participants may withdraw whenever they wanted. I tried to avoid suspicion and wariness at all costs, therefore did I not make them sign any physical document before starting the interviews. I believed that such a signing may have influenced their trust in me, and that they would be wary of what they said, especially regarding the guidance and support they received. I gave them the option to withdraw immediately, or at any stage of the interviews or observations. I have also promised them anonymity. I was also constantly aware of the fact that the interviewer’s main purpose was to understand, and not to pass judgment or evaluate information at any stage (Merriam, 1998). In all cases, the participants agreed, and participated freely.

Observations pose ethical questions in that the observer needs to be inconspicuous, yet has to have permission to observe. A dilemma may arise in that the observer may be compelled to intervene. The observer should be very aware that his/her main purpose is to understand the actions within the conditions he has set out to investigate from the start (Merriam, 1998). I have pledged to respect and protect the dignity and identity of all participants throughout this research, according to the Ethical Statement and Procedures preventing Plagiarism of the University of Pretoria (University of Pretoria: Faculty of Education, 2005). I have also pledged to support:

- the principle of *voluntary participation* in research, implying that the participants might withdraw from the research at any time
- the principle of *informed consent*, meaning that research participants must at all times be fully informed about the research process and purposes, and must give consent for their participation in the research
- the principle of *safety in participation*; that the human participants must not be placed at risk or harm of any kind
- the principle of *privacy*, meaning that the *confidentiality* and *anonymity* of human participants must be protected at all times, and
- the principle of *trust*, which implies that human participants will not be subjected to any acts of deception or betrayal in the research process or its published outcomes (University of Pretoria: Faculty of Education, 2005. Purpose of ethical statement.).

Appendix 3.1 refers to the ethical statement.

### 3.14 Limitations

The interpretive strategy always has a risk of subjectivity, and researchers may easily be caught up in a situation where the focus can be lost. The researcher needs to be well aware of his/her own experience and stance regarding race, class, gender, age, and the way these factors may influence his/her interpretation of a situation (Erickson, 1986). To be unobtrusive during observations is not easy, but this should be the goal.

During observations, the participant may regard the observer as an outsider and as a result may not act naturally. It is the responsibility of the observer to consciously remind him/herself of this, and try and counter this by being present as often as possible thus making his presence as unobtrusive as possible. Erickson lists four types of problems typical of poor qualitative research:

- Inadequate amounts of evidence. Collected data may not shed any light on the initial research problem, and an insufficient quantity of information is directed at the initial problem;
- Inadequate varieties of kinds of evidence. Lack of adequate research methods and sources results in unsubstantiated evidence.
- Inadequate attention to disconfirming data. Uncovering and analysing “disconfirming” data is just as important as substantiating information.
- Lack of attention to discrepant cases. Care should be taken that unexpected results are not discarded just to concentrate on evidence to support an argument (Erickson, 1986 p.140).

Qualitative research is formed by well-structured questions, and data are collected by being extremely focused on the unit of investigation being observed or interviewed.

I am aware of the fact that I am a white male researcher, and directly involved with the warehouse workers. I was also extensively aware of researcher orientation (Mouton, 2002) during my data collection strategies, especially in the light of South Africa's racial history. I agree that I am therefore very open to be biased, in that I may “see only what I want to”, and report the findings in a subjective manner. My race may also be a limitation in that my culture differs from most of the target group. I was constantly aware of this racial orientation during the interviews and observations, and went through special considerations and exercises to create an open relaxed atmosphere during the interviews and observations. Being subjective is one of the attributes of qualitative, interpretive research, and I do not claim not to be subjective, but I tried to eliminate researcher bias by using several data collection methods, and by selecting a very open and simple data-analysis strategy. I

made a point of it to record comments and remarks accurately, so that I would have the opportunity to understand the messages these contained, rather than my immediate response or understanding during the interviews. I also aimed to see the situation from the participants point of view at all times.

I believe this research is also very subject to the “omniscience syndrome” (Mouton, 2002 p. 153) meaning the belief of participants to answer questions about which they have limited knowledge. When asked whether they would be able to undergo computer training, all answered in the affirmative, while I knew that most did not really know what it entailed. I had to make a special effort to identify these responses and to concentrate more on skills and competencies of computer usage.

Participant attitudes were also under scrutiny. Attitudes to technology was one of the main variables that I needed to explore, and I was focused on their attitudes from the outset. I tried to discern between “attitudes of being selected for the interview” (false perception of being singled out) and the general attitude towards technology. It was for this purpose that I decided to observe the workers when they use technology. I believed that this would give me an opportunity to explore their attitudes and skills to use technology. I had the privilege to be involved in an earlier project prior to my observations where I had to be present in the warehouse almost every day. This opportunity provided me an element of unobtrusiveness that is needed for observations.

I am aware that I will never be able to explore and understand the warehouse workers from each individual’s point of view, as they represent all races and almost all cultural groups in South Africa. I tried to explain to them that this research was aimed at a target group analysis, and to conduct a bottom-up approach to prepare e-learning content that may be relevant and applicable for them at their levels. I also invited them to give me their account of what works for them and what not. During these interviews I tried to be sensitive to the culture, habits, and traditions as found within the South African context. I realized that it would be impossible to conduct research from every cultural point of view, but I concentrated mostly on the business culture, and acknowledging that the warehouse workers hail from all the ethnic groups in South Africa.

### **3.15 Summary**

My interpretation of e-readiness is based on a qualitative case study, with the intent on understanding the emotional, technical, educational and social aspects that may determine the e-readiness or lack thereof of warehouse workers. Individual perceptions were used as a guide and as indicators of the levels of preparedness to learn by means of computer technology. The warehouse workers as a specific community in South Africa were investigated as a case study. Interviews, documents and observations have been used to collect data and evidence of e-readiness. Inductive and deductive arguments were used to organise, analyse data and construct rich descriptions of the preparedness for e-learning of warehouse workers.

My research aimed to find information, and reveal structures, meaning-perspectives, causal links and local events intrinsic of the target group. When planning e-learning for warehouse workers we need to identify fears, uncertainty, confidence, skills, and determine levels of e-readiness before recommending or constructing possible learning solutions. However, I do believe that follow-up research on e-readiness can be focused on development of e-learning strategies for warehouse workers, especially in the South African environment.



## Chapter 4

### 4..... IDENTIFYING THE ASPECTS OF E-READINESS

- 4.1 Introduction
- 4.2 Results of subject matter expert ratings
  - 4.2.1 Cultural influences on learning
  - 4.2.2 Environmental learning culture
  - 4.2.3 Attitude and Aptitude Influences Personal Learning
  - 4.2.4 Attitude and Individual Differences Influenced by Environment
  - 4.2.5 Origins of Motivation – Personal attributes
  - 4.2.6 Origins of Motivation Influenced by the Environment
  - 4.2.7 Summary of SME evaluation
- 4.3 Emerging theory codes to structure the research for e-Readiness
- 4.4 Summary



## 4 Identifying the Aspects of e-Readiness

### 4.1 Introduction

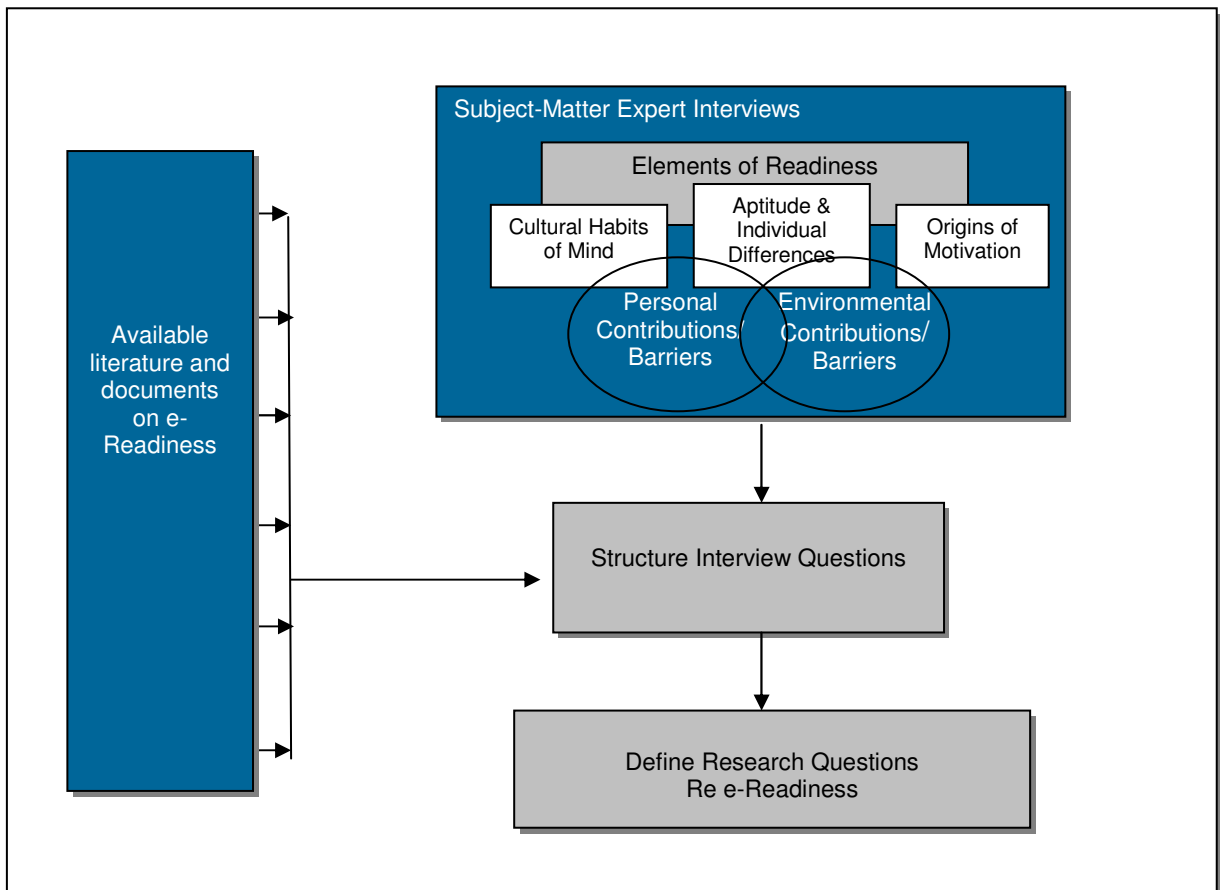
This research project began when I was confronted with the challenge to design and develop e-learning for warehouse workers. It took some time to define the academic puzzle: what aspects of e-readiness can I identify to substantiate the effort to develop e-learning for this group of learners? I gained some understanding into the problem after I had consulted Reeves' (1999) advice to instructional designers when designing learning on the web. Aspects of readiness can have different meanings to different groups in different places in the world. My research guided me to understand and view my unit of analysis to be part of a developing community who is exposed to the effects of the digital divide. I learnt that regardless of this deficit, warehouse workers are surrounded by technology in an industry that will survive only when it employs the latest technological innovations in SCM.

Previous research revealed that technology has been introduced in developing communities over the world, with mixed successes. One specific recommendation from these studies was to take a bottom up approach. My understanding from these recommendations was that the learners, for whom the training has been intended, had not been thoroughly consulted or involved in a training plan that was supposed to change their lives. Learning is meant to have a permanent impact on the students' life, it served as a timely reminder for me to include the learners in my planning. Instructional design can only be successful if preceded by a thorough target-group analysis. Many colleagues are of the opinion that to realise e-learning for a group that are not motivated to learn on their own, is merely a waste of time and money.

In South Africa, we find ourselves in some kind of a paradox when e-learning is discussed for a community of warehouse workers. Classroom training is their only-known learning strategy, and a habit has developed over the years that the training facilitator is responsible for the development of employees. This condition adds fuel to notion that an inner drive to learn must exist before self-driven learning can be introduced. Extrinsic motivations are provided by the South African government by promoting and supporting the introduction of IT training and usage to all the communities – especially to previously disadvantaged groups. Training and learning institutions heeded the request and forms of IT training is aggressively promoted and advertised in South Africa today. Sadly, very few online courses are available for learners with the stature of warehouse workers.

It is for this reason that I have decided to make use of an interpretive research design. I followed a bottom up approach and explored the e-readiness of the warehouse workers from their viewpoint. In the previous chapter I described how the data had been collected in three phases. I have also explained the research design, the selection of the unit of analysis and methods to collect data. This chapter reports on the results of the data collected during phase 1.

The purpose of phase one was to review the literature and determine what types of e-readiness research has already been conducted. The information collected from the literature, together with global e-readiness reports were used to identify categories of e-readiness. The purpose here was to identify the main aspects that were considered when e-readiness was discussed or reported. Figure 4.1 illustrates the first phase of the data collection strategy.



**Figure 4.1 Data Collection Phases**

I have studied readiness assessments from the University of Georgia, Powell, Guglielmino and Guglielmino, APEC, Harvard University, MIT, Huang *et al*, PriceWaterhouseCoopers, Cisco, Ifinedo and Bridges.org. Most of these e-readiness assessments are used to evaluate countries and organisations at the macro level, with only a few that concentrate on individual or group levels. It seems that a consensus exists on what should be assessed when e-readiness is explored, with differences relating to the purpose of the assessment. The literature review (chapter 2) discussed several of these assessments to identify the dimensions deemed to be important for assessing e-readiness. My research focuses on the warehouse workers as a community and with the aim to understand the community through the workers as individuals.

I then interviewed eight local subject-matter experts to get each one's own account of what they perceive to be the most important elements to be present in e-learning. With the help of Atlas.ti™ I generated a list of e-readiness elements. I categorised the readiness elements I received from the experts and then requested them to rate the elements in importance. I received ten SMEs' ratings and

categorised them into the synthesis of categories I had generated from the literature. These six categories became my guidelines to structure the interviews to explore the e-readiness of warehouse workers.

The purpose of chapter four is to identify important aspects of e-readiness. The main research objective is to explore the aspects that contribute to the e-readiness of the warehouse workers. To start this process, I needed to identify the aspects that are generally regarded to be the main categories of e-readiness. To do this I needed to find answers to the following questions: Which aspects are identified by the literature to evaluate e-readiness of communities? Secondly, I needed to identify the aspects to be considered to be present in the warehouse community to evaluate their status. I aimed to identify a basic framework to work from when interviewing the warehouse workers to explore their e-readiness.

The next section deals with the e-readiness as gathered from the available literature, to identify the aspects of e-readiness.

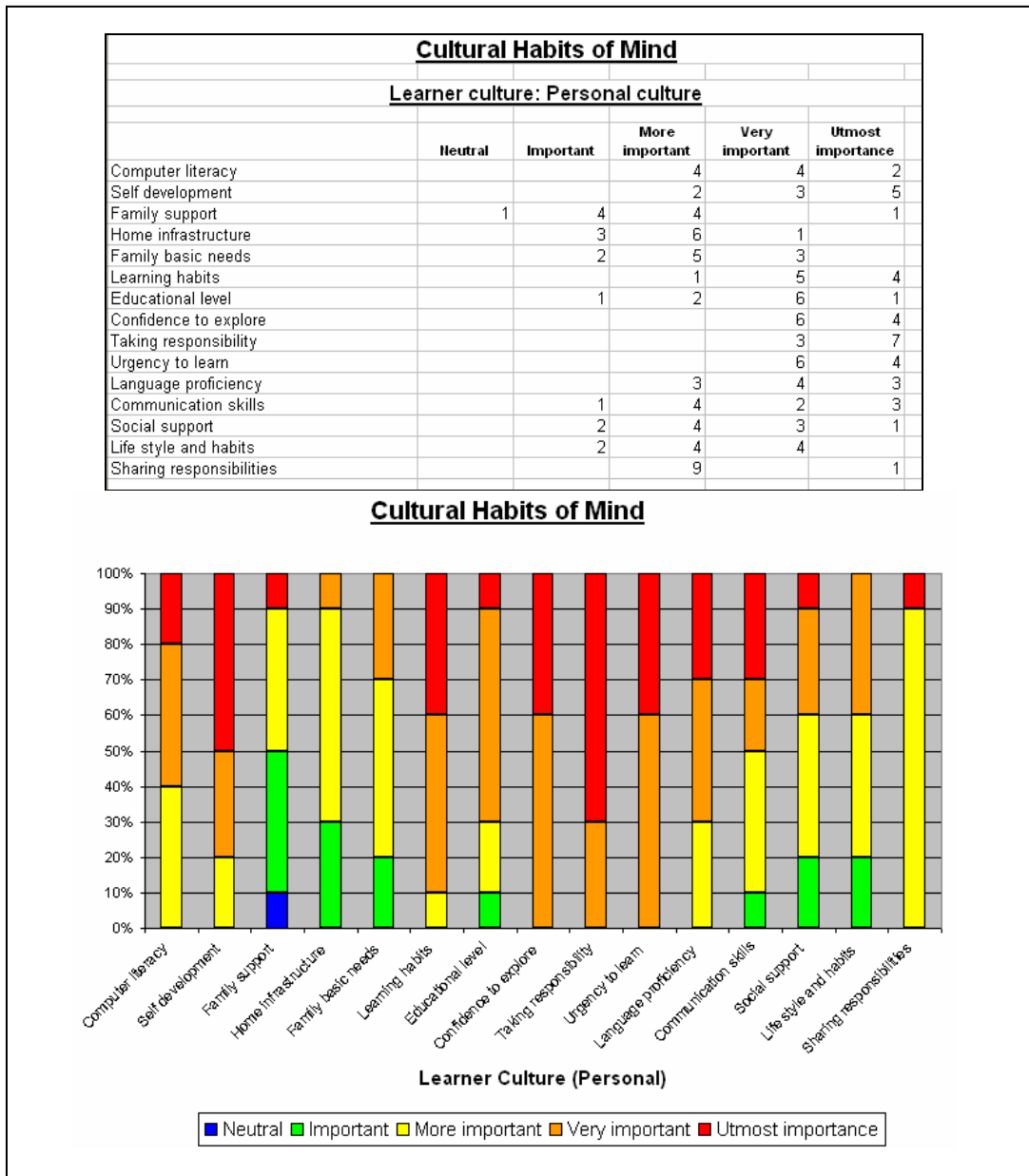
## **4.2 Results of subject matter expert ratings**

I discuss only the elements rated to be the most important by the group of SMEs (Appendix 4.1 – highest frequency of codes). Tables 4.10 to 4.15 illustrate the importance ratings by the experts. The following paragraphs discuss the results and comments by the experts during the interviews. It is from these rated elements that I drew my main queries to be explored in the interviews with the warehouse workers. I discuss the aspects as categorised in Reeves' model under the headings "Cultural influences, attitude and individual differences and origins of motivation" (Reeves, 1999). I do not discuss all the aspects rated by the SMEs, but only those that were rated to be the most important, or where I had come across a significant outcome.

### **4.2.1 Cultural influences on learning**

SMEs had to rate the aspects from "neutral, important, more important, very important" and finally to be "of utmost importance". The accompanying bar-graph, with Tables 4.1 to 4.5, indicates the inclination towards a specific aspect. Red and orange colours are used to indicate the more important aspects, while green and yellow are used to identify the aspects believed to be less critical. These graphs enabled me to identify the SMEs' preferred aspects of e-readiness (Appendix 4.2).

**Table 4.1 Cultural Influences on e-readiness: Personal**



The e-readiness elements as contributed by the individual that were rated highest by the subject-matter experts regarding cultural influences were: taking responsibility, self development, confidence to explore, urgency to learn and learning habits (Table 4.1).

The experts emphasised the importance of the individual’s intrinsic drive and ability to learn on his/her own. Learners should take responsibility and “want” to develop their knowledge and skills. As described by one of the experts: *I find the learner to be the biggest restriction. They should decide for themselves whether they want to learn more and go that route* 6:33 (195:200). Another expert said *You need to motivate yourself to learn*<sup>2</sup> 7:30 (275:276) and added that the learner’s ability to learn on his own may

<sup>2</sup> “Jy moet uit eie motivering hier wees”.

be the most important aspect of all ...*to accept the responsibility to master content within a specified time*<sup>3</sup> 8:2 (7:9).

Some SMEs believed that there is no culture of self learning. In the words of one respondent: *The key for me is 'I want to'. If I don't want to learn, it's not going to happen*<sup>4</sup> 8:29 (182:185). The same respondent added that extrinsic motivation like a salary incentive may be a short term solution, but next year the same problem may prevail. *It comes from the heart, if he doesn't have it, he won't learn to do it by himself. You may motivate him extrinsically by offering a higher salary, but next year the same problem will appear*<sup>5</sup> 8:31 (191:194). Another respondent reiterated that a resistance to learn is sometimes found: *I find that there is a resistance to learn, and to do more from your own point of view, that sel- driven learners are really very, very scarce* 5:21 (98:100).

The culture of learning by him/herself goes hand in hand with confidence, as explained by a following respondent:

- *despite the availability of technology, learners are not exposed to its everyday use often enough. This causes them to miss out on an opportunity to grow in confidence* 3:17 (68:70).
- *These learners need to get practical experience how to use the computer. He can be introduced to the computer by playing games and experiencing the use of the technology. Keep this up until he is comfortable and confident* 5:4 (24:28).

The same respondent referred to the urgency to learn and possible change of attitude: *when benefits are experienced and seen. Your main focus should be to remove the threat and focus on the positives* 5:49 (236:238).

I found it interesting that the SMEs did not think that family support was critical to establish a learning culture. Although important, I understood from the interviews that the belief was that the learning culture had to be developed at the workplace, because this was where the access to technology was mostly possible.

To summarize, from a learning culture point of view, it was evident to me that the experts believed that a culture of self motivation is critical for self-driven learning. The interviews also indicated that the methods used by the instructional designer can be critical in the development of a learning culture if the learner is exposed to the technology often enough.

#### **4.2.2 Environmental learning culture**

This section refers to organisation, background and personal environment that may contribute to a learning culture. The following aspects have been rated by the SMEs to be critical. (Table 4.11). Time for learning and managerial guidance were the two most critical elements listed by the experts.

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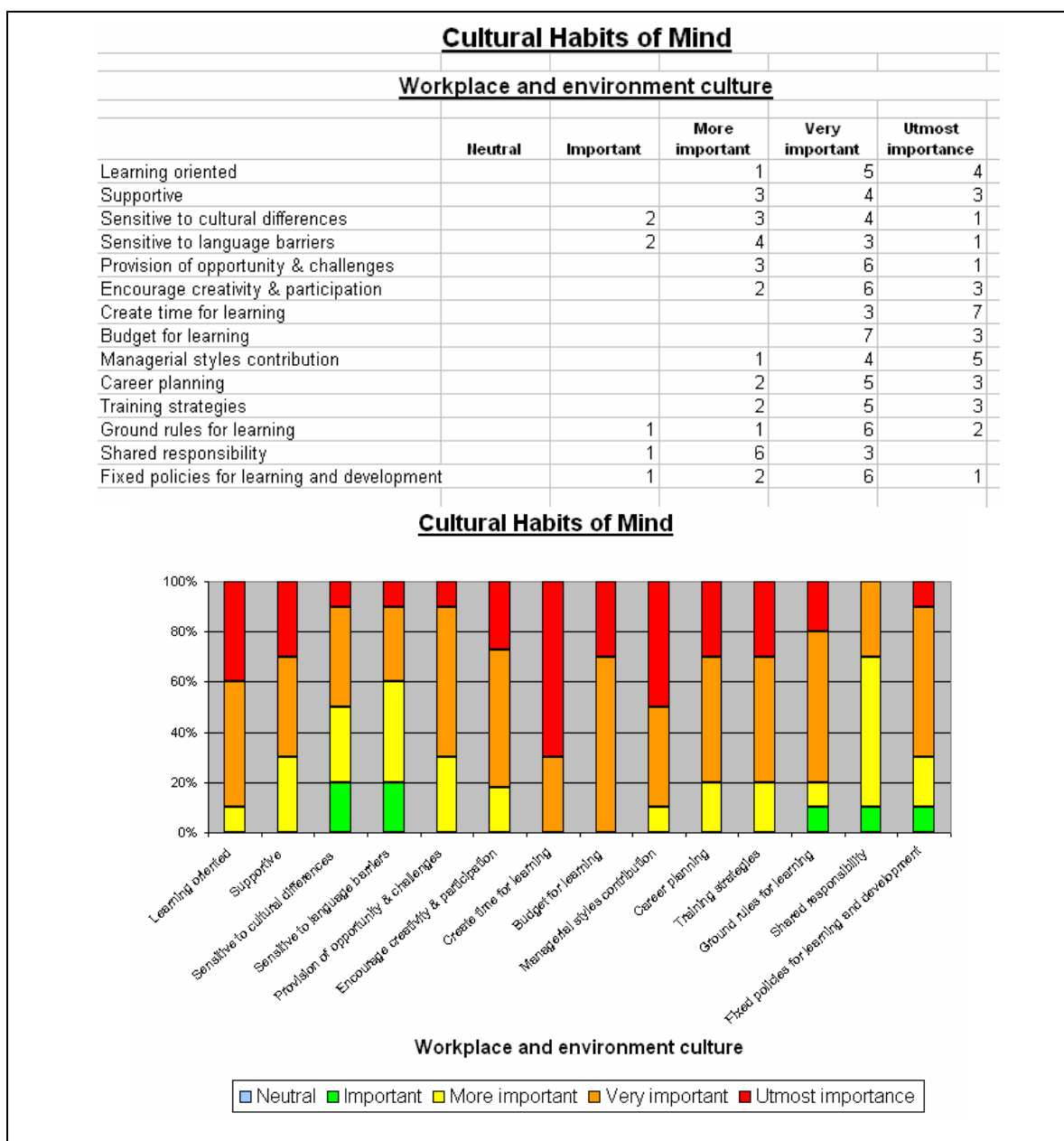
<sup>3</sup> Om self die verantwoordelikheid te aanvaar dat ek hierdie inhoud moet bemeester binne 'n spesifieke tyd".

<sup>4</sup> "Die sleutel lê vir my by 'Ek wil'. As ek nie wil nie gaan dit nie gebeur nie".

<sup>5</sup> "As hy dit nie vanself het nie, gaan hy dit nie sommer aanleer nie. Dit kom uit die hart uit. Jy gaan hom dalk ekstrinsiek motiveer, salaris, ens. Maar volgende jaar wil hy weer net meer geld hê, maar niks gebeur om hom te laat groei nie".

Readiness is influenced by the organisation’s culture towards training. Learners may benefit if time is set aside for training, accompanied by a culture of guidance and support.

**Table 4.2 Cultural Influences on e-Readiness: Environment**



Time for learning is important, and most SME’s agreed that the typical warehouse worker may not have the opportunity at home. One respondent highlighted the limited infrastructure: *that the workplace is almost always the only viable option for learning, because once they return home, they go to a shack with no electricity* 1:78 (536:540). The importance of the workplace is emphasised in that *the workplace cares and [provides] an opportunity to develop skills* 1:79 (541:543). One respondent advocated the introduction of a “growth charter”: *to give employees the opportunity to learn at the work* 1:77 (531:533). The same respondent added that a message is sent that the workplace cares: *...cares and provides opportunities to develop your skills. But it takes time. It’s got to be a way of work* 1:79 (541:543).

The importance of an induction course to inform the learner of times for learning is also mentioned: *The ideal would be for the business to tell the instructional designer to concentrate on developing a full scale induction course which will prepare the learner for everything he'll need in that organisation, including how to learn* 5:32 (137:141). A specific assigned time for training was mentioned by several participants, even for online learning:

- *... it worked well at Standard Bank, the employees were able to access the training material from 7:30 to 8:30*
- *they were not allowed to access this in normal working hours* 2:16 (122:125).

I got the impression an assigned and dedicated time for training was used to provide comfort and create confidence for the new online learners:

*...first you need to introduce the system, put them at ease by demonstrating the system, and show them the system does not need to be feared. Then short and basic exercises to get to know the system* 5:8 (41:44).

Another respondent supported the notion of training at work during a specific time, but added the sudden control the user may have as an online learner:

*Compute- based training sometimes makes the user feel they are not in control. They needed to control their own progress and performance. For novice learners we tend to give them too much control and they feel threatened...* 6:29 (172:176).

It is argued that new e-learners will feel more confident when assigned-time for training is provided, the reason being that they will keep on postponing their own learning. But, if they have the opportunity of learning for two hours each day, and their progress is monitored, they will make an effort to complete the required training.

I found it interesting that the SMEs advocated a specified time for training, as this opposed one of the main benefits of online learning, the so called "anytime-anywhere" aspect. The SMEs argued that a specific time at the workplace may be used initially to create confidence and to get to learn the mechanisms of e-learning. It may also serve to transform the learner gradually to become a self-driven learner.

The guidance of employees at work is also recognised by the fact that the managers are believed to be instrumental in the development of employees at work. *The manager should act as guide to make sure that the training is relevant for the workplace and to keep the learner motivated* 1:88 (602:611). The learning culture that exists with a company are believed to start with the management according to the SMEs. *Training on e-learning should be presented to the management first, so that they may give their staff the necessary support and guidance.* 3:11 (41:43) or as reiterated by another: *...management should be directly involved in this initiative. The worker should get guidance and leadership from his manager how to address a specific issue* 1:89 (616:618). They are criticised for not knowing what e-learning is, and therefore not getting their workers involved. *Within businesses, that specific culture can have a huge influence to make e-learning work or not. Sadly, in many cases management is not directly involved in the implementation process...* 3:39 (184:188). One respondent regarded this as a risk:

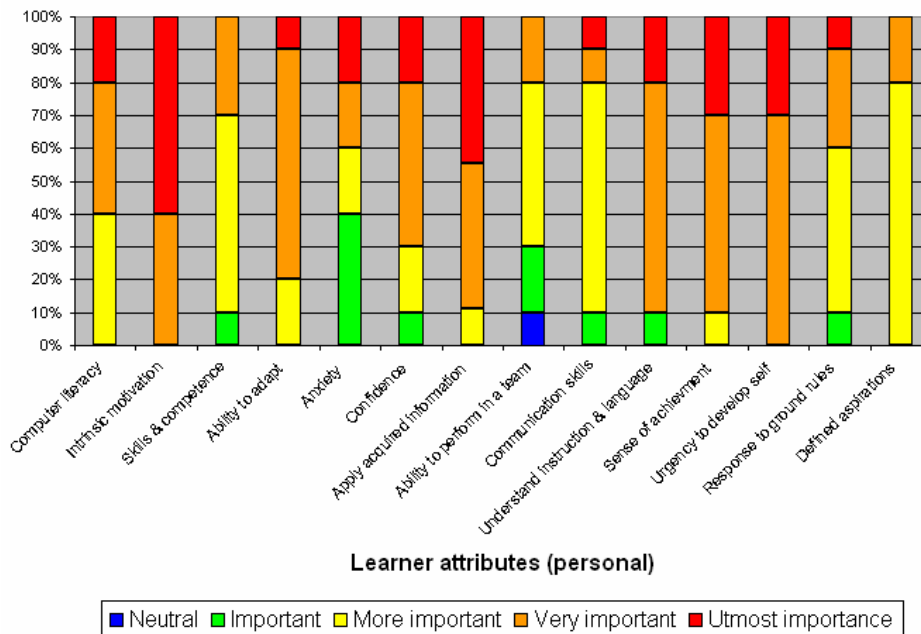




## Attitude and Individual Differences

<u>Learner attitude and personal attributes</u>					
	Neutral	Important	More important	Very important	Utmost importance
Computer literacy			4	4	2
Intrinsic motivation				4	6
Skills & competence		1	6	3	
Ability to adapt			2	7	1
Anxiety		4	2	2	2
Confidence		1	2	5	2
Apply acquired information			1	4	4
Ability to perform in a team	1	2	5	2	
Communication skills		1	7	1	1
Understand instruction & language		1		7	2
Sense of achievement			1	6	3
Urgency to develop self				7	3
Response to ground rules		1	5	3	1
Defined aspirations			8	2	

## Attitude and Individual Differences



Application of acquired information or relevancy of learning has been identified to be critical. *Whatever exercises you present to the learner, [these] have to be relevant to the working environment 1:68 (444:445).* The same respondent referred to the fact that the worker needs to experience the benefits: *He is a store-man, he works on the floor. And now suddenly we want him to learn in a strange medium 1:70 (452:454).* Still from the same source: *Learning should resemble the work demands. Never present the learner with irrelevant objectives at work 1:85 (583:585).* As stated by another: *Clarity on the value of the learning objective is important. The carrot-factor is always important. If he/she learns the skill more doors will open, more opportunities may arise. For me this is the first motivator...3:36 (161:166).* A next respondent argued that e-learning will be accepted when the “what’s in it for me”- argument is understood 4:63 (502:504). From the discussions it was evident that the relevancy of e-learning to their tasks and how the learner may benefit, had to be clear and relevant to his/her growth in the workplace.

The urgency to develop oneself can be equated with intrinsic motivation, where the learner has to experience a sense of self-development. *Businesses these days require staff to take responsibility and develop their own skills and competencies* 1:87 (593:595). Another argument was that learning opportunities need to be provided so that learners were aware, or made aware, that the opportunities were available: *They literally knew [know] it was there and the responsibility was theirs to learn themselves* 2:19 (130:131). Some of the participants mentioned that some learners did achieve success on their own, and had no problem in supporting others: *Some used these opportunities and grew quicker than their peers. And they assist their peers to grow to that same level*<sup>10</sup> 4:18 (128:135). The individual drive of learners is seen to be critical: *...it depends on individuals and their personalities. Some individuals are more inclined to be self-directed*<sup>11</sup> 4:32 (225:227). Not only do the SMEs prescribe an urgency to learn, it is also a concern that this drive is lacking: *I find that there's resistance to learn and to do more from your own point of view. Self-driven learners are very, very scarce* 5:21 (98:100). From these requirements I concluded that one of the personal attributes a learner should have is a reason and motivation to learn.

Anxiety and attitude to technology are often mentioned as barriers that prevent learners from being involved in technology. Reeves mentions anxiety explicitly as a “variable that needs to be accommodated by an improved instructional design for web-based learning environments” (Reeves, 1999). I understood from the SME interviews that once the learners have developed the individual drive, motivation to learn and the urgency to develop themselves, will eventually cancel out any attitudes or anxieties that may hinder successful e-learning.

#### 4.2.4 Attitude and Individual Differences Influenced by Environment

The previous section emphasised the importance of the individual's responsibility and sense of developing on his/her own, while this section deals with the contributions of the environment to motivate the learner. The most critical aspects have been identified to be the learning content and presentation, infrastructure and access to technology, training strategy (Table 4.13).

**Table 4.4 Attitude and Individual Differences on e-Readiness: Environment**

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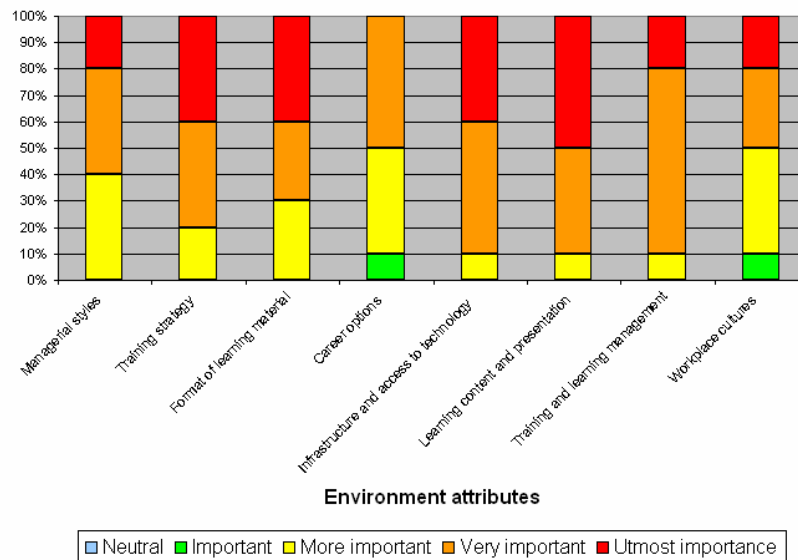
<sup>10</sup> “...hulle maak meer gebruik van geleenthede... en hulle kan dan nou hulle ander ‘pelle’ ook op dieselfde vlak kry...”

<sup>11</sup> “...dit hang verskriklik van individue en persoonlikhede af. Sekere individue is net meer geneig om *self directed* te werk”.

## Attitude and Individual Differences

<u>Environment attributes</u>					
	Neutral	Important	More important	Very important	Utmost importance
Managerial styles			4	4	2
Training strategy			2	4	4
Format of learning material			3	3	4
Career options		1	4	5	
Infrastructure and access to technology			1	5	4
Learning content and presentation			1	4	5
Training and learning management			1	7	2
Workplace cultures		1	4	3	2

## Attitude and Individual Differences



The SMEs described the “environment” mostly to be the organisation where the workers are employed, and highlighted the importance of content and presentation as one of the most important aspects to get individuals e-ready. Learners should understand why they receive training: *Training should resemble the work procedures, and make it easier for all* 1:95 (663:664) and as reiterated by another: *It is important that instructors and instructional designers are aware of the basic infrastructure of the company* 3:19 (80:82). Another respondent’s comment on content: *Relevancy of the training material and content is very important* 2:8(64:65). The SMEs emphasised that the target group should be clearly defined when learning is designed:

*One thing I learnt from my first website design is that an informal presentation was much better accepted by the general visitor than when we had a formal, structured website. The informal site drew much more attention – people related easier to this format. I have also learnt that too many hyperlinks confuse the average learner – hyperlinks should be functional, and their purpose must be clear. Most learners prefer simplistic designs with clear objectives. Learners like to get what they need at that time* 3:31 (134:142).

The design of the lesson is seen to be important to make the learners receptive to the objectives and the content: ... motivated us to develop the lessons less formal and with the general spoken language as instruction. *The more visual the lessons are, the better the responses* 3:48 (227:231). Another promoted the use of short, chunked lessons: *Keep it short, chunked. Games are a good way to improve*

*literacy. Fun makes them look forward to use the computer, and acts as a good motivator* 5:6 (31:36). The responsibility of the instructional designer can not be underestimated to make learners open and motivated for e-learning.

Clear objectives goes hand in hand with the relevancy: Several comments by the experts indicated that they regard a clear, relevant and achievable objective to be of utmost importance to get learners “ready” for learning.

- *It's important to look at the worker, the world of his work and his working environment* 1:25 (110:113).
- *Learning has to simulate the working activities*<sup>12</sup> 1:44 (242:243)
- *Relevancy of the training material and content is also very important* 2:8 (64”65). .

It is important that the learning has to be relevant and that the learner identifies with the objectives presented to him.

Relevancy leads to acceptance and buy-in of the learning objective: *I have presented training to 750 learners, a huge number of learners. Many of them were sceptic and queried the new system to be learnt. There was no buy-in, no shared objective* 2:15 (108:111). Supported by another expert: *These exercises need to be relevant and on his level, and acceptable for his cultural values. It is senseless to present him with games or exercises that do not add value* 5:9 (45:47). The same respondent added that the learner needs to understand the impact of knowledge – or the lack thereof on the working environment:

*This is a problem, because they don't understand what impact a small error has on the correct execution of the order. This for me needs to be included in the induction course – to inform him/her what impact he/she will have on the work* 5:34 (152:156).

Relevancy is believed to be one of the most important motivators for learning. When the learner believes and understands the reasons for the training he may be more motivated and more receptive to become self driven.

The access to technology was another important element highlighted by the group. Most accepted that the infrastructure was probably only available at work:

*workplace is for many the only viable option. But then, even at the office, a problem in that: ...despite the availability of technology, learners are not exposed to its everyday use often enough. This causes them to miss out on an opportunity to grow in confidence* 3:17 (68:70).

The workplace is seen to be the most probable area where access to technology can be obtained. As one respondent remarked about a study group she supervised: *That caused a lot of frustration... black students did not have access to computers or internet cafes, they had to go to the university...*<sup>13</sup> 1:15 (52:58). There was consensus that access to technology is important, and it can be accepted that this access can be only be provided by the workplace itself. Most of the participants agreed that the corporate environment provided a sound and solid infrastructure for e-learning.

Attitude can be significantly influenced by the motivation created by the environment. Firstly by presenting the content of the learning in such a way that the learner relates to it, secondly by making

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<sup>12</sup> “...die leer moet simuleer wat in die werk verband plaasvind.”

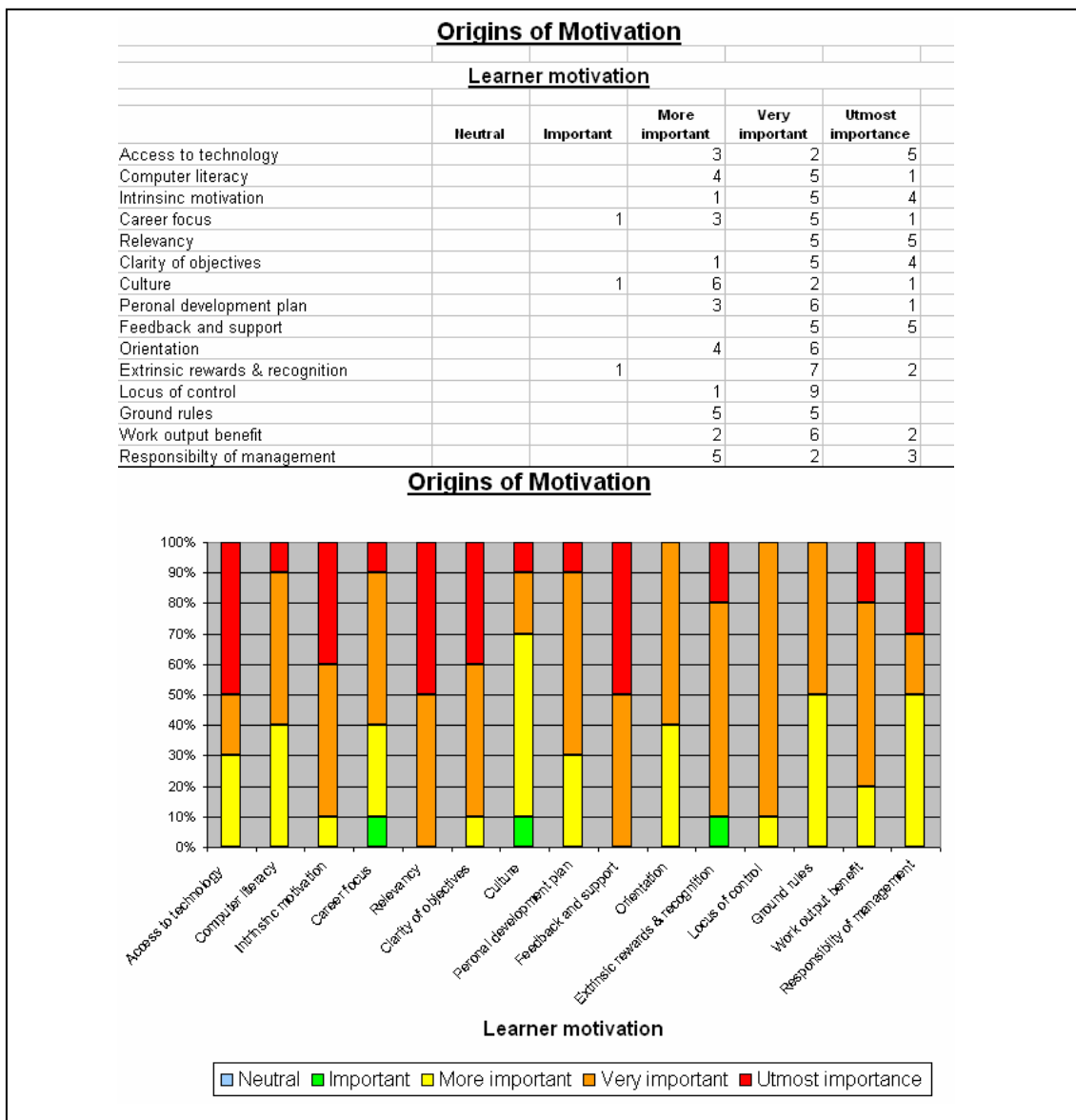
<sup>13</sup> “Hulle was nie altyd bly ‘n plek gewees, dis nou die swart studente, waar hulle die internet kon oopmaak nie”

the learning relevant and applicable so that the learner understands the benefits of the training, and lastly, by providing a solid platform in the access he/she has to technology.

#### 4.2.5 Origins of Motivation – Personal attributes

Motivation is arguably the single factor that may transform a passive learner to become self-driven and ready for e-learning. The following aspects have been identified by the SMEs to be the most important with regard to an individual’s motivation: relevancy, feedback and support, access to technology, intrinsic motivation, clarity of objectives. Table 4.5 refers to the origins of motivation according to the SMEs.

**Table 4.5 Origins of Motivation as Elements of e-Readiness: Personal**



Relevancy provides purpose, and may present any learner the perspective he needs to develop a need to grow. Relevancy was one of the elements with the highest frequency during the interviews.

All ten the SMEs regarded relevancy to be of critical importance. *It's important to look at the worker, the world of his work and the working environment* 1:25 (110:113). This was said during a discussion of when e-learning is being planned. The suggestion was that if the worker does not use computers, one must ask yourself if e-learning is a good option. All training has to be directly related to his working environment. As explained by another respondent: *I experience this as the 'first' motivator, only when he/she gains something from the experience, do they stay interested* 3:36 (165:167).

A second element that influences motivation to a huge extent is feedback and support. Especially management support. To create an e-ready workforce, the SMEs are of the opinion that managers should take responsibility and become involved in e-learning. If they understand the demands, the mechanics, they will see to it that the goals and objectives are in place to motivate the learners. Their feedback, encouragement and support are seen to be one of the crucial elements to ensure success of e-learning. *To motivate, one of the most important aspects is feedback, interaction with the students* 4:42 (312:315). One respondent takes the view that managers can lead by example, and get involved in e-learning, but if they do not, how can this motivate the workers to participate? *It is sometimes good practice to present the training to the managers too. Because the initial need comes from the business. Both should be accountable. My manager doesn't, why should I?* 4:39 (285:289). This is supported by the comment: *The moment a student receives feedback and he sees that the facilitator is present and views his work, he will be committed and interested* 4:43 (316:322). The facilitator is believed to be an important key to motivate the learners when doing e-learning.

Origins of motivation, as described by Reeves (1999), refer to different sources that may influence a learner to participate or not to get involved. Instructional designers need to identify these aspects to either use them to the advantage of the learner or know enough about the learner to avoid them. To ensure the necessary motivation for individuals, the SMEs proposed that relevance, access to technology, manager support and feedback should be thoroughly assessed to provide the necessary platform for an e-ready workforce.

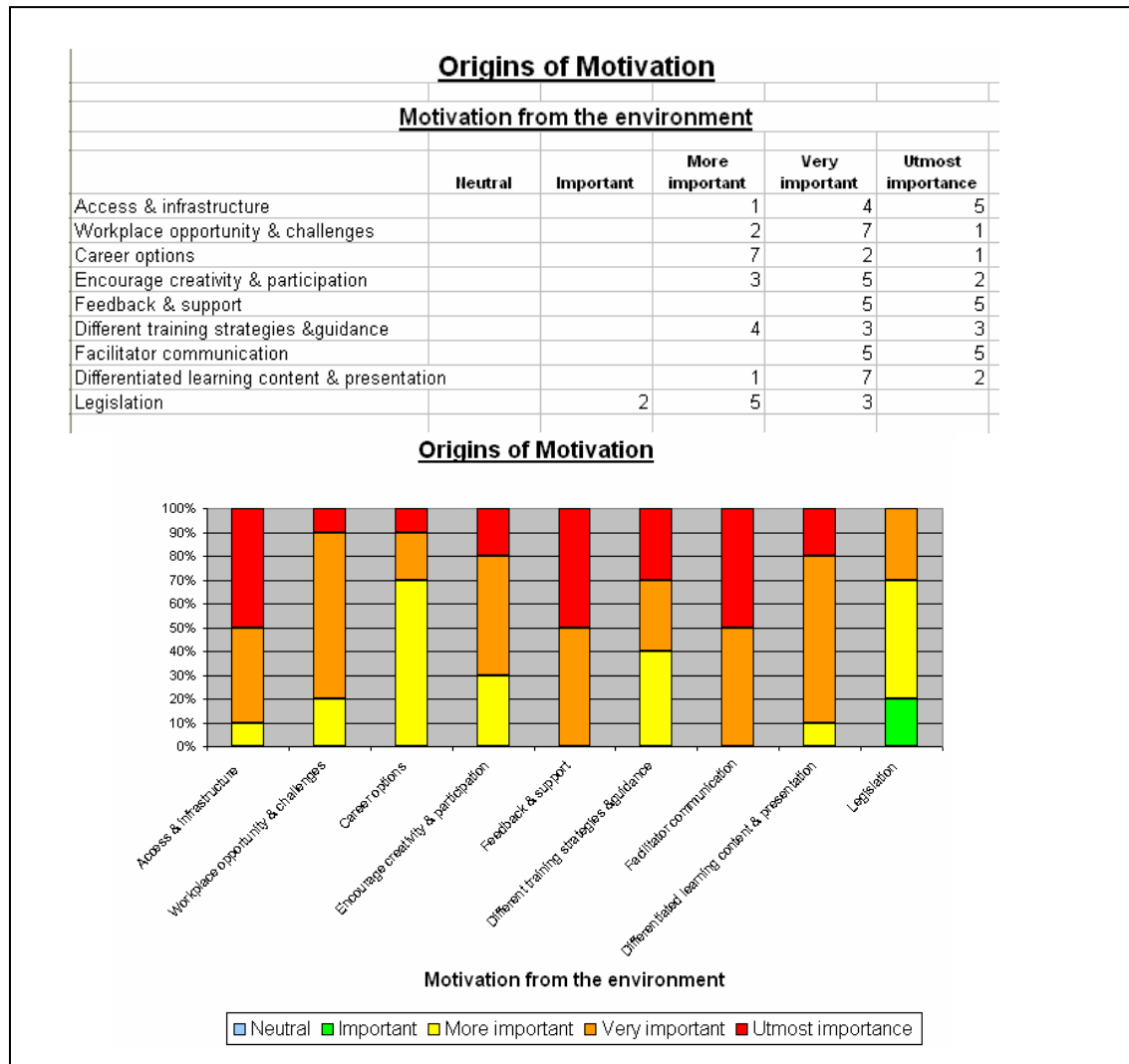
#### **4.2.6 Origins of Motivation Influenced by the Environment**

The environment, in the form of the organisation, may motivate the learner by means of facilitator communication, access and infrastructure, differentiated learning content and presentation and workplace opportunity and challenges (Table 4.6) These were the aspects rated highest by the SMEs.

Facilitator communication and feedback suggests that the learner should always be aware of his objectives and informed of his progress. These are the two most important e-readiness elements that the environment can provide to ensure an e-ready community. One respondent related a success story where the senior manager assisted her staff in setting their targets and planned their schedules with them. This co-responsibility is advocated by most of the participants. They believe that motivation can be generated and fuelled by clear objectives, regular feedback: *You can call them mentors, coaches. It does not really matter what terminology you use, but it should start with the need of that*

person 6:48 (305:310). The importance of achievable career plans and clear key-performance indicators are highlighted to guide the workers. Communication in the form of e-mail, telephone, face to face contact is important, as long as the interaction takes place: *Written communication skills are important - for learners and facilitators. In some cases learners should be motivated to communicate in different mediums with one another. e-Mail, face to face, telephonic, etc. 1:93 (647:650).*

**Table 4.6 Origins of Motivation as Elements of e-Readiness: Environment**



Many regard feedback in the form of an appropriate and timely induction course to inform the learner of training opportunities:

- *You virtually inform him of all the career opportunities within the organisation. That to me is a correct induction course 5:30 (130:134)*
- *Communication obviously is important, let them know you are available, either by phone or mail. Just to put them at ease... 2:7 (56:58).*

Communication is seen to be the instrument to clarify goals and objectives, and to ensure that learners know what are expected of them.

The environment can provide valuable motivators to build an e-ready workforce. From the commentary and views of the SMEs it is evident that organisations, and specifically the way the

management communicates with its workers, plays a major role in setting the scene for the e-readiness of the company. This communication includes putting a career plan and learning path in place, setting achievable objectives and providing the necessary feedback to keep the learner informed of his progress.

Good communication can be seen against the background of the necessary infrastructure as provided by the company. Access to computers and networks will contribute to the motivation and preparedness to get involved with e-learning. If the platform exists and is available, the learner may be motivated to start learning. One respondent argued that facilitators sometimes make the mistake of expecting results while only limited access *exists: the learners simply do not have access to technology, and we even expect them to make use of electronic banking services!*<sup>14</sup> 8:17 (98:103). The lack of access is seen to be a serious barrier to the readiness of the workers:

- *The real barrier is accessibility. The packers in the warehouse don't have access to computers. That is a huge constraint* 5:53 (258:260)
- *Access will always be a problem. Learners do not get enough practice on PC's. Some work areas have very limited access to PC's while others are under used* 3:18 (74:76).

The importance of access is stressed in the following comment:

*Access will always be important, and the ideal is that learners should have a PC immediately available to satisfy his/her learning need when necessary. Unfortunately, the people who need this most, have limited access to PC's* 3:24 (100:103).

From the interviews it emerged that access to a technological infrastructure is non negotiable, and of the utmost importance for e-learning. From these comments I assumed that if the warehouse workers had access to such an infrastructure, they would be well positioned to be involved in e-learning. If not, the move to involve them in e-learning may be ambitious but futile.

#### **4.2.7 Summary of SME evaluation**

I did not discuss all of the ninety nine codes evaluated by the SMEs, but I had the opportunity to obtain an indication what aspects are important when e-learning is planned. Aspects like personal motivation, and attitude appear to be intrinsic in the learner. Some participants argued that it may be too much to ask from a passive learner to be transformed to a self-driven learner who needs to take responsibility for his/her own learning. Others believed that the learner – especially learners from developing communities have been deprived of access and the infrastructure, and need guidance and need to be motivated by the environment before any significant self-driven learning may result. All these are probably true for the warehouse workers who had been exposed to face to face learning in most cases.

I have identified the most important conceptual codes to explore e-readiness, and used these to structure the interviews and observations (Appendix 3.12) with the warehouse workers.

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<sup>14</sup> so baie ouens wat net eenvoudig nie toegang tot rekenaars het nie,... maar dan verwag on steeds hulle moet van elektroniese bankdienst kan gebruik maak.



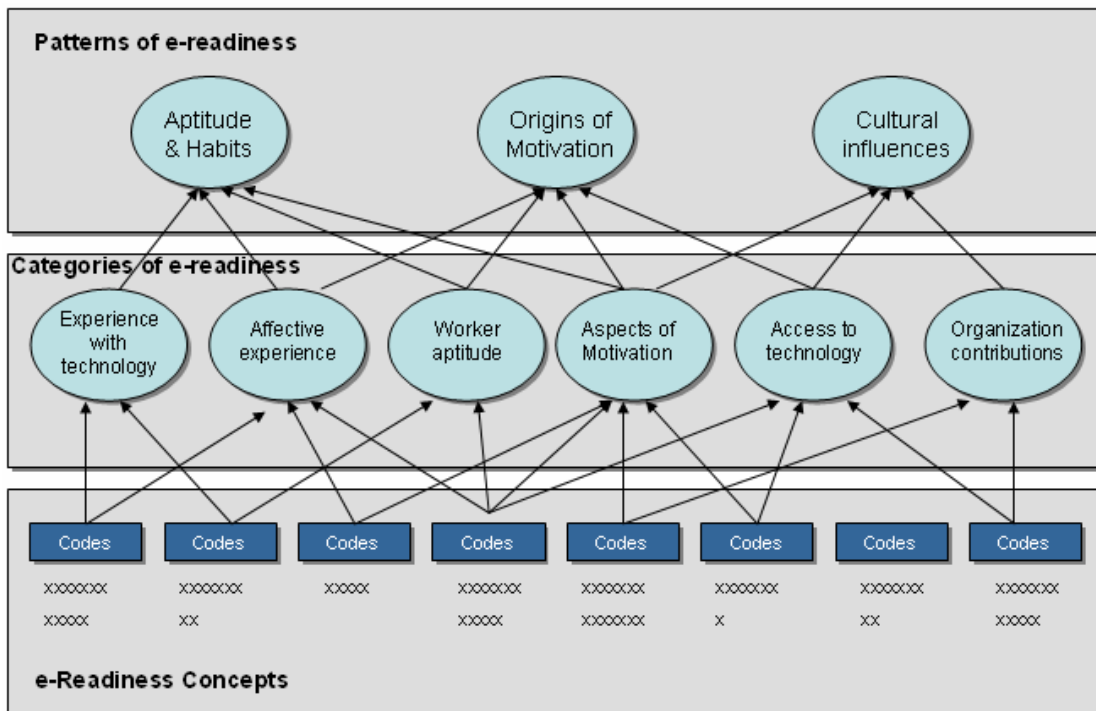
### 4.3 Emerging theory codes to structure the research for e-Readiness

The previous section identified numerous conceptual codes of e-readiness. It was structured around the three expected input areas according to Reeves' model for www learning, namely cultural habits of mind, origins of motivation and attitudes and individual differences. These conceptual codes of e-readiness as obtained from the SMEs have been used to structure the interviews and observations for the warehouse workers.

I used the guidelines from existing literature with regard to e-readiness to structure my research questions and to categorise the findings of the study. The following preliminary categories (theory codes) have been identified in chapter 2 (par 2.11.8). A community is regarded to be e-ready according to the literature, when they:

- *have access and are connected to an IT infrastructure*
- *have experience of technology*
- *utilise the platform provided by the organisation*
- *are motivated to become self-driven learners*
- *exercise own learning styles and attitude to take responsibility for training*
- *experience a culture of learning and support.*

These categories or theory codes have been identified from several sources and were used to structure and guide the remainder of this study. The conceptual codes of e-readiness as defined by the SMEs are associated to the theory codes identified by the literature. I have structured the interviews and observations with warehouse workers and managers in such a way that the listed theory codes and conceptual theories could be addressed. Figure 4.3 is an adapted version of Schumacher and McMillan (2001) to show that several conceptual codes are related to a theory code, and may also contribute or be associated with some of the others.



**Figure 4.2 Categories of e-readiness** (McMillan & Schumacher, 2001, p. 477)

The information gained from the literature has inspired me to construct the following six sub questions during my exploratory research of e-readiness of warehouse workers:

1. What technical experience do the warehouse workers have with technology that may impact their e-readiness?
2. What affective experience do the warehouse workers have with technology that may impact their e-readiness?
3. What aptitudes with regard to the use of the computers can be observed from warehouse workers to imply their e-readiness maturity?
4. What origins of motivation may induce warehouse workers to become e-ready?
5. How does access to technology contribute to the e-readiness of warehouse workers?
6. In what way does the organisation's culture influence the e-maturity of the warehouse workers?

These six sub-questions will be explored in the next chapter and serve as a guide for the remainder of the study.

## 4.4 Summary

I have consulted readiness assessments from several institutes and authors to conclude with six theory codes of e-readiness. It seemed that similarities occurred on the aspects that were assessed to determine the e-readiness of countries and communities – the differences were mostly related to the purpose of the e-readiness assessments.

I then interviewed eight local subject-matter experts to get each one's own account of what they perceived to be the most important elements to be present for e-learning. With the help of Atlas.ti™ I generated a list of e-readiness elements and categorised the readiness elements in terms of Reeves'

three input areas. The SMEs were then requested to rate the elements in importance. With these SME ratings of e-readiness I was able to generate a list of conceptual codes of e-readiness that were regarded to be important when exploring e-readiness. With the SME conceptual codes of e-readiness and the theory codes as derived from the literature, I constructed six sub-questions to structure interviews, observations and to serve as guidelines to conduct the data analysis. The chapter was concluded with six sub-questions to explore the e-readiness of the warehouse workers. The six theory codes became my guidelines to structure the interviews with both the experts and the warehouse workers to explore the e-readiness of warehouse workers.

Chapter five describes the data analysis and findings from the interviews, observations and questionnaires from the warehouse workers, warehouse managers and SMEs.

## Chapter 5

### 5..... DATA ANALYSIS AND INITIAL FINDINGS

- 5.1 Introduction
- 5.2 Technical experience with computer technology (Sub-question 1)
  - 5.2.1 Technical experience with computers
  - 5.2.2 Conclusion about technical experience of warehouse workers
- 5.3 Affective experience with technology (Sub-question 2)
  - 5.3.1 Affective experiences
  - 5.3.2 Anxiety of warehouse workers as affective experience
  - 5.3.3 Experience with technology also led to warehouse worker frustrations
  - 5.3.4 Warehouse workers' attitudes as affected by computer experience
  - 5.3.5 Conclusions on warehouse workers' affective experience of computers to determine e-readiness
- 5.4 Observed aptitude as evidence of e-readiness (Sub-question 3)
  - 5.4.1 Conclusion about warehouse workers' aptitudes for e-learning
- 5.5 Origins of motivation determine e-readiness of warehouse workers (Sub-Question 4)
  - 5.5.1 The types of motivators that affects the warehouse workers
  - 5.5.2 Extrinsic motivation contributes to e-readiness of warehouse workers
  - 5.5.3 Computer use as extrinsic motivator
  - 5.5.4 Facilitator contributions as extrinsic motivator
  - 5.5.5 Relevancy of training as extrinsic motivator
  - 5.5.6 Financial support as extrinsic motivator
  - 5.5.7 Allocated time for training as extrinsic motivator
  - 5.5.8 Intrinsic motivation
  - 5.5.9 Conclusion about the origins of motivation that influence warehouse workers' e-readiness
- 5.6 Access and infrastructure as contributors to e-readiness (Sub-question 5)
  - 5.6.1 Access to computer technology
  - 5.6.2 Computer access at home
  - 5.6.3 Computer access at work
  - 5.6.4 Access to technology as a motivator
  - 5.6.5 Conclusion about theory code access contributing to the e-readiness of warehouse workers
- 5.7 Contributions and constraints of the organisation's culture (Sub-question 6)
  - 5.7.1 Cultural differences and diversity
  - 5.7.2 Business language and communication
  - 5.7.3 Support and guidance available to warehouse workers
  - 5.7.4 Importance of a relevant learning plan
  - 5.7.5 Financial support and time for training
  - 5.7.6 Conclusion about organisation culture contributing to the e-readiness of warehouse workers
- 5.8 Conclusion Chapter 5

## 5 Data Analysis and Initial Findings

### 5.1 Introduction

The previous chapter explored the initial question of this investigation, namely to identify the aspects of e-readiness of warehouse workers, and resulted in five subsequent questions. The analysis in chapter four also resulted in six categories as indicators of e-readiness of the warehouse workers: experience with technology, access to technology, attitudes and habits, organisational contributions and constraints, origins of motivation and cultural contributions and constraints. These categories (theory codes) have inspired and led to the formulating of the following research questions to explore the e-readiness of the warehouse workers:

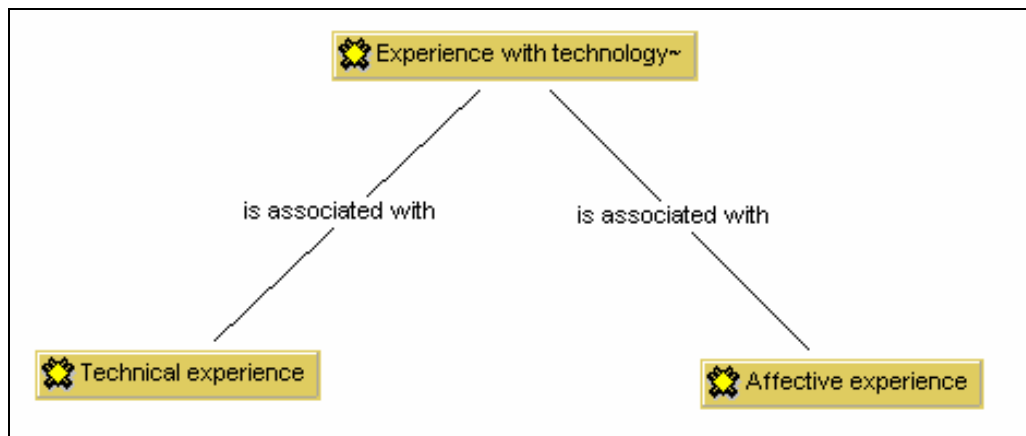
- Sub-question 1: What technical experience do the warehouse workers have with technology that may impact on their e-readiness?  
This question refers to the technological experience the warehouse workers have at work, during their business activities or any other contact and use they may have with technology.
- Sub-question 2: What affective experience do the warehouse workers have with technology that may impact on their e-readiness?  
This question explores the affective experience of warehouse workers when using computer technology - their fears, anxieties, confidence and attitudes of contributing to their e-readiness.
- Sub-question 3: What aptitudes with regard to the use of the computers can be observed from warehouse workers to imply their e-readiness maturity?  
This question explores the warehouse workers' aptitude with computer technology as it has been observed during their daily tasks and related observations (Reeves, 1999).
- Sub-question 4: What origins of motivation may induce warehouse workers to become e-ready?  
This category explores the motivational aspects that the use of technology may have on the warehouse worker, and how these origins of motivation (Reeves, 1999) influence their e-readiness. Aspects such as extrinsic and intrinsic motivators are explored.
- Sub-question 5: How does access to technology contribute to the e-readiness of warehouse workers?  
The fifth question relates to their access to computer technology - the access and infrastructure available to the warehouse workers, and the effect it has on their e-readiness.
- Sub-question 6: In what way does the organisational culture influence the e-maturity of the warehouse workers?  
The contributions of the organisation are critical for the e-readiness of warehouse workers. This question explores the warehouse workers' organisation - and personal cultural habits of mind (Reeves, 1999) and how this affects their e-readiness.

With the above six research questions in mind, I conducted a grounded theory approach and conceptual analysis of my research data. The primary documents captured in Atlas.ti™ comprised of the interviews, questionnaires and observations on the SMEs, warehouse workers and their managers. The theory codes (categories) that emerged in chapter four were used to guide deductive coding of the research data.

In the following sections the six sub-questions will be explored.

## 5.2 Technical experience with computer technology (Sub-question 1)

The first category of e-readiness, Experience with technology consists of two areas of e-readiness.



**Figure 5.1 Experience with technology includes technical and affective involvement**

The technological experience relates to the warehouse workers' encounters with computer technology, mainly the mainframe systems used within the organisation, their current training with technology, their use of e-mail within the organisation and the way they respond to technology. The affective experience with technology relates to the warehouse workers' aptitude, habits, attitudes and emotional responses when confronted with technology.

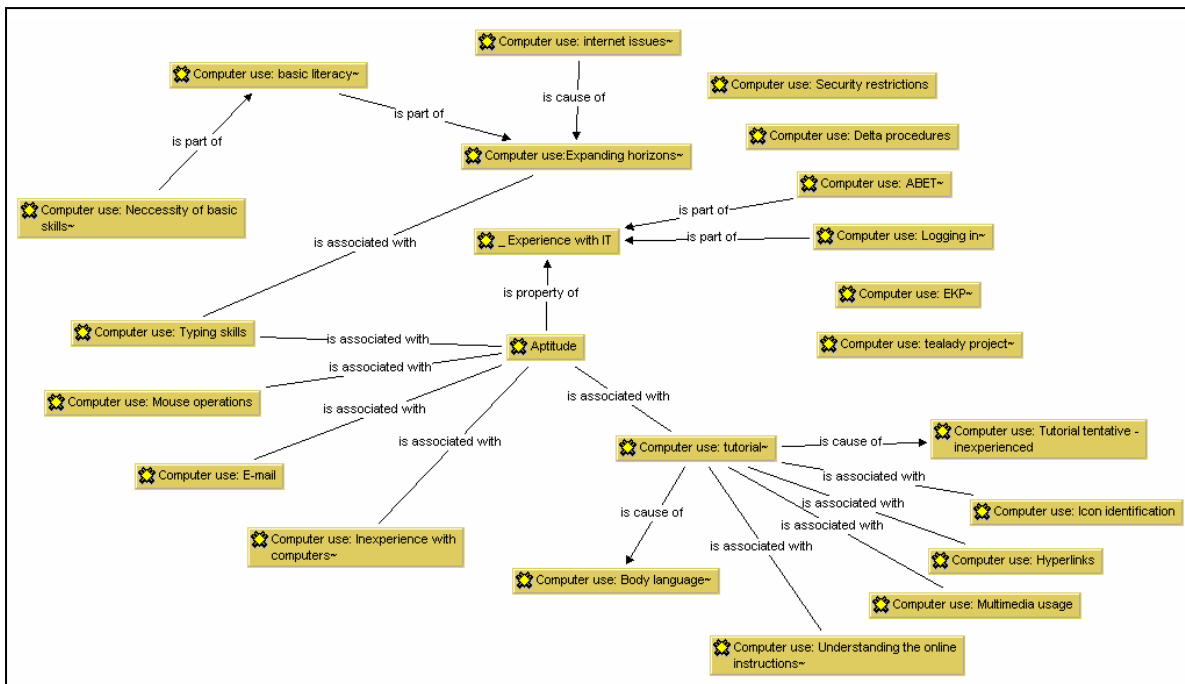
### 5.2.1 Technical experience with computers

SMEs indicated that computer use is essential to prepare warehouse workers for e-learning: *... to start e-learning, it is important that they have a basic knowledge of the computer, how to use the mouse, the keyboard - even if it [the warehouse workers] is slow* 1:298 (1814:1817).

During the interviews participants indicated that they would like to use the computer: *Yes, I like working on computers - a lot!* 2:297 (2077:2079), and my immediate opinion was that they may not know what it entails and their answers may be somewhat naïve. When I asked a respondent whether she would give up her tea and lunch breaks to do training I received an adamant response: [Not hesitating at all] *Yes! I would! Yes!* 2:181 (1167:1169). The category technical experience relates to

whether technology is a foreign experience for the warehouse workers, or whether they have been exposed to the technology often enough to counter arguments that they fear and are too scared to use computers.

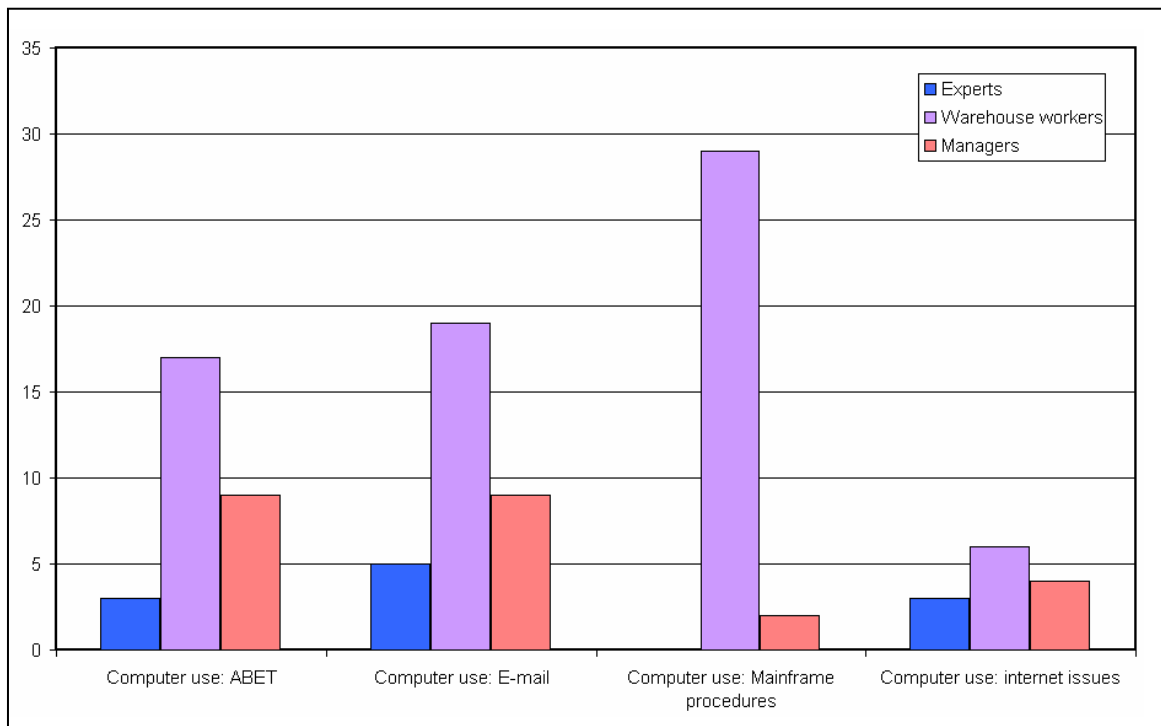
From the questionnaires, during the interviews and the observations I learnt that the warehouse workers were not new to the use of computers and did not fear this medium. This contradicted my initial perception that the warehouse workers' experiences were too limited for them to be e-ready.



**Figure 5.2 Encounters with computers as experienced by the warehouse workers**

Figure 5.2 indicates the different encounters that warehouse workers have with computers or related technology. Computer use refers to the daily tasks with the mainframe systems, e-mail use, internet connection and experience and the ABET classes for a number of warehouse workers. The diagram also refers to a tutorial that has been submitted to participants, and how they responded. The diagram also shows the basic computer literacy activities. The purpose of the diagram is to indicate the activities or ways that warehouse workers encounter computers. Some of these experiences include the use of cellular (mobile) phones, ATM's and a new procedure that has just been introduced to the IHD warehouses, picking stock with voice technology (Appendix3.13).

The following discussions analyse the contributions of the SMEs, warehouse workers and managers in relation to the technical experience the warehouse workers have gained with the mainframe system, ABET training, dealing with e-mail and internet activities. Figure 5.3 illustrates the experiences the warehouse workers have gained with computers during the course of their assigned responsibilities. Discussions follow to explore the experience warehouse workers have had with the business' mainframe system, ABET training, e-mail use and the internet.



**Figure 5.3 Work-related computer experience**

Warehouse workers at IHD have to perform their daily tasks by interacting with a mainframe system. This entails actions to receive, register, post the stock to be stored for easy tracking and picking at a later stage, and lastly pack stock and generate invoices when stock is about to be delivered to customers (Figure 1.3), procedures that are supported and managed by the mainframe system. Users need to log in as an allocated user, with a password that expires every thirty days, and requires the user to select the required menu to perform his tasks. Figure 5.3 refers to aspects of experience as regarded by SMEs, warehouse workers and managers. SMEs did not specifically refer to business systems, but have indicated the importance of computer experience, and regular practice: *...if this learner is exposed to the medium in a gradual way; let him play and use the application for at least a month* 1:93 (487:489).

I observed six of the warehouse workers while performing their tasks on the mainframe system. The activities I observed were: two pickers picking stock, one male employee performing receiving duties, a female employee during the manifesting (packing) of stock, and another doing stock replenishments. I have also observed a female using the latest voice picking technology to pick stock by means of audio technology. I needed to determine whether they performed the computer activities by themselves or whether the responsibilities were passed on to some higher authority. I also wanted to establish whether they were actually interacting with computer technology. From my observations I noted:

- *... worker watches the monitor, reads the information as it is displayed on the screen; interprets the information by deliberately walking to a shelf where electronic lights indicate the quantity to pick ...*2:457 (3046:3049)
- *briefly reads the screen, turns around to another shelf. He understood from the displayed information on the screen that there are more articles to be picked* 2:458 (3053:3055)



- ... while quickly scanning the new information on the monitor 2:461 (3069:3070).
- ... checks the information on the monitor. Apparently satisfied that all is in order, she opens the tote 2:479 (3223:3224).
- ... reads and interprets information on the screen. Verifies the information he sees with what he has on a paper document in front of him. He enters numbers in the computer by using the numeric keypad on the righthand side of the keyboard 2:484 (3279:3283).



**Figure 5.4 Receiving assistant using the mainframe system**

Figure 5.4 illustrates an older respondent where he performed his receiving tasks on the mainframe system (Appendix 5.15). The observations gave me an indication of the warehouse workers' ability to understand and interpret the information to perform their daily duties. All the observed participants were experienced and knew what they were doing and how to interact with the information.

Although the procedures they had to perform were basic and only specified keys were used, the responsibilities required a deeper understanding of their tasks than merely pressing a number of keys. The participants needed to know the business procedures well:

- *It seems easy, as there are only a few basic procedures to be completed. No typing is required, merely the recognition and interpreting of information on the monitor 2:464 (3094:3097)*
- *The process is completed by pressing the F7 button to acknowledge the completion. The process is very basic, but very dependent on technology 2:463 (3088:3091).*

I tried to identify signs of attentiveness when they were interacting with the computers, but most of the participants were assured and confident during their mainframe activities (Appendices 5.1 – 5.6). The information from the questionnaires confirmed that they used the computers in their line of work (Appendix 3.4).

**Table 5.1 Computer activities at work**

Do you work on the computer?

All the time	25
Most of the time	23
Now and then	11
Not at all	9

Warehouse workers use computers at work. The grouping of the responses as listed in Table 5.1 indicates that most of the warehouse workers have experience with the computer at work (Appendices 5.1-5.10). It may be that they use it in a limited way, but the value here is that the experience may serve as valuable practice to prepare warehouse workers for e-learning. The interviews showed that the workers have experienced computer technology in several other ways too.

I observed three of the ABET sessions. During the first session I focused mostly on the participants' behaviour and not on the programs they were busy with. I focused on their basic attitude towards the computer technology and whether they were able to work independently. The first observation I made was the seemingly easy way they started the sessions:

*Apparently neither of the two had any problems to switch on the PC's, type in the user ids and passwords to log on. Both watched patiently as they waited for the sign on process to be completed. Still no one spoke - It seemed as if they knew what to do to log in 2:15 (74:76).*

I got curious and walked past them to see whether they were successfully logged in:

*Lady 1 was busy with the English literacy program, and was apparently listening to some instructions or explanations. At this stage there was no typing or any mouse activity. I could see that she found where she had last left the program, logged in and continued from where she had to... 2:16 (84:88).*

I observed that another respondent had problems with her initial log in and password. I was not sure whether she had already tried or not, but somehow now she had problems remembering the correct password for the training room computers. She called me for assistance when she saw me looking at her monitor. I showed her the user id (which was written permanently on one corner of the whiteboard for training purposes). I reflected that there was little guidance and coaching from the HR department, and that they were basically left on their own with only minimum instructions. It was probably assumed that they were capable of getting all the computer logistics right by themselves. I further observed that:

*She retyped the password. An error message appeared. In all cases in IHD, a password had to include at least one uppercase character, at least one or two numbers with the other lowercase characters. Minimum number of characters was six. In this case the password was Aug2005. I checked her keyboard and saw that the uppercase key was activated. I deactivated it and asked her to try again. I watched her as she tried again. She made another mistake. She could not activate the uppercase character. Eventually I logged in on her behalf 2:20 (101:106).*

The interactions during the ABET lessons were minimal. The warehouse workers seemed to be listening most of the time, and completing exercises in their books. They were guided by the audio instructions most of the time:

- *I could not hear anything at this stage, but I assumed she was listening to instructions or explanations. I waited to see her type, but after a while she started writing in the textbook again 2:23 (122:125).*

- *They both carried on in the same way, now very involved in their assignments. Occasional typing, supported by mouse activities and writing in their workbooks. Mostly listening. 2:23 (153:155).*

During this hour that I had been observing them nobody from the HR training department visited them. They seemed to be used to being left on their own. This did not seem to bother them, each of the participants worked on their own, with their own learning programmes. I asked one of the warehouse workers what happened if they experienced problems? She replied that they did not normally experience any problems. I thought to myself that they would probably leave if network or technical problems prevented them from working. My initial reaction was an irritation about the irresponsibility of the training department to leave the participants without any assistance, because it really appeared as if some of them needed guidance. I later reflected that it may help my cause: e-Learning is a strategy where the learner needs to draw on his own resources to find solutions, and this was an opportunity to see how they responded to such a challenge.

The next day I decided to focus on their computer skills and the applications they were interacting with. It was a different group from the previous day. This time four warehouse workers arrived for the training session. They seemed to be clear on what they had to do. I concentrated on the way they logged in. One respondent had a problem with the Windows log in again, but the rest logged in easily and started working. Their basic computer literacy seemed to be slow, but sufficient:

- *I could not see her screen, but watched her hands. She operated the mouse well, as if she knew what to expect every time she clicked. She put on the headphones and I watched to see when she would start typing 2:38 (200:204)*
- *... I heard the Windows chimes to indicate that he has logged in successfully. He put on the headphones and started working on the PC. His mouse operating skills were fair, and he typed slow, but deliberately 2:41 (211:213).*

The warehouse workers' mouse skills were less than fluent, but they showed progress. I had observed previously that new users often struggle to perform the double click and wanted to see how the warehouse workers were doing:

*I could not see any activities that suggested that they had to double click or not. Their hands indicated that they were aware of the abilities of the mouse operation 2:45 (228:231).*

One of the warehouse workers even indicated that he knew what to do with a "sticky" mouse:

*The training room's PC's are used by many and maintained by few. He showed his irritation by picking the mouse up and fiddled with the mechanism 2:47 (233:237).*

I could not determine whether their interactions were correct or not. They used exercise books and interacted a little with the computer. I was not sure if the HR department used their results and if they passed by merely completing the exercises or if they had to be formally assessed. The activities seemed to be very one-sided and simple. ABET assignments are guided exercises where they could write the results either in the exercise books or enter their answers on the computers.

In their interviews both managers and SMEs presented less information regarding ABET training. SMEs briefly referred to ABET training, which implied that they were aware of these bridging programmes. Managers accepted it as a training strategy to be presented to their staff, even though

the purpose of this training was not always clear to them: *And do you feel that ABET is giving you a good enough platform to move on? Ah, I'm really not sure, but at the moment they push me a little bit up* 3:156 (914:917).

The ABET observations gave me an indication that the warehouse workers have the basic knowledge to continue on their own. The self-driven computer-assisted lessons gave them the opportunity to be independently in contact with computer technology. From an e-learning point of view, it indicated to me that the unit of analysis could operate independently. Regardless of the lack of supervision, most had a basic knowledge of the computers and the ABET program to work independently, and at their own tempo. But there were suggestions during the observations that indicated that some warehouse workers may need a lot of initial assistance. The logging in process where the respondent struggled with the password indicates initial guidance is required.

The warehouse workers' interactions with the ABET training program indicated that the workers were ready to work on basic e-learning assignments if thorough guidance and purpose are provided.

Next I focused on e-mail. All employees at IHD have the privilege of an e-mail address and access to an e-mail box. e-Mail experience can contribute significantly to the e-readiness level of warehouse workers as declared by an SME:

*e-Mail skills are the first things they learn. It's also an excellent tool to become computer literate. Let them write messages to one another. Let them learn how to use Outlook and how to organize their own lives* 1:519 (3214:3218).

Most participants have indicated on the questionnaires that they did have access to e-mail, a good position to get ready for e-learning. Table 5.2 refers to the responses re e-mail experience.

**Table 5.2 Warehouse workers' e-mail experience**

Do you receive e-mail messages?

Responses to the receipt of e – Mail	
Yes	53
No	14
Don't know	0

Can you send an e-mail message?

Responses wrt sending of e-mail	
Yes	50
With help	3
No – don't know how	14

In addition, the interviews yielded significant comments regarding e-mail. The use of e-mail seemed to be limited due to a lack of skill and knowledge. One responded that he can send e-mail messages, but didn't know how to open attachments, while another responded:

- *Um, yes we do receive e-mail, especially now with the company policy from HR to highlight to us what goes on with the meetings and so on. I don't have a problem with that* 2:189 (1243:1246)

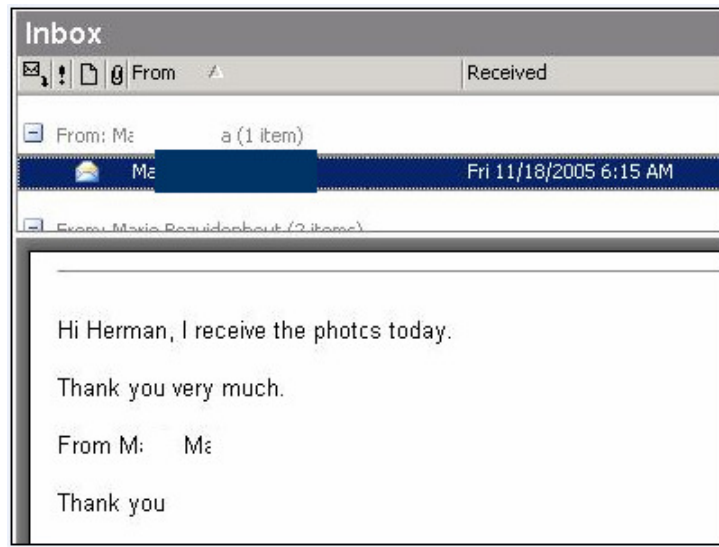
- *Definitely. I read all the e-mails but I don't even know how to send them. Tough luck 2:256 (1726:1727)*
- *No, I can't open the attachments 2:164 (1069).*

I video recorded a worker in Bloemfontein (Appendices 5.5-5.10). I wanted him to demonstrate to me how to open his mailbox and show me how to send mail. I transcribed his actions as follow:

- *He immediately responded by using the mouse, explained that he goes to Outlook to do this. He double clicked the icon on the desktop, and the MS Outlook application opened. His list of messages was visible 2:506 (3462:3466).*
- *He clicked on the message to open it. There was still no indication that he was tentative, or uncertain 2:507 (3468:3470).*

I asked him to reply to a received message: *He moved the cursor to the "Reply"-function, and said "I click it there". He indicated the correct procedure, but at this time I detected that he was not so sure anymore 2:508 (3474:3476).* He stopped and did not know exactly how to continue. He made the excuse that they did not have time to send messages. He explained the meaning of the "forward" function. He said: *Forward means I send a reply, maybe I write something there, and then forward to persons I want to send it to 2:510 (3480:3482).* He had the basic idea, but was not able to use it. My impression was that he needed relevant experience.

Apparently the warehouse workers were used to find information sent to them via e-mail, but it seemed to be less important for them to convey information to other workers. I observed that they had the skills to open and read the mail, but were tentative and less assured when required to send or reply to messages. The respondent in the previous paragraph explained the forward function accurately, but did not have the confidence to demonstrate his competency with this facility. There was no demand for this skill, and consequently not used by the workers. It includes the sending and receiving of attachments. Figure 5.5 shows an example of an e-mail I received from a respondent in Linbro Park When I interviewed the participants, I took a picture of each of them with a digital camera. I promised them that I'd send them the photos when I got back to my office. I requested them to reply on my mail. I sent twelve e-mails to participants, but received only five responses (Appendix 5.11). . The e-mail message illustrated in Figure 5.5 is one of the received e-mail messages.



**Figure 5.5 Examples of e-mail replies from warehouse workers**

SMEs believe that e-mail is a useful facility to prepare aspiring workers for e-learning. The warehouse workers have access to this facility and are positively positioned with regard to e-mail access. It is available to all, and the warehouse workers indicated that they know how to use the e-mail facility, mostly to receive information, but it appeared that their knowledge and skill was limited of the uses of this facility. Regardless of their limitations to send e-mail and open attachments, the experiences the warehouse workers have with e-mail enhance the argument that they have technical experience with computer technology to be e-ready.

Use of the internet may give an indication of a warehouse worker's ability to interact with the technology. At the same time it would tell me whether the workers have access to this communication facility. The responses from the questionnaires indicated that the warehouse workers were aware of their internet and intranet access.

**Table 5.3 Warehouse workers' access to internet**

Do you have access to the company intranet?

Responses wrt company intranet	
Yes	32
No	9
Don't know	1

Do you have access to the internet?

Responses wrt internet access	
Yes	31
No	11
Don't know	0

SMEs believed that internet use prepare the workers for the interactivity needed with e-learning. An SME commented as follow on the ability to learn browsing on the internet: *... it is surprising how quick*

people are when learning how to browse...<sup>15</sup> 1:287 (1651:1652). The workers agreed that they did have access to the organisation's intranet and internet. It indicated that they are acquainted with the internet and intranet, knew that it was available. Access was given to them at a communal computer in the cafeteria, but most also had access through the computers they used, at their workstations.

A few of the interviewees confirmed that they did make use of the internet, but only to a very limited extent: *Ah, not time to time, because basically I'm not using the internet. Sometimes just checking things* 2:121 (734:735). Another respondent confirmed that the intranet was functional to confirm company standard operating procedures: *Yes, because even the SOPs we get it on the intranet. Just when one asks a question you go and look on the intranet* 3:167 (1027:1032).

The computers they had access to were popularly known as "dumb terminals" to grant access to the mainframe and e-mail only. Some of the responses during the interviews indicated that they were not aware of internet access:

*You know with me, I don't have a problem but the thing is, we don't really have access to go wherever [we] want to, you know it's like limited, [sic] you only go to the mainframe system and from there you can read the e-mail. From there you can't do anything with the computer at all* 2:190 (1252:1257).

For some the hardware provided to them are regarded to be inferior and restricting:

*No, we don't have any access. We can only go to Delta [the mainframe system] and check the e-mail. You know it's one of the things they keep us like [laughs] you know you can't ...if you've finished Delta and read the mail there's nothing. It's like ... "oogklappe" [blinkers] [Laughs]* 2:225 (1504:1509).

The responsible network engineer at IHD revealed later that these dumb terminals were in fact web based machines:

*They don't know, because the internet in the warehouse is actually their e-mail. It is web-based. So when they open their e-mail, they're actually opening the internet browser, which to them - they think it is just e-mail* 3:223 (1421:1424).

He confirmed that the computers had access to the internet: *Just about every machine in the company has internet access* 3:220 (1408:1409). Computer viruses may hurt companies badly, therefore the restricted access. IHD has an Information Security Policy that the internet is there to be used by every employee, but within specified regulations (Appendix 5.12). This may be one of the reasons why access to the internet is not promoted.

The SMEs, warehouse workers and managers regarded the internet to be of importance to get used to the interactivity of computer programs. The warehouse workers were unfamiliar in the use of the internet. I got the impression that it was frowned upon when used within working hours as if no clear purpose existed for internet use. My interpretation at this stage is that there are no relevancy of the workers' needs and the use of the internet other than mere entertainment. Therefore the warehouse workers' negative attitude – it was not related to their work and was looked upon as a waste of time. The freedom to use it and resulting experience was lacking.

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<sup>15</sup> "...ouens is verbasend gou ... wat beteken dit om te browse".

The clear objectives and relevancy of the mainframe systems and ABET use are in contrast to the lack of objectives for the use of the internet. The use of the internet may hold long-term advantages for the workers to prepare them for self-driven learning, but there are no defined needs at present. The skill to use the internet may be more beneficial to the warehouse workers in the long run, due to the advantages browsing skills have for self-driven learning. This makes it a valuable skill to master for e-learning. It also suggests that clear objectives may induce the warehouse workers to make use of a specified strategy if needed.

Enterprise Knowledge Platform (EKP) is a series of e-learning lessons from Laraghskills® that are available to all aspiring employees. Lessons include basic typing and word processing to complex programming and even soft-skill courses. Workers are enrolled in these courses after application, consultation and approval by their managers. These are typical computer-based training (CBT) classes and students have to complete the lessons in their own time and tempo. Very few warehouse workers are enrolled for the EKP courses. I could find only a few workers in the remote DCs who had experience with EKP, although it is widely used by many office workers in IHD. Nevertheless, it provides another platform from which to be involved with computers and to gain experience with computer technology. A respondent from Cape Town indicated that he knew about the EKP courses: *... we had these other courses, e-learning courses, not a problem for me...*<sup>16</sup> 2:148 (957:959).

The questionnaire (Appendix 3.6) requested participants to give an indication of their knowledge about computers. The responses are untested and debatable, but the purpose of these responses was that it gave me an indication to their computer confidence and awareness. Most of the participants admitted that they had an average knowledge or knew little about computers. Seven of forty one participants who completed this section indicated that they had enough confidence to show other workers how to use the computer for basic work-related tasks. Basic typing and mouse skills elicited confident responses from most of the participants.

I reflected that the warehouse workers had already broken through the first barrier, the novelty had worn off, and that computers were not foreign to them anymore. As described by a warehouse manager: *That first fear of this machinery, they're beyond that already* 3:180 (1087:1088).

### **5.2.2 Conclusion about technical experience of warehouse workers**

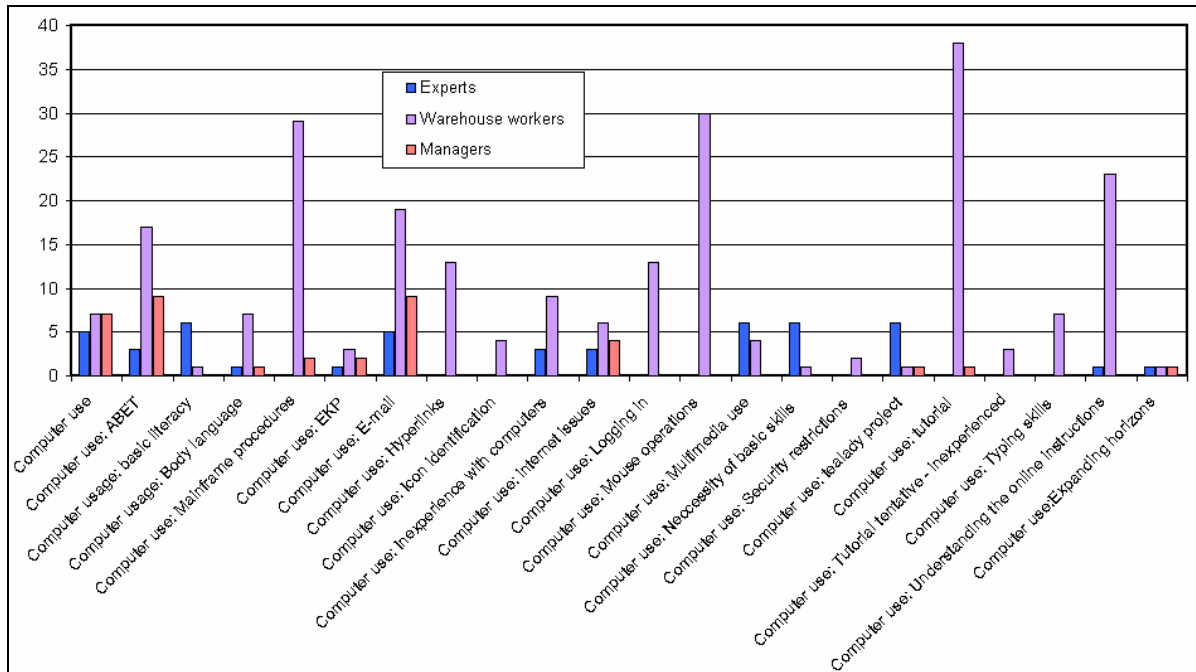
In this chapter, I have explored the first of six theory codes (categories) of e-readiness and presented the technical experience warehouse workers have with technology. The data have been collected from three primary documents generated from interviews, questionnaires and observations conducted with SME's, warehouse workers and warehouse managers. The data have been constructed from an inductive analysis of the data by using Atlas.ti™. I concluded that the warehouse workers are subjected to various types of technical experience in the course of their daily responsibilities.

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<sup>16</sup> Umm, 'n ander probleem is.. kyk ons het mos daardie ander "e-learning" goed gehad (EKP) daar is nie ..., dis nie 'n probleem vir my nie...



Figure 5.6 illustrates twenty two conceptual codes of warehouse worker involvement with computers. These codes emerged from the interviews with SMEs, warehouse workers and managers and observations of warehouse workers. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.



**Figure 5.6 Warehouse workers' technical encounters with computers**

By means of the grounded-theory approach, and by means of inductive analysis of my research data, I have identified the following new and additional theory codes relating to experience with technology (not affective) that may assist in exploring the e-readiness of warehouse workers:

Technical experience with computer technology:

- promotes warehouse workers' overall *encounters with IT*
- enhances the *viability of e-learning* in the workplace of warehouse workers
- influences warehouse workers' *learning preferences*
- affects the required *guidance and support* to warehouse workers
- alleviates warehouse workers' *anxiety* with computers
- influences the *attitude* of the workers
- improves the warehouse workers' *computer literacy*, and
- affects the warehouse workers' *knowledge of e-learning*.

Table 5.4 summarizes the conceptual codes that were the most prominent during the technical experience warehouse workers had with computers. Technical experience impacts the warehouse workers in the following conceptual codes of e-readiness.

**Table 5.4 Technical experience as related to conceptual codes**

		<i>Conceptual codes of e-readiness</i>																				
		Access	Anxiety	Attitude	Classroom training	Computer literacy	Computer use	Encounters with IT	Facilitator	Financial aspects	Guidance & support	Knowledge of e-learning	Learner frustrations	Learning plan	Learning preferences	Managerial contributions	Organisation culture	Relevance	Skills and abilities	Time constraints	Viability of e-learning	
<b>Tech. Exp.</b>			x	x		x		x			x					x						x

This section has explored the technical experience of the warehouse workers and consequently the theory code – technical experience – is related to the conceptual codes as supported by the following data obtained:

Warehouse workers demonstrated their technical experience in that they:

- logged in regularly to access business systems
- typed passwords with the required upper and lower case characters to gain access
- changed passwords monthly to conform to security
- navigated the mainframe system to access the correct application
- interpreted information and responded to instructions on the mainframe system
- were able to communicate via e-mail:
  - received and opened e-mail messages
  - could send e-mail messages, but
  - had problems sending attachments
- were involved with ABET training and sporadic e-learning lessons (EKP)
  - worked without supervision
  - took control of own learning plan
  - showed discipline to complete assignments
  - solved elementary training problems on their own
- had limited access to the internet
- browsed occasionally on the internet and intranet
- demonstrated basic computer skills
- typed and entered required information on the mainframe system
- performed basic mouse operations.

### 5.3 Affective experience with technology (Sub-question 2)

The knowledge that the warehouse workers accrue through technical experience with technology, sets up the next research question. This next section addresses the affective experiences that emerged during the encounters warehouse workers had with technology. Several encounters with computer technology have shown that the warehouse workers are not strangers to the world of technology. How do the warehouse workers experience computers affectively and how does this affective experience influence their e-readiness? The theory code *Experience with technology* also includes the affective experiences warehouse workers have when using computer technology - their fears, anxieties, confidence and attitudes of the warehouse workers contribute to their e-readiness (Figure 5.1).

### 5.3.1 Affective experiences

The previous section has indicated that experience with computers consists of two main areas that may contribute to e-readiness – computer experience and affective experience (Figure 5.1). The experiences with the business systems, ABET training, e-mail and occasional internet interactions have indicated that the opportunity exists to gain experience and work with computer technology almost on a daily basis. But it was not clear how they related to the computer technology emotionally, and whether their attitudes, anxieties, and frustrations hindered them from achieving e-readiness maturity. Figure 5.7 illustrates the relationships of quotes by the SMEs, managers and warehouse workers with regard to attitude, anxiety and frustrations as aspects of affective experiences to be explored.

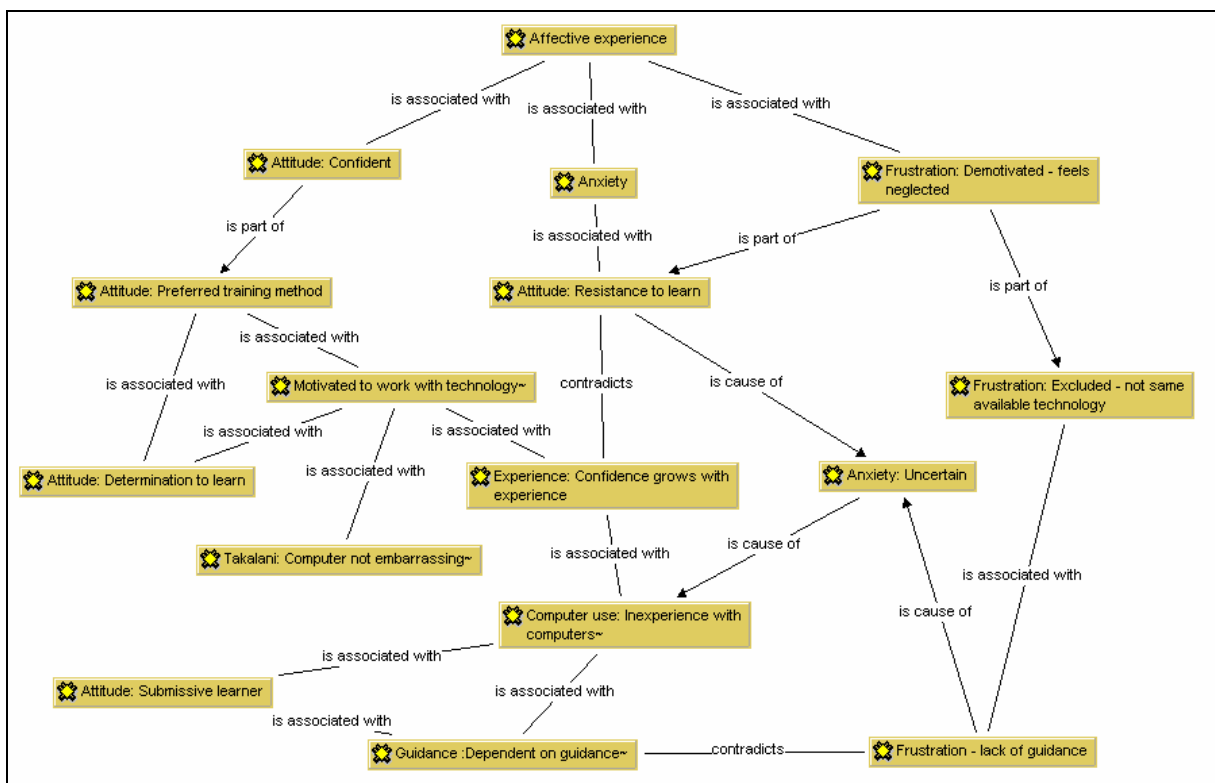


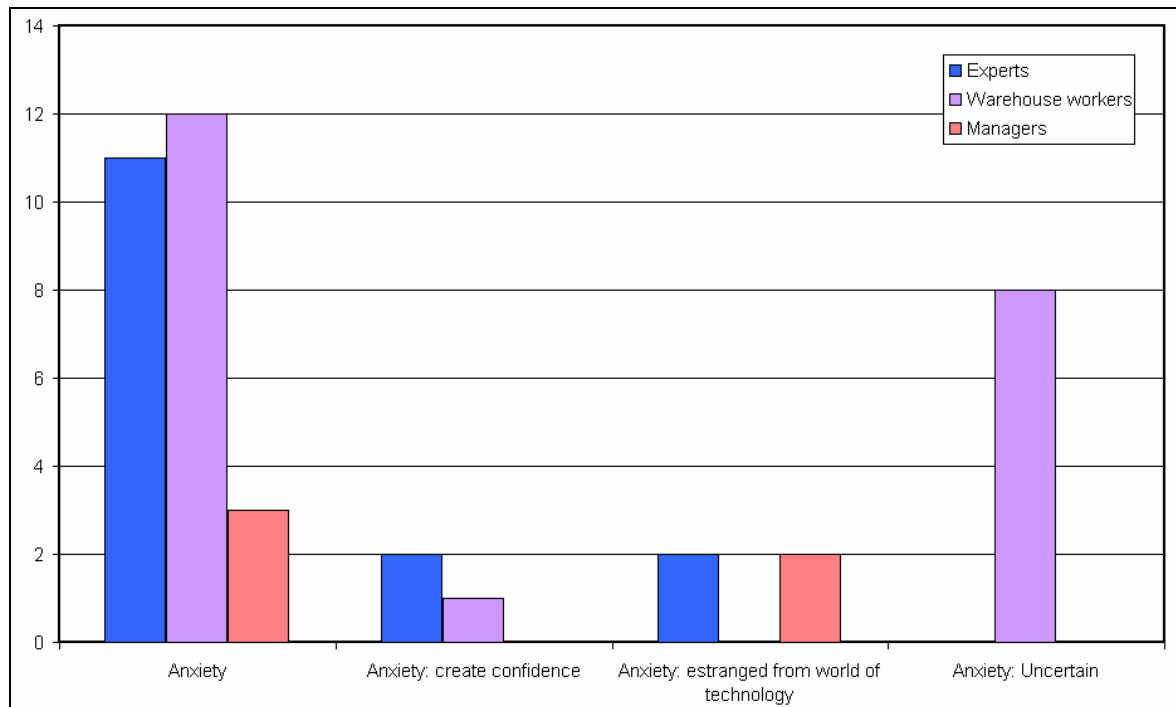
Figure 5.7 Relations of warehouse workers' affective experiences with computers

New and infrequent users often experience anxiety and angst when using computers. Emotions are experienced from the warehouse workers' exposure to the use of computers. These emotions were theorised as confident attitudes, anxiety and frustration. These attitudes may play an important role in the e-readiness of warehouse workers.

### 5.3.2 Anxiety of warehouse workers as affective experience

Many people experience anxiety when changes are introduced in their immediate environments. The SMEs and warehouse workers have both conceded that anxiety is present when computer technology is encountered. Figure 5.6 illustrates the identified dimensions of anxiety as it emerged from the data.

The y-axis represents the frequency the dimension was identified, while the x-axis represents the theoretical dimension of e-readiness.



**Figure 5.8 Experiences of anxiety by warehouse workers when using computers**

Anxiety elicited frequent responses from both SMEs and warehouse workers. SMEs advised that a gradual approach has to be considered to develop confidence before embarking on any e-learning projects: *Keep this up until he is comfortable and confident. This is a time-consuming process and takes time 1:465 (2970:2972)*. The SME warned further that a lack of skill may lead to anxiety:

- *If they don't have the necessary skill they will be anxious 1:95 (509:510).*
- *Many people have a fear of computers when they start. They think of the computer, and wrongly assume that they need to know it before being able to use it 1:157 (763:766).*

The SMEs implied that a lack of knowledge increased anxiety levels, and may lead to avoidance: Many students do not enroll out of fear and anxiety 1:212 (1007). Anxiety is experienced through a lack of knowledge and the limited skills users have when they need to be involved in computer technology.

The SMEs advocated a slow and gradual introduction to computers:

*Yes, first you need to introduce the system, put them at ease by demonstrating the system, and show them the system does not need to be feared. Then short basic and simple exercises to get to know the system. For example how to use the mouse, etc 1:470 (2984:2988).*

When I observed the groups of ABET warehouse workers, I could not detect any anxiousness or confidence either. What I saw was more a kind of apprehensiveness.

*It was as if they just sat back to allow the system to do its own thing. Both watched patiently as they waited for the sign on process to be complete. Still no one spoke - It seemed as if they knew what to do to log in. Nothing in their behaviour suggested that they were scared or tentative when they started to work on the computers 2:15 (71:76).*

However, when I confronted some of the warehouse workers doing ABET training, they conceded anxiety:

- *We were a little bit worried when we were shown out to use these computers* 2:83 (462:463)
- *I do, because I want to go here, there and there, but I can't* 2:260 (1763:1764).

Their opinions and experiences of anxiety were confirmed later during a tutorial observation:

- *... admitted that he was a little stressed and not sure about the "next" and "back" buttons* 2:329 (2403:2405).
- *Indicated that she felt very anxious "whatever I am going to learn here."* 2:405 (2763:2765).

Anxiety was fuelled by uncertainty, limited knowledge and skills as confirmed by a warehouse manager: *Some of them wherever they come from, have never touched a computer before. They really have a problem to just to try and look at things which is on computers* 3:177 (1076:1079).

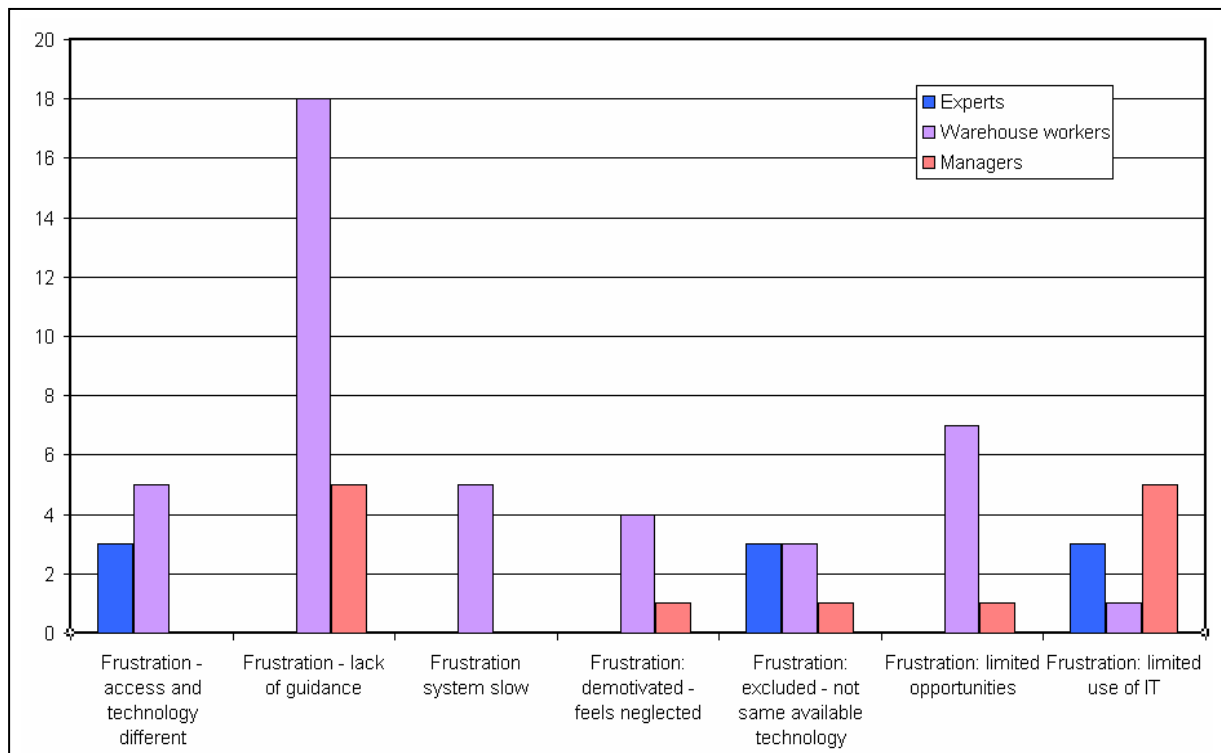
In contrast, regardless of this anxiety, the participants did not hesitate to express their – sometimes naïve – intentions to get involved in learning with computers. A question referring to the use and learning with a computer received the response: *No, I am not scared. I can do it. I can get the proper training and I am not afraid* 3:153 (898:899). A warehouse manager explained that the motivation to get involved with computers seems to be a stronger attraction than the barrier of anxiety: *Even if they are taken out of here, but as long as they are on the computers they feel that they are doing something new, because they have not been in a classroom with computers before* 3:174 (1064:1067).

Interestingly, the anxiety I observed could easily have been frustration due to lack of skills. The computer technology was regarded as strange and unfamiliar. The fact that the warehouse workers also experienced frustration implied that not only were they anxious, but also became impatient when they used the computers.

### **5.3.3 Experience with technology also led to warehouse worker frustrations**

The warehouse workers experienced frustration when their computer related objectives were not realized. I have observed the warehouse workers' frustrations which were caused by being restricted to certain actions and access, limited guidance, slow systems and different technology from the rest of the company. What is inductively implicated is the fact that the warehouse workers displayed some basic knowledge and awareness to assess what should be happening, viz what is actually happening. It implied that the knowledge and awareness of the computer technology exists, but a physical or external barrier prevents the workers from achieving their objectives.

Figure 5.9 illustrates the typical types of frustration with regard to access to the computer technology, lack of guidance, slow systems, feeling neglected, getting limited opportunities and the limited use of IT. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.



**Figure 5.9 Experience with computers led to warehouse worker frustration**

The most frequent responses were received from the warehouse workers themselves when frustrations were mentioned during interviews. Figure 5.9 indicates that the warehouse workers had numerous instances of frustration where guidance and support was concerned.

The warehouse workers indicated that they experienced frustrations related to restricted access to the computer technology. One such example was where a change had been made with regard to the help functions available to the workers:

- *I think maybe they should confront the people that did that. And now that I think of it, it makes me feel bad because they think that we're all stupid now. And mistakes are there to be made that's why you learn from the mistakes 2:171 (1110:1114).*
- *Now they think that it is everybody. You are not supposed to use F2, you have to call the supervisor. And I think it is not right for me, because you know what you are doing but all of a sudden they deprive you because they are afraid of mistakes 2:170 (1106:1110).*

The warehouse workers suggested an awareness of the potentials of computer technology and the ability to discern changes to their access and rights on the available systems. The restrictions frustrated several of the participants:

- *No, we don't have any access. We can only go to [the mainframe system] and check the e-mail. ...if you've finished with [the mainframe system]... and read the mail there's nothing. It's like ... "oogklappe" [blinkers] 2:225 (1504:1509).*
- *Like when you want to go to the internet to see what goes on there... and you can't because you don't know how to enter 2:248 (1656:1658).*
- *No, we don't have any access. We can only go to the mainframe system and check the e-mail 2:225 (1504:1505).*

Frustrations also emerged out of the lack of guidance as experienced during the ABET and EKP learning sessions where they were left on their own, and were not used to it:

- *It's frustrating, it is not very clear, and you're doing it on your own time. Maybe for half an hour, an hour, but you struggle all the time. You don't know which way to go...<sup>17</sup> 2:150 (963:967)*
- *So I think it is much better to have somebody in front whenever there is a question. You put the question directly than reserving the question. You reserve the question to tomorrow when I get it and hope to find someone to answer 2:81 (444:4490)*
- *I think to allow me to train, there in the computer department. I sometimes think and ask myself am I going to work here at manifesting for the rest of my life. It makes me so sad. I feel people have to know more 2:182 (1171:1173).*

Consequently, one respondent complained because his peers bothered him when they were busy with ABET training. The interruptions frustrated him:

*I've experienced some other problems that whenever I'm trying to concentrate on my work, and then somebody is calling me to come 'what can I do?' So now I'm stopping my share to concentrate on other people 2:79 (433:437).*

This frustration emanated from the fact that they continuously asked him questions or assistance when he was busy with his own learning.

I even observed frustration due to system performance: A female warehouse employee wanted to open the mainframe system to start a picking process. She knew I was recording her actions and wanted to impress me. Due to a limited bandwidth, the system was slow to respond (Appendix 5.13):

*She opened the program by clicking on a specified application on the desktop. The system was very slow to respond, and I could sense her frustration. She was aware of the fact that she was being videotaped, and I got the impression she wanted to show her skill with the computer. She clicked on several areas and eventually a program opened. Her frustration was obvious, she clearly demonstrated that she was aware that the system was slow to respond. As I looked at the screen, I could see her impatience as she moved the cursor around. She never waited for the programs to execute, she kept on clicking. It was not as if she did not know what to expect. She wanted something specific, and I wondered if she would know whether it had arrived. A program opened, but it was not what she wanted, she fiddled the mouse around, exclaimed, turned around to speak to a colleague 2:466 (3116:3132).*

I reflected briefly that the actions I had just observed were no different than any other I had seen numerous times from experienced programmers or any other seasoned computer users. I thought that it must be significant when warehouse workers experience frustrations on the performance of the system and not necessarily their own skill limitations. The slowness of the system aggravates all users, even those with limited experience. In spite of her frustrations, she also presented an aura of confidence whilst working on the main frame system (Appendix 5.14).

During the observations of the ABET warehouse workers, the mainframe system operators and the tutorial experiment, I focused on their body language from time to time to see if they were tentative or whether any type of behaviour demonstrated whether they could not cope. I observed to see if I could see them looking around, to search for signs of the lack of activity, unnecessary fidgeting or any other sign that would give me an impression that they did not know what to do. I observed the following:

- *... all three were concentrating and focused on the job at hand 2:421 (218:220)*

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<sup>17</sup> Dis nie mooi duidelik nie, en dis frustrerend, kyk jy doen dit op jou eie tyd. Nou sukkel jy, jy het miskien net 'n halfuur of 'n uur, sukkel jy die heeltid met daardie problem, jy weet nie watter kant toe om te gaan nie.

- *After a few moments he clicked the correct button to open the next screen. This screen simulated the opening of the IHD Intranet, using the explorer 2:333 (2419:2422)*
- *She continued reading, and at one stage leant forward, as if trying to see better 2:422 (2820:2821)*
- *The way he read the monitor indicated that he was not young any more. When he looked up he needed to use the bottom part of his glasses. He tilted his head backwards to enable himself to read the screen. This did not hinder him at all, he read from a document, and typed the figures on the keyboard in front of him 2:487 (3306:3311) (Appendix 5.15).*

The applications and input required from them were very basic, but I did not once get the impression that any of the participants experienced problems that prevented their progress. Judging their body language, most seemed to be capable and ready to use the technology offered to them.

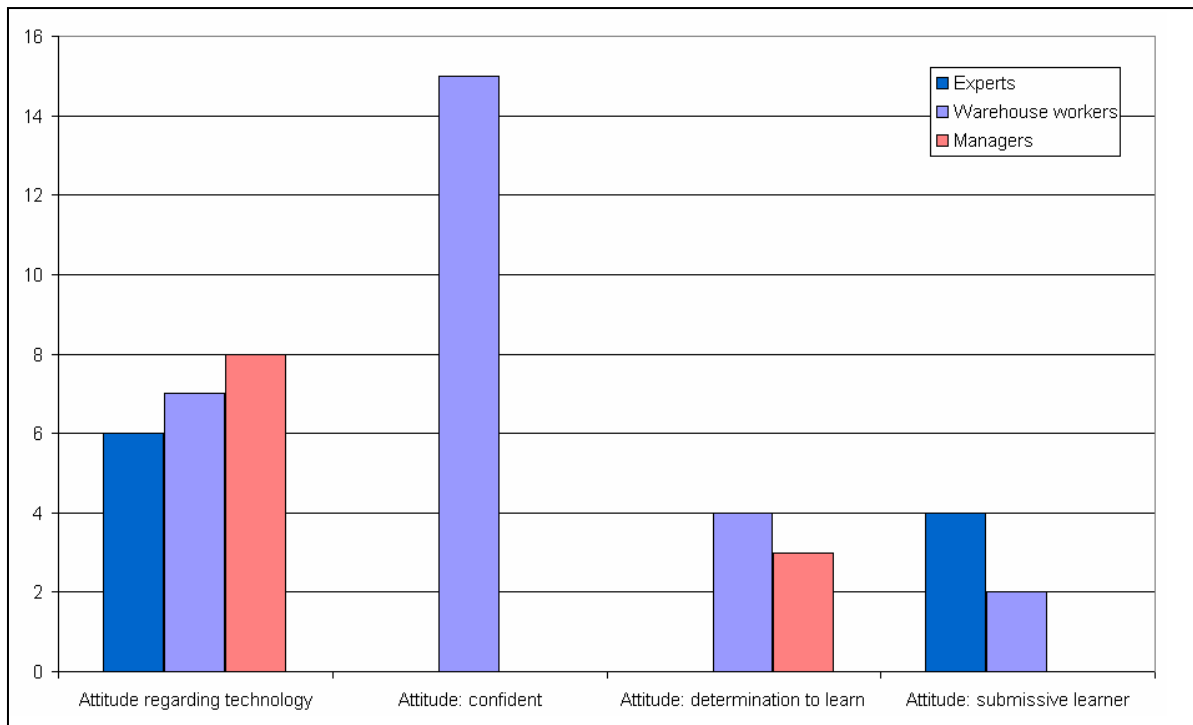
The computer activities the warehouse workers were involved in were not very demanding, and they did not have to solve any problems. In most cases they performed their tasks with assurance and acted with confidence because they were used to the work. Admittedly, none of the activities were focused on solving any problems or where warehouse workers were left on their own, it was merely an observation on how they experienced the computer with what they were already doing at work. The workers experienced frustrations due to expectations that were not met during the course of their work.

#### **5.3.4 Warehouse workers' attitudes as affected by computer experience**

Attitude is described to be the way someone thinks or feels about something. My hypothesis was that the experience with computers has left the warehouse workers with a settled opinion that may influence their eventual e-readiness. This opinion may be a feeling of apprehension that may have made them feel inept or to view computer technology as a summons to participate. It refers to the characteristics a learner brings to the learning environment, and includes the aptitude, attitude, skills and abilities of the learner, determination, preferences, resistances, interests, learning habits and any other aspects of the learner that has to be explored to assess the e-readiness (Reeves, 1999).

Figure 5.10 illustrates the four codes relating to attitude that was determined during the interviews and observations of the SMEs, warehouse workers and managers. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness





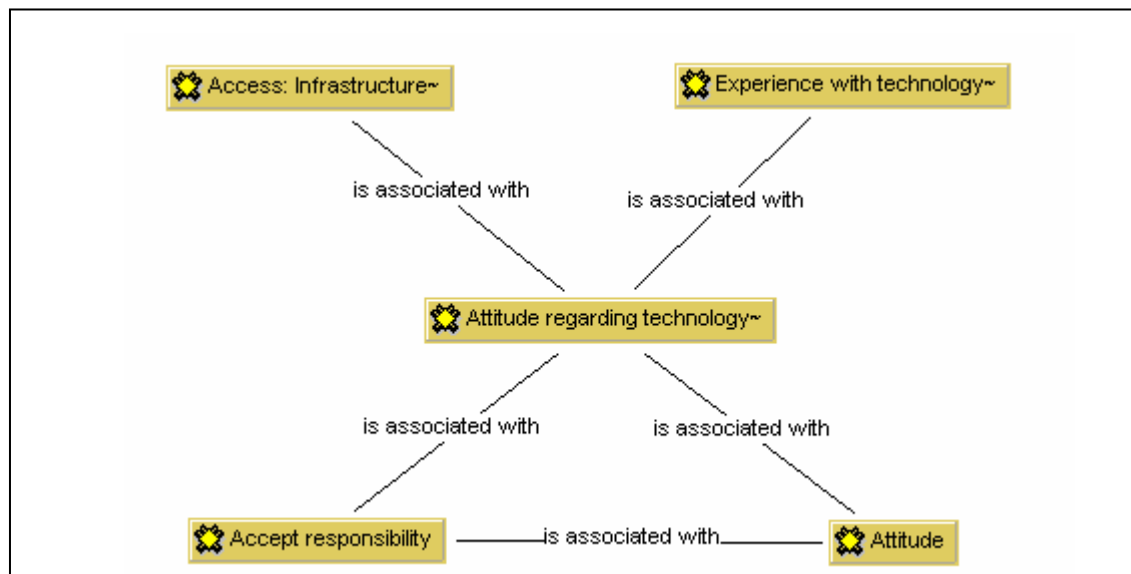
**Figure 5.10 Affective encounters with computers affect attitudes of warehouse workers**

Attitudes of the warehouse workers are influenced by the confidence they have accumulated during their experience with computer technology, determination they have shown to master the skills and to accept the responsibility to respond to the challenges that confronted them. The codes are the responses and observations with regard to attitude regarding technology, confidence, determination to learn and attitudes of submissive learners.

The warehouse workers' attitude towards technology can be a powerful catalyst to transform the worker to become a skilled computer learner. If the warehouse worker experiences frustration and consequently becomes negative towards computer technology, an attitude may develop to avoid the use and any involvement with computers. Views reflected by some of the SMEs are:

- *Especially regarding the attitude towards technology. Some are quick to respond to the challenge, while others are more hesitant, and very aware that they do not have the confidence to work on the PC 1:296 (1810:1814)*
- *I found that warehouse workers with very limited skills enjoyed the challenge and wanted to improve their PC skills. Motivation wasn't really an issue 1:301 (1836:1838)*
- *Attitude in my book is a very powerful driver. I can go much further with a person with limited skill, knowledge with a positive attitude, than with a skilled negative person. To swing a negative attitude is a huge challenge. e-Learning will not do anything to swing an attitude... 1:512 (3189:3193).*

These comments from the group of SMEs confirmed my observations and I am convinced that a positive attitude from warehouse workers is needed to transform training to e-learning.



**Figure 5.11 Warehouse workers' attitude towards technology affects their e-readiness**

Figure 5.11 illustrates the codes of information as it emerged from the data analysis. The central theme namely attitude towards technology is seen to be the result of the workers' experience and involvement with technology and the available infrastructure. By accepting responsibility and with the right attitude, the workers may develop an attitude towards technology to be ready for e-learning.

Some of the warehouse workers I have interviewed had a very specific and mostly positive opinion towards the computers and the possibility of computer training. Some comments I received were: *I work on it. I do have it at home, but I never learned or worked on it at school. I know it practically* 2:98 (582:583). This specific respondent was very adamant that he would love to get involved in computer training, and showed his determination by buying a computer for himself to have at home, and with internet connection. Warehouse workers often expressed their intentions to learn and that they would like to get the opportunity to learn using computers:

- *If you get learning, you get more accurate in what you are doing because you learn a lot of things for your future* 2:103 (622:624)
- *I don't think I can drop from learning. Yeah I can't, I can't! I can't drop from learning. I got so much experience coming to work, I mean I've been struggling for a long time* 2:111 (685:687)
- *You know, I'd like to know much about the computers, I wish the company can help to train us on the computer* 2:240 (1613:1615).

These few quotes suggest that the warehouse workers' attitudes towards training were positive and that they were keen to learn. However, I regarded some of the perceptions of the warehouse workers to be somewhat naïve:

- *I think with a computer it is not going to be too difficult. It is like a person. Whatever you do to the computer it is answering you back. I don't see a problem* 2:217 (1451:1454)
- *Yes! [very adamant] I wish I can. Because I think I can gain more experience. Because I never went for training on a computer, and I wish I can* 2:191 (1259:1261).

In contrast to the positive attitude reflected by the warehouse workers, one of the managers expressed the following perspective: ... *then you get the guys with a wrong attitude and expecting everything on a tray*<sup>18</sup> 4:38 (315:317). In support of this perspective, some SMEs had strong reservations regarding the inner drive and motivation of warehouse workers to take responsibility for their own development:

- *I find that there's resistance to learn, and to do more from your own point of view, that self-driven warehouse workers are really very, very scarce* 1:4829 (3046:3048)
- *Computer literacy is important, but the capability to learn on his own is even more important...*<sup>19</sup> 1:417 (2703:2704).

From the data two distinct opinions emerged. The warehouse workers were naïvely positive and expressed their capability to learn with computers, while the SMEs had some reservations about the inner motivations. SME advice included that an intensive management strategy devoted to change may be needed to transform the workers to become self-driven learners: ... *there is a change management process that has to be included here ... where you have a lot of blue collar workers, we used three different strategies, tutorials, demonstrations and simulations*<sup>20</sup> 1:447 (2848:2852).

Regardless of the naïvete shown by the warehouse workers, they reflected a confidence and determination to get involved in computer technology: *I think it is a challenge, and, if you are determined to achieve something out of it, it won't be too difficult* 2:286 (1961:1962). The findings from the data analysis supported the positive attitude the warehouse workers expressed and that they wanted to get more involved in computer technology.

I observed both a confidence and a lack thereof in the warehouse worker interviews and observations. I have observed the warehouse workers during the ABET sessions:

- *He briefly looked at the whiteboard, confirmed the user id and typed it in* 2:60 (315:316)
- *He found his name on the list, clicked once to open the lesson where he had left it the last time* 2:63 (334:335).

Both actions indicated an assuredness and confidence in what they were doing. Questions during the interviews regarding the ability of computer training were often met with an almost arrogant and overconfident manner: *No, I'm OK with the computer* [Not hesitant at all, not even giving it a second thought] *If I did a basic course, I'll do it* 2:268 (1841:1843). I don't think I would have received a negative response anyway, but I tried to detect insecurity which I could not find.

Information in Figure 5.12 indicates the relations of participants' observations with regard to confident attitudes. The data analysis implies that a positive attitude with regard to technology will be established when access and regular use of the computers are promoted. The regular use develops a basic literacy which in turn adds to a positive attitude. This attitude may be exploited later to support

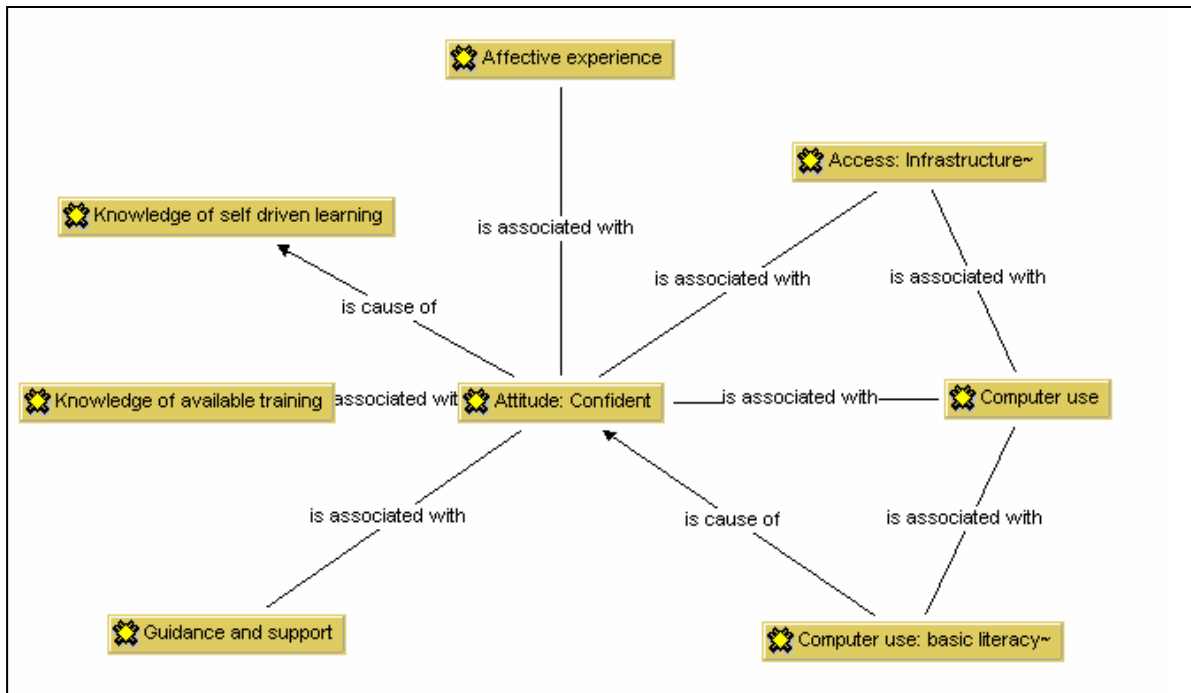
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<sup>18</sup> En dan kry jy die ouens wat glad nie die potensiaal het nie, maar hulle "attitude" is verkeerd en hulle dink hulle gaan als op 'n skinkbord kry.

<sup>19</sup> Een ding is "computer literacy", maar wat dalk nog belangriker is, is die ou se vermoë om self te leer (sic).

<sup>20</sup> Daar is 'n hele "change management" proses wat hierby moet aansluit. ... waar daar 'n groot deel "blue collar workers" is, het ons drie strategieë gebruik – "tutorials", demonstrasies en simulasie.

and develop e-learning through guidance and support and the relevant knowledge of learning objectives.



**Figure 5.12 Confident attitudes developed through experience with technology**

Observations of warehouse workers performing mainframe system activities illustrated that they were confident where the skill and competence measured up to the requirements for the job at hand. An observation during one of the mainframe system observations was:

*Judging her behaviour and response to the PC, she clearly has no fear for the machine. It may be that she never learnt to use the Windows menus, but she knew that she had to use the menus to find her application 2:477 (3158:3162) (Appendices 5.13-14).*

I could not detect uncertainty while the workers were busy with the mainframe system procedures: *His computer skills seemed to be fair, and to be honest, I did not detect or interpret any sign of apprehension towards the computer 2:489 (3317:3319).* In Bloemfontein, I confronted and queried the actions of one of the participants while he was completing his tasks on the mainframe system:

*He was assured, knew what he was doing, and could explain the process to me without hesitation. He then proceeded to process the product quantities to be moved from the bulk area to the fine pick area or "flow racks" as it is known 2:501 (3423:3427) (Appendices 5.5 – 5.7).*

Interestingly, this same respondent became increasingly more tentative and less assured when I asked him to demonstrate some e-mail procedures (Appendices 5.8 - 5.10). At first he was confident:

- *He immediately clicked on the message to open it. There was still not indication that he was tentative, or uncertain 2:507 (3468:3470)*
- *He moved the cursor to the "Reply"-function, and said "I click it there". He indicated the correct procedure, but at this time I detected that he was not so sure anymore 2:508 (3474:3476)*
- *My perception of his e-mail abilities was that he was fairly capable, but lacked experience. The need of e-mail usage at this stage, was to receive information, and not really to pass it on 2:515 (3504:3507).*

From the above observations I concluded that workers were less confident when they worked with unfamiliar computer procedures. When the objectives were clear, and when the medium was known, the warehouse workers were confident with the computer technology. I reflected that it was this confidence with known and familiar procedures that convinced them to express, almost naïvely, that they would not experience any problems to learn more about computer technology.

Consequently, the warehouse workers were determined to learn and use the computers: *I think it is a challenge, but if you are determined to achieve something out of it, it won't be too difficult* 2:286 (1961:1962). Some participants reiterated that it was not just the fascination of computer learning that attracted their attention, for some it was a priority to develop: *I can do the eighteen months and you can go to UNISA and do the correspondence, they will help you. Then I go there, then I finish you see* 2:312 (2226:2229). This determination to try and explore the new technology was summarized by a warehouse manager:

*These guys, if you consider the cultures where they came from. Ten years ago they would sit back and be afraid that they will make mistakes. Today they confront the computer and say to themselves, "Hey, how does this thing work? I'd like to try it out..."*<sup>21</sup> 4:53 (55:60).

Such a determination to learn is viewed by the SMEs to be of inestimable value to establish a learning culture for e-learning: [to determine] *a mindset, I must go on my own, see what is expected from me, get the due dates, study the outcomes and take the responsibility to make it work...*<sup>22</sup> 1:257 (1355:1360). The determination to learn and the attitude needed to develop a culture to learn on their own can be encouraged by the availability and regular use of computer technology. A manager commented:

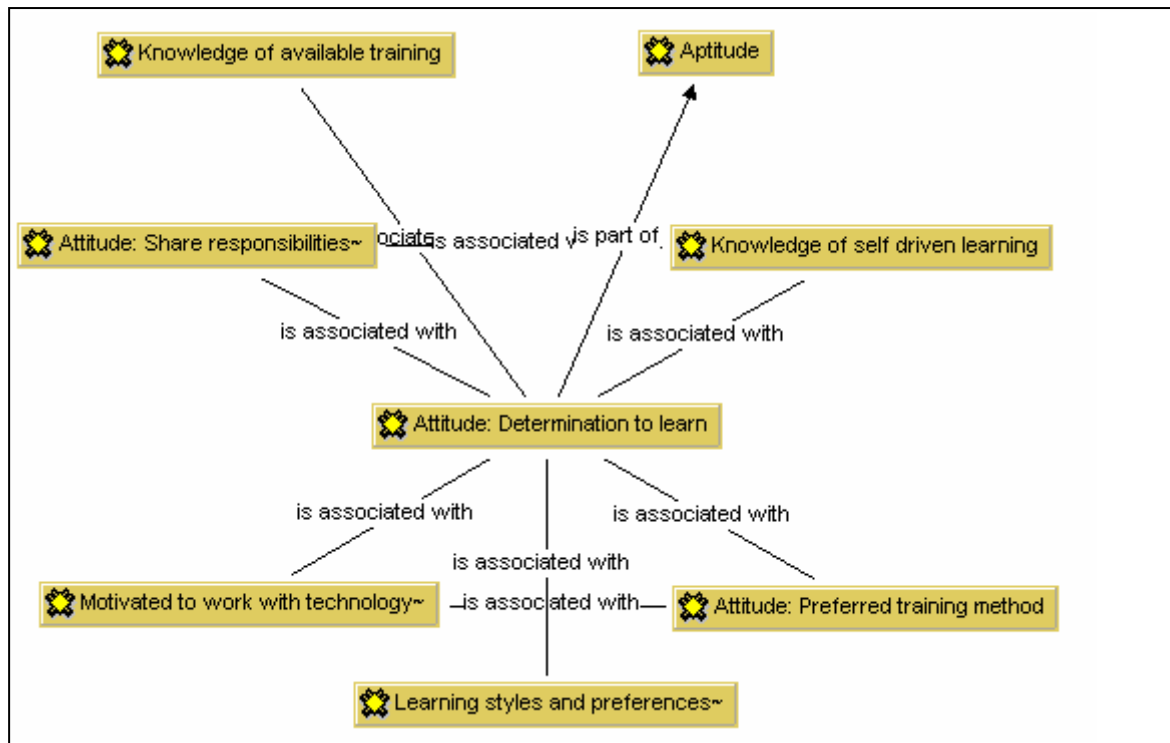
*Even if they are taken out of here, but as long as they are on the computers, they feel that they are doing something new, because they have not been in a classroom with computers before* 3:174 (1064:1067).

Figure 5.13 indicates the identified relationships of warehouse workers' determination to learn about applicable technology. The basic learning styles, along with the motivation to work with technology and preferred training strategy may bolster the determination to learn. This determination could influence a worker to take responsibility of his own development if the objectives and outcomes are known. It may eventually affect his aptitude for e-maturity of e-readiness.

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<sup>21</sup> Hierdie outjies, as jy kyk na die kultuur, waar hulle vandaan kom, en tien jaar terug was daar altyd die vrees dat "ek gaan 'n fout maak", nie net op die rekenaar nie, maar op alle gebiede. So ek dink deesdae is dit meer van voor-op-die-stoel sit, van "hey" ek wil begin "check" hoe werk hierdie muis, ek wil dinge begin "try" - dis wat ek dink

<sup>22</sup> ... "mind-set" van ek moet eintlik self gaan soek, ek moet gaan kyk wat word van my verwag, ek moet die "due-dates" gaan bestudeer, ek moet die uitkomst bestudeer, ek is self verantwoordelik om hierdie ding te maak werk.



**Figure 5.13 Determination to learn is regarded to be a valuable attitude for e-readiness**

The attitude and determination can be established with careful facilitation according to SMEs: *Attitude can only change when the benefits are experienced and seen. Your main focus should be to remove the threat and focus on the positives* 1:513 (3195:3197). Accordingly, some managers also indicate a willingness to make use of the computer to train their staff: *With my staff I would prefer computerized training because then it is up to me and it's easier to manage, and co-ordinate with the time I have available* 3:106 (570:572).

The determined attitude of the warehouse workers to work and learn computer technology and the willingness of some of the managers contribute significantly to the e-readiness of warehouse workers. It may set up a positive platform from which to launch e-learning programs. However, not all workers are this confident, and several SMEs and managers indicated a concern on the learning styles of the warehouse workers:

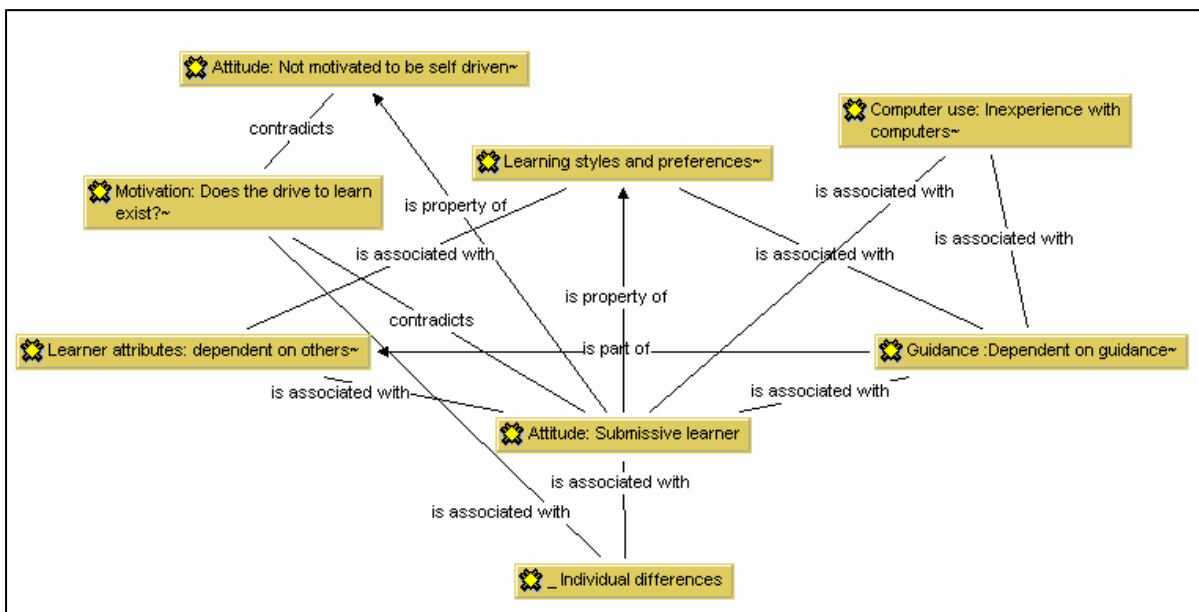
- ... they have the potential, but never apply for promotion. Happy where they are. They never speak to their managers, happy where they are...<sup>23</sup> 4:37 (311:315)
- I find that there's resistance to learn, and to do more from your own point of view, that self-driven learners are really very, very scarce 1:482 (3046:3048)
- ... find that there are two extremes, on the one side there are the passive worker without any wish to progress further, he is unsure of himself, know his education is limited, doesn't read very well and doesn't know what to do next. On the other hand, you find an arrogant person who demands attention, and see it as his right to develop 1:501 (3123:3128).

SMEs also indicated that a self-driven learning culture does not exist in the typical workers' community:

<sup>23</sup> ...wat baie [sic] potensiaal het, maar hulle is gelukkig [sic] waar hulle is. Hulle wil nooit aansoek doen nie, skrikkerig vir een of ander rede. Hulle sal ook nie openlik met die bestuurder praat oor hulle nie aansoek doen nie, hulle is gelukkig daar.

... while we found that at companies like Escom, Randwater, the typical worker has not developed the skill to become a self driven learner. They are being scheduled for training, attend and afterwards they are only interested in the attendance certificate. Whether they learnt anything, is irrelevant to them<sup>24</sup> 1:420 (2713:2718).

The purpose of this paper is not to seek a solution to these problems but to understand it. Tema (2002) stated “the traditional classroom which Dewey (1949) described as ‘having fixed rows of desks and a military regimen of pupils who were permitted to move only at certain fixed signals’, are still the norm in Africa” (p. 137). The same author added that in the climate of change in South Africa, pupils should be allowed to pursue a strategy to develop self-correcting strategies, and an awareness of the possibility to enforce changes. The point that I try to bring across is that the warehouse worker should be allowed to decide for himself. Attitudes differ, some need more guidance and support than others, but in the end the individual’s learning style and preferences may be the deciding factor to determine his e-readiness. Figure 5.14 illustrates the attitude of submissive learners and the initial dependency on guidance and direction.



**Figure 5.14 Attitude and e-readiness of submissive learners**

Submissive learners may be insecure and feel even more threatened due to their inexperience with computers. With guidance and motivation and support such warehouse workers may develop a learning style to be e-ready. But the following comment by a female respondent suggested that guidance is needed, but it should be a mutual process:

*Rather than when I take the course because you said I must take the course! [Anger showing] Then I'm gonna sit in the classroom? [Incredulous - voice pitch rises significantly]. Does that mean that I'm going to concentrate? Better if you sit down and talk. I'll have a direction! 2:214 (1422:1427).*

<sup>24</sup> terwyl ons gevind het dat by plekke soos Eskom, Randwater - die tipiese arbeider - het nog nie hierdie vermoë aangeleer nie. Dit bestaan nie by hulle nie. Hulle word geskeduleer, woon by en stel bloot belang in die bywoningsertifikaat na die tyd. Of hy iets geleer het of nie, is irrelevant.

The attitude displayed by this respondent summarizes the awareness of the warehouse workers. It seems as if guidance is needed, and that direction should be provided, but only when they are active participants in the direction they are sent to.

### **5.3.5 Conclusions on warehouse workers' affective experience of computers to determine e-readiness**

The second sub-question explored the affective experience of warehouse workers and the impact it has on the e-readiness of the warehouse workers. I have inductively explored the presence and relation of the warehouse workers with regard to anxiety, frustration and attitude to determine the effects these emotions had on the warehouse workers' e-readiness. The analysis has confirmed my hypothesis that warehouse workers experience computers affectively and that it indeed has an effect on their e-readiness.

However, affective emotions like anxiety resulting from experiences with computers did not seem to deter the warehouse workers from getting involved with the challenges that computer technology holds in their working environments. Some workers tended to be more determined and confident when responding to the challenges of technology. Others responded less assured, and sought guidance and direction to ensure them that they were moving in the right direction. The anxiety and lack of confidence can be directly associated with the warehouse workers limited knowledge of learning with computers. They had never been placed in a position before where they needed to take responsibility for their own training, and experienced the computer learning mostly as an extension of the classroom where a presenter would guide and direct their activities.

The frustrated reaction of some participants reflected familiarity with some of the computer tasks and confirmed that a comfort zone had been achieved with regard to computer use on the mainframe systems. Other frustrations were lack of access to and differences about the technology that are available to them.

The following additional and new theory codes relating to affective experience with technology have emerged after following a grounded theory approach and inductive analysis of the research data.

Affective experience with computer technology:

- increases warehouse workers' *encounters with IT*
- promotes warehouse workers' freedom to *use computer* technology
- improves warehouse workers' *computer literacy*
- alleviates *anxiety* of warehouse workers to be involved with computer technology
- affects the *attitude* of the workers to computer technology
- alleviates *frustrations* regarding the use and knowledge of computer technology
- affects the workers' *learning styles and preferences*
- increases the warehouse workers' *skills and abilities* with computer technology
- affects the warehouse workers' *knowledge of e-learning*
- affects warehouse workers' required *guidance and support* when working on computer technology



Table 5.5 summarizes the conceptual codes that emerged to be the most prominent during the affective experience warehouse workers had with computers. The theory code affective experience, impacts the warehouse workers in the following conceptual codes of e-readiness.

**Table 5.5 Theory code “Affective experience” relating to conceptual codes**

		<i>Conceptual codes of e-readiness</i>																			
		Access	Anxiety	Attitude	Classroom training	Computer literacy	Computer use	Encounters with IT	Facilitator	Financial aspects	Guidance & Support	Knowledge of e-learning	Learner Frustrations	Learning plan	Learning Preferences	Managerial contributions	Organisation culture	Relevance	Skills and abilities	Time constraints	Viability of e-learning
<b>Aff. Exp.</b>			x	x		x	x	x			x	x	x		x				x		

These listed conceptual codes are supported by the information that has emerged during the interviews with SMEs, warehouse workers and managers, and observations of warehouse workers.

The warehouse workers’ attitudes indicated that they:

- were confident that they could master computer training and learning strategies
- were anxious and frustrated but this did not prevent their participation
- enjoyed the access and use of computer technology
- hoped to make more use of computers
- needed guidance and support to use the computers more purposefully
- would like to be involved in decision-making processes regarding their computer use.

The warehouse workers experienced anxiety:

- when computer actions were unfamiliar due to skill limitations
- due to lack of knowledge of computer use
- due to lack of guidance and support
- but were not deterred from using computers.

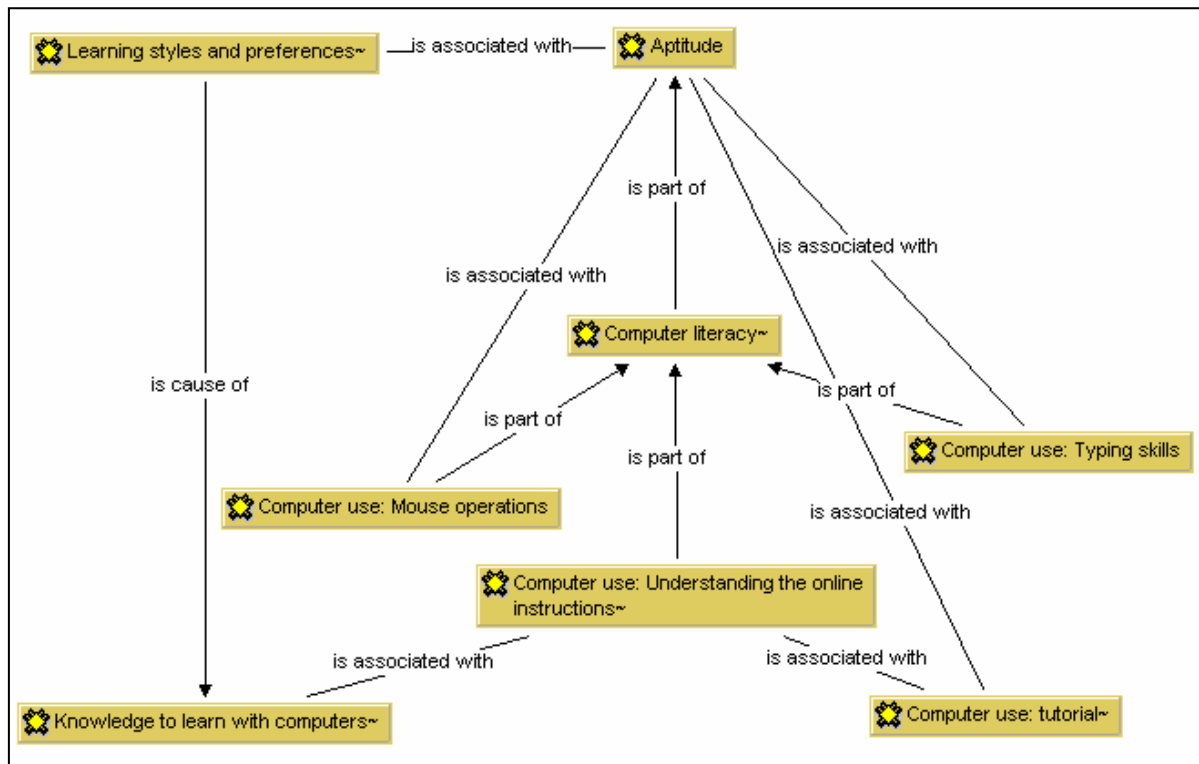
Warehouse workers also experienced frustration when they:

- worked without supervision and if interrupted by co-workers
- experienced restrictions to the access of computer technology
- lacked guidance and support when training with computers
- experienced slow system responses and if their expectations were not met.

## 5.4 Observed aptitude as evidence of e-readiness (Sub-question 3)

The third sub-question explored the warehouse workers observed aptitude with computers to determine their e-readiness relating to computer skills and competencies. Aptitude refers to the individual characteristics or propensity of the learner to make sense of the learning objective. This aptitude or ability includes the locus of control, learning styles, prior experience, attitudes, interests and other personal attributes a learner uses to address the challenges posed (Reeves, 1999). The previous two questions discussed the warehouse workers’ experiences and affective experiences about computer technology. This section explores the aptitudes the warehouse workers display while being challenged with computer technology.

Warehouse workers' aptitude is described to be the way the warehouse workers were able to negotiate the demands of the systems they were confronted with. During the interviews and observations, I mostly focused on three areas of e-maturity. They are the ability to interpret online instructions, typing and mouse skills. Figure 5.15 illustrates these three codes' relation to the knowledge to learn with computers and the workers' observed abilities to complete tutorials. Aptitudes of warehouse workers are seen to be a combination of these skills together with the learning styles of individuals.



**Figure 5.15 e-Readiness aptitude – observed codes of computer literacy**

The SMEs emphasised the importance of computer literacy especially to enable warehouse workers to be confident when they need to work independently on computers:

- *Not only IT literacy, but also the skill to search for information, find, analyse and to use it is important*<sup>25</sup> 1:234 (1134:1159)
- *The capability to work on operating systems and to follow logical paths that are used in e-learning strategies...*<sup>26</sup> 1:235 (1194:1195).

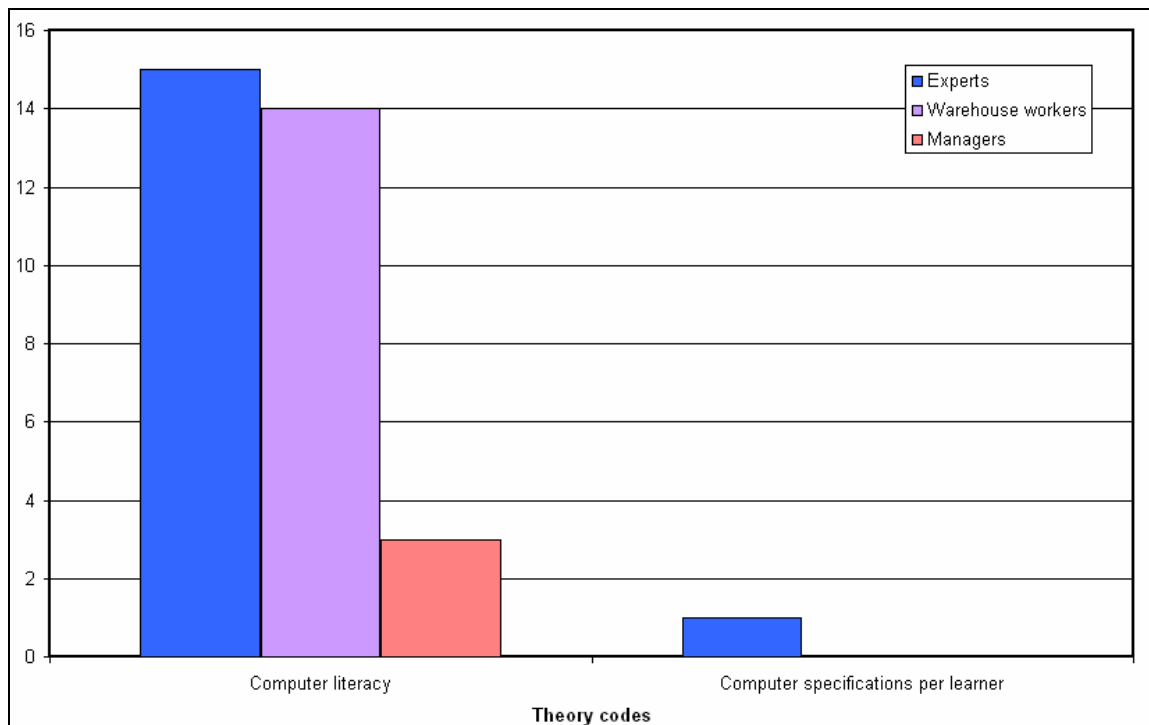
The SME's also agreed that different levels of computer literacy existed, and that, regardless of the tempo, competency was important:

<sup>25</sup> ... so dis nie net 'n "IT literacy", hy moenie net tuis wees met die rekenaar omgewing nie, maar hy moet tuis wees met die vermoë om inligting te gaan soek en dan om daai inligting te analiseer en te integreer en iets daarmee te maak (sic).

<sup>26</sup> "operating systems" kan hanteer, hy moet kan 'n logiese pad volg wat in 'n "e-learning" omgewing moet kan optree

*Different levels of literacy exist. Some are quick to respond to the challenge, while others are more hesitant, and very aware that they do not have the confidence to work on the PC. Scared that they may make mistakes. To start e-learning, it is important that they have a basic knowledge of the computer, how to use the mouse, the keyboard - even if it is slow 1:295 (1810:1817).*

The above quote indicates the challenges that confront warehouse workers to try and make sense of their environments according to their personal skills, competencies and knowledge. Figure 5.16 illustrates the frequencies and the participation of the SMEs and warehouse workers during the interviews and observations of computer literacy. SMEs mostly discussed aspects such as the importance and the influence that workers' aptitudes have on the e-readiness of such groups. The input received from the workers, were the frequent observations during their mainframe, ABET and other observed activities. Figure 5.16 illustrate the frequency of responses wrt to computer literacy. Figure 5.10 illustrates the four codes relating to attitude that was determined during the interviews and observations of the SMEs, warehouse workers and managers. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.



**Figure 5.16 Computer literacy a required aptitude for e-readiness**

One SME commented on reading literacy and the expected computer literacy: *My experience is that many of them are not even literate, which makes computer literacy even a bigger issue. This becomes a huge challenge 1:462 (2956:2958).* If the warehouse workers experienced problems with literacy, it meant that they would not be able to interpret messages or information sent to them on the mainframe system.

When I observed the five participants during their mainframe system activities, they all seemed to be competent enough to read and interpret the information from the computer:

- ...watches the monitor, reads the information as it is displayed on the screen. Interprets the information by deliberately walking to a shelf where electronic lights indicate the quantity to pick 2:457 (3046:3049)
- ... briefly reads the screen, turns around to another shelf. He understood from the displayed information on the screen that there are more articles to be picked 2:458 (3053:3055)
- He accurately interprets from the displayed information that there is no more stock to pick 2:459 (3061:3062).

None of the observed participants indicated any problems to interpret information from the computers, in fact, most reflected a confident, knowledgeable attitude as far as the mainframe information was concerned.

However, one has to admit the actions were taught, drilled responses, which they perform literally hundred times per day. Information to be interpreted from the monitors is a few single fields to confirm accuracy. No complex judgements are needed. It would be short-sighted to compare these to the exercises in e-learning where students are subjected to a more constructivist learning approach. In spite of the simplicity, it is a very critical procedure and mistakes will have severe financial repercussions for the organisation. Instructions can be read and interpreted from computer technology. Guidance may be needed if more complex applications and software are used.

The warehouse workers' experience with the available systems at work gives them a basic exposure to practice their typing skills. My observations during the mainframe system activities, ABET training sessions and interviews indicated that they have already laid the first foundation of literacy. There were definite differences between individuals, some had problems when the caps lock was on, and others typed slower, but in general I had the impression that their general computer literacy was good:

- *Lady 1's typing was not fast, but seemed adequate* 2:26 (130:131)
- *... occasional typing, supported by mouse activities and writing in their work books* 2:31 (154:155).

From the above, one could sense the confidence and purposeful manner in which they completed their tasks. The typing demands from both the mainframe system and the ABET lessons were not complex, and required a few single keystrokes only, and for this the warehouse workers seemed to be in control and confident.

However, some of the participants were overly confident regarding their computer literacy:

*Yes I type quite well. We work on the computers since this year* 2:165 (1072:1075).

When I asked her to rate her typing skills out of ten, she replied:

*Oh I think it's a ten.* [Laughs - seemed very sure but the reaction is probably one of embarrassment at her own arrogance] *I'll give myself ten* 2:180 (1163:1165). [I wondered briefly if she has ever seen a real typist in action].

This overly confident attitude made me wary and suspicious that the warehouse workers may underestimate the demands that are required from e-learning. I was aware that their confidence emanated mostly from their previous experience.

Another respondent displayed his unique way of typing: *His typing actions were with one hand only, using only his middle finger to type, right hand resting between the numeric keypad and the mouse* 2:498 (3401:3410) (Appendix 5.15). Several participants indicated to me that they had never received formal training to type; it was learnt on the job. One respondent complained about being thrown in at the deep end: ... *nobody gave you a manual to help you learn new strategies, we had to learn ourselves ...*<sup>27</sup> 2:516 (818:823). From the way most of the workers typed I assumed that none had received formal training on these skills either. The indications I received from such data were that the warehouse workers mostly taught themselves how to type. Their typing skills were basic but adequate for the demands of the job. (Appendices 5.1 to 5.15). The warehouse workers seemed to be e-mature with regard to their aptitude to type basic commands.

Operating the mouse did not really pose problems but from observations I could detect that they did not use the mouse very often. The mainframe system doesn't require much mouse operation, but to log in they had to place the cursor in the right field. When I asked the respondent in Bloemfontein to show me his e-mail skills I noted the following regarding his mouse skills: ... *put his right hand on the mouse and started. He had a confident manner in which he used the mouse, not hesitant at all* 2:326 (2389:2391). They used the mouse mostly to activate a field where input was needed. These actions seemed to be confident.

The double clicking to select and open files proved a little different. They were not used to this: *He clicked once, too slow, but got the double click right with the second attempt. When the hourglass appeared on the screen he released the mouse ...* 2:327 (2391:2393). This was during a tutorial experiment, where the participants had to work through a tutorial. I detected a definite difference where a double click action was required. This was a less familiar action, but the participants caught on quickly once they learnt the purpose.

The basic computer literacy of the warehouse workers appeared to be sufficient for the requirements of the computer activities they were involved in. Interpreting the information from the monitors, typing and mouse operations were basic, but still provided a very good platform for expansion. However, these observations were made when warehouse workers performed well-known tasks and knew what was required and what should be done.

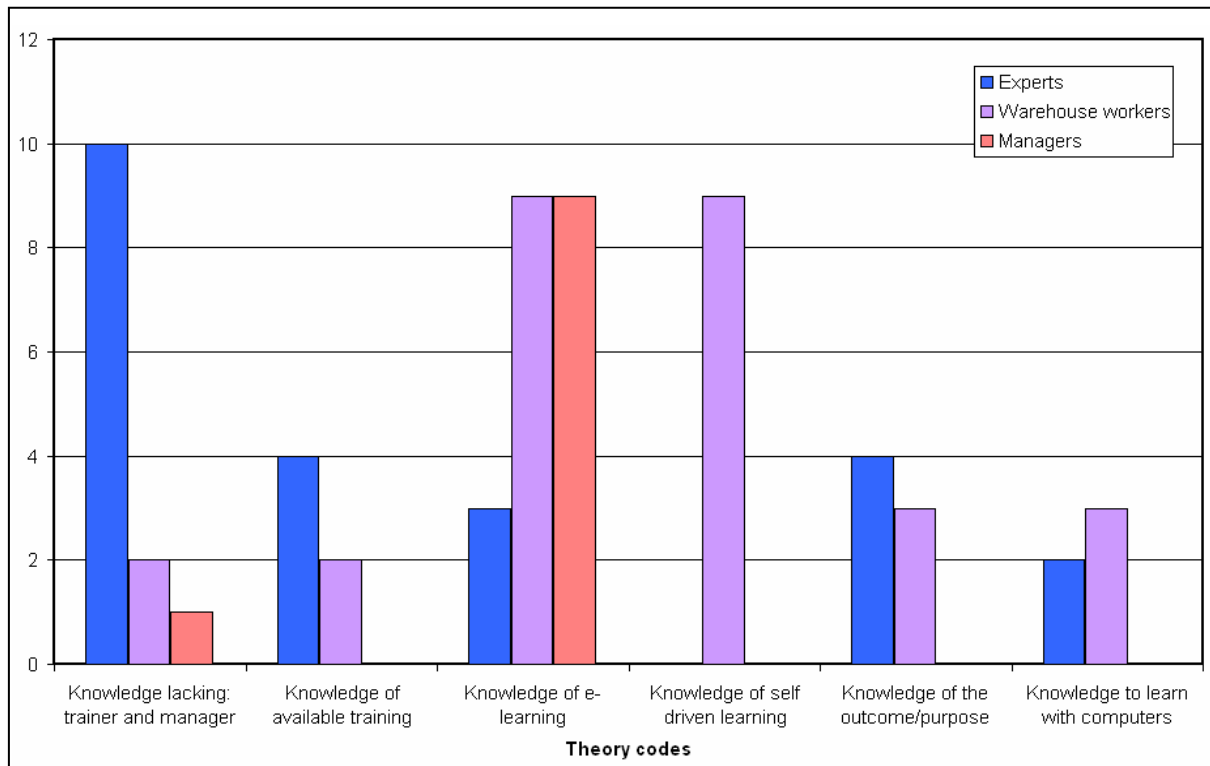
The computer literacy of the warehouse workers seemed to be good enough to support the hypothesis that they are e-ready as far as interpreting the mainframe information, basic typing and mouse skills are concerned. The opinion of the SMEs was that once the learner knows his way around, the rest follows more readily: ... *once a learner got used to the way a computer program works and he learnt his way around it, they become eager for more* 1:149 (728:730).

The previous section suggested that warehouse workers were confident that they would be able to cope with the computer technology. Their computer literacy supported their confidence, and I became

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<sup>27</sup> Hier gooi hulle mos vir jou by die diepkant in. Ons het nie "training" gekry nie. hulle het nie vir ons gesê hier is vir jou 'n "manual" om dit te leer nie, ons moes maar self leer.

curious about their knowledge of learning with computers. SMEs related that students often don't know what are expected of them during online lessons. *A problem we experience is that line managers do not relate to the e-learning initiative, and don't really support the workers to complete their tasks on computers 1:304 (1845:1847).*



**Figure 5.17 e-Readiness aptitude and knowledge of e-learning**

Figure 5.17 illustrates the collected data from the interviews and observation with regard to the participants' knowledge of e-learning. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness. Two code types are prominent where warehouse workers made frequent contributions during the interviews and observations, knowledge of computer training and self-driven learning. The SMEs frequently reported about the lack of knowledge from responsible managers and the training staff. The HR training manager gave an honest reply regarding his knowledge of e-learning:

- *I'm not who is averse to e-learning, and that... It's not as if I do not support it, but I believe if it is well monitored it can yield great results. It is not that I am not at ease with that 3:71 (381:386).*
- *But, I don't know really. I don't know how you drive it, I don't know much about e-learning, I must be honest. I don't know how you actually encourage the people to go in that direction. I don't know much about it 3:75 (397:400).*

I asked one of the participants during an interview if he knew what e-learning was. *He answered negatively, shaking his head, he did not know what it was 2:322 (2369:2371).* In contrast very few of the participants reacted negatively when I asked them if they would be able to learn with computers. Most were confident that they would be able to do computer training if it is made available to them, regardless of the limited knowledge.

Interestingly, one has to argue that if the HR manager who has the responsibility to prepare and develop training admits that he does not know what e-learning is, the chances are quite high that the warehouse staff may know even less. Their admissions that they would like computer training may be valid, but it may be a risky assumption that they would be able to do it just on these indications. If their answers were naïve to seek interviewer approval, and if they really have a limited knowledge of e-learning, such a limitation immediately questions the wisdom to present the warehouse workers with a self driven learning strategy.

The participants were overly positive on their capabilities to do e-learning, and this made me suspicious, due to the possible limitations about their knowledge of e-learning. I ran an additional questionnaire to ten randomly selected users in the Port Elizabeth DC to probe their e-learning knowledge (Appendix 3.6).

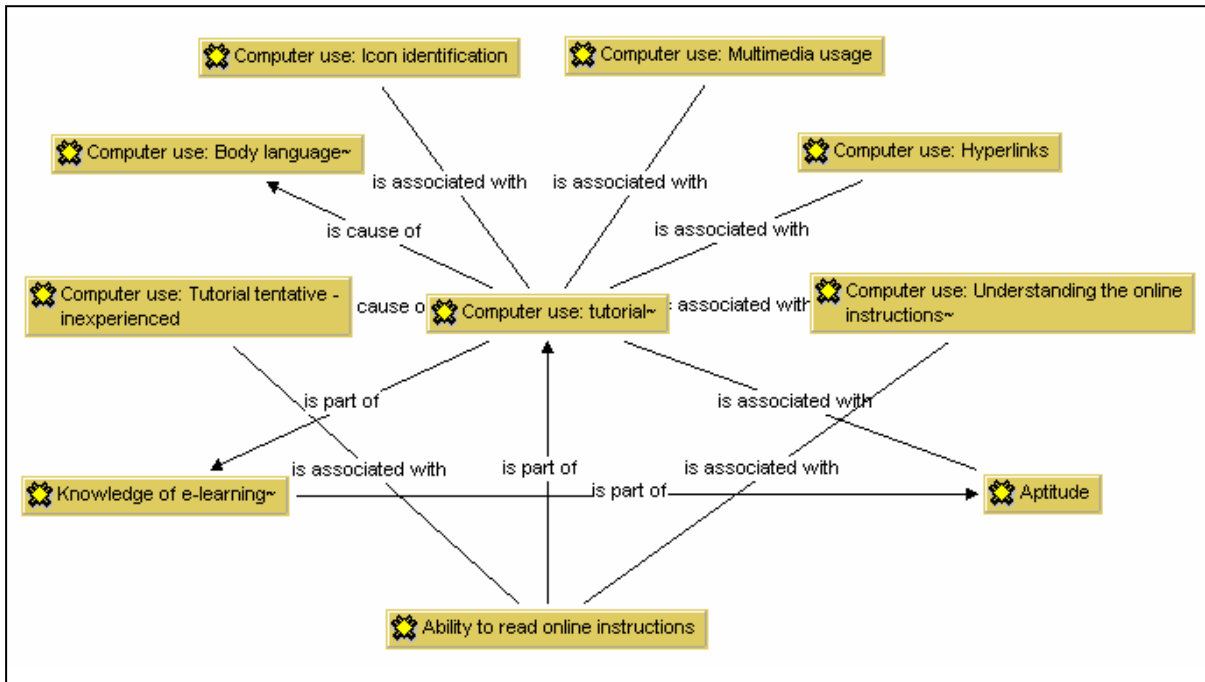
**Table 5.6 Warehouse workers' own account about their knowledge of e-learning**

Question	Yes	No	Little
Do you know what e-learning is?	7	1	2
Have you ever taken a course with a computer?	8	2	0
Have you ever completed one of the EKP courses available?	7	3	0
Do you operate the computer during any of the processes here at IHD?	10	0	0
I need assistance to guide my future as an employee	9	0	0
I am not interested to learn further – happy with what I am doing	4	6	0
I have enough time to learn more	5	5	0
Which do you prefer:			
Classroom training	4	0	0
On my own	0		
Doesn't matter to me	5		

Table 5.6 shows the feedback of this questionnaire on knowledge of e-learning. They claim to know what e-learning is and, according to the indicators, they have been involved in e-learning lessons in the past. The EKP courses they refer to are online courses provided by the organisation. According to the data from Table 5.6, one may conclude that they have a basic idea what e-learning consists of.

I decided to do an observation with a tutorial that is relevant to all staff working for IHD (Appendix 3.14). Participants indicated during the interviews and questionnaires that they were capable and interested in learning with computers. The e-learning I had in mind and what they were thinking of were probably worlds apart, but I became increasingly curious whether they would be able to show signs of independent learning and the capability to progress on their own, or whether their attitudes will remain as confident.

Figure 5.18 illustrates the different physical aspects a learner is subjected when completing a tutorial. The activities I observed were icon identification, working with hyperlinks, multimedia, reading and understanding the instructions, outward signs of tentativeness and body language. (Appendices 5.16-5.44).



**Figure 5.18 Warehouse worker aptitude during tutorial observation**

One of the SMEs had warned me earlier that many of the warehouse workers he used to work with, did not understand the online instructions. He added that he got the impression that the warehouse workers didn't read properly.<sup>28</sup> This made me curious to see how the warehouse workers would respond to a challenge like this. To start the tutorial, they had to click an icon. Neither of the two participants I used with this exercise had done an online lesson before. It would have been unfair to expect that they would know where to click to start, so I told them what to do. After that the tutorial was fairly easy to negotiate, and I hoped that they used their own experience to negotiate the lesson.

*R, the first respondent to do the tutorial, did not know what to expect, even after my explanation. I deliberately did not tell her much. I was interested to see whether she was able to interpret what her next action should be. She did not know which one of the many icons to click (we worked on my computer) She asked and I showed her. She did not know what to do with the icon. She moved the cursor over the icon, and after a while I instructed her to double click it 2:409 (2772:2775).*

*She had problems with the double click action: I instructed her to double click again. She visibly found the double click action unfamiliar 2:413 (2785:2787) (Appendices 5.16-5.27).*

When the tutorial opened, she started reading. It displayed the main objective of the tutorial, and if she understood the instructions, she would click the next button on the right to continue:

*... started reading the information on the next screen "The purpose of EBMS". This is the first information that refers to the content to be learnt. I could still not establish if she realized the difference between the navigation and information areas 2:420 (2815:2819) (Figure 5.15).*

My impression was that she read the instructions but did not really understand where it led to. She admitted being anxious. Eventually she found the next button and clicked it: *She clicked "Next" to open the next screen. I decided to ask her if she understood the instructions, whether it was clear to her. She looked at me, and nodded "yes" 2:423 (2827:2829).* After a while she realized where the navigation instructions were placed.

<sup>28</sup> Hy sukkel om die instruksies te lees en toe te pas op die skerm. Ek wil amper vir jou sê die mense lees nie.



I could sense her confusion. I got the impression she did not really know the purpose of the lesson. She read the instructions intensively and for a long time: *It seemed as if she now realized that there was more to the lesson than mere clicking. As before, she leaned forward, and read the message aloud* 2:429 (2848:2851). Later I asked her whether she was able to discern between information regarding the lesson, and instructions to navigate the tutorial. She seemed confused and did not really know what I meant:

*R's progress was slow and an indication to me that she was not ready to be left on her own and to start e-learning. We eventually covered quite a large section of the tutorial, but it was with a lot of guidance. An experienced e-learner would probably average about five to ten minutes to complete the tutorial. R was only halfway, and she had been working for almost thirty minutes. I was not able to determine whether her attitude was such that she would grasp the next opportunity to learn in a similar way. My honest opinion was that she was confused and did not really understand the purpose of the lesson, other than that it referred to the possibility of future computer training (Appendices 5.16-5.27).*

A, the second person to be introduced to the tutorial, was much more methodical and slowly read each screen before moving on. (Appendices 5.28-5.44) I deliberately briefed him more about the purpose of the tutorial and what the EBMS system was for. He started with a lot more background knowledge than R. When we started, I asked him if he knew what e-learning was: *He answered negatively, shaking his head, he did not know what it was* 2:525 (2370:2371). He also admitted that he did not know what hyperlinks were. When he started, he mastered the double mouse click much faster:

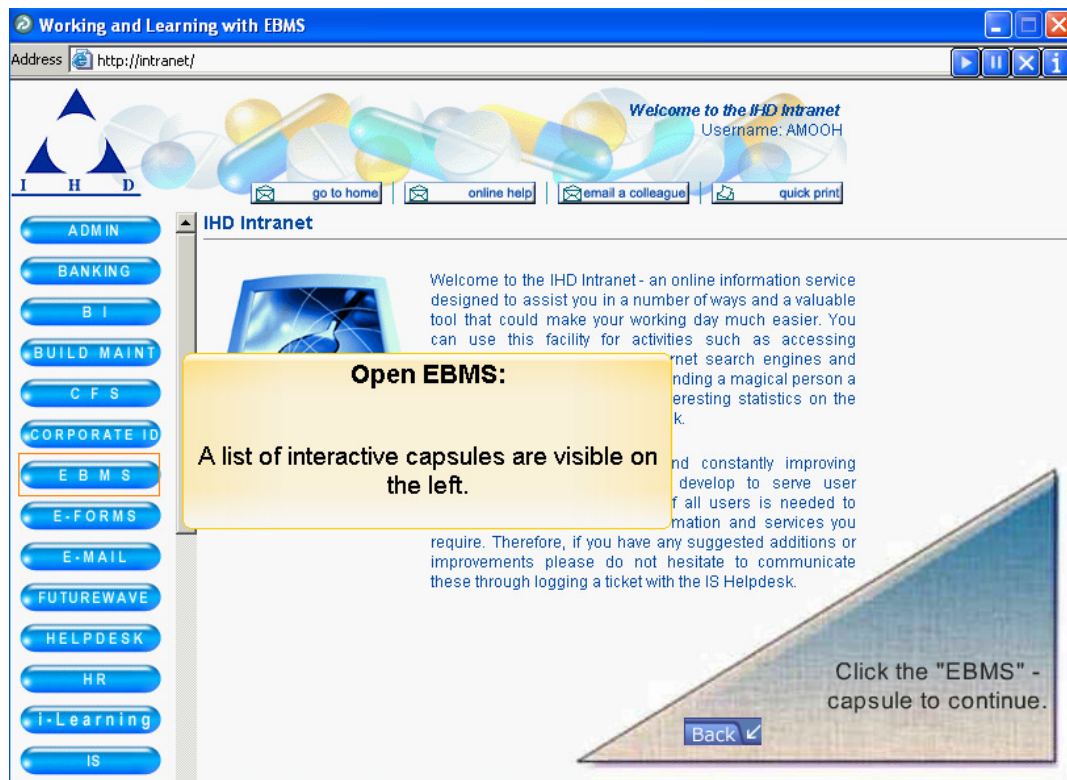
- *After a few moments he clicked the correct button to open the next screen. This screen simulated the opening of the IHD Intranet, using the Explorer. I commented to him that it took him a little while to open the Explorer* 2:529 (2419:2423)
- *He showed that he had the ability to understand the online instructions, by using the navigation keys after a short while. I queried him on this: .. He elaborately explained that he read it from the instructions, and saw the highlighted box* 2:530 (2429:2431).

He then encountered a text hyperlink that he had to click on. My interpretation was that he had to do this for the first time, and I explained to him the purpose of these hyperlinks.

It was during this time that my recorder battery went flat. I arranged with A that he would return later that afternoon to complete the tutorial. He agreed. At first I was irritated but it proved to be a very interesting break. When A returned about three hours later, he had to start the tutorial again from the icon on the desktop. This time I said a lot less, and wanted to see whether he had learnt anything on the previous short encounter:

*...when A returned later during the day, he visibly had more confidence with the program. He started from the first screen again, and clearly showed that he had learnt from the previous experience. I did not prompt him at all, he moved on his own). He quickly scanned the instructions, and without hesitation, used the mouse to navigate through the screens. He read the contents again, but reacted much quicker* 2:534 (2469:2476).

When I queried A's ability to discern between content information and instructions to navigate the system, he replied: *... that the information does make sense "in the way that it tells me the purpose of EBMS"* [I noted that he used the terminology as described on the screen, and not describing it in his own words] 2:364 (2576:2580). Figure 5.19 illustrates the content information in a yellow box and the navigation instructions in a triangle (bottom right).



**Figure 5.19 Tutorial with information box and instructions triangle displayed**

His response was not very convincing, but his progress was much faster than the previous respondent's. I reflected on the differences of their ways and the skills they had. It seemed that A was more methodical, slow but may be able to learn by himself, while R seemingly depended on a lot of guidance.

The differences in their performances did not make them unlikely candidates for this type of training, in fact, instructional designers may use these indicators to plan the type of approach that should be taken to develop online lessons for similar target groups. It may be a mistake to leave them on their own initially to sort things out for themselves. I got the impression that their prior knowledge was just not sufficient to enable them to start learning on their own. They still needed a lot of guidance.

The difference in genders was purely accidental and does not mean anything in this study. They were available and willing, and no attempt has been made to identify or exploit any gender differences in their behaviour toward the tutorials.

The tutorial observation explained something about the comprehensiveness of the warehouse workers' capabilities, attitudes and skills. A's gratitude when we finished was sincere and made me very aware of the responsibility that training has to develop much needed skills. His attitude reflected that he enjoyed the experience, and was really looking forward to more such exercises. Both workers indicated that they did have the aptitude to learn with tutorials, but with different support and guidance. The one respondent indicated more dependency on assistance, while the next respondent seemed as if he just needed some time to get used to the way of teaching. The unfamiliarity of this training was

initially the most prominent sensation during these observations, but I could sense that the anxiety gradually faded. One particular thought crossed my mind when we concluded the observations, and this was all about relevancy. Both participants were not sure why I made them do the specific exercise other than doing some observations on the computer. They could not relate to the EBMS procedures. I reflected that relevancy of training may provide users the necessary focus and clarity of objectives to get involved in e-learning.

Learning style and learner preferences may impact on the aptitude and attitude of the warehouse worker, whether they accept the strategy or would rather avoid it. Many warehouse workers know only one strategy which is the classroom instruction method. Most participants indicated on the questionnaires that they prefer that somebody shows them what to do (Tables 5.6 and 5.7).

**Table 5.7 Warehouse workers' responses to preferred training strategies**

Which of the following training options do you prefer?

Learn myself with instructions	28
Let an instructor show me	38

Classroom training was the more familiar strategy and it may also be that the warehouse workers do not have confidence to get along on their own. One respondent answered the question regarding her learning preference: *I like somebody to show me and I like the computer* 2:232 (1566). Organisations made use of classroom training most of the time, and this must have played a role in this indication. Many supported classroom training because it provided a secluded training environment:

- *... nobody bothers him when he is being trained in a classroom, while no one respects his privacy when busy with computer training* 2:157 1006:1009)
- *Yes, I like the classroom training, away from stress and all other stuff*<sup>29</sup> 4:11 (116:117).

Most preferred classroom training, but there may be other reasons for the preference.

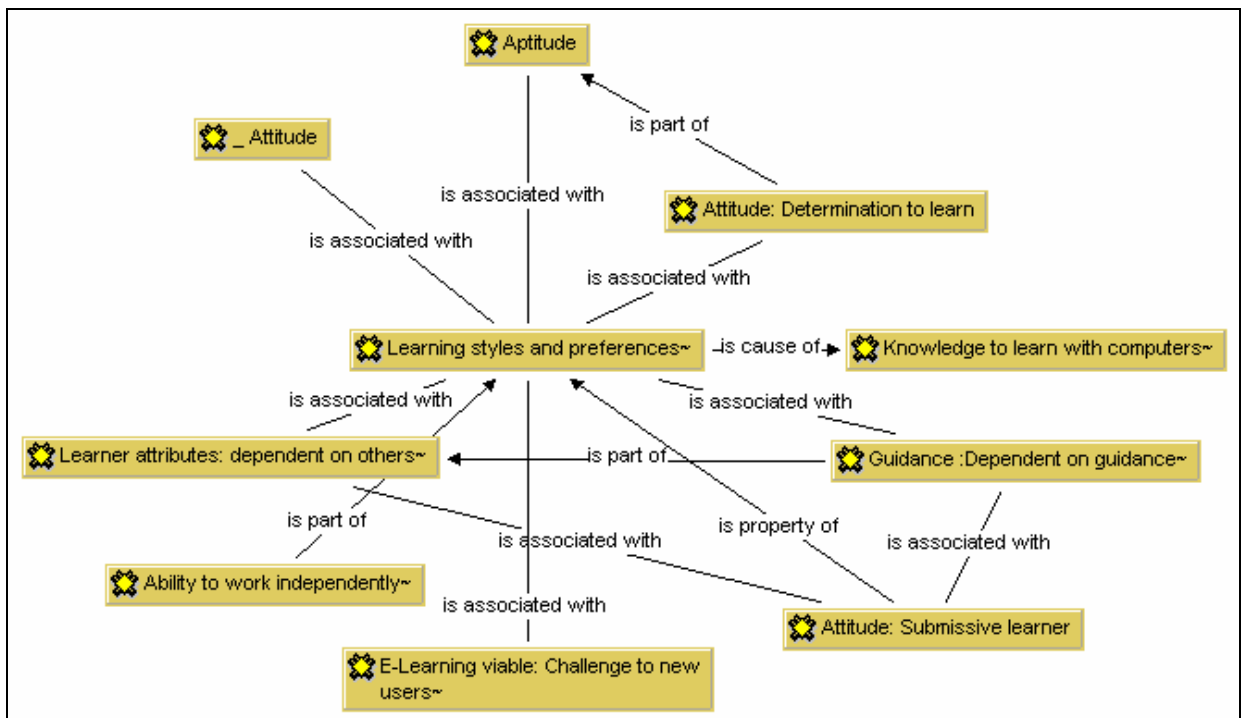
The warehouse workers very seldom work in other areas in the organisation, except when they go for training. They sit in soft chairs in air-conditioned rooms, in contrast to the industrial-like environment where they spend their working days. The atmosphere is drastically different to the buzz they experience in the warehouses. The situation does not demand input from their side, it is almost as if they are there to receive, regardless the outcome. Despite all these alluring comfort and extrinsic motivation to be passive learners, there are those who would like to be subjected to computer classes and training: *It will be a big opportunity for me and I will grab it because ... [sic] it is no use for me to sit in a class [sic]* 2:304 (2147:2149). This same respondent elaborated that classroom training sometimes stresses him and that the privacy of computer training would suit his personality better:

*... it is no use for me to sit in a class. ...you say in 30 minutes it must be finished, I can adjust myself but if you are in a group of people working on a project, maybe I see someone finishing on 15 minutes, I start to panic and I loose from that 15 minutes onwards. I won't be able to concentrate. Because you see the thing is, I am that kind of person. I grew up alone at home* 2:304 (2148:2157).

<sup>29</sup> Ja, ek "like" die klaskamer opleiding, weg van die "stress" af, dis vir my lekkerder.

The comments above illustrate the basic perceptions of people going for training. Classroom training is used mostly but does not guarantee results. SMEs advised: *I believe that classroom training and e-learning should not be played against each other. You should go for a combination 1:94 (502:504).*

Figure 5.20 illustrates the relation of learning styles to aptitude and other identified theory codes as pointed out by the participants. Warehouse workers have indicated their preference to be guided and facilitated, which may be as a result of the way they were used to receive training.



**Figure 5.20 Warehouse workers' aptitudes regarding learning styles and preferences**

Some warehouse workers indicated their preference for guidance, and confirmed by SME comments: *Structured guidance make them feel comfortable. They feel somebody cares and takes the responsibility 1:71 (346:348).* Another warehouse respondent explained the successes he experienced during a previous training initiative where the instructor guided the learners most of the way: *He explained it to us and helped us a lot. We all passed well<sup>30</sup> 2:155 (992:994).* This structured guidance is not regarded as a barrier to e-learning. Some SMEs argued:

- *the best way to start with e-learning is with a face to face intervention 1:251 (1288:1289)*
- *...guided with a coach and mentor until he can carry on on his own...<sup>31</sup> 1:35 (2136:2139)*
- *The problem with classroom training and structured guidance is that it leads to a culture of expecting to be helped<sup>32</sup> 1:429 (2752:2753).*

The last comment implied that guidance should be such that workers do learn how to develop the motivation to start self-driven training.

<sup>30</sup> Hy het dit verduidelik en ons gehelp, almal het goed gedoen.

<sup>31</sup> Tot hy op so punt kom dat hy dit self kan doen dan is sy "performance" oor "impact". Dis waar jy "return and investment" en al daai lekker goed kop en jy kry die dividende van jou opleiding en dis hoekom ek dit die GAP-model noem.

<sup>32</sup> Verwag om gehelp te word.

Learner preferences are closely related to their attitude, according to some of the SMEs: *I believe that if the learner wants to, you'll get him there...*<sup>33</sup> 1:239 (1231:1233). They pointed out that warehouse workers may have diverse objectives:

*... find that there are two extremes, on the one hand there is the passive worker without any wish to progress further, he is unsure of himself, knows his education is limited, doesn't read very well and doesn't know what to do next* 1:501 (3123:3127).

Another SME observed that all workers are not intent on training and development:

*We sometimes make the mistake of thinking that everyone wants to move on, develop themselves, but there are quite a number of individuals out there who are quite content with what they are doing. He feels secure, his salary is ok, he is satisfied. This doesn't make him a bad worker at all. We must be careful not to drive people because "we" believe he wants that* 1:552 (3387:3393).

SMEs advised that it will be useful first to determine whether the intrinsic motivation to learn does in fact exist, before a lot of money is invested in such a strategy. *Computer literacy may be important, but much more important is the drive to learn...*<sup>34</sup> 1:417 (2702:2704). Some of the warehouse participants added that the motivation can only be kindled and sustained by recognition:

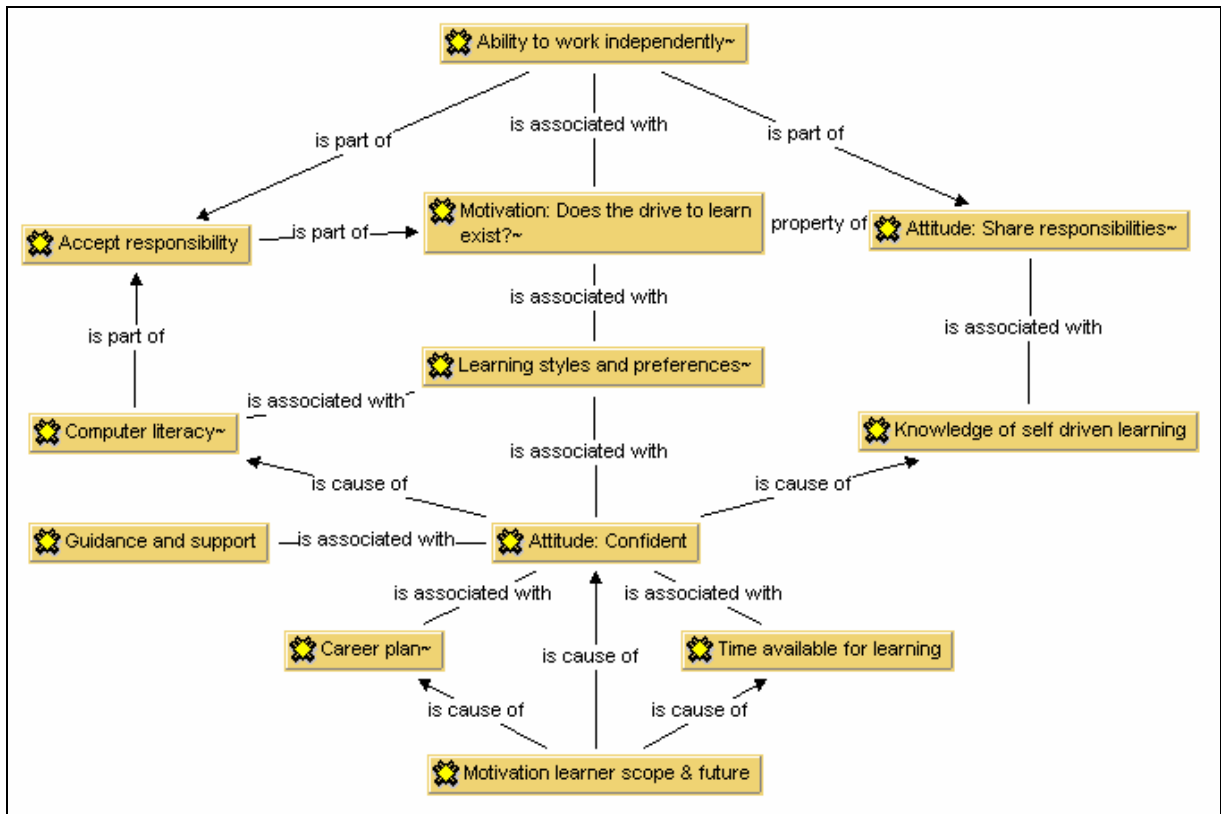
*The interest in most cases will be sustained by... is, what you do to be recognized by your employer. From the training side we can do a lot, but if you're not being recognized, I mean, the interest will disappear* 3:65 (361:364).

Motivation is a critical aspect of self-driven learning and is discussed later in this study. Figure 5.21 illustrates the ability to work independently when workers are supported by thorough career plans, guidance, time for training and the necessary knowledge to promote the drive to learn.

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<sup>33</sup> Ek glo as 'n ou wil, maak nie saak of hy vantevore aan 'n rekenaar gevat het nie, as hy wil leer en die rekenaar is die medium daarna toe, dan sal jy hom baie gou daar kry.

<sup>34</sup> Een ding is "computer literacy", maar wat dalk nog belangriker is, is die ou se vermoë om self te leer.



**Figure 5.21 e-Readiness aptitude, attitude and ability to work independently.**

From some remarks it emerged that the warehouse workers may not have the determination to learn on their own. It may also be unfair to judge them all to be the same type of learners.

The HR training manager emphasized the differences when people take action:

- *People do things differently. Some people they do things by doing, others by listening. The facilitation skills, when you facilitate, you've got to accommodate this 3:97 (5187:5190)*
- *You will get people that respond in that manner, you need to manage that diversity. It is an issue, we perceive things differently. In my background I may regard that to be aggressive, while you may perceive this as being assertive 3:84 (438:442).*

People differ, and the warehouse workers are no exception. Where one may have problems to adapt to self-driven learning, a next may take to it spontaneously.

During the interviews the participants had differing views regarding the taking of responsibility and taking charge of their own learning. The different attitudes can be seen from the following comments made by warehouse interviewees:

- *They do not easily use their free time - lunch, tea - to do work-related activities 1:479 (3033:3034)*
- *Obviously I will do it in my spare time. When I knock off I will give myself time to do that. Because even when and if I knock off from work in time it's something that I can get myself busy with it 2:109 (666:669)*
- *I think it is a challenge, but if you are determined to achieve something out of it, it won't be too difficult 2:286 (1961:1962).*

These approaches are found with many workers. The difference is probably in the motivation and guidance the employees receive.

The SMEs referred to individual differences and the ability of some warehouse workers to adapt more easily to new ways and strategies of training: *it is difficult to transform to be a self-directed learner, but people differ and it often depends on learning styles and personalities...*<sup>35</sup> 1:258 (1370:1372). Another commented that it helps if the motivation is there, for instance an achievable career plan: *Provided the worker has the ability and the commitment*<sup>36</sup> 1427 (2744:2746).

I experienced the advantage of e-learning to allow individuals to work at their own tempo when I observed the ABET warehouse workers during their learning sessions. No orchestrated assistance or initiative was needed to get them started, they arrived, got their files, sat down and started. There was no confusion about who was where, etc: *They were at different stages of one of the English levels. Learner one worked on maths lessons. All seemed very basic but the students were interested and obviously enjoyed the experience* 2:52 (257:260). The ABET observations showed that they did not have to be guided to learn. The two individuals who were involved in the tutorial experiment also showed their different abilities and aptitudes to execute their learning objectives.

Habits and attitudes vary, in some situations a learner may find himself to be an independent leader, i.e. the mainframe system operations, but when working on the internet, the same individual may be reduced to be dependent on another person's knowledge and skill. Experience generates confidence, confidence builds attitude, and attitude may provide capabilities and opportunity. The confident way in which the warehouse workers completed their mainframe tasks can be compared to the way R completed the tutorial. The same individual was confident with the one activity, and had to be guided with the next. My interpretation is that when an objective is addressed where the knowledge is limited their learning styles revert to be dependent, while in a situation that they know well, they are self-directed learners.

The key to be transformed from a passive to an active learner may eventually come down to motivation, and that inner drive to succeed. The warehouse workers have different learning styles and capabilities, and adapt to new approaches of learning according to their prior learning experiences and learning preferences. Motivation can play a major role in the acceptance and e-readiness of the warehouse workers.

#### **5.4.1 Conclusion about warehouse workers' aptitudes for e-learning**

The third sub-question explored the aptitudes of warehouse workers and the impact it has on their e-readiness. The aptitudes displayed and discussed during the interviews and observations have indicated that warehouse workers have accumulated the proficiency to understand basic computer instructions and to conduct basic computer assignments that may contribute to their e-readiness. To

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<sup>35</sup> dit is moeilik en ek dink dit hang verskriklik baie van individue en persoonlikhede af. En sekere individue is net geneig om "self-directed" te werk

<sup>36</sup> Ja, dis moontlik mits die werker die "commitment" by homself het. Hy moet self die "commitment", die "go" hê om te verbeter.

conclude, the following additional and new theory codes with regard to the aptitude of warehouse workers have emerged after an inductive analysis of the research data.

The aptitude to use computer technology that may affect the warehouse workers' e-readiness have been accrued through:

- regular *encounters with computers* that established a confidence in *using technology*
- exposure to mainframe systems, ABET training, e-mail use to enable the warehouse workers to develop a *basic computer literacy*
- experience with computers that enhanced the workers' *knowledge of e-learning*
- regular use of computers may assist them to develop an *own learning preferences*, and
- *computer use* enhanced the warehouse workers' *skills and abilities*.

The accrued aptitude affects the warehouse workers':

- *anxiety* when working with computers
- *attitude* when needed to learn by means of computer technology
- *knowledge of e-learning*
- *guidance and support* required when learning through computer technology
- views of *classroom* training
- *skills and abilities* with computer technology, and
- ability to interpret and execute information received from the computer

**Table 5.8 summarizes the conceptual codes that emerged to be the most prominent during the accrual of computer skills (aptitude) by warehouse workers. The theory code aptitude, impacts the warehouse workers in the following conceptual codes of e-readiness.**

**Table 5.8 Theory code "Aptitude" relating to conceptual codes of e-readiness**

		<i>Conceptual codes of e-readiness</i>																			
		Access	Anxiety	Attitude	Classroom training	Computer literacy	Computer use	Encounters with IT	Facilitator	Financial aspects	Guidance & support	Knowledge of e-learning	Learner frustrations	Learning plan	Learning preferences	Managerial contributions	Organisation culture	Relevance	Skills and abilities	Time constraints	Viability of e-learning
<b>Aptitude</b>			x	x	x	x	x	x			x	x			x				x		

These listed conceptual codes supported the data that has emerged during the interviews with SMEs, warehouse workers and managers, and observations of warehouse workers. Warehouse workers demonstrated their aptitude with computers in that they:

- confronted challenges in their own unique ways
- learnt in different ways – individual preferences
- displayed an ability to read and understand information from the computers
- demonstrated basic typing skills
- displayed own learned methods of typing on the keyboard
- demonstrated basic mouse operations
- demonstrated the ability to negotiate menu selections on mainframe system
- worked at own tempo during ABET classes, and
- interpreted information displayed on the computer.

Specific concerns also emerged from the data:

- mouse skills were underdeveloped due to limited use
- workers claimed to be able to learn by means of computers, and were overly positive
- some did not know what e-learning was
- HR training manager did not know e-learning, and



- a tutorial observation indicated limitations and that guidance were needed.

The tutorial observation indicated that the warehouse workers had potential to learn from tutorials:

- They demonstrated during the tutorial that:
  - it was a strange and unfamiliar method of training
  - they knew what to do with icons
  - they could be instructed to use hyperlinks
  - they could generate knowledge from tutorials
  - they could be guided to learn by means of tutorials, and
  - clear objectives were needed to direct them with e-learning.

## 5.5 Origins of motivation determine e-readiness of warehouse workers (Sub-Question 4)

### What origins of motivation may induce warehouse workers to become e-ready?

This theory code is the result of the exploration of the motivational aspects that the use of technology may have on the warehouse worker, and how these origins of motivation (Reeves, 1999) influence their e-readiness. Aspects such as extrinsic and intrinsic motivators are explored.

The concept origins of motivation refers to the type of motivation that affects the learner (Reeves, 1999). It refers to the extrinsic and intrinsic motivators that influence people to react to their environments. People react differently or have different levels of motivation:

That is, they vary not only in level of motivation (i.e., how much motivation), but also in the orientation of that motivation (i.e., what type of motivation). Orientation of motivation concerns the underlying attitudes and goals that give rise to action—that is, it concerns the why of actions (Ryan & Deci, 2000 p. 54).

The warehouse workers have indicated that they have their own unique motivators that inspire them to be involved with computer technology, and have indicated specific intrinsic motivation to display their e-maturity.

### 5.5.1 The types of motivators that affects the warehouse workers

The two main motivation types, extrinsic and intrinsic motivation are critical when warehouse workers are required to take responsibility for their own learning (Figure 5.22).

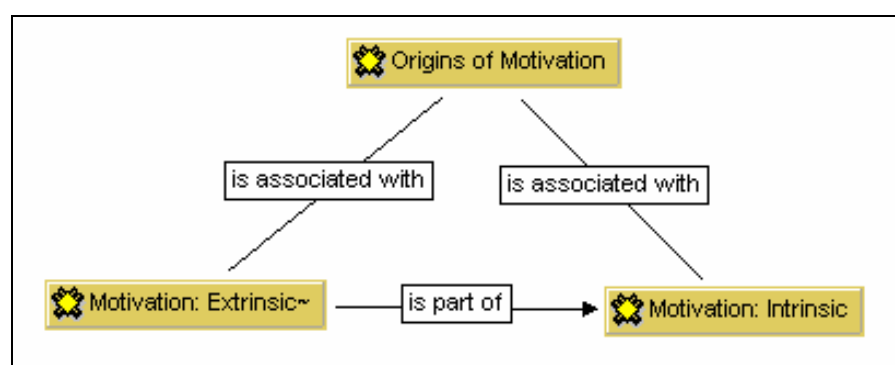
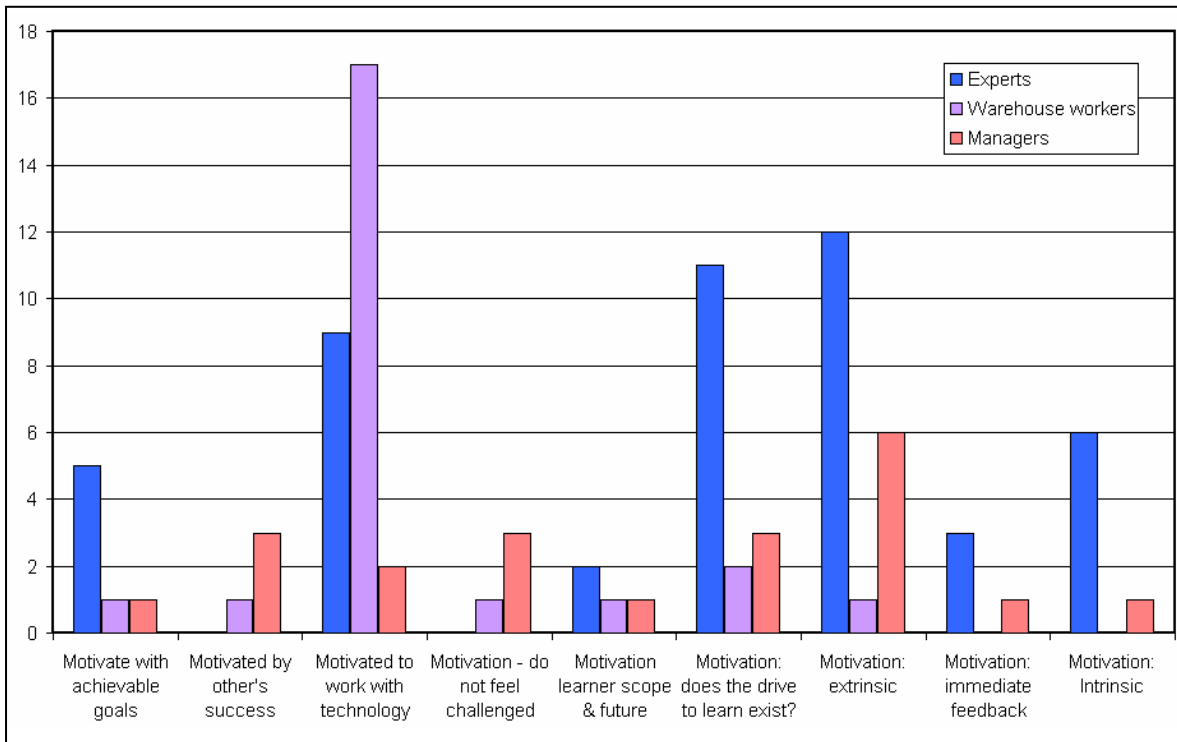


Figure 5.22 Two types of motivation

Although nine conceptual codes (Figure 5.23) have been identified during the interviews of warehouse workers, SMEs and managers, and observations of the warehouse workers, they will be discussed under the two main types of motivation, extrinsic and intrinsic motivation. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.

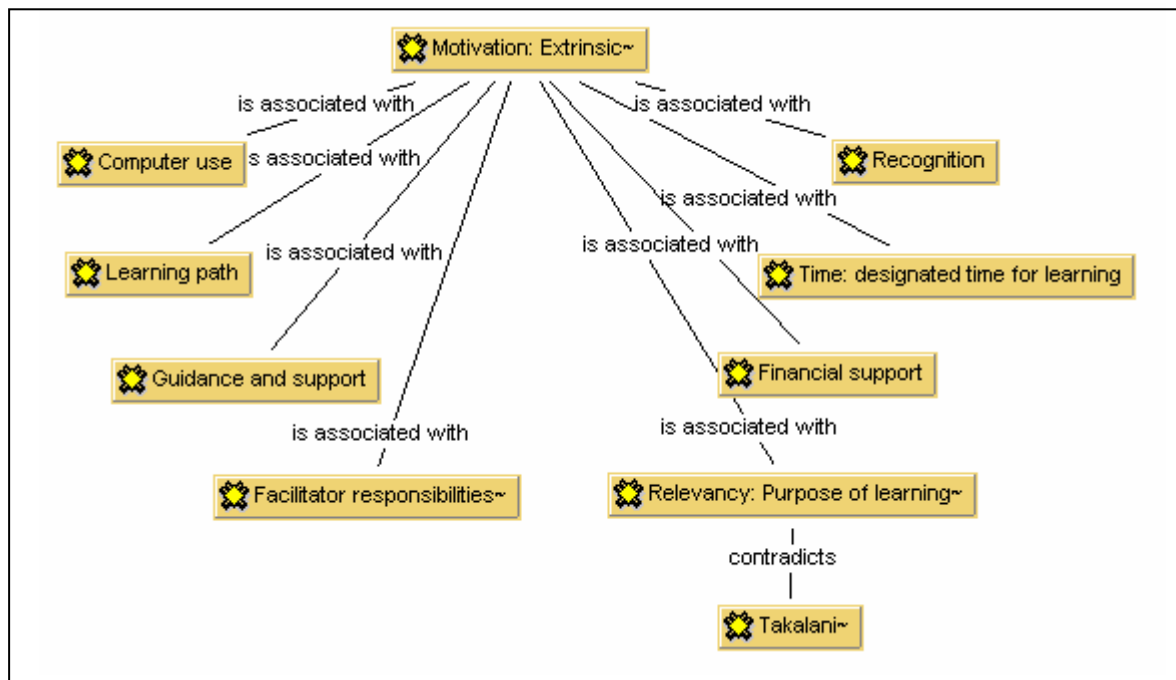


**Figure 5.23** Frequencies of respondent responses relating to motivation

The warehouse workers experienced distinct extrinsic motivation to be involved with computers, and suggestions of intrinsic motivation have also emerged during the interviews with and observations of warehouse workers. Figure 5.23 provides one specific area where warehouse workers responded most frequently with regard to motivation - the motivation to work with technology. For the benefit of this discussion all motivators will be discussed under the headings extrinsic and intrinsic motivation. The following section will explore the extrinsic origins of motivation of the warehouse workers as contributors of their e-readiness.

### 5.5.2 Extrinsic motivation contributes to e-readiness of warehouse workers

Information from the data suggest that warehouse workers are extrinsically motivated by access and ability to use technology, learning paths, guidance and support, facilitation, relevancy of training, financial support, time available for training and recognition by the organisation (Figure 5.24).



**Figure 5.24 Extrinsic origins of motivation as experienced by warehouse workers**

The aspects of extrinsic motivation that has emerged from the data are illustrated in Figure 5.24. Each of these aspects will be discussed as related and observed during the interactions with SMEs, warehouse workers and managers.

### 5.5.3 Computer use as extrinsic motivator

When IHD progressed in its functioning to keep abreast of developments in the commercial world it also extended its use of computers including therefore its stockholding. As a result the warehouse workers were also exposed to computerisation in performing their daily tasks. This implied being proficient in fulfilling their tasks with this medium. Referring to Figure 5.24 we have the consequence that the interests of the warehouse workers were aroused. They regarded the use of technology as an advancement of their careers and computer opportunities. SMEs' opinions confirmed this tendency:

- *When we started in early 2004, they only saw the computers on the other employees' desks. They were always curious and anxious to learn more 1:182 (851:854)*
- *I found that warehouse workers with very limited skills enjoyed the challenge and wanted to improve their PC skills. Motivation wasn't really an issue 1:301 (1836:1839)*
- *Most warehouse workers are motivated since the computer is a medium they like to work with 1:322 (1963:1964)*
- *It is new, you need to get him curious. Once he is curious and feels the need to explore, you have gained some ground 1:524 (3234:3236).*

An SME commented that the opportunity to work with the computers can be instrumental in an effort to close the digital gap:

*If an IT illiterate learner gets the opportunity to learn and work on the PC, they are often more motivated than others who have the necessary skills. They see it as a way to close the skill and knowledge gap 1:302 (1838:1841).*

In addition to the SME's opinions, the warehouse workers believed that the use of the computers assisted them to gain experience and eventually to expand their horizons:

- ... I see myself interested in A+ stuff and also programming - Visual Basic stuff 2:310 (2194:2196)
- Obviously I'll finish on what I am doing now, but if there is an opportunity, I'll go for something else. To have more options for my career 2:283 (1932:1934)
- ... it's my desire to grow in this company, for the benefit of the company, because already I have been through a lot of courses and I can see I'm going even further 2:318 (2311:2315)

From the remarks by the SMEs and the responses of the workers it emerged that both respondent groups shared the same view of the potential opportunities of working with computers. The workers were of the opinion that the use of computers held the key to a better future, and were motivated to use it. SMEs regarded the involvement with computers as valuable experience to develop skills and knowledge.

Some warehouse workers also pointed to the possible dangers and disadvantages of not being able to use computers in one's work: *So if you don't know everything about the computer, it is tough luck* 2:247 (1653:1654). This respondent suggested that the lack of skills puts an immediate restriction to any further development and eventually restricts the skills growth and development. There was an almost desperation in some responses with regard to the use of computers: *Yes, I like working on computers - a lot!* 2:297 (2077:2079). These responses indicated that the warehouse workers were aware of the necessity to get involved in computer technology.

It appeared as if the warehouse workers were challenged by the presence of the computers and regarded the computers as a possible way to a better future. The motivation to get involved in constructive computer training meant that the warehouse worker had to be guided by a well-structured learning path.

### **Learning paths as extrinsic motivator**

Learning paths are regarded to be a critical aspect to motivate warehouse workers to acknowledge their skill gaps and take the responsibility to learn (Figure 5.24). The SMEs specifically referred to career plans, recognition and financial gain to motivate the learners to become successful self-driven computer users. The worker needs to know what his opportunities are to develop, therefore the need for a well planned career plan:

*If this learning is not included in his KPI [key performance indicator], then he is not going to develop. He needs to be managed well, and motivation needs to be built into his learning plan. You also need to support these with extrinsic motivation* 1:478 (3028:3032).

SMEs regarded well-planned induction programmes to be important to start a successful learning path:

*You virtually inform him of all career opportunities within the organisation. That to me is a correct induction course. You will also find that this strategy will kindle intrinsic motivation* 1:492 (3082:3085).

Unfortunately warehouse workers indicated that some departments of the organisation do not have structured learning paths in place. Table 5.9 refers to the responses from seven warehouse workers interviewed in Johannesburg's about their career plans.

**Table 5.9 Warehouse workers' views on own career plans**

Do you have a formal career plan with your supervisor/manager?

Yes	1
No	6

Are you developing/growing according to your expectations?

Yes	1
No	6

SMEs were concerned that the lack of career plans for warehouse workers may have a negative effect on their motivation:

*Unfortunately, for the picker and packers, where are they going to next? There are very few of them with the intrinsic motivation to develop them self to a next level. Reason for this is, firstly the educational level of the worker, is a huge constraint, and where does he really go? 1:485 (3055:3060).*

Recommendations by SMEs were that the workers should be constantly aware of their developmental status and possible opportunities:

*... we look at what is needed to move or develop to the next level. This learner must be constantly aware of his competency level, so that his progress makes sense to him. He must know that if he is 70 % competent, he can move into one of three positions 1:534 (3272:3277).*

The rationale of learning plans is to provide focus and purpose so that the workers know what are expected of them. This is to enable the workers to motivate themselves and to understand the purpose of each training intervention they are subjected to. The lack of learning plans leaves them confused and frustrated:

*Satisfied? No, I'm not satisfied! Because last time I remember I asked J. why can't they allow us to go and do something else like picking or maybe work at the fridge? I mean to be a manifester for a long time, I don't think it's OK. Sometimes you must go and work in bulk, so we can know all the workings...[sic] 2:162 (1052:1057).*

She added that she does not have a career plan in place.

*When questioned, she conceded to have aspirations to higher levels of work: Yes, I'd like to become a pharmacist assistant, and would like to do courses , because I work with medicines and all that. To go and learn 2:251 (684:686).*

The aspirations were evident, but they needed focus, as confirmed by two other participants:

- *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 2:316 (2264:2269)*
- *To me, if the company developed me, that would help me. Because if you're in the company for three years, five years one job. It's frustrating. If you are developed enough, educationally, I think it's better for you to get some options for other jobs 2:278 (1902:1907).*

SMEs suggested that learning plans should be in place to motivate the warehouse workers, and from the warehouse workers' point of view it is implied that they do not have learning plans in place. Only one of the interviewees admitted having a plan. It might however, be that they misunderstood the concept of a career plan.

The HR manager also added the importance of a career plan to be in place: *You know, you give them like a path, say once you have done this, you will be able to do that [self-driven computer training] 3:15 (63:65).*

Managers responded differently with regard to learning paths:

- *...that's what they have been doing the last two years, and once that 's over by the end of this year, then we will look at further training opportunities 3:117 (623:625)*
- *..always did it, but I have to admit, its been a long time since I have done IDP [individual development plan] planning.<sup>37</sup> 4:64 (139:144).*

It appears that an important motivational concept such as career planning is not clearly defined for some workers and consequently does not contribute to the learning culture of these warehouse workers. Indeed, some have indicated that they have career plans in place, but my perception was that there existed an uncertainty with regard to this aspect of staff development. The workers seemed to be dependent on guidance from the organisation. A manager reflected: *In the past, the initiative came from the training department...<sup>38</sup> 4:64 (139:144).*

### **Guidance and support as extrinsic motivator**

Many of the warehouse workers indicated their dependency on guidance and support during interviews and observations (Figure 5.24). They did not say it directly, but the way some workers often referred to “they” when discussing their future plans, implied a reliance on higher authorities to lead the way:

- *You know what, as I said... it would be so nice if they can bring this literacy of computers, if people can be literate [sic]. I think they must go out of their way but they must have classes to enlighten us in the computers in what's going on there [sic] 2:255 (1720:1724)*
- *We do. We do. Last time we spoke to J. We do have time to speak but they say we have too much work in manifesting. I've been asking that for a long time 2:183 (1177:1179)*
- *Maybe I don't have that opportunity but there's no one to motivate me. Every time I speak about this someone will see it as a kind of attitude. Maybe they will say there is no hope and all that, but when I meet people like you, I can see there is something that is growing inside of me 2:321 (2336:2341).*

The way the warehouse workers expressed their needs and wishes for training, they implied that their superior or the training departments should guide and give them direction. The last quote above included a workers' almost desperate plea for recognition of his hunger to be trained. He seemed to be determined to better himself, but he needed guidance, like so many others.

Information gained from the questionnaires has already indicated that the warehouse workers prefer to be shown by a knowledgeable person (Appendix 3.4).

SMEs had the opinion that e-learning starts with strong and structured guidance: *The warehouse workers have to be coached, taken by the hand, and shown how to do it. Practice under supervision and then sent back to the workplace to apply his acquired knowledge<sup>39</sup> 1:444 (2826:2830).* Blended approaches are

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<sup>37</sup> Het altyd, maar ek moet bieg en sê ek het lanklaas “IDP planning” gedoen.

<sup>38</sup> Ek dink in die verlede het die dryf altyd van die “training” departement afgekom.

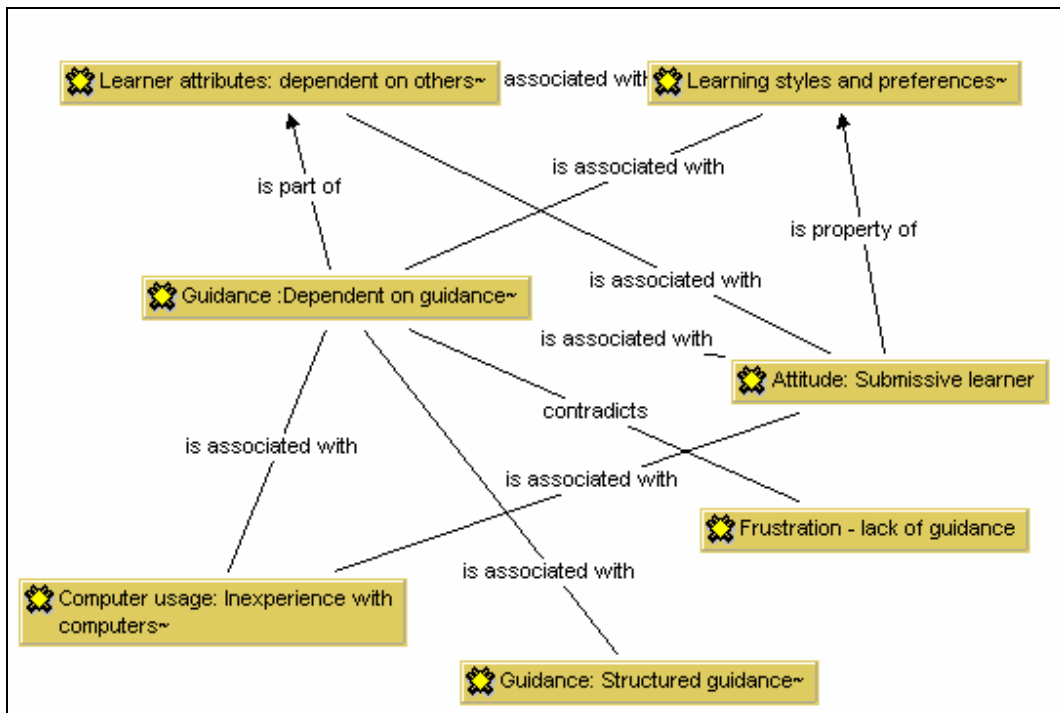
<sup>39</sup> Die leerders moet ge-“coach” word. Met die hand gelei word oor hoekom dit belangrik is, en fisies te wys hoe al die materiaal en programme hanteer moet word. Hy moet onder toesig kan oefen en dan teruggestuur word na die werkplek om toe te pas wat hy geleer het.

suggested to provide a bridge for transformation to a self-directed learning: *Some areas of the preparation are conducted in the classroom 1:445 (2843:2845)*. One of the SMEs related that a “Growth Charter” can be instrumental to structure a development plan: ... *reason why we have incorporated the growth charter [in own organisation] - to give employees the opportunity to learn at work 1:105 (558:560)*.

Several responses from warehouse workers indicated that they were confused at times and hoped to get guidance:

- *It wasn't very clear, you don't know where to go to. You struggle, maybe half an hour, an hour... all the time. You don't know which way to go to<sup>40</sup> 2:150 (963:967)*
- *On my way to achieve those goals... maybe if I can get a chance, through the right channels, maybe I don't really know what is the right chance. What I know is that I must get the right training so that I can go forward 2:207 (1389:1392)*
- *Without the training obviously you can't do anything, you know 2:208 (1393:1395)*.

The result of such confusion may be withdrawal from training and a lack of trust in the concept of self-driven learning. Figure 5.25 illustrates the relation of dependency to other aspects of motivation in becoming e-ready.



**Figure 5.25 Dependency on guidance and support**

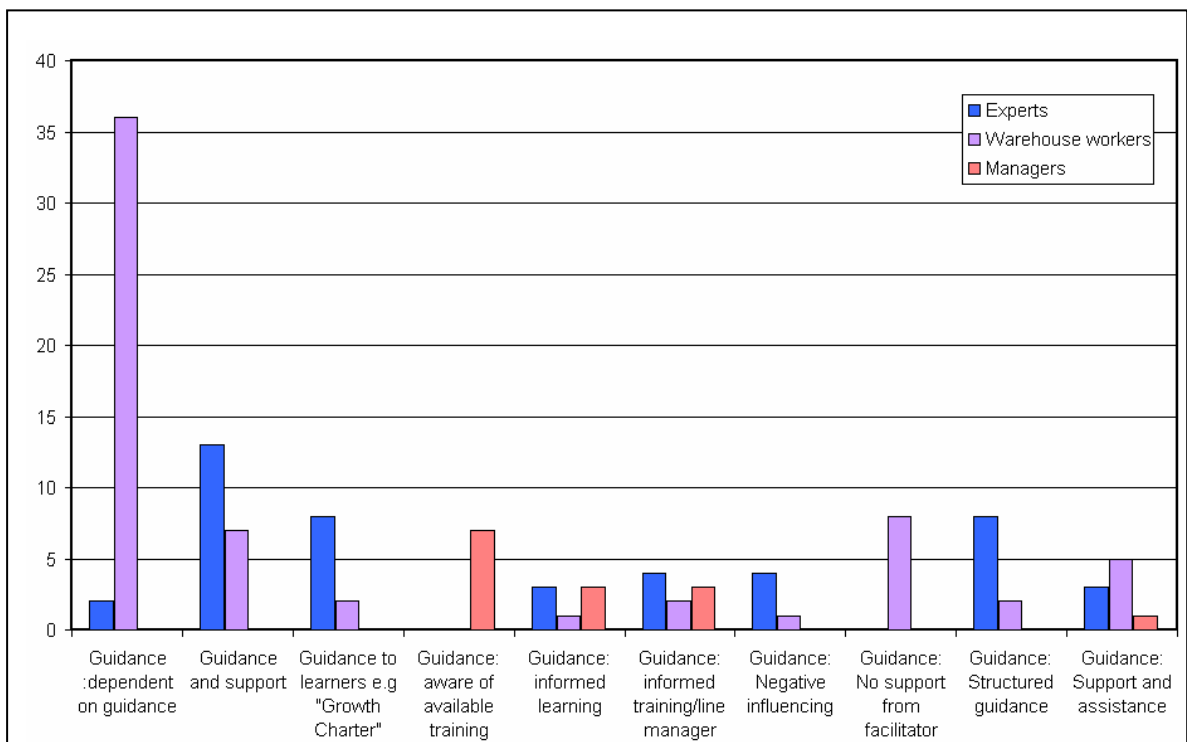
Dependency is related to the attitude and the learning styles of the learner, while the fact that the knowledge is limited leads to anxiety. The only way they believe this anxiety can be allayed is to be directed and coached into a career that they believe in. The readiness levels of the workers differ, because different levels of guidance are needed.

<sup>40</sup> Dis nie mooi duidelik nie, en dis frustrerend, kyk jy doen dit op jou eie tyd. Nou sukkel jy, jy het miskien net 'n halfuur of 'n uur, sukkel jy die heelyd met daardie problem, jy weet nie watter kant toe om te gaan nie.

Commentary by the workers suggested that they are in need of such guidance and clarity of objectives: *But sometimes we do like some kind of direction, you know ... 2:204 (1373:1376)*. This guidance refers to support and direction in terms of a learning plan and knowledgeable advice. The SMEs and managers provided career information and possibilities during induction courses, to activate the employees' curiosity and attention:

- *You virtually inform him of all career opportunities within the organisation. That to me is a correct induction course 1:491 (3082:3083)*
- *We need to give them a buffet, see what is available. Not only within the company. Say you've got a guy in the warehouse not interested in pharmacist assistant, you should say what other warehouse workships are available? 3:62 (336:340)*
- *We look at what is needed to move or develop into the next level. This learner must be constantly aware of his competency level, so that his progress makes sense to him 1:533 (3272:3275).*

Several concepts emerged from the interviews and observations of warehouse workers, SMEs and managers with regard to guidance and support. Figure 5.26 illustrates the guidance and support concepts that emerged during the interviews and observations. This guidance includes knowledge from the responsible people to provide accurate direction, structured guidance and continuous support. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.



**Figure 5.26 Concepts relating to guidance and support according to warehouse workers**

The warehouse workers frequently responded to and expressed a need for guidance and support in their learning paths. A platform to work from is needed to provide extrinsic and intrinsic motivation for growth. In the words of the HR training manager:



*So, sometimes you find that you're motivated, you got the interest, but the organisation is not supportive. There are things that we do not have control of. You can control the personal development, but the structures of the organisation must actually be supportive 3:68 (367:371).*

Manager and facilitators are seen to be the providers of guidance, support and career direction. This aspect can be critical in providing the needed motivation to be e-ready.

#### **5.5.4 Facilitator contributions as extrinsic motivator**

The ideal facilitator is described by an SME as: *a coach, a skills builder to mentor and coach towards competency*<sup>41</sup> 1:361 (2278:2282) (Figure 4.24). Facilitator responsibilities are seen to be as guide, administrator, social supporter, empathy supporter and as an instructor (Adendorff, 2005).

When I observed the warehouse workers during their ABET training sessions and mainframe tasks, no facilitator led them or guided them during their activities. Both training and job requirements were completed without supervisor support.

Regardless of the absence of a facilitator, the warehouse workers were able to work independently when I observed their progress during the ABET training classes:

- *no facilitator or supervisor from the HR department showed up. I realized that these warehouse workers were left entirely on their own 2:27 (135:137)*
- *... during this and the previous observation, nobody intervened or came in to assist the warehouse workers in any way. They had to carry on without assistance 2:29 (141:144).*

During the three observation sessions nobody came to check on them or to hear if they experienced any difficulties. It seemed as if they were not depending on a facilitator to guide them during these activities, they all knew what to do:

*Both watched patiently as they waited for the sign on process to complete. Still no one spoke - It seemed as if they knew what to do to log in. Nothing in their behaviour suggested that they were scared or tentative when they started to work on the computers 2:15 (71:76).*

This observation contradicted the previous section where most workers suggested that they were dependent on guidance and preferred to be directed by superiors. The difference with ABET and the mainframe activities were that they were already confident and knew what was expected of them. It seemed then from this collected data that the warehouse workers do have the ability to work independently and without supervision. It may be that the concept of guidance does not literally refer to the presence of a facilitator, but that guidance can be presented in the form of relevant, clear learning objectives.

#### **5.5.5 Relevancy of training as extrinsic motivator**

The lack of motivation is described by Ryan and Deci (2000) as amotivation: When amotivated, a person's behaviour lacks intentionality and a sense of personal causation. Amotivation results from

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<sup>41</sup> hierdie ou kan byvoorbeeld 'n "coach" wees, jy kan sien mentorskap en "coaching" is vir my belangrik, jy moet dit hê anders werk dit nie. M.a.w. nou is jy 'n "skillsbuilder" en hy is 'n fisiese "coach" want hy kan ander fisies leer en help en hy bou sy "skills".

not valuing an activity, not feeling competent to do it, or not believing it will yield a desired outcome (Ryan & Deci, 2000 p. 61). (See figure 5.24)

During the interviews some managers commented that training is often presented to workers that do not add value:

*It wasn't explained. A coordinator or supervisor just went to you and told you you need to be in the training room. I mean that is not the right way 3:12 (52:54).*

The same manager responded as follows when he was prompted about self-driven training that may be relevant to his employees: *Personally I wouldn't mind, because the people will be more motivated if they see the light at the end of the tunnel 3:194 (1165:1167).*

If training is not relevant to the learner, what motivation will the learner have to acquire the knowledge to be presented to him? SM's suggested that relevant training can be applied and would broaden the required skills, knowledge and competency of the warehouse worker, generate confidence and eventually lead to a higher level of performance. SMEs were adamant that learning has to simulate the working environment, to give meaning and perspective to the learner :

- *...learning has to simulate what happens on the job<sup>42</sup> 1:55 (261:263)*
- *...then we need to present training to him that is relevant, and prepares him for those activities 1:87 (462:464)*
- *Lastly, the training you do and plan, should be aligned with what the business needs. It has to add value, both to the business and individual 1:550 (3368:3370).*

The indications from SMEs and managers were that relevant training, where the workers could understand the reason for training and see the purpose of the plan, would lead to better participation and motivation. It could play an important role to establish the workers as self-driven learners.

Unfortunately, some workers suggested that they sometimes do not know the purposes of the training they received:

- *it's nothing to learn something new, but it doesn't really make life easier...<sup>43</sup> 2:137 (891:893)*
- *They are helping us, in general, but not specific 2:319 (2317).*

The purpose of training was not always clear to the workers and led to confusion. One respondent summarised it as follows:

*I think the first thing is, when you offer somebody an opportunity to learn, I think it's better to make them pass a test. Just to see how ready is he, for what you are offering. Because at the end of the day he is not prepared to do it 2:288 (1973:1977).*

The confusion warehouse workers experience with regard to some of the training they receive, may result in amotivation. If e-learning is planned, it will require motivated workers, with clear, relevant learning paths to guide them. Experts advised: *These exercises need to be relevant and on his level, and acceptable for his cultural values. It is senseless to present him with games or exercises that do not add value*

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<sup>42</sup> Weereens - die leer moet simuleer wat in die werksverband plaasvind.

<sup>43</sup> maar wat ek eintlik wil sê, dis niks om iets nuuts te leer nie, maar dit maak nie eintlik jou lewe makliker nie

1:471 (2988:2991). It seemed that clear relevant training is not always discussed and proposed to warehouse workers to motivate them for training.

Takalani refers to a programme on national television in South Africa. The name "Takalani" means "be happy" in TshiVenda (one of South Africa's official languages) and conveys the spirit of happiness and innocence throughout the project (Science Education, 2001). One of the warehouse managers referred to Takalani to describe his staff's attitude with regard to some kinds of training. Apparently some regarded it to be treated as children.

- *They feel that they are taken backward, because here the in the warehouse [sic].... They always say we're going "takalani". That means where small children get [sic] taught 3:172 (1055:1057)*
- *So if they feel more all right if they don't feel belittled. But the classroom type where they just need to read and write, they really feel belittled 3:175 (1067:1069).*

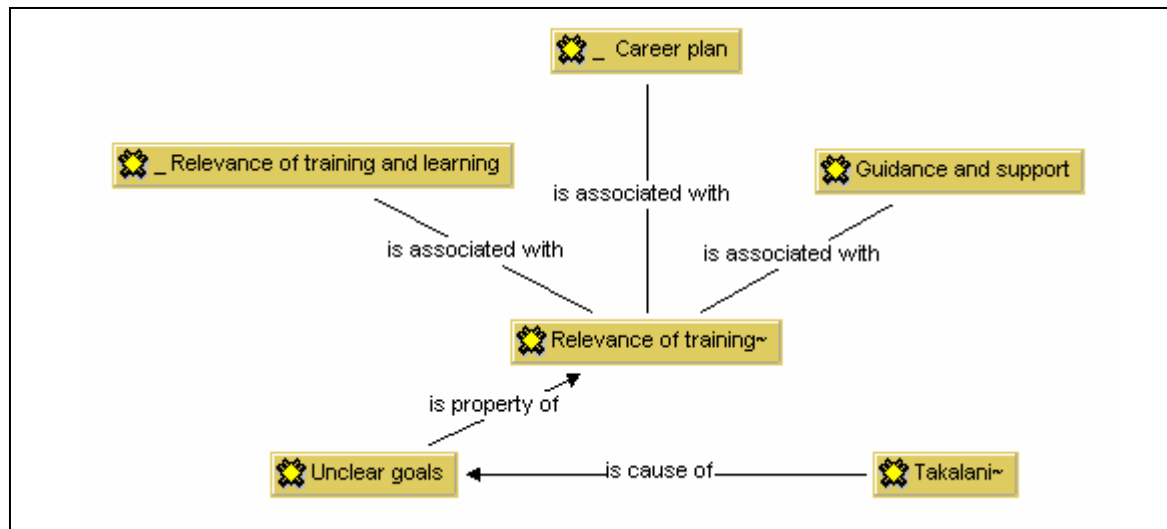
He referred mostly to classroom type of training, and implied that the purpose of the training was not always clear. He did not refer to a specific objective that had to be trained during these sessions, his comment was more directed at the method. They were not able to see the relevance of some types of training.

SMEs commentary confirmed this opinion: *...Escom made them do their own ABET levels, levels three and four, it was like washing and ironing levels, while the workers wanted to do technical levels...*<sup>44</sup> 1:386 (2440:2445). Another manager confirmed that sometimes training does not serve the right purposes: *We present them with learning material and content that is not relevant to them in their lives. Relevancy is important 1:1197 (929:930).* A worker commented on the same programme: *Then I have to go and start with ABET. You know, it doesn't give me direction! 2:209 (1395:1396).*

Figure 5.27 illustrates the relation of the collected data with regard to motivation. Warehouse workers may be more motivated to be involved in e-learning when their learning paths are relevant to the tasks at hand and their career paths and if a training plan has been structured to suit their own and the business' needs.

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<sup>44</sup> Hierdie was dus 'n Eskom Abet level. Hulle wil ook nie vlak 3 en 4 doen nie want hulle doen was en stryk vlakke, terwyl hulle eerder tegniese vlakke wou aanvat.



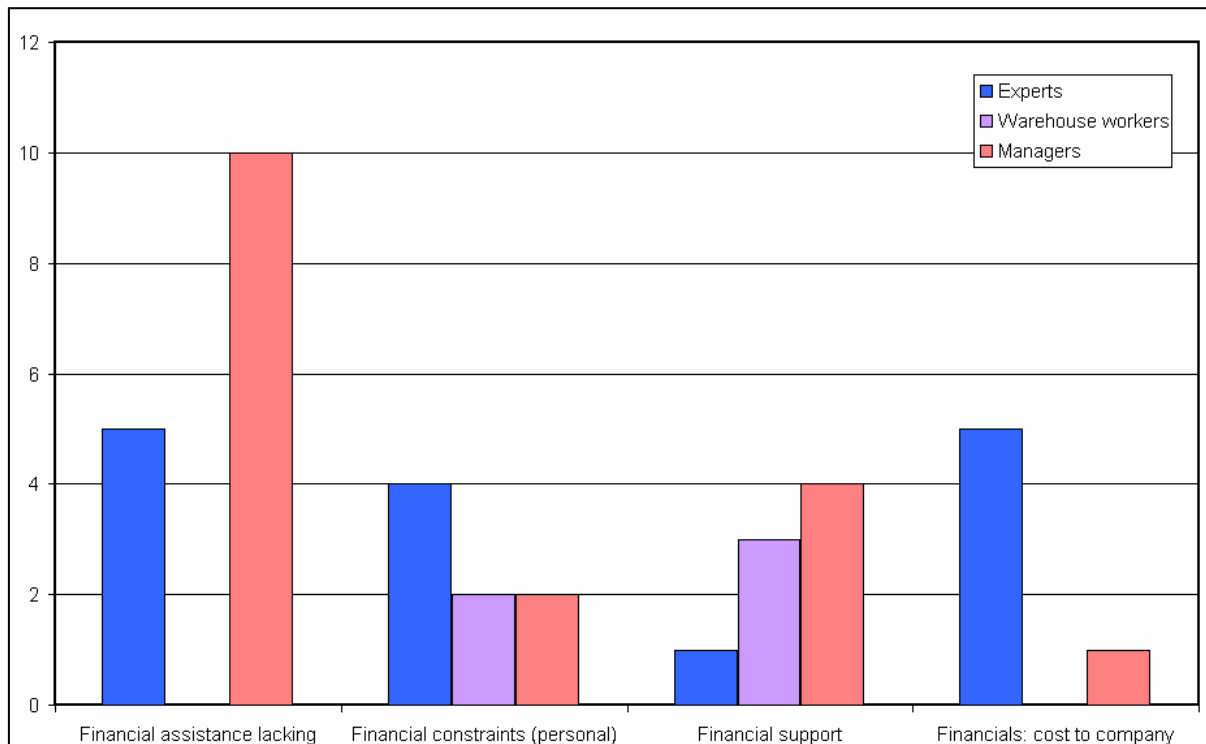
**Figure 5.27 Motivation grows with clear career-related objectives**

The data suggested that workers may be much more motivated when training was relevant and focused on a business goal which would make them feel like adult learners. The Takalani comment suggested that they were not always aware of the purposes of training. It appears as if their e-readiness may be negatively affected if they do not have relevant learning paths in place.

### 5.5.6 Financial support as extrinsic motivator

Workers indicated that most of them did not have the personal finances to study privately. One warehouse worker indicated that he was interested in networking and contemplated the possibility to study: *So if I do networking, will I be able to pay it, will I be able to afford it?* 2:118 (714:715). Another commented on his motivation to learn on his own: *I've no problem in pushing myself, like I said, I've done it, it's just that I did not have enough money to continue doing it* 2:270 (1853:1855). Management agreed: *If I say to those guys you can go out there and study whatever is available, they'll say to me they don't have money* 3:38 (198:200). Most workers just did not have the financial resources to study on their own.

From the data analysis emerged four codes that related to the financial support of warehouse workers for training. Figure 5.28 illustrates the frequency of SME, warehouse workers and manager responses with regard to the lack of financial assistance, financial constraints as experienced by workers, organisational support and the eventual cost to the company. Most responses were from SMEs and managers who were more qualified to speak on the organisation's financial views as it related to training. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.



**Figure 5.28 Financial support as motivator for e-readiness**

The organisation has a policy to support career development: ... *it is much easier because they provide a study loan 2:114 (702:703)*. Aspiring students need to apply for the loans and only after the request has passed all the procedures can the loan be awarded. The HR training manager commented that the financial support is not ideal:

- *...financially conservative, which is good because that's how you make a profit, but you need to find a balance. If you want to have trained people or motivated people, you must be prepared to develop them 3:44 (222:225)*
- *When we budget, we actually budget for that study, but then we ask them to go and find a loan before we pay it. Our policies don't support the training 3:42 (210:212)*.

He added that most of the workers also did not have the financial status to obtain loans:

*Most of the guys that we talk about are blacklisted for that matter. They can't access loans. They don't have credit cards. So, our policies don't encourage what we're trying to preach. Do you understand what I'm saying? 3:41 (204:209)*.

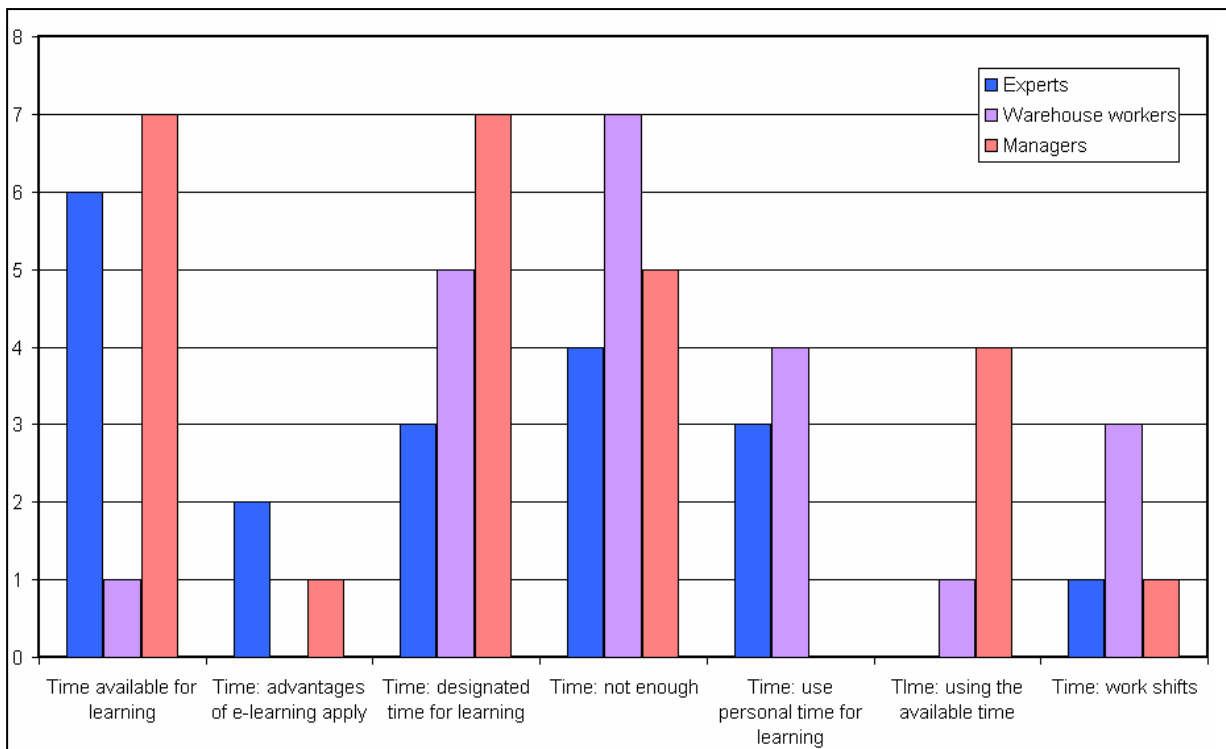
In a bid to overcome their financial constraints, the workers have become more dependent on the organisation to provide in their needs for training. The financial constraints of the warehouse workers may be a critical constraint to prevent warehouse workers to become involved in e-learning.

The organisations may also benefit with e-learning, according to SMEs. They added that e-learning can be a cost saver for many organisations: *From a business point of view, I regard the value of e-learning as a cost saving strategy. Not from a trainer's point of view but from business 1:553 (3395:3397)*. It is argued that the management of organisations did not always understand the impact of e-learning and the

potential cost to company. *To make the learner use available time at his workstation can be very effective learning*<sup>45</sup> 1:451 (2884:2888).

### 5.5.7 Allocated time for training as extrinsic motivator

Seven aspects relating to time have emerged during the interviews with and observations of the participants (Figure 5.29). These include the available time for training, use of the available time at work and from a personal point of view. The advantages of e-learning with regard to time constraints have also been discussed. All three respondent groups participated frequently during the discussions of time and the limitations of time. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.



**Figure 5.29 Time available for learning as motivator for e-readiness**

Warehouse workers mostly complained about the availability of time for training during the interviews:

- *It is not difficult, everything is available at work, but there is not enough time*<sup>46</sup> 2:144 (927:928)
- *There is just not enough time, I'm not going to do it in free time, or after hours, then there's not time for one's children*<sup>47</sup> 2:145 (928:933)
- *When we have the time here, and we do get the chance, but time is very limited* 2:298 (2079:2082). ...for our workers this is always a problem, because they work shifts. Now we've got a problem, they need extra studying time in working hours 1:233 (1123:1126).

<sup>45</sup> Bestuur verstaan ook nie altyd die koste-besparings element nie. Hulle besef nie altyd dis meer koste-effektief om die ou in sy werksplek te laat leer nie. Om tien, twintig minute te gebruik om gou die werk daar waar hy sit te doen nie

<sup>46</sup> Is nie moeilik nie maar alles word by die werk opgestel ... maar jy het nie tyd nie.

<sup>47</sup> Daar is net nie tyd nie, ek weet nie wanneer wil hulle hê moet ons dit doen nie. Ek gaan dit nie in *lunchtime* doen nie. Ek gaan ook nie na ure werk nie, want ons het al klaar nie tyd vir ons kinders nie.

SMEs believed that an assigned time per week contributes significantly to develop a learning culture at work.

- *In a previous experience in a state organisation, we had a designated time frame, e.g. Friday mornings, for an hour, to do learning on a computer program 1:480 (3038:3040)*
- *A fixed time yielded much more success, but he still needs to be managed well 1:481 (3044:3045)*
- *Or the training room should be accessible for this purpose. They should be granted an hour's time for learning per day, but unfortunately very few companies invest in this strategy 1:522 (3225:3228).*

An assigned time for training may provide the motivation, and I queried the available time. The managers believed that time for training is more than sufficient at IHD. The HR training manager said that there is not a policy that states what the minimum train hours should be, but at IHD there is enough time set out for training: *The way it works in the entire warehouse is that two hours are set aside every morning from Tuesday, Wednesday and Thursdays for training 3:138 (769:771).* A total of six hours was available. I queried the use of the time: *We are suppose to get that. We use it for ABET now 3:155 (911:916).*

It appears that a fair amount of time is available per week for training for warehouse workers. Although e-learning is believed to be an anywhere- anytime learning strategy, it still needs guidance and knowledgeable support from a facilitator (Adendorff, 2005). When the organisation provides time and funding, it needs to ensure that the available time is used optimally. Available learning time may serve as a motivation for warehouse workers who do not know yet how to effectively manage their time for work and learning during business hours. Knowledge and skill inputs from the facilitators are needed. Additional motivation can be provided by the organisation by means of recognition.

### **Recognition and rewarding as extrinsic motivator**

Rewarding is seen as a popular motivator by organisations. Employees receive recognition in the form of incentives, promotion, certificates when they have performed exceptionally well. Workers on financial rewards: *At the end of the day everybody is concerned about their salaries. This is a very good motivator 1:504 (3144:3146).* The need for financial gain was reiterated by the warehouse workers: *If they give you more money it always works*<sup>48</sup> *2:133 (871).*

SMEs valued the awarding of certificates on completion of an objective: *I found that when students complete courses and get their certificates, it motivates some others to enroll 1:211 (1004:1006).*

Other ways of recognition has also been mentioned:

*By posting his picture onto a wall, or reward him with something visible to all. This extrinsic motivation may put several other warehouse workers into action. Important, this achievement needs to be visible for all. Praise the person in front of his peers, so that others can be motivated. The warehouse workers compare themselves with one another 1:538 (3286:3292).*

Rewards are important for any goal:

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<sup>48</sup> Kyk as hulle vir jou meer geld gee dan werk dit altyd.

- ...they need to know what is waiting for them once a skill has been learnt, and a lesson completed 1:325 (1974:1976)
- Promotion will ALWAYS be in the warehouse workers' mind when he/she acquires new skills and knowledge 1:327 (1983:1985).

Warehouse managers agreed that IHD do have recognition structures available. Workers receive incentives twice a year and some get promoted to the office areas:

*... there are more than ten people [in the administration offices] who have worked under me. I am so proud. It actually makes me feel that here are the people [the promoted employees] who actually respect the people in the warehouse 3:198 (1238:1241).*

The organisation uses recognition to reward its employees regularly. It is possible that this same culture can be used for training purposes and to motivate warehouse workers to be involved in e-learning. The organisation needs to provide the launching-pad for e-learning.

### 5.5.8 Intrinsic motivation

To be motivated means to be moved to do something. Intrinsic motivation refers to the urge to do something because it is inherently enjoyable or interesting (Ryan & Deci, 2000). Some of the SMEs regarded intrinsic motivation to be the most critical aspect to realize e-learning:

- *Intrinsic motivation, for me is the most important, far more than basic computer literacy...*<sup>49</sup> 1:430 (2759:2761)
- *You definitely need one or other form of intrinsic motivation and support mechanisms to achieve this 1:477 (3027:3028).*

Unfortunately, from the comments by most SMEs it seems that the intrinsic motivation to be self driven learners is scarce: *What I saw with these warehouse workers, is that a self drive- learning culture does not exist*<sup>50</sup> 1:419 (2706:2708). One of the SMEs added an example where the worker quit after a while:

*He really wants to learn badly, and enrolled for the A+ certification too. I got the approval from his line manager, and he was granted access. He initially had the commitment, but somehow this slowed down. Now that he is enrolled, he always finds excuses that he doesn't have time to do it 1:231 (1107:1112).*

SMEs were doubtful that the workers may not be intrinsically motivated for e-learning. Neither the observations nor the interviews supplied direct information in this regard, therefore I used Ryan and Deci's (2000) definition and explanation of intrinsic motivation to explore the data for intrinsic motivation of the warehouse workers.

Ryan and Deci's approach focused mainly on psychological needs. These were "needs for competence, autonomy and relatedness" (2000, p. 57). They explain intrinsic motivation by means of the "free choice measure". If users were left alone and kept on returning to do tasks on their own, they were regarded to be intrinsically motivated. The more time they voluntarily spent with the task, the more the motivation.

<sup>49</sup> innerlike of intrinsieke motivering, dit is vir my die belangrikste aspek van "readiness", nog belangriker as basiese rekenaargeletterdheid.

<sup>50</sup> En wat ek veral by die ouens gesien wat ons probeer leer, is dat die selfleer kultuur nie bestaan nie.



Secondly, Ryan and Deci (2000) drew on their Cognitive Evaluation Theory that specified that interpersonal events and structures that led to feelings of competence during action can enhance intrinsic motivation. This follows when participants experience satisfaction during the interaction and is further enhanced by the freedom to take part or as described by Ryan and Deci: "Thus, people must not only experience perceived competence (or self-efficacy), they must also experience their behavior to be self-determined if intrinsic motivation is to be maintained or enhanced" (2000 p. 58). The authors maintain that autonomy and the opportunity to be self-determined can develop intrinsic motivation even more.

The data from the interviews and observations indicated that the warehouse workers have an interest to work on the computers and they have expressed their needs for competence several times:

- *With me, when it comes to learning on my own, I don't think it can be a problem. This is almost the same question I had sometime before... people are concentrating when you are with people 2:94 (538:541)*
- *No, that would not scare me. I've got some ... of how computers work. ... that won't be a problem. I would enjoy it 2:281 (1924:1926)*
- *Yes, I like working on computers - a lot! 2:297 (2077).*

From the comments above it appears as if the interest was alive and enough to create an awareness of the computers with the warehouse workers. Their work on the mainframe system was not really voluntary, and can not be regarded to be a "free choice", but the interest in the ABET training was an indication that they chose to keep on working independently:

- *no facilitator or supervisor from the HR department showed up. I realized that these learners were left entirely on their own 2:27 (135:137)*
- *I was sure of one thing: during this and the previous observation, nobody interfered or came in to assist the learners in any way. They had to carry on on their own 2:29 (141:144).*

The ABET training classes indicated that the warehouse workers' interest was such that they autonomously attended classes and worked without supervision. It also gave them the opportunity to generate confidence in themselves. The warehouse workers also reported their satisfaction and enjoyment to be involved in computer technology:

- *No, that would not scare me. I've got some [knowledge]... of how computers work. ... that won't be a problem. I would enjoy it 2:281 (1924:1926)*
- *When we have the time here, and we do get the chance, but time is very limited. But if I can be in an environment where we can use the computers more, then I'll like it a lot 2:298 (2079:2081).*

The warehouse workers did not display conscious behaviour to be intrinsically motivated, but by comparing observed actions to Ryan and Deci's approach of intrinsic motivation, it seems as if some indications exist that warehouse workers are intrinsically motivated with the activities that were supposed to challenge them.



The conceptual codes of e-readiness listed in Table 5.10 were supported by an analysis of the obtained data in this section. The data has indicated that warehouse workers are moved to become e-ready when:

- computers are available to work on
- access and connectivity to the internet and e-mail facilities is available
- they believe they have closed the digital gap with technology
- they believe they prepare for a better future
- learning paths are made available and regularly communicated
- focus and purpose is provided with guidance and support
- structured guidance is provided for inexperienced users
- knowledgeable advice and support is made available
- facilitators empower them to develop self-learning skills
- they are challenged by relevant learning objectives
- irrelevant learning interventions can be eliminated
- financial support is provided by the organisation
- time is made available during work hours to aid inexperienced self-driven learners, and
- achievements are recognised by the organisation.

It has emerged from the data analysis that the warehouse workers are concerned and experience a lack of motivation due to

- learning paths that are not very clear
- guidance and direction is not always relevant
- limited knowledge by facilitators to introduce them to computer training
- learning objectives not always clear
- financial support not always available, and
- restricted computer use that may increase the digital divide.

The data analyses has indicated that the warehouse workers may be intrinsically motivated by their experience with computer technology due to their:

- freedom and autonomy to return to ABET classes
- wish to be involved in computer technology
- awareness that computers may affect their career development and future opportunities, and
- awareness of the potential dangers if they abstain from getting involved in computer technology.

## **5.6 Access and infrastructure as contributors to e-readiness (Sub-question 5)**

The fifth question relates to the warehouse workers' access to computer technology and available infrastructure, and the effect it has on their e-readiness.

The previous section explored the motivators that may inspire the warehouse workers to participate or avoid learning with computers. It was found that warehouse workers have several extrinsic origins of motivation that are instrumental to move the warehouse workers to be motivated to be involved in computer technology. Added to these extrinsic motivators are definite signs that warehouse workers often choose freely to work with computers and often do it without supervision. Regardless of aspects such as financial constraints or the lack of relevant learning plans, the warehouse workers have indicated that they are motivated to learn by means of computer technology. This sub-question deals with the infrastructure that is available for the warehouse workers. The data are used to explore the

access warehouse workers have to the technology and whether e-learning may be a viable learning option for the workers.

### 5.6.1 Access to computer technology

Access to computer technology has been identified in the literature to be one of the critical aspects of e-readiness. The questionnaires, interviews and observations with participants dealt with warehouse workers' access and connectivity to computer technology and how it influences the warehouse workers to be e-ready. The SMEs reiterated the importance of access and warned that connectivity is often underestimated:

- ...make the mistake by assuming everyone has access to computers. There are many, probably more than 40 percent of people who do not have access to computers at all<sup>51</sup> 1:441 (2803:2807)
- Access will always be a problem. Warehouse workers do not get enough practice on PC's. Some work areas have very limited access to PC's while others are under used ... and with regard to the basic requirements: [these requirements are]: Access to the intranet at the least. PC access - either by a shared or own workstation. Password and user ID to grant access. It is important that instructors and instructional designers are aware of the basic infrastructure of the company 1:310 (1883:1889).

SMEs indicated these requirements to be available to warehouse workers to ensure effective e-learning. The data indicated that several types of connectivity exist for warehouse workers.

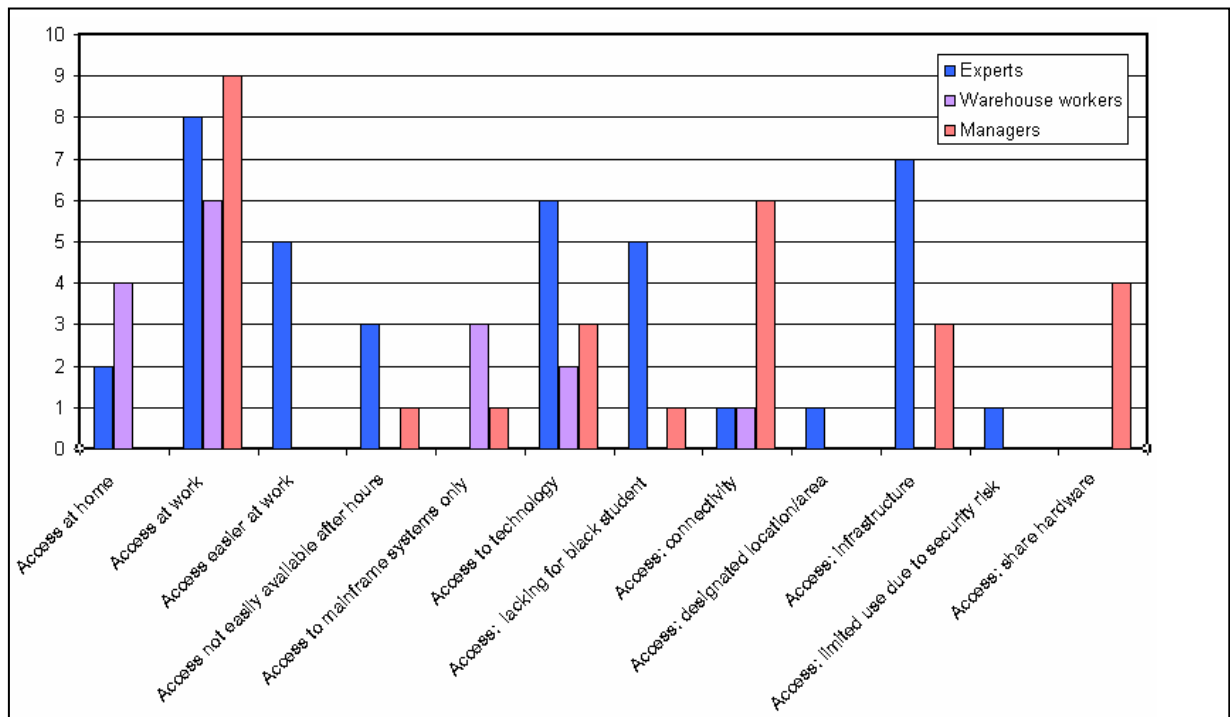


Figure 5.30 Computer technology access for warehouse workers

Figure 5.30 illustrates the types of access as it emerged from the data analysis. Among these are access and connectivity from home, at work, after hours, type of connectivity, shared access and

<sup>51</sup> Mens maak die fout in 'n groot mate deur aan te neem dat almal toegang tot rekenars het. Daar's baie - persentasie gewys seker 40 % mense wat nie toegang het tot rekenars het nie.

limitations due to security risks. The y-axis represents the frequency the dimension was identified from the data, while the x-axis represents the theoretical dimension of e-readiness.

The data analysis indicated that the warehouse workers were dependent on their workplace to get access to computer technology. The graph relating to access at work indicates the frequency of comments and participation from the participants. This access included access to networks, e-mail and the internet. Managers agreed that the connectivity and availability at work was the only access the warehouse workers could rely on. The warehouse workers have indicated that access from their homes were not always viable due to financial considerations.

### 5.6.2 Computer access at home

Information from the questionnaires revealed that very few workers had access to computers at home (Appendix 3.4). Most of the warehouse workers indicated in the questionnaires that they got access to computers at work. Few warehouse workers may have had the confidence and financial security to install and use computer technology at home, but most were dependent on the workplace to provide the exposure to technology. The anxiety and lack of confidence was believed to emanate from the lack of access: *Now here, not everyone has a computer. That is why there is this fear of a computer 3:79 (414:416).*

The data analysis from the interviews suggested that few were connected to the internet. *I work on it. I do have it at home, but I never learned or worked on it at school. I know it practically 2:98 (582:583).* Only one of the participants I interviewed admitted to being connected to the internet from home: *Interesting, how do you use it? SM: Normally for e-mails and just for games. HM: Connected to the internet? SM: Ja, connected to the internet 2:274 (1866:1869).*

### 5.6.3 Computer access at work

Many SMEs regarded the workplace to be the only real opportunity where warehouse workers could get access to computers:

- *... workplace is for many warehouse workers the only viable option 1:106 (564)*
- *The workplace is the only solution. You also bring a message across that the workplace cares and gives an opportunity to develop your skills 1:108 (568:570).*

The workplace offers a lot more to the warehouse worker than he can financially afford on his own. As stated by the network manager:

- *Most companies have a network, and PC's. That's where you start. That's what you need, a network so that you can communicate with the server. You know our network here currently and the infrastructure is quite advanced 3:227 (1453:1457)*
- *Just about every machine in the company has internet access 3:220 (1408:1409).*

Information from the questionnaires, observations and interviews confirmed the access warehouse workers had at work. Appendix 3.4 includes the information regarding the warehouse workers' access to computers, e-mail and the internet.

The warehouse workers conceded that they have access to e-mail and some knew that internet access was available: I have but it is not working, but I have e-mail 2:234 (1579). With this response another problem emerged. The organisation may provide access, but the lack of knowledge and skills of the worker literally cancels out the privilege. This corresponds with the argument in 5.5.1.4 where the internet connection is there, but it's functionality never properly communicated to the users:

- *The connectivity in this case was to "dumb terminals" due to security risks foreseen by the organisation. As with most of the warehouse workers, she has access to a computer known as a "dumb terminal". This terminal gives them access to e-mail and the specified business procedures she works on 2:404 (2738:2742)*
- *They don't know, because the internet in the warehouse is actually their e-mail. It is web based. So when they open their e-mail, they're actually opening the internet browser, which to them - they think it is just e-mail 2:223 (1421:1424).*

I later queried these terminals during the interview with the network manager. He explained that these terminals were in fact capable of internet browsing and could be web enabled. They were known as dumb terminals because it did not have a normal operating system loaded, e.g. Windows®. To save costs, the terminals were loaded with the necessary applications like e-mail and the mainframe system. The network manager explained: *There's only two things that they got on those machines. It is e-mail, access to e-mail and access to the internet. And most of the latest stuff is web based 3:221 (1411:1414).* I prompted on internet connection for these terminals: *Absolutely, they can access it on the warehouse machines if they want to. It's just a matter of restrictions. But those PC's can access it. No, there's not much detail to be changed 3:224 (1429:1431).*

The organisation accepted the responsibility to use the company infrastructure to provide in the training needs of the warehouse workers. According to a manager: *As far as I know they only train here at work 3:120 (640).* She also confirmed that her staff does have the opportunity to use shared computers for their own purposes: *There are some computers in the department, where they can go to 3:120 (693:694).* She added that people have to share where computers are limited: *But then of course problems do arise with these extra courses that come along where people don't have access, you know. People need to share 3:135 (755:757).*

The shared computers however, do not solve this entirely: *It's a problem. Even now, when you manage the stock controllers, they're about four people in customer returns that work on a normal PC, but then there are about eight of them doing the scores, you know that still causes a problem 3:136 (760:764).* It was for this reason that internet café's were promoted in the organisation: *The warehouse groups do not always have easy access to computers, but we think in terms of "internet café's" for these workers 1:148 (725:727).* From the above I concluded that there are workers who do want to work and use the computers for their own training, but are limited due to the meagre availability of dedicated computers for learning purposes. Again it points to the need of a facilitated effort to make learning a viable option in the warehouse.

Workers have access to computers at the workplace. They either share computers or work on terminals with limited access. Internet connectivity is not promoted, but it seems that it is available. One gets the impression that the basic infrastructure is in place. This made me curious on the viability of e-learning within the current infrastructure of the organisation. I posed the question to the network manager in charge of IHD's networks. *Absolutely, they can access it on the warehouse machines if they want to. It's just a matter of restrictions. But those PC's can access it. No, its not much detail to be changed 3:224 (1430:1432).*

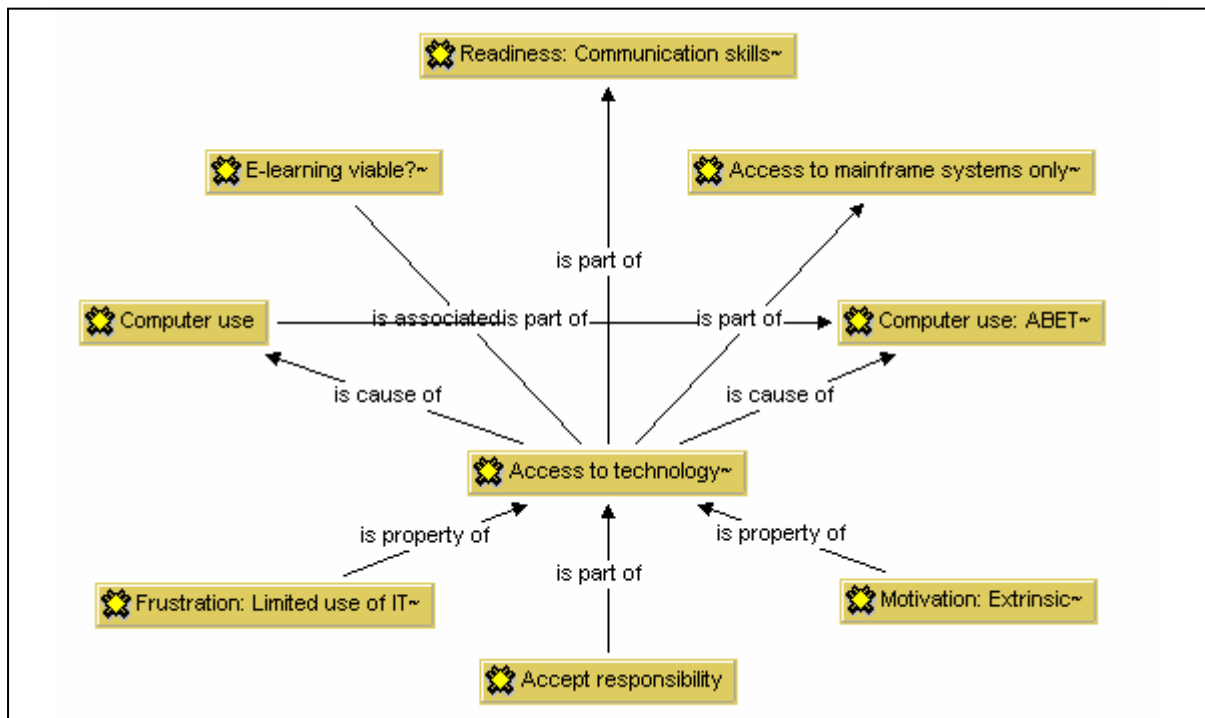
Warehouse workers were not in a financial position to procure the necessary access and infrastructure themselves and therefore relied on the workplace to grant them the opportunity to get access, get connected, gain experience and grow as both a learner and a worker. The workplace becomes a critical environment for the development of the warehouse worker, and to assist them to bridge the digital gap. The access available to the warehouse workers contributes to their e-readiness in a meaningful way. Logistics and technical aspects like sharing computers, and limited access points seem to constrain the connectivity somewhat.

#### **5.6.4 Access to technology as a motivator**

Access to the infrastructure and the availability of computers, internet, e-mail can be one of the most powerful extrinsic motivators:

- *I found that warehouse workers with very limited skills enjoyed the challenge and wanted to improve their PC skills. Motivation wasn't really an issue 1:301 (1836:1838)*
- *If an IT illiterate learner gets the opportunity to learn and work on the PC, they are often more motivated than others who have the necessary skills. They see it as a way to close the skills and knowledge gap 1:302 (1839:1841)*
- *Most warehouse workers are motivated since the computer is a medium they like to work on.1:322 (1963:1964)*
- *Yes, I like working on computers - a lot! 2:297 (2077:2079).*

SMEs and warehouse workers agreed that the access and use of computers are strong motivators to inspire learning with technology. Figure 5.31 illustrates the relations that the access warehouse workers have to technology and how this access relates to their motivation, regular use of computers, frustrations and the viability to be involved in e-learning.



**Figure 5.31 Access to technology contributes to e-readiness of warehouse workers**

Access to computers is also regarded to be critically important for motivation: *This already is a powerful motivation for the learner. The real barrier is accessibility* 1:520 (3218:3219). From the above it can be concluded that access to computer technology opens a wide range of opportunities for warehouse workers. Where it started with mainframe access and then expanding to basic education programmes, it has the potential to lay a foundation to launch planned careers by means of regular computer use, and by generating necessary e-learning skills.

### 5.6.5 Conclusion about theory code access contributing to the e-readiness of warehouse workers

To conclude the e-readiness with regard to access I found that the infrastructure and connectivity for the warehouse workers were well established, and may serve as a valid platform to implement e-learning. It appeared that a concerted effort to guide and direct warehouse workers to use the available access was lacking and the communication to the workers influenced the potential uses of the computer technology. It appeared that the organisation played an important role to make the workers ready for e-learning.

The following additional and new conceptual codes of e-readiness relating to access and connectivity to technology have emerged after following a grounded theory approach. The warehouse workers' access to computer technology has:

- increased warehouse workers' *encounters with IT*
- improved the warehouse workers' *skills and abilities* to take responsibility
- motivated warehouse workers' freedom to *use computer* technology
- improved warehouse workers' *computer literacy*
- opened *relevant* learning opportunities for the warehouse workers



- enhanced the *viability of e-learning*
- influenced their *preferences and styles of learning*
- supported the *organisation culture* to develop its staffs interaction with technology.

Table 5.11 indicates the conceptual codes that emerged to be the prominent elements in the interviews and from observations of the access and connectivity warehouse workers have with computers. The theory code access to computer technology, impacts the warehouse workers in the following conceptual codes of e-readiness.

**Table 5.11 Theory code “access to technology” relating to conceptual codes**

<i>Conceptual codes of e-readiness</i>	
	Access
	Anxiety
	Attitude
	Classroom training
	Computer literacy
	Computer use
	Encounters with IT
	Facilitator
	Financial aspects
	Guidance & Support
	Knowledge of e-learning
	Learner Frustrations
	Learning plan
	Learning Preferences
	Managerial contributions
	Organisation culture
	Relevance
	Skills and abilities
	Time constraints
	Viability of e-learning
<b>Access</b>	x
	x
	x
	x
	x
	x
	x
	x
	x

As far as the e-readiness of warehouse workers was concerned with regard to connectivity and access to computer technology, the following outcomes support the conceptual codes in Table 5.11 above.

The workers have access to:

- computer technology during the entire working day
- network connection all the time at work
- e-mail communication
- internet connection.
- intranet network to obtain information about and from the organisation
- a hi-tech environment where technology supports all business procedures
- mainframe systems to perform business tasks.

Few warehouse workers indicated that they:

- have computers at home
- have internet access at home
- do not know how the internet is browsed
- do not know what type of connectivity they have available
- are motivated to work with the computers
- do not get enough opportunity to browse the net, and
- do not have the financial strength to provide their own connectivity.

The data indicated that warehouse workers are moved to become e-ready when:

- computers are available to work on
- access and connectivity to the internet and e-mail facilities is available
- they believe they close the digital gap with the technology
- they believe they prepare for a better future
- learning paths are made available and regularly communicated
- focus and purpose is provided with guidance and support
- structured guidance is provided for inexperienced users
- knowledgeable advice and support is made available
- facilitators empower them to develop self learning skills
- they are challenged by relevant learning objectives, and
- irrelevant learning interventions can be eliminated.

## 5.7 Contributions and constraints of the organisation's culture (Sub-question 6)

### What business cultural habits influence the e-readiness of warehouse workers?

The contributions of the organisation are critical for the e-readiness of warehouse workers. This question explores the habits of mind of the business culture of the warehouse workers (Reeves, 1999) and how this affects their e-readiness.

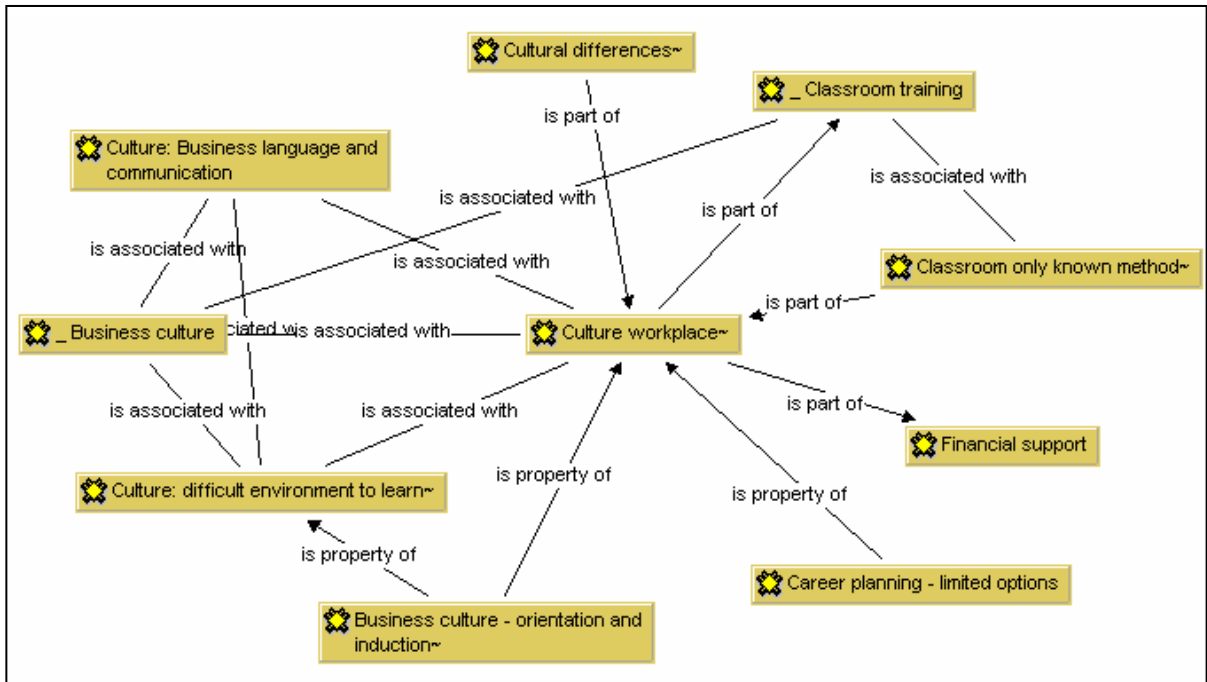
The previous section suggested that the organisation can play a major role to develop and establish the e-readiness of its employees by providing the needed access to computer technology. Access to the infrastructure and awareness of and using the technology are two contributors that have the potential to transform the warehouse workers to self-driven e-learners. Contributions from the organisation can be provided in the form of financial support, managerial guidance to ensure that training and development is driven by achievable learning plans. These aspects may motivate the warehouse workers to get involved and take control of their careers.

The warehouse workers are dependent on the organisation to provide in their needs to learn and to expand their horizons. Most organisations will only accept such an approach if the company will benefit financially. *From a business point of view, I regard the value of e-learning as a cost-saving strategy. Not from a trainer's point of view but from business* 1:553 (3395:3397). This will require informed leadership and a good understanding of the people within such an organisation. *Management often does not understand the cost saving element of e-learning. They do not know that it can benefit them financially to make the workers learn in the workplace*<sup>52</sup> 1:451 (2884:2888). The culture of the organisation often determines the way it deals with the training and development of their employees (Jones, 1996).

Organisations today are global participants with a fair element of different cultures to deal with. The leaders in such an organisation need to deal with the diversity among the staff, while the employees have to conform to the rhythm of the organisation. This last question interprets the culture of the organisation to explore whether the warehouse workers find themselves in an environment that is conducive to e-learning or not.

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<sup>52</sup> Bestuur verstaan ook nie altyd die koste-besparings element nie. Hulle beseft nie altyd dis meer koste-effektief om die ou in sy werksplek te laat leer nie



**Figure 5.32 Organisation culture effecting the e-readiness of warehouse workers**

Figure 5.32 indicates aspects of the business culture that relates to the e-readiness of the warehouse workers. The illustration focuses on the workplace culture in support of the business culture. From the data analysis it has emerged that the e-maturity of the warehouse worker's workplace culture is founded on:

- cultural difference and diversity
- the business language and communication
- support and guidance available to warehouse workers
- learning plans being defined
- financial support and time available for training
- environment might create difficulties for learning
- classroom training being preferred, and
- options available for expanding careers.

The above aspects relating to business culture emerged from the interviews with and observations of SMEs, warehouse workers and managers. Some aspects directly influence the e-readiness of the warehouse workers while others, e.g financial assistance and budgeting, affect the warehouse workers indirectly. These aspects are discussed in the following sections in the manner they may contribute or constrain the e-readiness of the warehouse workers.

### 5.7.1 Cultural differences and diversity

Thomas and Inkson (2004) described the culturally intelligent manager to have knowledge of the diversity, practice mindfulness and develop behavioral skills to deal with a cultural diverse group. The biographical information in Appendix 3.4 confirms that the warehouse workers represent all the racial groups in South Africa - black, coloured, Asian and white workers from all the regions in SA. Ethnicity adds to the diversity: black workers are Xhosa, Zulu, Ndebele, Venda, Sotho etc, while white people are from English and Afrikaans communities. These are one of the reasons SA prides itself as

the Rainbow Nation. It can then be understood that “mindfulness” is needed to accommodate all the different cultures within the Republic of South Africa (Thomas & Inkson, 2004).

SMEs viewed the sensitivity to cultural diversity to be importance to achieve success:

- *They are of all races, and it's highly sophisticated work. And they cope. You obviously need to be sensitive to religious days and make sure that you recognize these for all groups 1:131 (660:663)*
- *Sometimes warehouse workers use English as even their fifth language, and have difficulty in understanding the commands. It certainly helps then to get one of their own to come and explain to them what needs to be done 1:171 (805:809)*
- *Within businesses, that specific culture can have a huge influence to make e-learning work or not 1:330 (1998:1999).*

The above comments confirm the view held by Thomas and Inkson (2004) that particular care should be taken to accommodate the habits and beliefs of the various workers in the working environment.

The managers were of the same opinion: *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 (429:430)*. They issued a warning that facilitators should be aware of diversity. *...people do things different. Some people they do things by doing, others by listening. The facilitation skills, when you facilitate, you've got to accommodate this 3:97 (507:509)*. A warehouse manager suggested that one should take a submissive approach when dealing with cultural diversity: *I've got my own culture. When I deal with people, I try to put my own culture backward. Personally I speak several languages of South Africa, but I'm not fluent with all of them 3:210 (1309:1313)*.

Quotes from the warehouse workers confirm their diversity, not only from their cultural backgrounds but also in their preferences as learners:

- *... you see I am a kind of person who likes religion and church and I do it on my own. [sic] I discover that I am more successful when I do it on my own 2:302 (2126:2130)*
- *It won't be a problem. It will be a big opportunity for me and I will grab it because in a class it is no use for me to sit in a class 2:304 (2147:2149).*

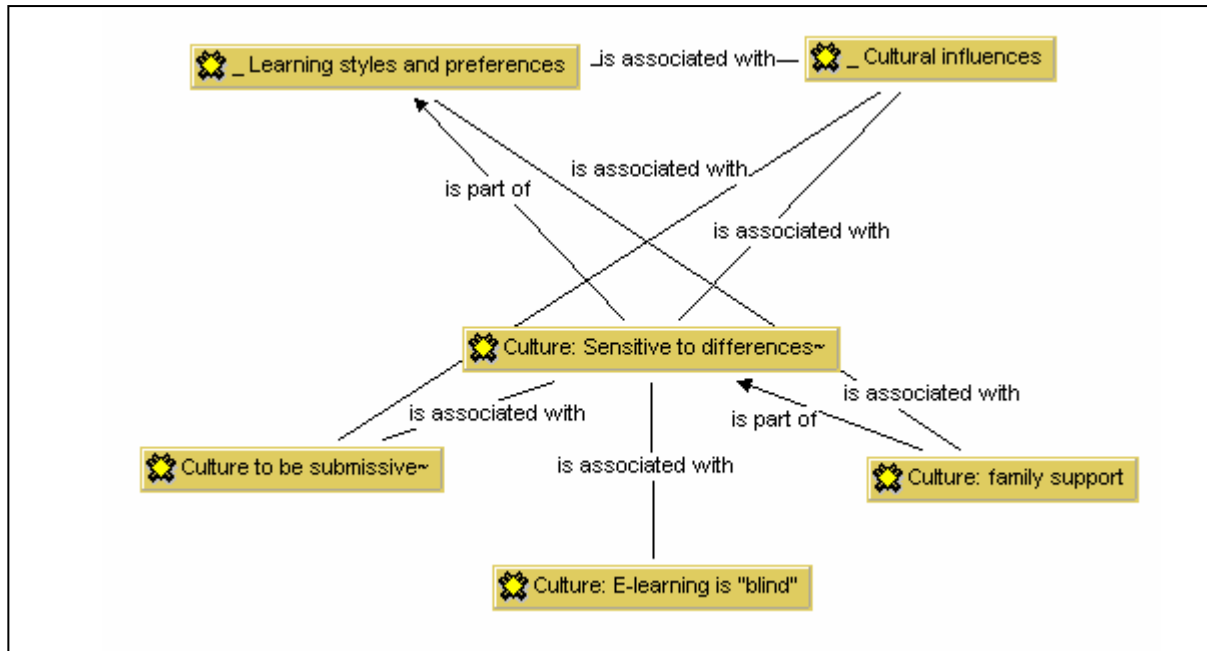
The warehouse workers are a diverse community and have indicated that special care should be taken to accommodate their cultural needs as well as their training and learning preferences. The responsibility of the organisation to provide in these needs is complex and has to be considered when e-learning is planned. The culture of the working environment should be recognized by all who participate in it so that the different values and needs are taken into account at all times.

Sensitivity is required to ensure that differences between people and their learning preferences are considered. One of the SMEs made interesting comments:

- *The experience I had was very positive. One very good aspect I experienced with e-learning, is that with e-learning, the trainer/facilitator is not white or black 1:541 (3326:3329)*
- *e-Learning effectively removes any racial issues that may arise from personal prejudices 1:542 (3329:3330)*

- *If the instructional designers succeeds in presenting the content in a "political correct" manner, it can be a very positive learning experience. Unfortunately, in the perspective of South Africa's historical background, white facilitators are not always readily accepted by black learners, and vice versa. E-learning removes this important aspect totally. This already makes e-learning for me a must 1:543 (3331:3338).*

From these comments, the importance to be aware of cultural diversity is emphasized, as illustrated in Figure 5.33..



**Figure 5.33 Dealing with cultural diversity at the workplace**

Managers have indicated an awareness of the cultural diversity: *There are times where you don't have to be concerned about culture and diversity. But there are cases where it's either white or either black 3:85 (445:448).* Others reported that they have not experienced any culture related problems so far: *No problems that I can say that are due to cultural conflict, and also all of my staff comes from the same cultural background, so that minimizes the problem 3:133 (741:744).* A comment emphasised the importance of cultural recognition: *Companies need to make their profits, but not at the expense of its employees or at the expense of development 3:104 (546:548).* A last view from a manager:

*Culture can dictate something from my work, I need to play by the rules. I need to respect your culture 3:91 (486:488).*

To conclude this section, the warehouse workers have indicated that they are from different cultural backgrounds and that the business culture is directly influenced by the way it has to take care of the needs of its employees. IHD as a workplace seems to be aware and intent on keeping on track with cultural diversity and making sure that workers are aware of different cultures. The participants were representative of all the race groups indicated in Appendix 3.4. This sensitivity was understandable in the wake of South Africa's history of racial prejudice. Employees, especially managers are well aware of the demand racial harmony has in modern SA businesses. When e-readiness is evaluated, it seems that cultural awareness may be one of the strong points of the warehouse workers.

### 5.7.2 Business language and communication

SMEs warned against language assumptions when planning e-learning. Not all warehouse workers are proficient in the English vernacular when they are required to communicate with one another. But organisations have come a long way to establish English as the communication language. Meetings are held in English, e-mail messages are typed in English, and even casual communication occurs in English when several employees converse with one another. This regulation has been accepted in general to be mindful of the cultural diversity. But it is still the second or even third language of many workers. All are not fluent in this language. SMEs related incidents of learning interventions where the communication language caused problems: *They sorted it out and decided on their own to communicate only in English*<sup>53</sup> 1:68 (313:314).

Most of the communication and online instructions used in the questionnaires, interviews and observations were conducted in the preferred language of the respondent. Most were done in English. The only intervention where I experienced communication anxiety were during the online instructions to the two inexperienced participants in the tutorial experiment. (Refer § 3.1). Instructions on the mainframe systems and ABET classes were all written in English, and e-mails relating to the business are all communicated in English: The responses during some of the observations and interviews confirmed that they had no problems with the instructions:

- *He told me that the information does make sense "in the way that it tells me the purpose of EBMS" 2:364 (2576:2577)*
- *He completed his brief and simple version of the basic diagram displayed on the screen 2:378 (2635:2637)*
- *... briefly reads the screen, turns around to another shelf. He understood from the displayed information on the screen that there are more articles to be picked 2:458 (3053:3056).*

One of the warehouse managers viewed that freedom of expression should be allowed to enable workers to speak in their preferred way: *Though it may not be good, but they feel more free when they express themselves in the language of their choice* 3:211 (1314:1316).

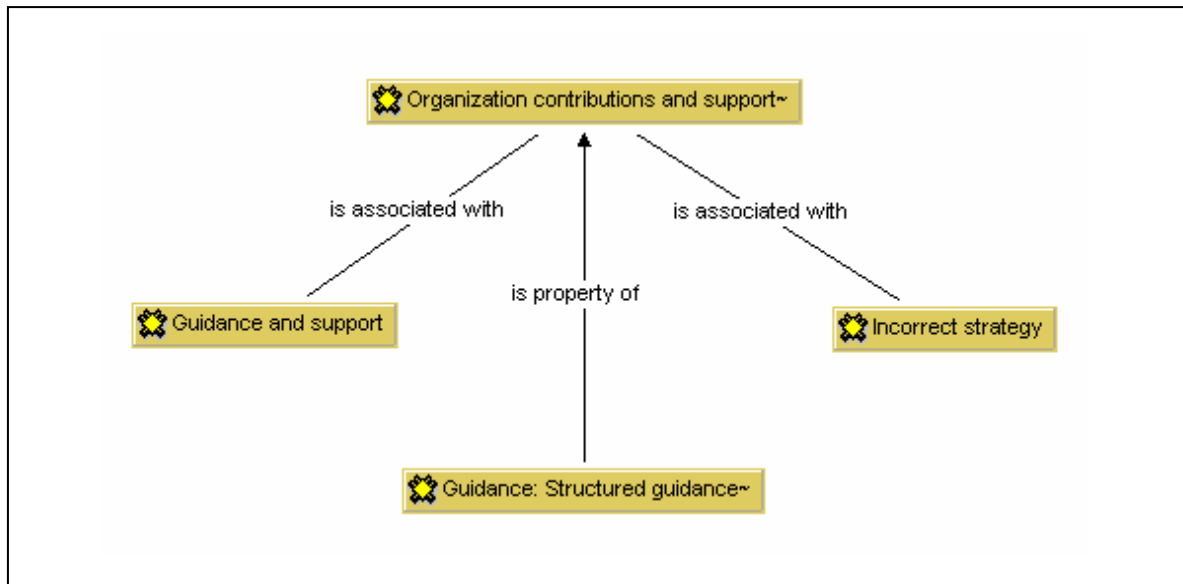
The warehouse workers were able to do their mainframe system requirements, get involved and complete their assignments on ABET, conversed in English during the interviews, and read and sent e-mails as best as they could within their own knowledge limitations. These experiences gave evidence of their e-readiness to communicate in English as is required from the business.

### 5.7.3 Support and guidance available to warehouse workers

The organisation is the provider of the finances for all training, career development, expenses, time for training, guidance and support and access to technology. Figure 5.34 illustrates the guidance that organisations may provide to promote e-readiness within the workplace.

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<sup>53</sup> Toe later het hulle self uitgewerk met mekaar, dat as hulle akademies met mekaar kommunikeer, is dit in Engels



**Figure 5.34 Organisation guidance and support to establish e-readiness**

SMEs frequently expressed their views on the support and guidance that the organisation should provide to ensure that the workers establish a learning culture:

- *Not only within the company, but also regarding SAQA's requirements. They start looking at an individual's development as a whole, over a specified period 1:167 (796:799)*
- *The workplace is for many learners the only viable option. If they go home they return to a shack without electricity. That is the reality. It doesn't even help to tell them that they can go to internet café's. It's not that readily available 1:107 (564:568)*
- *That's why line management should be directly involved in this initiative. The worker should get guidance and leadership from his manager how to address a specific issue. 1:129 (648:651).*

The SMEs agreed that organisations do provide in many of the technological requirements of the warehouse workers: *Today they can work on the computer, send and receive e-mail, schedule meetings and refreshment programs 1:177 (838:840).*

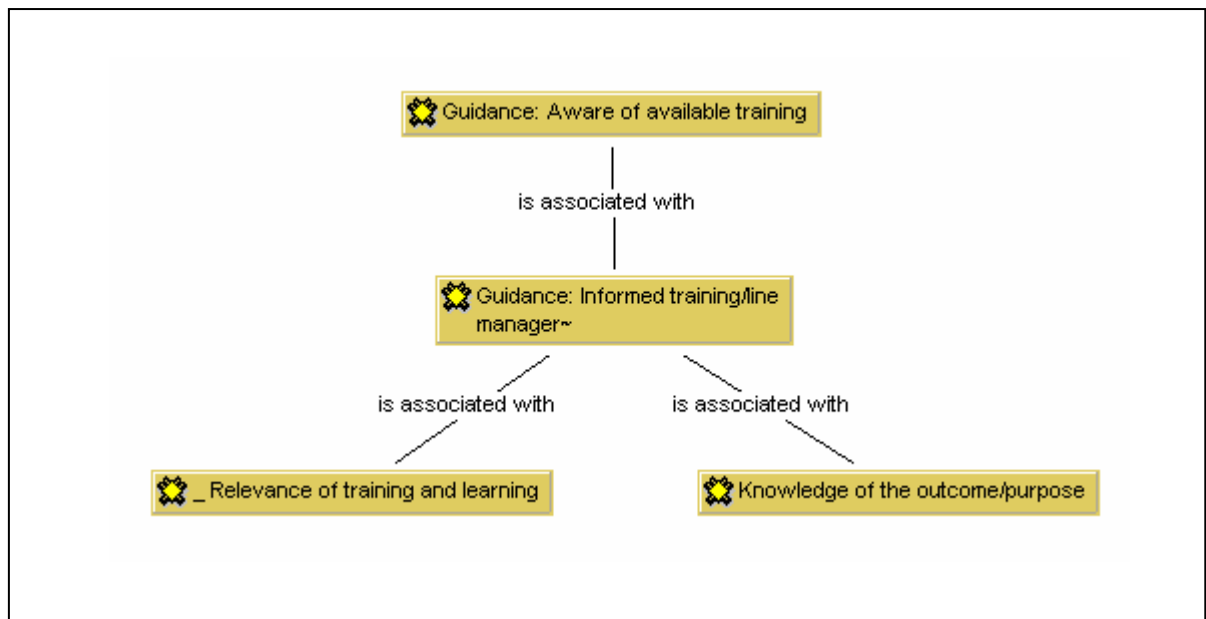
The organisation often orientates new employees with an induction programme as a basic guideline to fit into the new company. SMEs believe such a support programme should be in place for the training of warehouse workers: *The learner has to be coached, and guided how to use all the programs and learning material. They need to practice under supervision...<sup>54</sup> 1:444 (2826:2830).* Some of the SMEs advocate structured guidance: *Therefore we need to present them with a bridging programme, to learn the needed skills 1:96 (510:511).*

The question is then whether such guidance exists within this business culture: From the responses by the warehouse workers I concluded that assistance and guidance do exist, but maybe not in the format the SMEs suggested: *He explained and everybody did well. One guy was off sick, did the assessment*

<sup>54</sup> Die leerders moet ge-“coach” word. Met die hand gelei word oor hoekom dit belangrik is, en fisies te wys hoe al die materiaal en programme hanteer moet word. Hy moet onder toesig kan oefen.

and still passed . He started one day after us<sup>55</sup> 2:155 (992:995) From these comments I found that guidance and assistance happens within the organisation, warehouse workers are being assisted, but that the assistance may need to be adapted to conform to e-learning requirements.

The type of guidance and assistance warehouse workers receive, may be directly related to the knowledge of managers and facilitators with regard to e-learning. Figure 5.35 indicates the importance of facilitator or manager knowledge in order to present relevant guidance. Facilitator knowledge of e-learning may indirectly influence the readiness of the warehouse worker to be e-ready.



**Figure 5.35 Importance of knowledge by facilitator or training manager**

In response to this knowledge, it has emerged that the HR training manager does not know much about e-learning:

*But, I don't know really. I don't know how you drive it, I don't know much about e-earning, I must be honest. I don't know how you actually encourage the people to go in that direction. I don't know much about it 3:75 (397:400).*

SME's regard it to be critical that facilitators have a good grasp of e-learning to ensure successful implementation and to influence the e-readiness of the warehouse workers positively: *Critical. It's critical. It should not be forced, but the management should support the e-learning initiative, and only then would it be received by the workers*<sup>56</sup> 1:425 (2734:2736)

<sup>55</sup> Hy het dit verduidelik en ons gehelp, almal het goed gedoen. Daar is een persoon wat een dag siek was en steeds die eksamen gedoen het, en goed gedoen. Hy't 'n dag na ons begin.

<sup>56</sup> Krities. Dis krities. Mens moet dit nie afdwing nie, maar die bestuur moet die e-learning inisiatief ondersteun, en so moet dit afwentel na die werkers toe



#### 5.7.4 Importance of a relevant learning plan

The organisation is also responsible for the development of its staff. SMEs regarded individual development plans (IDP) to be very important to motivate workers for e-learning:

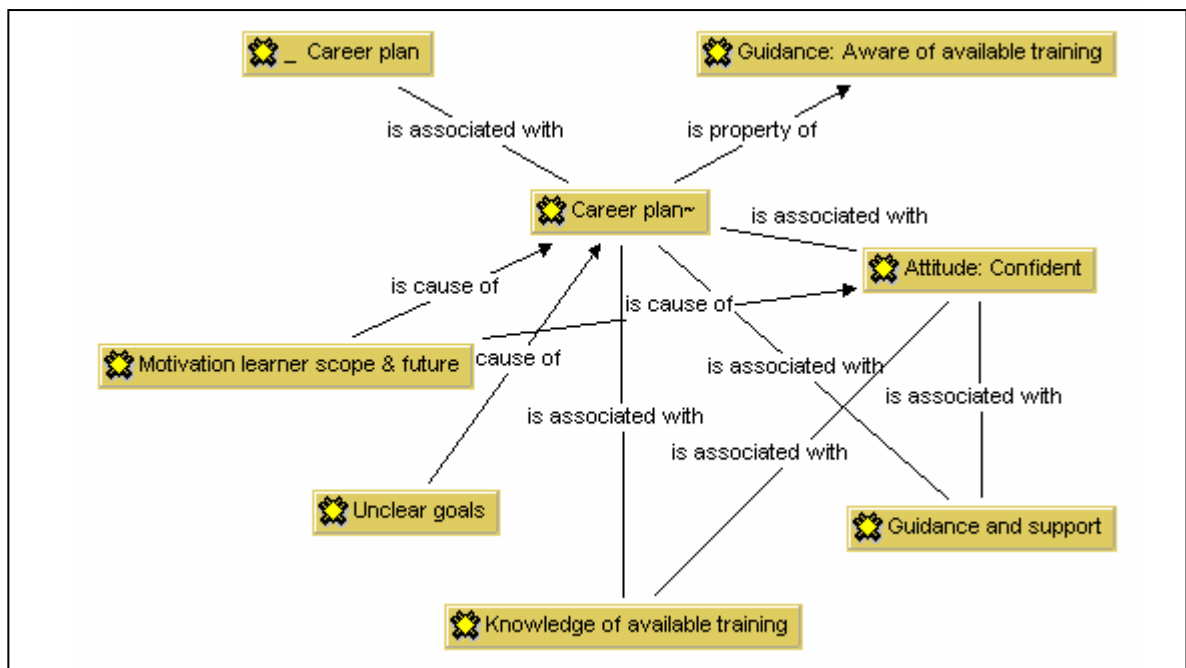
- *the personal development plan, initiated by the line manager is crucial. They need to know what is the next rung in the ladder - where are they going to? 1:209 (989:991)*
- *I also see that this progress must be reflected back to the development plan. So that the strong and weaker elements of the learner can be identified. Their managers need to ensure that they are competent, and stay that way 1:126 (637:641).*

The organisation finds itself to be in the position to give direction and focus in the form of a learning plan. This is expected from the SMEs, managers and the workers themselves: Warehouse workers were not sure on their learning plans when queried:

*Satisfied? No, I'm not satisfied! Because last time I remember I asked J [supervisor] that why can't they allow us to go and do something else like picking or maybe work at the fridge. I mean to be a manifestor for a long time, I don't think it's OK. Sometimes you must go and work in bulk, so we can know all the workings 2:162 (1052:1057).*

Others again had a better idea where they wanted to go: *That's why I told myself I'm going to stay here. I want to invest first of all my life in this company because I want to work in an environment like this 2:314 (2241:2243).* Some workers knew what was expected of them to develop, while there were a number that did not have any clear indications of a career plan or IDP in the organisation. They believe that the organisation should provide them this opportunity to develop.

Ironically, one of the managers commented: *training was planned for them, not with them. And here, so even here, why it has been on and off, because people are still dragging their feet 3:11 (49:52).* I could not establish who the "they" were, but assumed he referred to the training department. From the quotes received during interviews and observations it appeared as if the business culture was negligent with regard to the determination of employees' learning plans. This reflects negatively on the guidance and direction given to the warehouse workers from their management and training departments' point of view. The reasons for this apparent lack of focus are not clear, and were not the focus of this study. What may be more relevant, is the fact that the warehouse workers are dependent on the organisation to give direction by means of learning plans.



**Figure 5.36 Knowledge of training leads to relevant training and career plans**

Figure 5.36 indicates the value of knowledge of available training. The data analysis has indicated that workers are motivated with knowledgeable guidance and support because it contributes to an achievable learning plan.

The previous section has indicated that the warehouse workers have access to computer technology, but find themselves in a culture where one department waits upon the next to take the initiative with regard to workers' learning plans. I found it rather sad that a manager commented: *training was planned for them, not with them* 3:11 (49:50). These comments, together with the HR manager's acknowledgement that he did not know what e-learning was, suggested that no clear direction was presented to ensure focused learning plans. The workers are the ones that may suffer as a result of this lack of guidance.

### 5.7.5 Financial support and time for training

Organisations in South Africa are implored by the government to conduct learnership programmes to develop their employees' skills and to create a continuous culture of learning. SMEs emphasized the value of learnerships and that organisations may benefit financially in a big way: *The SETAs give them money for development. The organisation benefits a lot from this strategy ...*<sup>57</sup> 1:374 (2374:2384). Organisations are motivated to train their employees by submitting annual proof (See Skills Levy Act § 2.4.1) of the number of employees that has been trained. One can therefore accept that a learning culture does exist in most South African organisations.

Money is available to employees for training, but strict conditions apply:

<sup>57</sup> Dit is waar die SETA vir jou geld gee om te ontwikkel. ...Die maatskappy wen baie hierdeur.

- ... this time it is... much easier because they provide a study loan 2:114 (702:703)
- If you want to learn you must get a loan and when you pass they pay back a portion of the cost. So this policy again, does not encourage people to learn 3:39 (202:204).

The organisation supports the culture of learning but strict policies regarding loans make it inaccessible to the warehouse workers. Most will not have a credit record to get loans or have the funding to repay the company: *Most of the guys that we talk about are blacklisted for that matter. They can't access loans. They don't have credit cards. So, our policies don't encourage what we're trying to preach. Do you understand what I'm saying?* 3:41 (204:209).

It seems then that the funding to train the workers through company funding is also not clear:

*If you notice, when I put together what I get from departments when I do budget, finance, business, I don't get any training requirements for the warehouse people. I know you do a lot when it comes to on the job training. But, in terms of budget, nothing is budgeted for. Other than ABET, I don't have anything!* 3:101 (526:531).

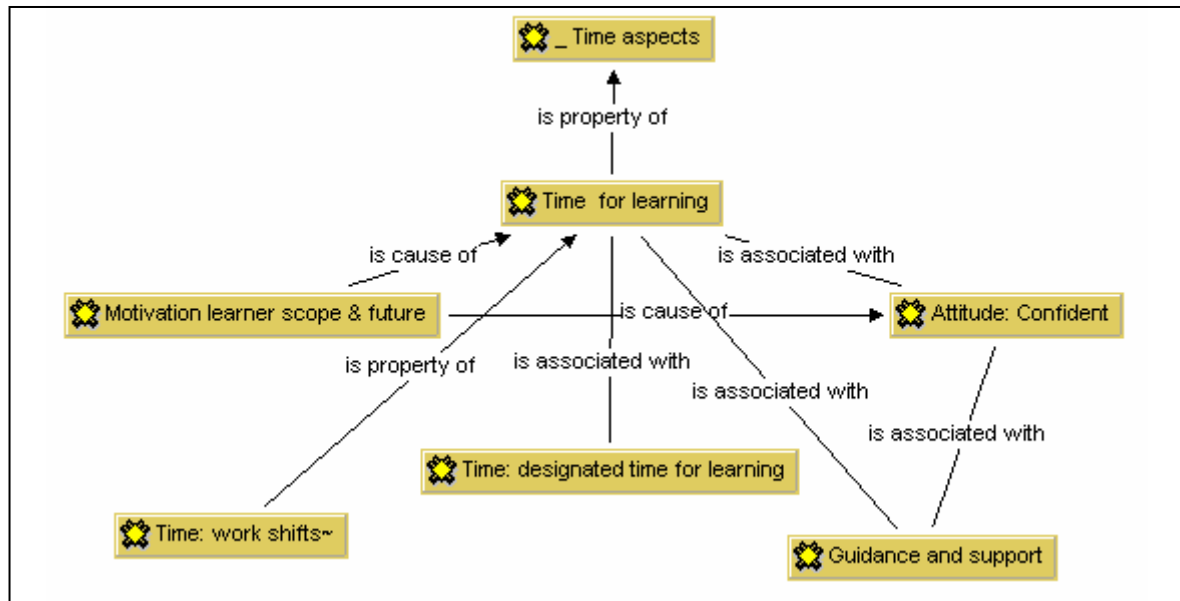
From the above, it seems as if the warehouse workers are subjected to the way managers organise and plan for training. The financial support that is needed to ensure the e-readiness of warehouse workers seem to be lacking. This lack of budgeting and planning may be a direct implication of the HR training manager's and line manager's lack of knowledge with regard to e-learning.

The general impression one gets when the financial support is explored, is that a learning culture is not promoted. On the contrary, the allocated time the organisation sets aside for training seems to be a strong indicator that the organisation is serious in creating a learning culture:

- *But for the warehouse people you're right I would say six hours, but again that is flexible, because I spoke to David and he gave me an extra two hours* 3:5 (28:31)
- *The way it works in the entire warehouse is that two hours are set aside every morning from Tuesday, Wednesday and Thursdays for training* 3:138 (769:771).

From these comments it appears that time for training should not be a problem for the warehouse workers. Six hours per week is more than what most companies allow for training. SMEs mentioned that at some places only one hour per week is provided: *seek and participate in learning activities at least one hour per week thus taking responsibility for your own growth* 1:21 (80:82).

Regardless of the time that is available, the fact that the workers work shifts also affects their available time and the way they should be allowed to manage the time for training: ... *for our workers this is always a problem, because they work shifts. Now we've got a problem, they need extra studying time in working hours* 1:233 (1123:1126). Figure 5.37 summarizes the effects of time that may play a role in the e-readiness of the warehouse workers.



**Figure 5.37 Allocated time for training related to the e-readiness of warehouse workers**

The following comment from a worker is an indicator of the confusion shift workers sometimes have with classroom facilitated training:

*My time is not enough, I can only use maybe two hours [or] only one hour and sometimes the guy starts training at ten, sometimes he starts at eleven. Sometimes it starts at seven, and sometimes I'm doing night shift, you know. You know our shifts are not cross bonding - sometimes I can stay a week without the training! It makes me go back, [lose work] because after about two or three weeks then I'm gonna start [all over] again 2:194 (1282:1291).*

IHD as an organisation does provide financial support and time for staff development. More than six hours are made available for training, which suggests that if a knowledgeable plan can be generated for e-learning, the warehouse workers may find themselves to be in an e-mature environment.

### 5.7.6 Conclusion about organisation culture contributing to the e-readiness of warehouse workers

This section has explored the e-maturity of the organisation and the way it contributes to or constrains the e-readiness of the warehouse workers. The following conceptual theories have emerged from an inductive analysis of the data with regard to the contributions and organisation makes to the e-readiness of warehouse workers. From the data I concluded that the warehouse workers' e-readiness was:

- positively affected by the *encounters with computer technology* provided by the organisation
- influenced by the regular *use of computer technology*
- encouraged by the *organisation culture* to grant computer access
- affected by the *viability of e-learning* due to network connectivity
- influenced by the *guidance and support* provided by the facilitator
- positively influenced by the accrued *computer literacy*
- affected by the *financial support* available for learning and training, and
- promoted by the organisation's *allocated time* for training.

Table 5.12 indicates the conceptual codes of e-readiness that emerged to be the most prominent in support of the organisation culture. The theory code organisation culture, influenced the warehouse workers in the following conceptual codes of e-readiness.

**Table 5.12 Theory code “organisation culture” relating to conceptual codes**

<i>Conceptual codes of e-readiness</i>	
	Access
	Anxiety
	Attitude
	Classroom training
	Computer literacy
	Computer use
	Encounters with IT
	Facilitator
	Financial aspects
	Guidance & support
	Knowledge of e-learning
	Learner frustrations
	Learning plan
	Learning preferences
	Managerial contributions
	Organisation culture
	Relevance
	Skills and abilities
	Time constraints
	Viability of e-learning
<b>Organisation</b>	x x x x x x x x x x x x x x x x x x

These listed conceptual codes are supported by the data that has emerged during the interviews with SMEs, warehouse workers and managers, and observations of warehouse workers. The data analysis found that warehouse workers:

- hail from diverse cultures in South Africa
- are aware of the cultural diversity of the warehouse workforce
- sometimes subject own cultural habits to accommodate the business cultures
- accept English as the business language and use it for communication within the organisation
- receive limited guidance and assistance with regard to learning plans
- need clarity on the learning plans from their management
- receive financial support but with strict conditions
- have available time for training during work hours, and
- are subjected to the lack of e-learning knowledge from managers

The warehouse workers e-readiness are negatively influenced by the organisations’

- lack of guidance regarding e-learning
- lack of senior staff’s knowledge regarding e-learning
- limited or unclear objectives for training
- limited budget for training.

## 5.8 Conclusion Chapter 5

Chapter five presented an analysis of the data collected from the interviews with SMEs, warehouse workers and several managers and the observations of the warehouse workers. Data was discussed in terms of the six sub-questions defined in chapter four. The main aspects that was addressed in the analysis were technical and affective experience with technology, the aptitudes warehouse workers may have accrued due to this experience and how it affected their e-readiness. It also explored the origins of motivation as it is affected by the presence and use of technology, whether the access to technology was significant to affect their e-readiness and lastly how the warehouse workers’ e-readiness was affected by the contributions of the organisation.

Chapter six presents a synopsis of the findings and conclude with a final summary of findings with regard to the e-readiness of the warehouse workers.

## Chapter 6

### 6.....**SYNOPSIS OF E-READINESS FINDINGS**

- 6.1 Introduction
- 6.2 Synoptic overview of the research
- 6.3 Executive Summary of Findings
  - 6.3.1 Computer use, encounters with IT and computer literacy
  - 6.3.2 Anxiety and attitude as a result of experience with IT
  - 6.3.3 Managerial contributions, guidance, support and knowledge of e-learning
  - 6.3.4 Infrastructure and connectivity
  - 6.3.5 Learning preferences adapt with new skills
  - 6.3.6 Access to computer technology as origin of motivation
  - 6.3.7 The organisation holds the final key
- 6.4 Conclusion Executive Summary

## 6 Synopsis of e-Readiness Findings

### 6.1 Introduction

In this chapter I present a synopsis of the findings and orientate the findings in the context of the theoretical framework as discussed in § 2.12. I used the term “readiness barometer” to describe the differing inputs (Reeves, 1999) individuals and communities may present when challenged to become involved in e-learning or learning on the www. Figure 2.7 illustrated the “readiness filter” to demonstrate that the e-readiness of individuals and communities may differ when they respond to e-learning. Diverse characteristics merge into opportunities and then create profiles of readiness. Profiles of readiness are not fixed, but depend on socio-economic factors, experience, attitudes, individual differences and habits. I present these fluctuating attributes to a continuously adjusting barometer dependent on constraining and contributing influences. The readiness barometer implies that there are contributors and constraints that play a role to make the readiness level rise or fall. It also suggested that the warehouse workers have unique contributors or constraints that affected their e-readiness.

The findings emerged from the data presented in the previous chapter. It stems from the conclusions presented at the end of each sub-question. Each of the six conclusions described the emergence of an inventory of twenty conceptual codes of e-readiness and how it related to the readiness of the warehouse workers. This chapter summarizes the six theory codes (technical experience, affective experience, aptitude, origins of motivation, access to computer infrastructure and organisation culture) and an inventory of applicable conceptual codes in order to look for meaningful patterns of e-readiness. The initial classification of the conceptual codes did not yield explicit patterns of readiness, and urged me to table all frequencies of the conceptual codes of e-readiness as classified against the theory codes (Table 6.1). The patterns and information I generated from this table, supported by the findings in chapter five, resulted in the seven main findings of this research. These main findings are described in the executive summary of this chapter.

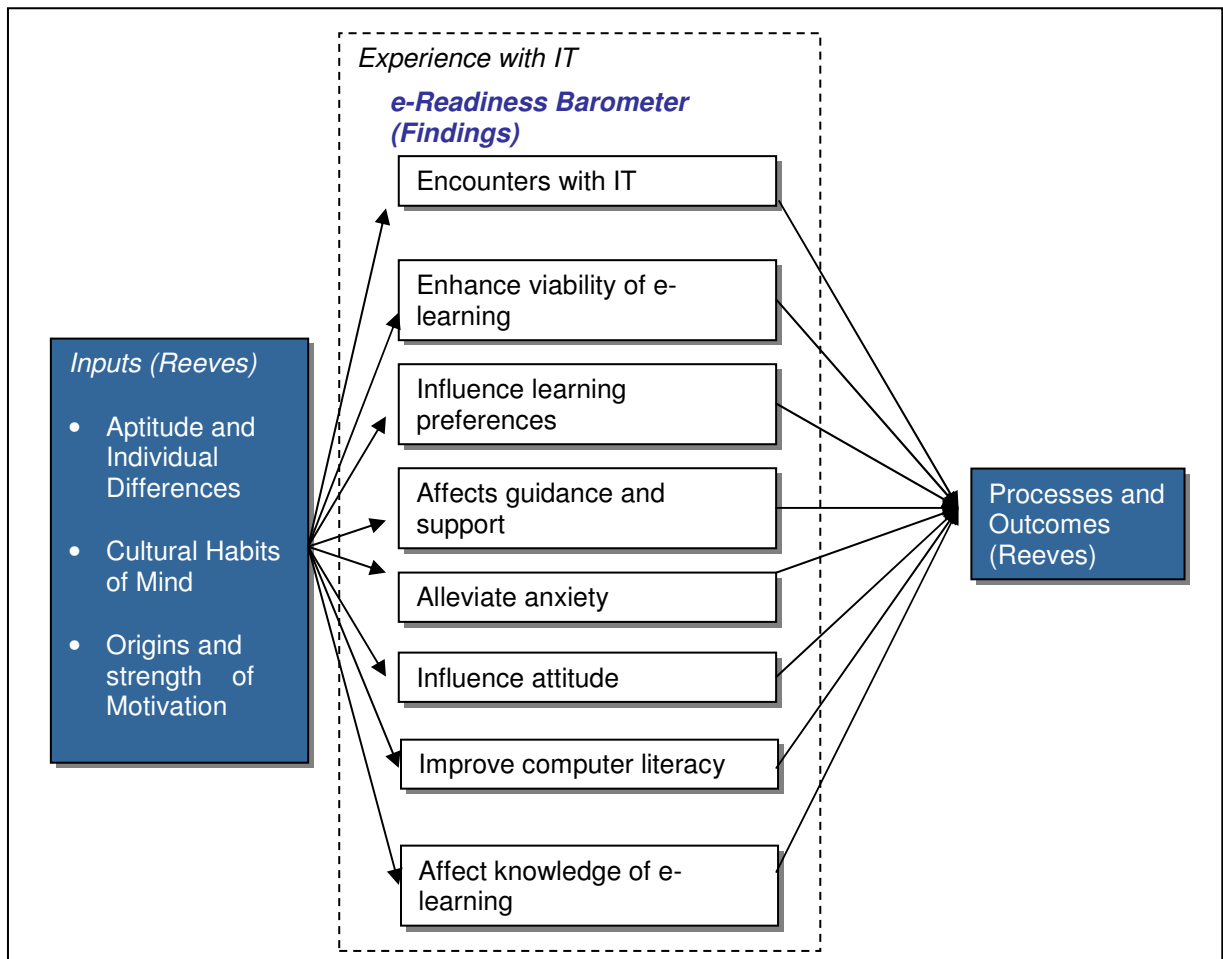
### 6.2 Synoptic overview of the research

The previous chapter was an attempt to seek patterns and trends related to the main theory codes of e-readiness. It culminated an inventory of twenty conceptual dimensions of e-readiness that have been used to reveal the main trends and patterns relating to the e-readiness of the warehouse workers. In my endeavour to identify these trends, I have categorised these conceptual codes to explicate the readiness barometer relating to the relevant theory codes. The inventory of conceptual codes of e-readiness are briefly discussed and illustrated in Figure(s) 6.1 - 6.6.



The first sub-question related to the technical experience the warehouse workers had with computer technology to prepare them for e-learning. It emerged from the data that the warehouse workers had regular encounters with the computer technology that was available to them. Consequently the viability of e-learning increased; the workers' learning preferences were affected, the guidance and support they needed emerged to be different from the usual classroom support they were used to; and the encounters with computers seemed to lessen their anxiety for technology. The computer literacy of the warehouse workers have improved and with it their attitude and preference to work with computers. The technical encounters and accumulated computer literacy has made them aware of training strategies other than classroom training, and consequently introduced them to e-learning as a possible method of future instruction.

Figure 6.1 illustrates the e-readiness barometer relating to technical experience with computer technology. The barometer refers to an inventory of eight conceptual dimensions of e-readiness that may contribute to the technical e-readiness of warehouse workers.

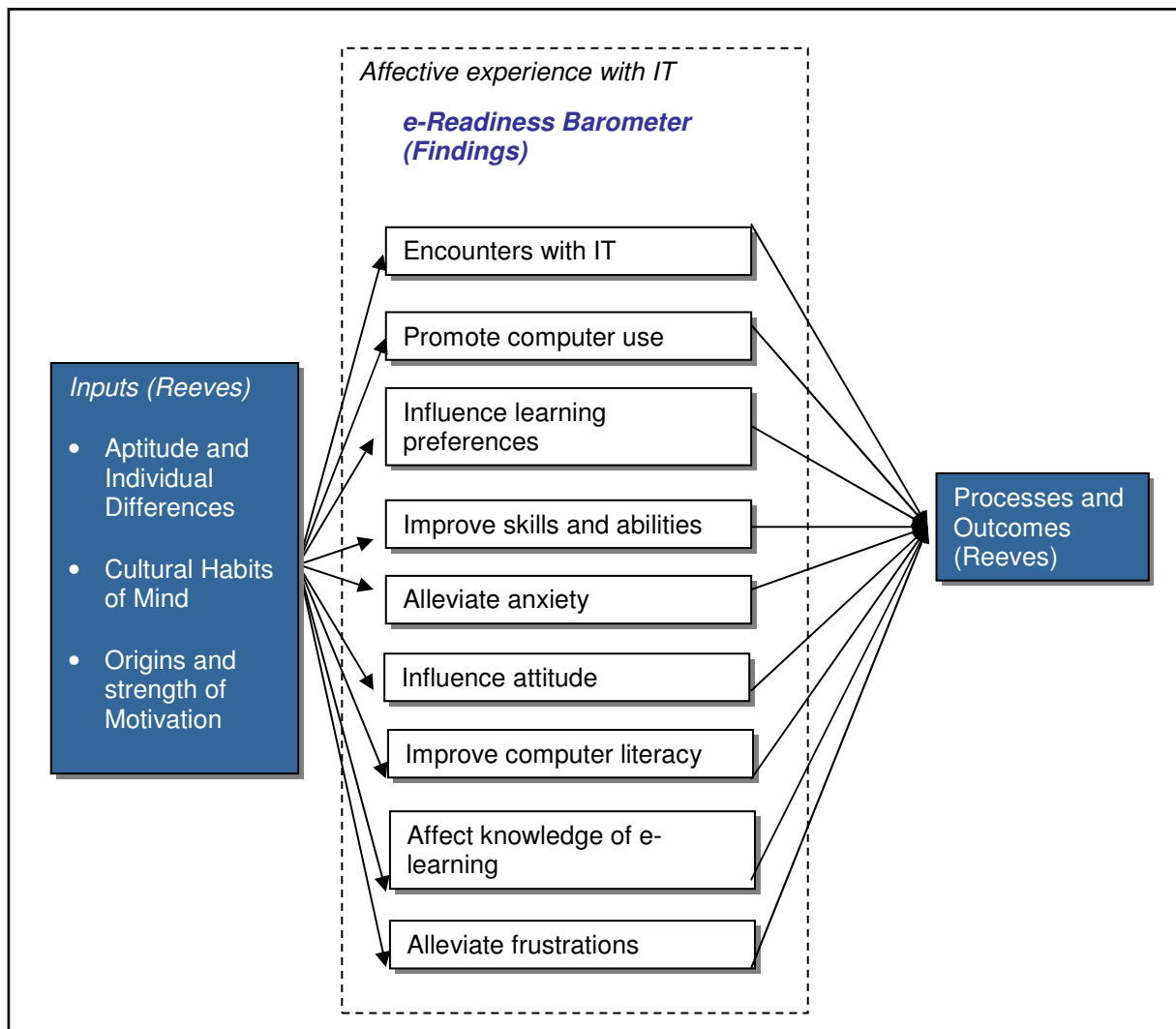


**Figure 6.1** Technical experience with computer technology

Sub-question two explored the warehouse workers' affective experience with technology that may impact their e-readiness. It emerged from the data that the technical experience led to regular use

and higher skill and literacy levels with computers. These skill levels resulted in a pattern of rising confidence and acceptance of the offerings of computer technology as a possible training tool. The confidence gave rise to a new level of encounters and confidence to get involved in new areas with computer technology. Technophobia is described to cause negative emotions, such as anxiety, incompetence, fear, stress and nervousness (Gupta, 2001). It emerged that the warehouse workers were not scared of technology.

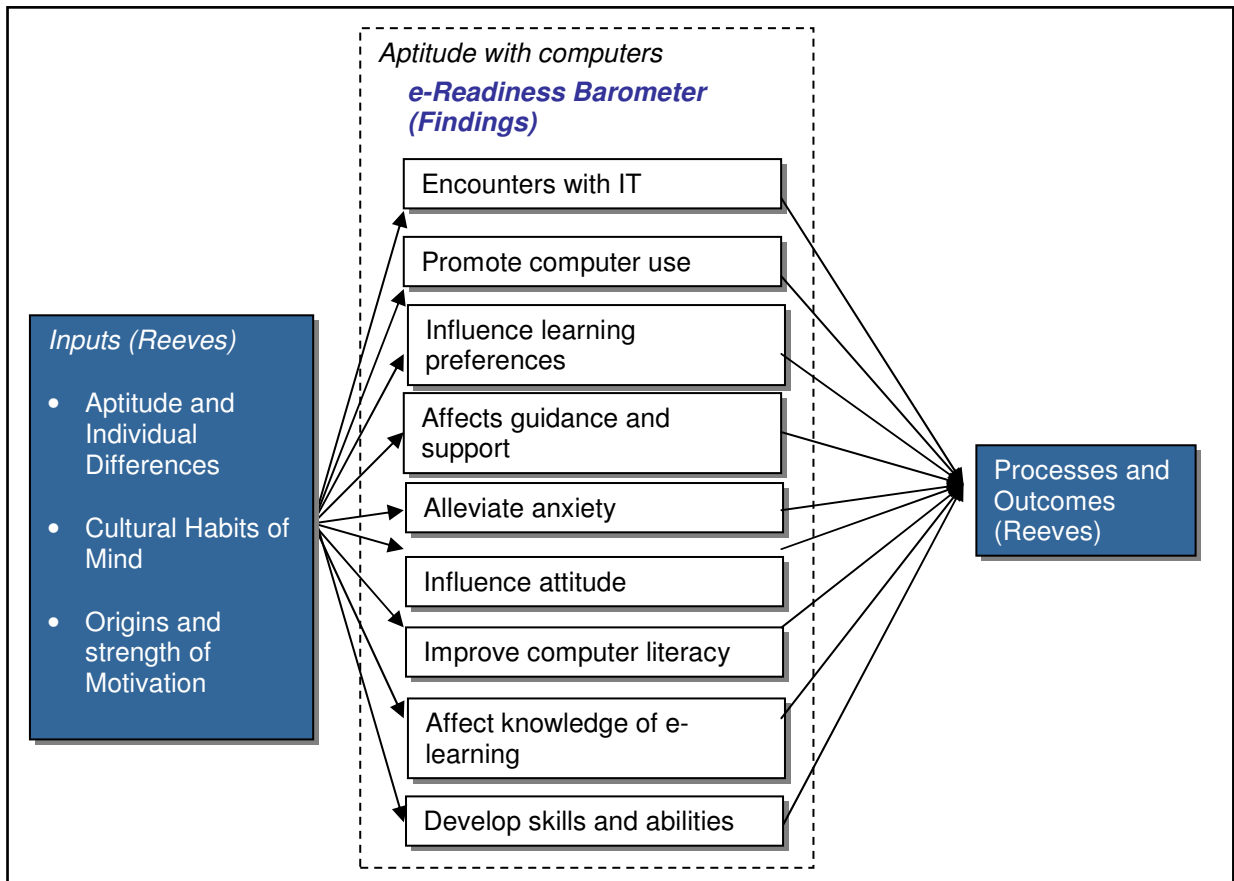
The affective experience with computer technology caused the warehouse workers to develop positive attitudes with regard to the possibilities of training with computers and even experience frustrations with slow systems. Figure 6.2 illustrates an inventory of nine conceptual dimensions of e-readiness related to affective experience with technology. This second barometer of e-readiness indicates that the warehouse workers have achieved an emotional readiness to be involved with computers.



**Figure 6.2 Affective experience with computer technology**

The third sub-question explored the warehouse workers' aptitudes with regard to the use of the

computers. An interrelating pattern of technical and emotional readiness emerged from the data. An inventory of nine conceptual dimensions of e-readiness are related to the aptitude of which encounters with IT, computer literacy, learner preferences and higher skills and abilities are related to the technical experience of the computer technology. Emotional aptitude has developed through the positive attitude to computers, less anxiety, growing knowledge of e-learning, and belief that self-driven training may be a future option. It has also emerged that different guidance and support may be needed to support learning with computers. Figure 6.3 illustrates the e-readiness barometer relating to warehouse workers' aptitude with computer technology.

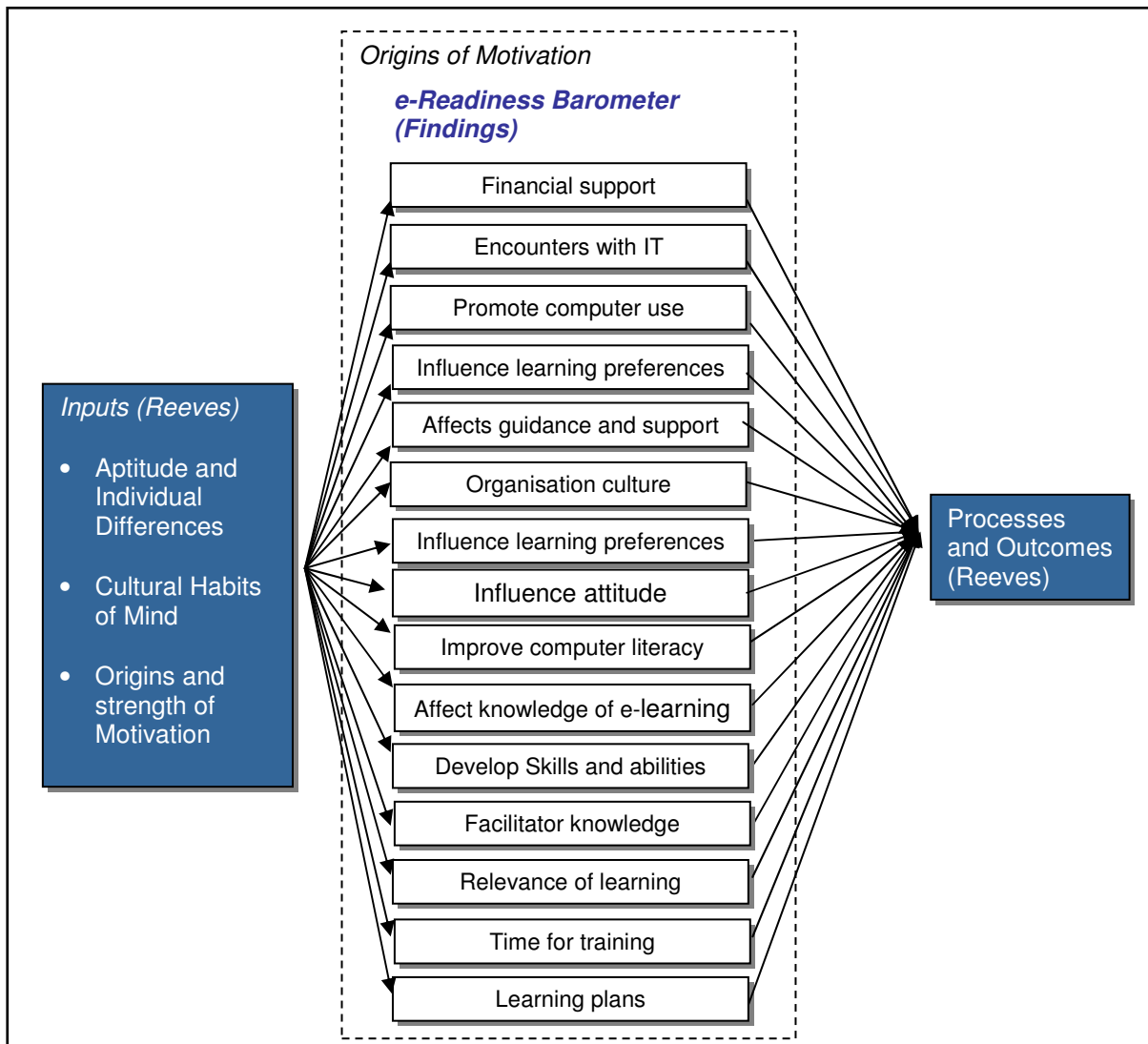


**Figure 6.3 Warehouse workers' aptitude with computer technology**

Sub-question four explored the origins of motivation that may induce warehouse workers to become e-ready. Origins of motivation have also been identified by Reeves as one of the main inputs to influence learners when working on the www. It has emerged from the data that the warehouse workers are motivated in various ways to become involved in e-learning. Fourteen of the twenty conceptual dimensions of e-readiness have been included in the inventory for origins of motivation.

Both extrinsic and intrinsic origins of motivation have emerged from the data. Warehouse workers indicated that the encounters with computers had extrinsic value to them and motivated them to use the computer in more areas. At the same time it had the value of acting as an intrinsic motivator by challenging the workers to be successful in their tasks and to try new procedures. The origins of motivation identified the organisation as the primary provider of these challenges. The

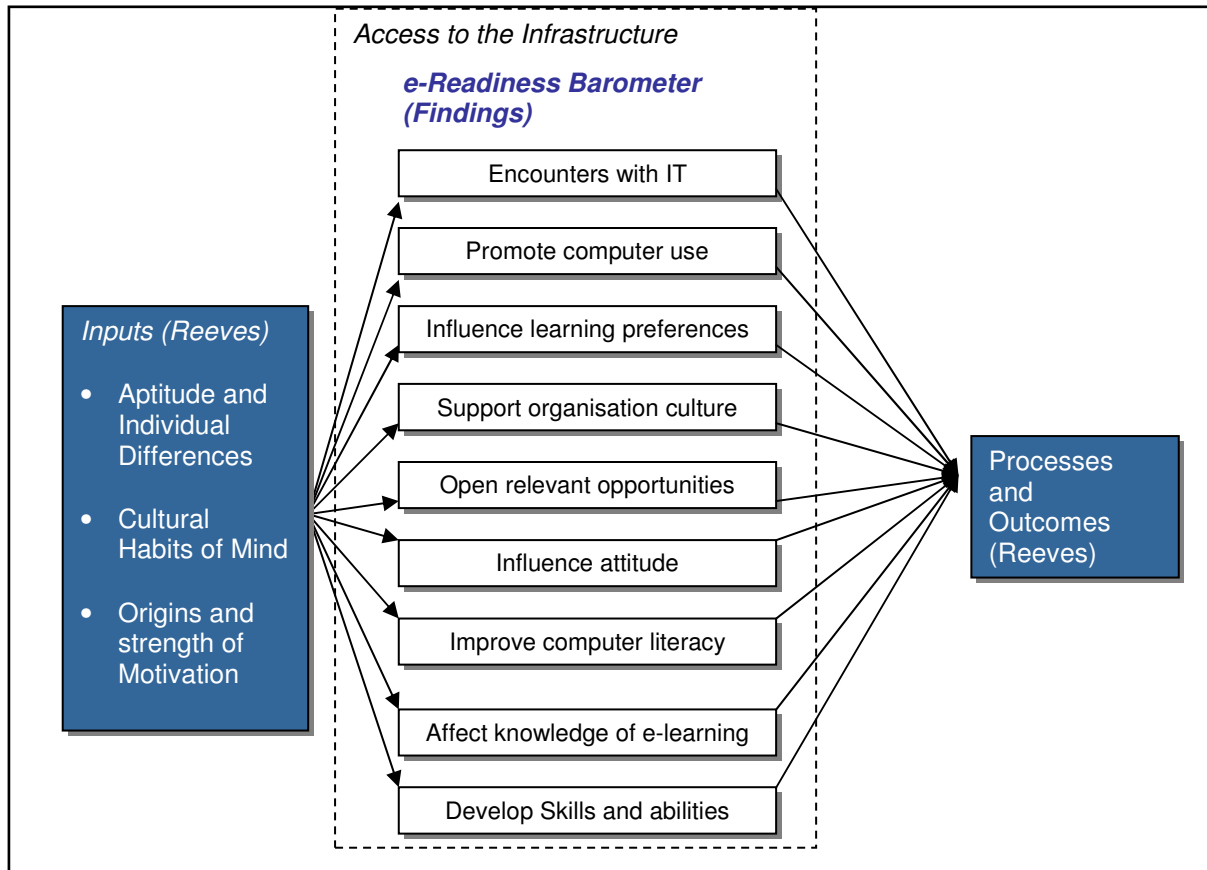
organisation culture emerged to be critical in determining the e-readiness of the warehouse workers. Aspects such as financial support, access to technology, guidance and support, learning plans, time for training, facilitator and management guidance and support emerged as important origins of motivation. The role of the organisation emerged as a critical motivator to create a receptive attitude and awareness of e-learning. Figure 6.4 illustrates the e-readiness barometer relating to origins of motivation.



**Figure 6.4** Origins of motivation relating to e-readiness of warehouse workers

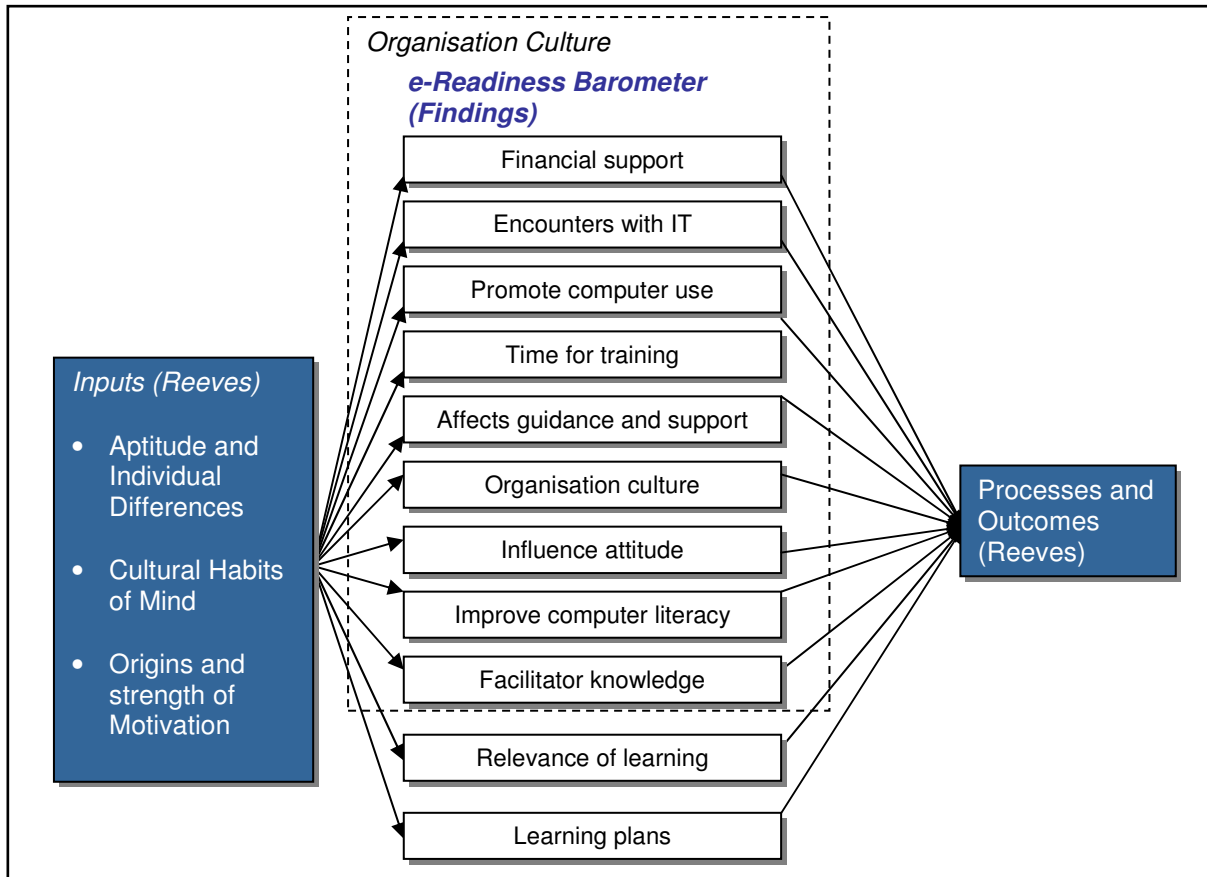
The fifth sub-question explored the access of computer technology and how it contributed to the e-readiness of warehouse workers. An inventory of nine conceptual dimensions of e-readiness has been identified. Access to computer technology is regarded to be a critical aspect to realize e-learning in an environment (Board of Regents University of Georgia, 2003; Bowles, 2004; Bridges Organization, 2001; Choucri *et al.*, 2003; Huang *et al.*, 2004; ICT Charter, 2004; Ifinedo, 2005; Khan, 2005). The

pattern that emerged from the data indicated that access to the infrastructure led to encounters with computers, enhanced the skills and abilities with computers, opened new opportunities, and influenced the learning preferences of the warehouse workers. It appeared as if access to computers positioned the warehouse workers for new challenges. Figure 6.5 illustrates the e-readiness barometer relating to access to computer technology and that it affects the viability of e-learning in the workplace.



**Figure 6.5 Access to computer technology relating to e-readiness of warehouse workers**

Sub-question six referred to the role of the organisation’s e-maturity as contributor to the e-readiness of the warehouse workers. The data revealed the growing role of the organisation in the e-readiness of the warehouse workers. Eleven of the conceptual dimensions of e-readiness related to the organisation’s maturity to contribute to the e-readiness of the warehouse workers. As employees they were dependent on direction from the workplace, not only to provide the infrastructure and access, but also to provide the maturity in its utilisation of the infrastructure and management of the workers. This readiness barometer relating to organisation culture includes aspects such as encounters with computer technology, use of computers, guidance and support, time for training, financial support, facilitation and knowledge of e-learning. The e-maturity of the organisation is also the determinant of the viability of e-learning. Figure 6.6 illustrates an inventory of eleven conceptual codes of e-readiness relating to the e-readiness of the warehouse workers.



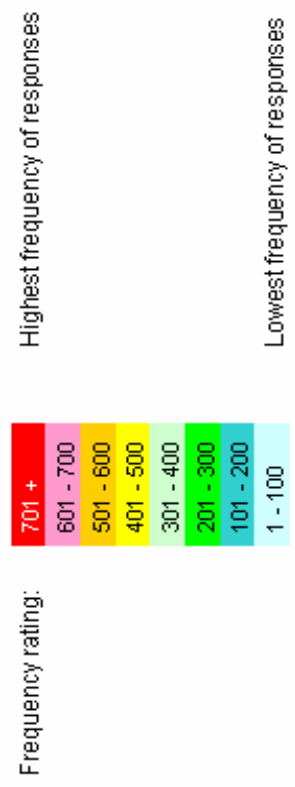
**Figure 6.6 Organisation e-maturity as contributor to e-readiness of warehouse workers**

The six questions revealed an interesting inventory of twenty conceptual dimensions of e-readiness. The data indicated that the warehouse workers had access to IT which explained their encounters with IT. These led to the development of skills, abilities and a basic computer literacy. This resulted in the aptitude to work with computers and the confidence that computers may be utilised in more areas to contribute to their learning plans. It has also emerged that the warehouse workers were dependent on the organisation in various ways to provide the leadership and knowledge to become successful in e-learning.

But, unfortunately a logical order was not yet clear. I then decided to draw up a summary table to compare the frequency of responses of the inventory of identified conceptual codes. Table 6.1 illustrates the twenty conceptual dimensions of e-readiness that have emerged from the data by means of an inductive/deductive analysis. Each of the six sub-questions are represented in the left column as a theory code while the conceptual codes of e-readiness are listed on the x-axis. The frequencies of responses have been included as they have been encoded during the analysis with Atlas.ti™. A comparison and analysis of the frequencies revealed interesting information and enabled me to generate the main findings of this study.

**Table 6.1** Patterns of e-readiness theory codes with conceptual dimensions of e-readiness as identified from interviews and observations

Theory Codes	Conceptual Codes																			
	Anxiety	Attitude	Classroom training	Computer literacy	Computer use	Connectivity-	Encounters with IT	Facilitator	Financial aspects	Guidance & Support	Knowledge of e-learning	Learner frustrations	Learning plan	Learning preferences	Managerial contributions	Organisation culture	Relevance	Skills and abilities	Time constraints	Viability of e-learning
Technical experience	41	69	49	241	293	62	526	59	33	108	59	54	93	121	67	122	90	307	60	81
Affective experience	168	207	213	377	426	227	611	222	201	235	222	192	244	262	232	281	255	458	225	244
Aptitude with computer	257	290	306	371	367	313	599	313	282	361	313	304	346	337	323	366	345	374	312	446
Origins of motivation	537	571	561	619	712	554	795	563	562	597	563	582	563	638	571	620	572	653	581	674
Access to technology	86	124	149	296	351	86	538	144	119	192	144	138	179	203	153	178	175	375	143	300
Organization contributions	370	407	428	500	548	377	726	421	394	445	421	415	414	482	402	415	451	571	399	536



□

## 6.3 Executive Summary of Findings

This categorisation illustrated in Table 6.1 along with the findings described in chapter five yielded interesting information. The following seven areas were identified to be the most significant findings that emerged from the data:

- computer use, encounters with IT and computer literacy
- anxiety and attitude
- managerial contributions: guidance and knowledge of e-learning
- infrastructure and connectivity
- learning preferences
- access to computer technology as origin of motivation, and
- role of the organisation.

These findings relate to the warehouse workers as individuals, how their personal readiness was affected, and how they benefited as a community to be involved with computer technology. The findings revealed the critical role of the managers and training facilitators and that knowledge of e-learning is an important aspect to the readiness of the workers. It referred to the support role that is expected from the organisation to provide in the infrastructure that the warehouse workers can't afford. The e-maturity of the organisation appears to hold the key for the warehouse workers to become involved in e-learning.

### 6.3.1 Computer use, encounters with IT and computer literacy

This first finding confirmed that warehouse workers experience computer technology to such an extent that they can be introduced to e-learning. The column "Encounters with IT" illustrated in Table 6.1 indicates the high frequency of responses as received from the SMEs, warehouse workers and their managers. "Computer use" and "Computer literacy" also received high frequencies of responses. These three conceptual codes related to the encounters (contact) the warehouse workers had with technology (not necessarily using it, but being surrounded and aware of its use and presence), their different ways of using it in the course of their work responsibilities and lastly the resulting computer literacy from these encounters and use of computers.

Their experiences as a working community concur with the concept "community of practice" described by (Lesser & Storck, 2001; Smith, 2003; Wenger & Por, 2004). Warehouse workers as a community shared in the objectives of the organisation and experienced regular, basic activities with technology. The learned social activities expected from them have given them the benefits of a community of practice (Lesser & Storck, 2001; Smith, 2003; Wenger & Por, 2004). Their involvement and interest in the business presented them with a knowledge and sense to complete the expected requirements with confidence (Wenger & Por, 2004). Warehouse workers are instrumental in the success of SCM companies and play an important role in the business' procedures. The organisation relies on the warehouse workers to receive stock, process the arrival and store the stock in assigned bin areas in the warehouses. They also need to find the stock when it has been ordered and go through the necessary procedures to find, pack and despatch stock to be delivered to the various customers of the



organisation. All these procedures are systems-driven and supported, and require a basic computer knowledge and skill from the warehouse workers. Warehouse workers find themselves enclosed in a technical environment intended to add to the profit-driven ethos of the organisation. They have become part of Castells' "Network Society" (Huckle, 1997) where companies depend on the availability of technology to compete and survive against other companies in the world.

The interviews and observations confirmed that the warehouse workers have experienced computers through the mainframe systems and occasionally used computer technology for training, e.g. ABET or sporadic CBT courses. They regularly receive e-mail messages and occasionally send some of their own. They operate personal cell (mobile) phones to send text messages. Their encounters with computer technology provided them with an aptitude and skill to use the technology and the attitude to be motivated when they may be confronted with relevant challenges. As one of the warehouse managers stated: "... that first fear of this machinery, they're beyond that already..." 3:180 (1087:1088) - meaning that the warehouse workers have achieved an acquired skill level that is sufficient for the work they do every day. Computers are tools that they regard to be a support facility. They do not stand in awe of it, and do not hesitate to use it when needed for familiar procedures.

The experiences the warehouse workers have accrued with the encounters with computers and have also positively influenced their computer literacy and aptitudes with technology. It concurs with the view held by Irving (2000) that increased computer use leads to increased constructivist practice. Although the necessary aptitudes for e-learning may be limited and not yet developed, an important skill to get involved with computers has been achieved. Warehouse workers showed the ability to type, read instructions from the monitors, understand the e-mail messages and respond to instructions. Individual differences were clear in the way the warehouse workers responded to the challenges, but a uniform eagerness and determination have been observed to be involved in computer technology. Their skills have developed through the encounters with computer technology during their daily responsibilities in the workplace.

These findings concur with Reeves' (1999) view with regard to learner inputs, that the origins of motivation, aptitude and individual differences may play an important role in the way e-learning has to be planned and developed. Although workers will be extrinsically motivated to use the computer technology, the responsible instructional designers need to be aware how to design instruction for the computer technology to motivate the workers, and what their skills and aptitudes are in order to provide relevant learning strategies at the right level for this target group.

To conclude, warehouse workers encounter and use technology actively every day in the work-place, and have developed sufficient skills and literacy to allay arguments that they are technically not ready for the challenge of e-learning.

### 6.3.2 Anxiety and attitude as a result of experience with IT

My second finding was that anxiety does not prevent warehouse workers to get involved with computer technology. Warehouse workers did not suggest that they were scared or afraid to use the technology. However, they had experienced anxiety and apprehension when confronted with a tutorial, but their anxiety did not prevent them to participate in exercises that involved computer technology. My initial expectations were that warehouse workers may be overawed by the technology and may be scared to use or to get involved with technology.

Khan (2005) argued that inexperience may lead to anxiety, and such learners may need more guidance and assistance. The warehouse workers have experienced computers to complete their business tasks and have passed the stage where they are intimidated by the technology. Their daily responsibilities require them to log in and complete mainframe procedures. When confronted with these familiar challenges they appeared to be emotionally on an equal footing with any other administrative group within the organisation. They did not display any anxious behaviour during the completion of their daily responsibilities, and expressed a confidence in their ability to learn with computers.

During the tutorial exercises, the participants seemed unsure and anxious, and confirmed Khan's (2005) view regarding inexperience and anxiety. The uncertainty grew from the unfamiliarity with the training intervention, which the warehouse workers were not used to. Johnson and Aragon (2001) explained the different skills and capabilities that are needed from self-driven learners, where the learner needs to take control and construct his own knowledge from the presented content. Warehouse workers were used to classroom training where they were passive receivers of information, hence the anxiety during the tutorial observations. However, the strangeness and unfamiliar strategy did not discourage the participants to carry on, their attitudes were positive and determined to complete the challenges put before them. Their anxiety when being confronted with a new and unfamiliar training strategy could be understood, considering their history of classroom training. Their schooling and the way they were trained in the organisation made them used to being tutored and directed to achieve an objective in the classroom. I found that the participants at times could not understand the lack of assistance from me when they tried to negotiate the tutorial. They expected to receive help every time they were uncertain during the tutorial. This was the way they were used to in classrooms.

SMEs did not regard the workers to be too anxious to learn with computers, most agreed that guidance and knowledgeable instruction was a bigger problem. Rather than experiencing anxiety, it has been found that some overrate their own abilities with computers and are almost naïve in their belief that they would be able to learn with computers on their own. It appeared that the experience that they have already had with computers had given them a confidence and attitude that they would be able to cope with computer technology. It also appeared that they enjoyed the contact with the computers and had hoped to be more involved with computer technology.

Questions may be asked that, if warehouse workers as a community within a developing nation, express a willingness and eagerness to be involved in technology, and do not show anxiety to such an extent that it deters them from getting involved with technology, why then a digital divide? Figure 2.3 illustrated the digital divide (Cronje, 2004) and to indicate that the developed world and the developing world should be aware of the needs of one another, to prevent the digital gap from widening. According to some of the SMEs such awareness does not always exist, and e-learning programmes are often presented to learners without proper needs analyses. These programmes result in anxiety and lack of progress. The importance of relevancy and thorough knowledge of the target population is supported by the view held by Gurstein: “how and under what conditions can ICT be made useful and usable to the range of excluded populations ... particularly to support local economic development, ...” (2003 p. 4). Hoppers described it as “diverse knowledge” that should be known and understood in order to “operationalise empowerment” (Hoppers, 2002 p. 14). These views concur with Reeves’ model to be aware of individual differences and ways of input to guide instructional designers in their planning on the effectiveness of the www as a learning tool.

The warehouse workers have been introduced to computer technology and do not experience anxiety to such an extent that it prevents them from accepting the challenges of computer technology. To conclude, warehouse workers seem affectively ready for e-learning. Warehouse workers’ digital divide can be addressed by means of knowledgeable guidance via qualified instructional designers to challenge them with appropriate, relevant learning content.

### **6.3.3 Managerial contributions, guidance, support and knowledge of e-learning**

A third finding was that the warehouse workers did not receive knowledgeable advice and support from their superiors to be regarded e-ready. High frequencies of responses were recorded when the theory code “origins of motivation” in Table 6.1 was related to managerial contributions, guidance and support and knowledge of e-learning. All three conceptual codes of e-readiness yielded frequencies of more than 550 in relation to origins of motivation. These high responses do not only confirm the value of these three conceptual codes as motivators, but also served as indicators of the critical value it held to realize e-learning for warehouse workers. Warehouse workers are dependent on knowledgeable e-learning leadership and guidance from the organisation to be able to transform to self-driven learners.

Warehouse workers are dependent as employees on the organisation to provide the infrastructure and the motivational values to be e-ready. These motivational values include aspects such as learning plans to guide and direct their careers, to be challenged with realistic achievable goals and objectives, direction and guidance from knowledgeable facilitators and support staff. It has emerged that warehouse workers have experience of technology and have accrued a valid computer literacy to get

involved in e-learning. However, they are still very dependent on leadership and guidance to become successful self-driven learners. This dependency puts the expertise and “e-knowledge” of the facilitators and managers under scrutiny.

The HR training manager has conceded that he does not know much about e-learning, and an alarmingly large number of the warehouse workers have admitted to not having a career plan in place. The concept “learning plan” is an initiative of the South African government’s Skills Development Act 97 of 1998, which require all organisations in South Africa to determine learning plans for their employees to ensure that all employee skills are developed and focused on the acquisition of a formal qualification. During the interviews, IHD had just appointed a new HR training manager after having been without such leadership for a few months already. It has probably affected the responses from some of the participants. In contrast to the warehouse workers’ majority view that they do not have structured learning plans in place, the managers argued mostly that these were sound and used as required. Some even conceded that it has been neglected: *... always have, but I have to admit, it’s been a long time since I did IDP [individual development planning]. It has always been driven by the training department, but since S left, nothing happened*<sup>58</sup> 4:64 (139:144). Management also seems to be dependent on guidance and support to get the employees motivated and to generate the drive to learn independently. With the HR manager not knowing what e-learning is and how it works, and the line managers also dependent on guidance, it left the warehouse workers in a very difficult position. Even if they have the experience, the motivation and the attitude to get involved with technology to develop with e-learning, chances were that they may be confronted with irrelevant training and with a “one size fits all” type of training. This type of learning strategy has been identified by one manager who regarded ABET as “Takalani” – education for children that does not necessarily benefit the learner’s career.

I do not imply that the managers neglect their duties at all, it merely emphasised the complexity of relevant career-driven learning plans within the organisational structure. Neither of the referred management groups saw it as their primary duty to prepare the learners for e-learning, nor did they have the knowledge of e-learning to provide accurate, relevant learning programmes to address the digital divide. The definitions of e-learning as stated in Chapter 2 highlighted that it is a training strategy with many facets that needs attention before being implemented. The definitions from Alessi and Trollip (2001), Anderson and Elloumi (2004), Bowles (2004), Gill (2003), Khan (2005), and others confirmed the complex nature of e-learning and that it may need professional facilitation to administer correctly. This emerging void of relevant e-learning knowledge is perceived by the warehouse workers as a lack of guidance and direction.

To conclude, my third finding was that managers and responsible facilitators do not have the knowledge and expertise to prepare the warehouse workers for e-learning.

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<sup>58</sup> Het altyd, maar ek moet bieg en sê ek het lanklaas IDP planning gedoen. Ek dink in die verlede het die dryf altyd van die “training department” af gekom, toe S nog hier was.

### 6.3.4 Infrastructure and connectivity

The next finding was that the warehouse workers had ample access and connectivity to the networks, internet and computers to improve the viability for e-learning. Warehouse workers were observed in the workplace where they completed their tasks on computers available to them for the entire working day. They were connected to the organisation network and had the opportunity to communicate electronically with other connected employees. They were also connected to the internet. Accordingly the frequency of responses related to the conceptual code “connectivity” - illustrated in Table 6.1 - recorded significant responses when related to the “technical experience” and “motivational” theory codes.

The infrastructure manager of IHD confirmed that the organisation was well equipped to be competitive in the global market. This implied that the organisation was internationally and nationally connected to the global networks in order to attract international clients and to be a successful competitor. Global industry leaders needed to conform to the requirements of global competition, to be on the leading edge of the SCM industry and to have the privilege of updated information and knowledge of products, procedures, growth and offerings to its clients (Turban *et al.*, 2001).

According to the infrastructure manager, IHD had all the requirements in place, including internet connectivity to the warehouse workers.

*Just about every machine in the company has internet access, even our warehouse machines which are terminals. There are only two things that they got on those machines. It is e-mail, access to e-mail and access to the internet 3:220 (1408:1415).*

This connectivity concurs with the importance of access and infrastructure as described by Ifinedo (2005), Paxton (Business Wire, 2001), Piskurich (2003), Board of Regents, University of Georgia (Board of Regents University of Georgia, 2003) and other sources like Choucri, Maugis, Madnick and Siegel (2003) and Huang *et al.* (Huang *et al.*, 2004). They agreed that modern companies' strengths and capabilities are rated by their connectedness to other resources and role-players in the global network. While employing the infrastructure to compete and survive in the global world, the infrastructure is made available and to the benefit of its employees.

Table 6.1 indicates that this connectivity and access to the infrastructure has high motivational value and added directly to the technical experience that was required for e-learning. To conclude this section, as far as access and connectivity to an electronic computer infrastructure is concerned, the warehouse workers find themselves in an environment that is as e-ready as most other competitive organisations.

### 6.3.5 Learning preferences adapt with new skills

A preference can only be valid if the available options are known and comparable. My next finding was that warehouse workers mostly indicate that they prefer classroom training because it was the only option they knew. I was aware of a paradox throughout the interviews and observations. The questionnaire responses indicated that most of the warehouse workers preferred to be shown and guided by a knowledgeable person, rather than working on their own. In contrast, almost all the participants indicated during the interviews that they would like to be involved with computer training.

It was probably accurate to assume that they did not envisage e-learning in the same way that I had in mind. This is exactly my point. Warehouse workers do not know how to learn on computers without being tutored. According to Johnson and Aragon, it needs an entire paradigm shift to transform from a classroom-driven learner to become a self-reliant, participating, active learner (Johnson & Aragon, 2001). Regardless of the declared inclination towards classroom training, the motivational indicator for the conceptual code “classroom training” recorded the second lowest frequency in the “origins of motivation” row (Table 6.1). Classroom training was familiar to them and they knew what to expect. They were used to getting training in an air-conditioned room with soft chairs, sometimes with snacks and beverages included. Warehouse workers do not have experience of a well-designed e-learning programme which, according to Johnson and Aragon (2001), could include social interaction, student reflection, allow for unique habits and individual differences, and motivate and create a real-life context for the student.

Warehouse workers were not reluctant to work with computers on their own. The warehouse workers that were drafted for ABET training did that in their own allocated training time, three times a week. They were not supported by a facilitator all the time, and coped with the basic computer programs during their ABET activities. The workers indicated that they liked working with computer technology. The theory code “affective experience” for classroom training yielded 213 responses while computer use recorded exactly double that (Table 6.1). The warehouse workers indicated an eagerness to work on computers. I can not refer to it as a preference because I don't think their knowledge of e-learning was such that they could compare the two options.

The learning styles, preferences and individual differences of the warehouse worker community can be accommodated by improved instructional design (Reeves, 1999). The warehouse workers were not even aware of these advantages of computer-learning strategies, and can not really make a valid comparison to declare that they prefer classroom training. They prefer classroom training because it is the only strategy they know.

To conclude, warehouse workers may be ready for e-learning, even though they have expressed a preference for classroom training in the questionnaires. Their limited knowledge of well-designed computer programs prevented them to make a valid comparison. Their eagerness to learn with

computer technology indicated that they were e-ready to be included in introductory e-learning strategies.

### 6.3.6 Access to computer technology as origin of motivation

The next finding indicated that warehouse workers would be motivated by computer technology to such an extent that their receptiveness for e-learning may be positively affected.

Reeves (1999) listed origins of motivation as one of the most influential aspects to consider when www learning is planned. The frequency of responses of the conceptual code “encounters with IT” (Table 6.1) relating to motivation were recorded to be as high as 795. Access to computer technology as an origin of motivation affected the warehouse workers extrinsically and intrinsically. The following conceptual codes listed in Table 6.2 refer to the warehouse workers extrinsic behaviours and motivators: encounters with computers, computer use, computer literacy and skills and abilities. The access and ability to work with computers have affected the warehouse workers intrinsically through their attitudes, frustrations, anxieties and learning preferences. All of these conceptual codes recorded high frequencies of responses relating to motivation.

**Table 6.1 Warehouse workers motivation as a result of access to computers**

		<i>Conceptual dimensions of e-readiness</i>								
	Connectivity	Anxiety	Attitude	Computer literacy	Computer use	Encounters with IT	Knowledge of e-learning	Learner frustrations	Learning preferences	Skills and abilities
<b>Organisation</b>	x	567	571	619	712	795	563	582	638	653

Encounters with computers have enormous motivational value for the warehouse workers as indicated in Table 6.1. Extrinsically the exposure to computers affected the way they use computers, it enabled them to get involved in mainframe procedures, taught them how to type, to use the mouse, to click on hyperlinks, to read online instructions and improved their computer literacy overall. It has also affected their skills and abilities to adapt to different ways of computer uses, as was shown in the way they used e-mail and the tutorial observation. Having experienced the ABET classes they have realised that the computer poses a different opportunity for learning, thereby increasing their knowledge of learning with computers.

The motivational effect computers had on the warehouse workers was also indicated by means of the affective motivation they experienced. The access to computer technology affected their attitude, levels of anxiety and frustrations. It appeared that the warehouse workers felt good about using the

computers and that it motivated them in various ways. Almost all of the interviewed participants expressed fervent wishes to be involved with computers on a more regular and extensive basis. Intrinsic motivation was displayed by some of the warehouse workers' urgency to complete their self-driven ABET lessons and expressed the wish to learn more with computers. It has also been mentioned by some that they needed the computers to prepare better futures for themselves.

Frustrations were observed where warehouse workers were struggling with system speed. These frustrations implied that they were easy with the technology and have learnt what to expect from the systems. More intrinsic frustrations were implied by their almost naïve wishes to learn more with computers implying that they were motivated to learn, but needed knowledgeable guidance. They have passed the point where they experience anxiety to the extent that it would prevent them from being involved with computer technology. The warehouse workers have achieved a capacity that sets them up for e-learning opportunities to be explored. It agrees to the view held by Choucri *et al*:

If *access* conditions are in place, then *capacity* considerations come into play. If both *access* and *capacity* are in place, then value creation *opportunities* can be pursued. In other words, there can be no viable *opportunity* creation in the absence of *access* and *capacity* conditions (Choucri *et al.*, 2003 p. 8)

The motivation that resulted from the access and use of computer technology has developed the capacities of the warehouse workers. To conclude, the warehouse workers were motivated to be challenged on a higher level, and seemed to be motivated and e-ready. Their naïvetè suggested that their capacity should be guided with care, and with empathy. The key to this is in the hands of the organisation.

### 6.3.7 The organisation holds the final key

My last finding indicated that the warehouse workers' potential can be realised by the organisation only. Fifty percent of the conceptual codes that emerged from the data indicated the dependency of the warehouse workers on the workplace. Table 6.3 illustrates the conceptual codes that imply the responsibility of the organisation.

**Table 6.2 Warehouse workers motivation as a result of access to computers**

<i>Conceptual dimensions of e-readiness</i>										
	Connectivity	Facilitator	Financial aspects	Guidance & support	Learning plan	Managerial contributions	Organisation culture	Relevance	Time constraints	Viability of e-learning
<b>Organisation</b>	377	421	394	445	414	402	415	451	399	536

The pattern that emerged from the data analysis can be an indication of the warehouse workers' dependency on the e-maturity of the organisation. Access to computer technology provides



opportunities and potential growth in several other fields for the employees. Aspects such as expert advice and guidance can allow employees to achieve short and long term goals. These aspects also include financial support and assistance, informed career guidance and relevant learning plans to realise career objectives. The capacity of the warehouse workers have improved significantly with the provision of access to a computer infrastructure. The opportunity to use this capacity is partially dependent on the management and support of the organisation.

It has emerged from the data that some participants questioned the relevancy and ultimate goals of ABET training. Several of the workers indicated that they do not have formal learning plans in place, while managers stated the opposite. The facilitator needs to be an informed and skilful e-learning practitioner who knows how to conduct thorough needs analyses to ensure instructional design that focuses on the needs of the warehouse workers (Bowles, 2004). The warehouse workers have conceded that they may need guidance and support using computer learning programs. The facilitator and responsible managers or training team will have to be informed and knowledgeable to ensure that relevant training is presented in order to keep the warehouse worker interested and focused to develop their careers. Informed training facilitators may know how to break the learning objectives down into digestible chunks so that the warehouse workers are able to learn according to their individual needs and capabilities.

Financial support and assistance has also been identified to be critical because the warehouse workers do not have the personal financial strengths to finance their own training. Even though the organisation does have financial support and assistance plans in place, it seemed as if it was not clear to the managers when money can be used for training purposes. Organisation budgets seem to make provision for training, but these are not applied for the promotion of self-driven training with computers. Indirectly, the warehouse workers are dependent on informed and knowledgeable training managers who have the ability to structure a financial plan for e-learning. The knowledge of the interviewed managers suggested that they do not know enough of e-learning to realise such training for their staff.

The organisation does not shirk its responsibility to train and prepare their employees. Warehouse workers do have the privilege of six hours training time per week. Most workers have the opportunity to be trained at the company's expense. Although it seems that a culture of learning does exist, it appears that focus and direction is limited. Guidance is not always available in the way that the workers expect. They are dependent on classroom training, and on facilitators to direct their training. It may need a concerted effort between training managers, facilitators and warehouse managers to transform the warehouse workers from passive followers to active initiators. For this to happen, they need opportunity. They already have the basic capacity.

To conclude: warehouse workers are dependent on the organisation to take the decisive steps to transform them to become self-driven e-learners. I concur with the arguments of Macpherson *et al* (2005) and Powell (2000) who found that organisational readiness should be established before the

implementation of e-learning, and that management support is crucial for the success of e-learning. As far as access to computers and the motivation goes, the warehouse workers seem to be e-ready. The organisation, however, lacks the informed expertise of e-learning. Although the e-maturity indicates that the organisation is excellently poised with regard to the necessary infrastructure, the management of e-learning lacks knowledge and expertise. A concerted focus and drive from a knowledgeable training management team is needed.

## 6.4 Conclusion Executive Summary

With regard to my research question: e-Readiness of warehouse workers: an exploratory study, the following patterns and findings emerged:

- 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
- 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.

As employees of a company that strives to be competitive in the global network, the warehouse workers are surrounded with computer technology. This technology has placed them in a position that may prepare them for the challenge of e-learning.

In this chapter I presented a summary of findings and patterns relating to six main theory codes: technical and affective experience, aptitude, motivation, access to infrastructure and organisation culture. The emerging patterns were not clear, therefore I formalised the patterns and findings in table format. The table related the theory codes with an inventory of twenty conceptual codes that were constructed from an inductive analysis of the data – using Atlas.ti™. My executive summary of findings emerged from a close analysis and examination of the collected data. Seven main findings appear to relate to the research question regarding the e-readiness of warehouse workers.

The next chapter will provide an overview of the research, discuss the conclusions, limitations and recommendations.

## Chapter 7

### 7..... CONCLUSION

- 7.1 Overview of Study
  - 7.1.1 Introduction
  - 7.1.2 Overview
  - 7.1.3 Conclusion – e-Readiness of the warehouse worker
- 7.2 Limitations of this study
  - 7.2.1 Methodological limitations
  - 7.2.2 Project limitations
- 7.3 Value of the research
- 7.4 Recommendations for further research
- 7.5 Personal reflection of this study
  - 7.5.1 Learner expectations
  - 7.5.2 Dealing with cultural differences
  - 7.5.3 Personal reflection
- 7.6 Final thoughts

## **7 Conclusion**

### **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.

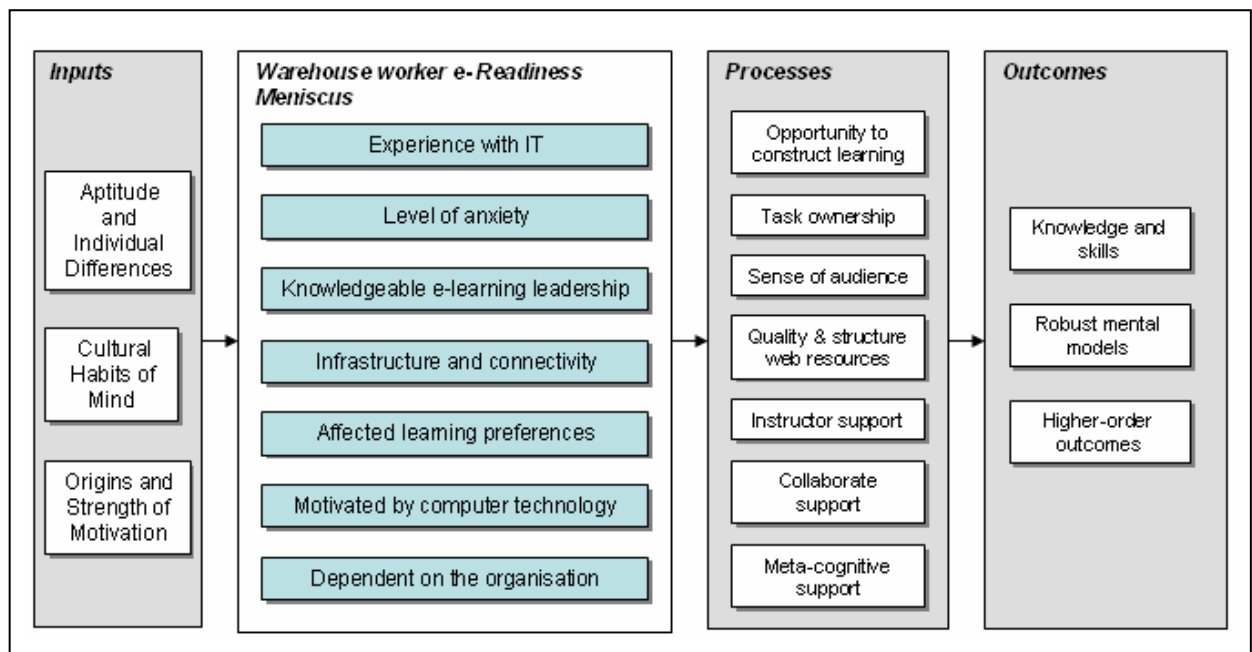
Chapter six presented a synthesis of the research findings and resulted in the seven main findings of this study. I reported on the emergence of an inventory of twenty conceptual codes of e-readiness and how a pattern or trend was explored to grasp the readiness of the warehouse workers. This chapter 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 structural 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.

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