Designing online learning environments for local contexts, as exemplified in the Sultanate of Oman

Andrea Hall
University of Wollongong


This paper is posted at Research Online.
NOTE

This online version of the thesis may have different page formatting and pagination from the paper copy held in the University of Wollongong Library.

UNIVERSITY OF WOLLONGONG

COPYRIGHT WARNING

You may print or download ONE copy of this document for the purpose of your own research or study. The University does not authorise you to copy, communicate or otherwise make available electronically to any other person any copyright material contained on this site. You are reminded of the following:

Copyright owners are entitled to take legal action against persons who infringe their copyright. A reproduction of material that is protected by copyright may be a copyright infringement. A court may impose penalties and award damages in relation to offences and infringements relating to copyright material. Higher penalties may apply, and higher damages may be awarded, for offences and infringements involving the conversion of material into digital or electronic form.
Designing Online Learning Environments for Local Contexts, as exemplified in the Sultanate of Oman

A thesis in partial fulfilment of a Doctorate in Education

from the

University of Wollongong

by

Andrea Hall,
B.Sc., NZMLT, Dip SLT, M. Ed.

Faculty of Education

2009
Certification

I, Andrea Hall, declare that this thesis, submitted in partial fulfilment of the requirements for the award of a Doctorate of Education in the Faculty of Education, at the University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.

Andrea Hall
Acknowledgements

My first word of thanks goes to the participants of this study. Without them, there would have been no study. I truly appreciated their immediate and keen response to participate, and in the way they shared their thoughts with me during the interviews.

My thanks also go to Dr Ali Sharaf Al-Musawi who provided encouragement at the right time, and who fitted into my research timetable by reading and assessing large amounts of data within a short time frame, so that the findings could be evaluated ready for the next cycle of data collection and analysis. Many thanks too go to Dr Gillian White for her expertise and support just when I needed it.

I would also like to thank Dr Peter Kell and Dr Jan Herrington, my research supervisors; for the time and expert advice they provided. I appreciated their ability to say something just in the right time that helped me refocus or reconceptualise my work.

Thanks also go to my family, especially my husband, in coping with and encouraging someone who was always at the computer, always tired, and not always sociable. And finally thanks to God for providing the motivation and determination to keep working until it was completed.
Abstract

Online learning has a significant role in teaching and learning as it can be used to address the issues of quality and access to learning in higher education. However, for online learning to provide an effective solution, it needs to be designed to meet the learning needs of the students. This includes the consideration of their cultural preferences, as it is generally presumed that these significantly affect how people learn, and consequently affect learning success if courses are not designed appropriately.

This is particularly important for the Sultanate of Oman, the focus of this study. Since Oman's renaissance in 1970, it has made impressive steps in the development of its education system from a mere three schools in 1970 to over a thousand in 2006 including over 20 higher education colleges and universities; but still faces the challenges of providing sufficient higher education and of sufficient quality for its rapidly expanding student population. If online learning is to be used to respond to these challenges, then the effect of cultural values and preferences must be considered in the way that learning is designed. However, there is little in the literature on how people in this culture learn, how they learn online, and how learning may be designed in a culturally-suitable manner. This is the problem investigated in the research: if culture does impact learning, how can learning be designed in a way that considers cultural values, and enables a successful learning experience? This thesis describes the development and refinement of design principles as an effective means to design culturally appropriate learning environments for higher education in the Sultanate of Oman.

A Design-based Research approach was selected to for this study, as it can be used to develop a design solution that has been tested and refined in a genuine learning context, thus making the solution more useable and robust. This approach begins with the identification of the teaching and learning problem, then the proposal of a draft design solution from a literature review. This is followed with iterative testing in a genuine context, so that the theory is informed and modified in the learning
environment. The final stage is the production of refined design guidelines and a modified learning environment that is specific for the context where it was tested.

In this investigation, existing design models and principles were identified in the literature. These were used to develop design criteria to guide in the development of a design solution. From the literature review, concepts from Vygotsky’s sociocultural theory were extracted for the design solution as they were found to meet the design criteria more effectively than any other theories that were examined. The five online learning themes of social presence, interaction, collaboration, cognitive strategies, and student-centred learning were identified as a means to apply these theories to the learning design, and it was also found that these theories could be used to explain and verify cultural aspects of the learning design.

From this theoretical basis, design guidelines were proposed for a specific context. The five online themes were used as a framework to develop guidelines that were developed from a literature review of learners’ responses to the online environment. Cultural theories were also used to identify worldview and values of the Arabic society so that learning preferences and guidelines could be created for learners with this background. The guidelines were then used to develop an online course, and these became the prototype design solution. This solution was tested iteratively in a context in the Sultanate of Oman, using a case study strategy, during two three month online professional development courses for university faculty. During each research cycle, data analysis was used to modify the design guidelines which then were used to modify the learning environment. This resulted in the development of design guidelines modified by practice and a learning environment modified by theory. Iterative research ensured that the design guidelines continued to shape the learning environment and that this practical context continued to modify and adapt the theory so that with each cycle of research, both the guidelines and the learning environment became more culturally suitable for these particular learners.

It was found that the refined guidelines developed in this research were consistent with, and extended, the existing models they built on. They were also able to apply cultural preferences to the design of the learning environment which became increasingly suitable for learners from an Oman cultural background. This provides
convincing evidence that this research has provided an effective design solution for culturally appropriate learning design, and for the Sultanate of Oman, where the teaching and learning challenge was identified. It was also found that culture does impact learning significantly, and this emphasises the necessity of using design principles that account for culture and enable the challenges of quality and access to be met more effectively.
Table of Contents

Certification........................................................................................................ iii
Acknowledgements.......................................................................................... iv
Abstract.............................................................................................................. v
  List of Tables .................................................................................................... xv
  List of Figures .................................................................................................. xvii
  List of Figures .................................................................................................. xvii

Chapter 1: Introduction ...................................................................................... 1
  Background to the Study..................................................................................... 1
  Education and the Sultanate of Oman ............................................................... 2
  The Problem....................................................................................................... 3
  Responding to the Problem............................................................................... 3
  The Research Questions .................................................................................... 4
    The research aim.............................................................................................. 4
    The research question ..................................................................................... 4
    The research objectives ................................................................................. 5
  Choice of location for this research................................................................. 6
  Summary of the Chapters ................................................................................. 6

Chapter 2: Investigating the Research Problem .............................................. 9
  Introduction....................................................................................................... 9
  Education in the Sultanate of Oman................................................................. 9
    Origins of the Arabic Civilisations and of Oman ........................................... 9
    Formation of the Omani Government and its policies ................................... 10
  Education in Oman .......................................................................................... 14
  Higher education ............................................................................................. 16
  Challenges facing higher education............................................................... 17
  Using technology to address issues of quality and access ......................... 18
  Online Learning............................................................................................... 19
  Benefits of Online Learning............................................................................ 19
  Increased access to courses: ............................................................................ 19
Increased teaching quality................................................................. 20
Addressing Oman’s higher education challenges .............................. 21
Cultural Preferences and Online Learning......................................... 22
Cultural preferences in teaching and learning................................. 22
Cultural preferences and practitioners concerns.............................. 23
Cultural Preferences and Online Learning in Oman ......................... 24
Conclusion ......................................................................................... 26

Chapter 3: Methodology for Responding to the Research Problem.......27
Introduction ......................................................................................... 27
A Research Approach Appropriate for the Investigation .................... 27
Design-based Research........................................................................ 28
Rationale for selection ....................................................................... 28
Using Design-based Research to guide the investigation .................. 30
Suitability for investigation for Omani learning contexts.................... 32
Research Strategy Approaches........................................................... 32
Case study strategy .......................................................................... 32
Designing the case study strategy.................................................... 33
Using a qualitative research approach.............................................. 33
Using Design-based Research in this Study ..................................... 35
Phase One: Analysis of the practical problem by practitioners and researchers. 35
Phase Two: Development of solutions informed by existing design principles . 36
Phase Three: Iterative cycles of testing and refinement of solutions in practice 37
Phase Four: Reflection on the design solution .................................. 38
Conclusion ......................................................................................... 39

Chapter 4: Developing a Design Solution .........................................40
Introduction ......................................................................................... 40
Existing Models and Principles.......................................................... 40
Henderson's Multiple Cultural Model ................................................. 40
Collis's design guidelines for culture-related flexibility .................... 41
McLoughlin and Oliver's culturally inclusive design principles .......... 42
Models and guidelines that propose general recommendations ....... 43
Building on the existing models ....................................................... 43
Criteria for the development of the design solution .............................................. 47
Analysing the Literature to Develop a Design Solution ........................................... 48
A learning theory ........................................................................................................ 48
Selection of a learning theory for the design solution ............................................. 58
Cultural theories ........................................................................................................ 59
Selection of a cultural theory for the design solution ............................................. 70
Learning design ......................................................................................................... 71
Selection of a learning design strategy for the design solution ............................... 78
Application of learning theories to the online environment using five online
learning themes .......................................................................................................... 78
Use of the five online learning themes for the design solution ............................... 81
Initial Design Solution ............................................................................................... 82
Conclusion .................................................................................................................. 83

Chapter 5: Exploration and Consolidation of the Design Solution ...................... 85
Introduction ................................................................................................................ 85
Exploring Online Themes and Learner Preferences ................................................. 85
Using online learning themes as a framework for learner preferences ................. 86
Online themes and cultural responses in learning environments ........................... 104
Significance of the online themes ............................................................................. 115
Consolidation of the Design Solution ...................................................................... 116
Using learning preferences in research to derive a set of design guidelines .......... 116
Modification of the proposed design solution ......................................................... 116
Initial Design Guidelines ......................................................................................... 118
Conclusion .................................................................................................................. 118

Chapter 6: Application of the Design Solution to an Omani Context ................. 120
Introduction ................................................................................................................ 120
The Learning Community Used for the Study ......................................................... 120
Sultan Qaboos University: Context of the learning community ............................ 121
E-learning in the university ....................................................................................... 122
Cultural background of the research participants ................................................. 123
Cultural Background of the Arab World and the Sultanate of Oman .................... 123
Geographical background and Arabic cultural values .......................................... 123
Chapter 7: First Implementation of the Design Solution

Introduction
Preparation before Implementation
General research questions
Data collection sources and templates
Data analysis templates
Timetable
Procedure for each cycle of research
Timing for data collection
Selection of participants
Implementation
The online course setting
Interviewing the participants
Collection of interaction data
Procedure for refining the learning environment
First Research Cycle
Analysis of findings
Guideline and learning design refinements proposed
Reflections on the first implementation
The Second Research Cycle
Data collection
Analysis of findings
Guideline and learning design refinements proposed
Reflection on results and analysis procedure ............................................. 174
The Third Research Cycle ........................................................................... 175
Data collection ............................................................................................ 175
Analysis procedure ..................................................................................... 175
Analysis of the findings ............................................................................. 176
Guideline and learning design refinements proposed ............................... 181
Reflection on results and analysis procedure ........................................... 182
Evaluation of the First Implementation ..................................................... 182
Refinements to the guidelines and learning environment .......................... 182
Initial evaluation of research tools and procedures .................................... 185
Initial evaluation of the use of the design solution ..................................... 188
Conclusion .................................................................................................. 189

Chapter 8: Second Implementation of the Design Solution ...................... 191
Introduction ................................................................................................ 191
Modifications to the Research Approach .................................................... 191
New tools for data collection .................................................................... 191
The Fourth Research Cycle (First Cycle for Second Implementation) ...... 194
Selection of research participants ............................................................... 194
Data collection ............................................................................................ 195
Analysis of findings ................................................................................... 196
Guideline and learning design refinements proposed ............................... 204
Reflections on the collection and analysis procedure ................................. 206
The Fifth Research Cycle .......................................................................... 207
Data collection ............................................................................................ 207
Analysis of findings ................................................................................... 207
Guideline and design changes proposed ................................................... 217
Reflection on the results and analysis procedure ....................................... 220
Retrospective Analysis of the Empirical Research ..................................... 222
Objective One: To develop design principles ............................................. 222
Objective Two: To refine a learning environment for an Omani context ...... 222
Objective Three: To analyse the design solution for evidence of the impact of
culture ........................................................................................................ 223
Objective Four: To propose how the design solution may be generalised to other contexts

Summary of the research approach and strategy selected

Suitability of the Design-based Research approach

Suitability of the Case study strategy

Issues of Quality in this Research

Transferability

Credibility

Dependability

Confirmability

Ethical Issues

Conclusion

Chapter 9: A Design Solution for Omani Contexts

Introduction

Research Sub-question: How does Culture Impact Online Learning

Identification of cultural values in the refined guidelines

The social aspects of learning were impacted more than others

How does culture impact online learning?

Research Sub-question: What Principles May Be Used For Culturally Appropriate Learning Design?

Design guidelines

A modified learning environment

Culturally appropriate learning design for other contexts in Oman

What principles may be used to guide the design of cultural appropriate learning environments in Oman?

The Research Question: How can online learning environments be designed for Omani contexts?

A learning and teaching solution for the Sultanate of Oman

Limitations of the Research

Limitations in the research process

Designing for mixed cultural contexts

Recommendations

Further research
Design guides for practitioners ................................................................. 251

References .................................................................................................. 253

Appendices ................................................................................................. 266

Appendix 1: Design guidelines reorganised for using in design a learning environment ................................................................. 266
Appendix 2: Application of design principles to the learning environment ................................................................. 269
Appendix 3: Interview Question example questions, designed for the first implementation ....................................................................... 272
Appendix 4: Template for Analysing Forum Responses ................................................ 275
Appendix 5: Template for Participant Observation ........................................ 276
Appendix 6: Case Study Analysis Template .................................................. 277
Appendix 7: Template for comparison of Case Study Conclusions ................. 279
Appendix 8: Template for Log Files ................................................................ 281
Appendix 9: Planned Research timetable ........................................................ 282
Appendix 10: Data Analysis from Case 1, Amal, in the first research cycle ...... 283
Appendix 11: Data Analysis from Case 2, Badar, first research cycle .......... 287
Appendix 12: Data Analysis from Case 3, Dawood; first research cycle ........ 292
Appendix 13: Data Analysis from Case 5, Faiza; final research cycle .......... 296
Appendix 14: Data Analysis from Case 11, Talib; final research cycle ........... 308
Appendix 15: Comments on Proposed guideline changes by a peer. ............ 324
Appendix 16: Guideline changes from five research iterations ..................... 325
Appendix 17: Modifications to the learning environment ................................ 328
Appendix 18: Comments on final learning environment by two peers ........... 330
Appendix 19: Consent form for the research .................................................. 333
Appendix 20: Participant Information Sheet .................................................. 334
Appendix 21: Guides for the Facilitator ........................................................ 336
# List of Tables

| Table 4.1: Summary of existing models and guidelines | 47  |
| Table 4.2: Concept comparisons for sociocultural and constructivist theories | 57  |
| Table 4.3: Hofstede’s (2003) national characteristics | 60  |
| Table 4.4: Hall’s high and low context characteristics | 61  |
| Table 4.5: Trompenaars and Hampden-Turner’s cultural characteristics | 62  |
| Table 4.6: Examples of the effects of social practice on belief systems | 67  |
| Table 4.7: Concepts used for courses with a Sociocultural Approach | 77  |
| Table 5.1: Social presence guidelines | 88  |
| Table 5.2: Interaction guidelines | 92  |
| Table 5.3: Collaboration guidelines | 95  |
| Table 5.4: Cognitive strategies guidelines | 99  |
| Table 5.5: Student-Centred learning guidelines | 103 |
| Table 5.6: Cultural guidelines for social presence | 106 |
| Table 5.7: Cultural guidelines for interaction | 110 |
| Table 5.8: Cultural guidelines for collaboration | 113 |
| Table 5.9: Cultural guidelines for student-centred learning | 115 |
| Table 6.1: Summary of proposed preferred learning tools | 129 |
| Table 6.2: Proposed Arabic cultural preferences in online learning | 129 |
| Table 6.3: Composite guidelines for developing social presence | 132 |
| Table 6.4: Composite guidelines for developing interaction | 133 |
| Table 6.5: Composite guidelines for developing collaborative learning | 135 |
| Table 6.6: Composite guidelines for developing cognitive strategies | 137 |
| Table 6.7: Composite guidelines for developing student-centred learning | 138 |
| Table 6.8: Learning design content and resources | 141 |
| Table 6.9: Activities designed for the learning environment | 143 |
| Table 6.10: Support provided in the earning environment | 144 |
| Table 7.1: Research participant data | 158 |
| Table 7.2: Guideline and learning design refinements from the first iteration | 166 |
| Table 7.3: Guideline and learning design refinements from the second iteration | 173 |
List of Figures

Figure 3.1: Design-based Research 30
Figure 3.2: Analysis phase of Design-based Research 35
Figure 3.3: Development Stage in the Design-based Research model 36
Figure 3.4: Iterative phase of Design-based Research 37
Figure 3.5: Reflection phase of Design-based Research 38
Figure 4.1: Draft design principles 83
Figure 5.1: Modified design solution 117
Figure 6.1 Proposing preferences using cultural theories 120
Figure 6.2: Design guidelines as the proposed solution 145
Figure 7:1 Analysis process, repeated for each research cycle 156
Figure 8.1 Example of logs of participant action in the course 193
Figure 8.2: Guidelines as the design solution 226
Figure 8.3: Design-based Research cycle 227
Chapter 1: Introduction

Background to the Study

Cultural preferences and values are commonly considered to affect the way that people learn, and the cultural differences between the learners and the learning design may result in poor learning performance (Chen, Mashhadi, Ang & Harkrider, 1999; Gerbic, 2005; Gutierrez and Rogoff, 2003). The technological interface is also proposed to affect the learning process; increasing the barriers to learning success that are caused by cultural differences (McLoughlin, 1999; Ziguras, 1999). However, little consideration to this is given in the way that learning is designed or in the way that teachers implement their courses. There is also little in the literature on how culture affects learning, and what can be done to make learning designs more effective and the learning experience more successful. As learning is increasingly provided in the technological environment of online learning, then the effect of culture on learning needs to be investigated, and consequently how it may be designed in a way that considers cultural preferences. These issues are important as online learning has enabled access for learners around the world, resulting in a greater cultural mix between learners and with the teachers. Thus the issue of culture and learning requires investigation.

My interest in the cultural suitability of learning design was initiated from involvement with a distance learning continuing education programme in the Sultanate of Oman. This programme was designed for graduates working in isolated areas all over the Sultanate and consisted of several large course books and several questionnaires, but had negligible learning support from others. Some learners on this programme found the isolated individualised learning approach difficult and requested modifications to the structure. The course had been designed by a learning centre in a western country, and the evaluation of course materials was by international content experts, with the only consideration given to non western learners appearing to be in the use of less technical or complex language. My previous teaching experience in this society suggested that this teaching method was
incompatible with the learners’ cultural values, as observations had indicated that they are visual learners and are highly relationship-oriented. Therefore the success of this approach to teaching for increasing workplace effectiveness was questioned. A preliminary review of literature found that Omani cultural values might be compatible with active learning approaches to teaching and learning; approaches that are supported in an online environment, and therefore might provide a more motivating and successful learning experience for these learners. However, this presents a problem, as no research was found on how people in this culture learn, how they learn online, and no research was found on how learning environments are designed for learners from an Arabic cultural background such as Oman.

Education and the Sultanate of Oman

Until the discovery of oil in the Sultanate of Oman in the 1960s (Oxford Business Group, 2007), Omanis lived as the ancient Bedouin did in an impoverished and feudal lifestyle. The present leader, Sultan Qaboos bin Said came to power in 1970, and the changes he made, using the oil wealth, rapidly propelled this Middle Eastern nation into the twentieth century. Oman was developed rapidly with a modern government set up by 1975, five year plans put into place, social development encouraged and schooling provided for all children. The number of schools increased from three in 1970 to over a thousand by 2006 (ONA 2006). Educational materials and teachers were imported; schooling started in tents, and then moved into school buildings, often with boys in the morning, girls in the afternoon, and sometimes adults in the evening. Higher education institutes were opened in the 1980s, along with the first university, and private colleges started opening in the nineties. By the 2006-2007 academic year there were 16 colleges and three universities (Apex 2007).

In the 1970s and 1980s, school leavers, graduates and educated Omanis returning to Oman were automatically provided with positions in the government sector. By the 1990s this sector reached maximum capacity, and it was realised that Omanis had to fill positions in the private sector. Government policies began to focus on how to prepare graduates with the skills and abilities necessary to take over positions held by
expatriates and to be able to compete in an increasingly globalised world. Some of the skills identified included the ability to be creative, critical thinkers, and be technologically skilled (ONA, 2005a). Education and training were identified as the most important means for preparing Omanis to achieve these goals.

Online learning could be used to help achieve these goals; however, there is little available on how to design online learning in a way that supports learners' cultural preferences. Consideration of culture in learning design is important if the impact of culture is significant. This presents a problem.

**The Problem**

If culture does impact learning, how can learning be designed in a way that considers cultural values and enables a successful learning experience?

**Responding to the Problem**

Learning environments should be designed effectively if they are to enable a successful learning experience and be used to help prepare Omanis for the workplace. However, as is found internationally, there are cultural differences in Oman between the students, teachers and the learning design, and if culture does impact learning, then Oman's educational goals may be compromised where learning design does not account for cultural preferences. Oman will increasingly be using the technological environment of online learning, and therefore it is vital that investigations are done in an Omani context to understand the impact of culture on learning, and how learning should be designed appropriately.

A learning design solution needs to be theoretically sound to be effective. However, it should also be a practical solution if it is to be beneficial to the educators who are involved in the design of courses. Most educators do not have the time or expertise to analyse theoretical research for its use in the classroom. Therefore, for this research to have maximum impact on the effective use of the online environment, the design solutions should be immediately applicable to local contexts. Solutions should be in
the form of practical principles that can guide in the way that learning is designed, for example, in which types of online tools can be used and what may be the ways that the learners prefer to use them. If the research has been carried out in the same or similar context that the educator works in, the usefulness of identified principles will be high, as these would have already accounted for this context in their design.

The design solution for effective online learning in Oman should be soundly based, be practical guides for educators in their course design, should account for the cultural preferences of the learners in that context, and have already accounted for the local context. This research seeks to respond to these challenges.

The Research Questions

A preliminary search of the literature suggests that cultural values may affect how people learn, and consideration should be given to these values in the way that courses are designed. Therefore, models or principles that can account for the cultural preferences in the design of learning would help provide effective learning environments for local contexts, such as Oman. The relevance of cultural values and the search for an appropriate design solution should be investigated.

The research aim

The aim of this research is to explore how online learning environments can be designed for Omani contexts so that online learning can be used effectively to address issues of quality and access in higher education.

The research question

How can online learning environments be designed for Omani contexts?

The investigation should identify the impact of culture on learning, as this can determine the importance of designing culturally suitable learning environments.
Therefore the first sub-question is:

a) How does culture impact on online learning?

If culture does impact learning significantly, then an investigation is required that can explain how learning can be designed in a way that does consider the cultural preferences in learning. This investigation should be able to develop principles that can accommodate learners’ preferences in the design of a learning environment.

Therefore the second sub-question is:

b) What principles may be used to guide the design of culturally appropriate online learning environments in Oman?

The research objectives

a) To develop design principles, based existing models and a review of the literature. The design principles should have a sound theoretical basis and continue the work of others in the field.

b) To refine a learning environment for an Omani context. The modified learning environment can be used for learners in that context. This can also exemplify how the design principles can be used in a genuine environment.

c) To analyse the refined solution for evidence of the impact of culture, and their suitability for designing culturally appropriate learning environments for an Omani context.

d) To propose how the design solution may be generalised to other contexts. The research will be done in one context in Oman. For the findings to be useful for other contexts in Oman, the use of the principles needs to be generalised. If they can also be generalised to contexts other than Oman, then this research can have a greater impact. This is important as Oman is not the only country that must address the issues of quality and access to learning in higher education.
**Choice of location for this research**

The Sultanate of Oman is a suitable place for this investigation because:

- Its culture is significantly different from the societies where most literature on e-learning design has been developed, such as Australia, the United States, Canada and Britain.
- The culture is in a relatively pure form because modernisation of the country has occurred only in the last thirty-seven years and because the society values its own culture in its forms, traditions and lifestyle. This provides a suitable research setting.
- Design solutions developed could be further tested and modified for use in a larger number of environments, as many classes in this setting consist of students from only this cultural background.

**Summary of the Chapters**

This thesis explores how online learning environments can be designed for a context in the Sultanate of Oman. It proposes design principles and a model learning design as a means to design effective online learning for addressing the issues of quality and access to higher education in Oman.

The thesis is broadly divided into two stages. The first is a synthesis of the literature, to characterise the nature of the problem, and to propose a solution based on previous models and a review of relevant theory. The second stage is the analysis of an iterative implementation of the solution, with the proposal of design principles and a model learning environment as solutions that have been tested and refined through implementation in a genuine context of use.
The investigation of the research problem is described in Chapter Two. Historical and governmental aspects of the Sultanate of Oman are discussed as they relate to education. Educational challenges are identified from the literature, and online learning is proposed as a means to respond to these challenges. Cultural values are proposed to affect learning, and the perceptions of educators in Oman are discussed as they relate to the way students learn. This explains the importance of investigating the impact of culture on learning and the necessity of finding guides or principles for culturally suitable learning designs.

In Chapter Three the methodology that is used to inform the research approach is presented. This includes an explanation of how the methodology guides the literature research in proposing a design solution to respond to the teaching and learning problem, and an explanation of how it guides the use of the empirical research to test and refine design principles.

The search of the literature for the theoretical basis for the design solution is presented in Chapter Four. Using criteria developed from existing cultural models, relevant theories are evaluated for their use in developing a design solution. This chapter concludes with an initial emerging design solution.

Further exploration is described in Chapters Five and Six in the consolidation of the design solution with the proposal of design guidelines. A review of the empirical research in literature is described in Chapter Five to identify learning preferences on learners of diverse cultural backgrounds. Design guidelines are developed from the research with these learners, which may be used in the design of learning environments. In Chapter Six, a review of the literature on cultural preferences of Arabic learners expands the proposed guidelines and these are applied to a learning environment. This chapter completes the theoretical component of the research with draft design guidelines and a learning environment for an Omani context.

The analysis stage in the investigation begins in Chapter Seven. The learning environment developed in Chapter Six is implemented in two online courses which are presented in Chapters Seven and Eight. The first implementation is presented in Chapter Seven. Research participants in a three month online course are researched to
identify their learning preferences in the learning environment. These preferences are used to revise the guidelines which are then used to modify the learning environment. Participants are again investigated for evidence of their learning preferences in this modified environment to develop proposals for further modification and refinement of the guidelines and learning environment. The second implementation of the design solution is described in Chapter Eight. This has a similar structure to Chapter Seven. It describes further analysis and modifications to the guidelines and learning environment through two further research iterations.

Chapter Nine describes the impact of culture and the necessity for a design solution. Refined guidelines and learning design for an Omani context are described, which are proposed to be an answer to the question of how can online learning environments be designed for Omani contexts. This chapter also concludes that as culture does significantly impact learning, it is important that culturally appropriate learning designs are required if online learning is used to address the issues of quality and access to higher education in Oman. Limitations are discussed, as are recommendations for further research.
Chapter 2: Investigating the Research Problem

Introduction

In this chapter the nature and context of the research problem are characterised. The research problem was identified in Chapter One; that if culture does impact learning, then how can online learning be designed in a way that considers cultural values and enables a successful learning experience?

The context of this research is the Sultanate of Oman. This chapter describes Oman's transition into the modern world and the current teaching and learning problems it is facing in higher education. Online learning is suggested as a solution, but its effectiveness is dependent on several issues, including the significance of cultural preferences in learning. Consideration of cultural issues also presents as a problem, as is presented in this chapter, there is a lack in the literature on how to design culturally appropriate learning environments for this culture, and that at present there is little consideration being given to cultural preferences in online teaching and learning in Oman.

Education in the Sultanate of Oman

For Omanis to compete in an increasingly globalised world, they need to be equipped with the skills needed to function effectively in the marketplace. This is no easy task for the Sultanate of Oman; in 1970 it had only three schools for a population of over half a million. A review of its recent history provides an explanation of the steps that have been taken to modernise the country and educate its people, and it describes the challenges that remain to meet this target.
Origins of the Arabic Civilisations and of Oman

The first civilisations in the world were the Semitic people who lived around the Fertile Crescent, the Arabian Peninsula and northern Africa above the Nile. These people consisted of many tribes, such as Sumerians, Hittites, Assyrians, and Arabs. The Arabs were first mentioned in the third century B.C. and the term ‘Arab’ now includes those who are ethnically Arab, as well as those who were Arabised during tribal wars. The term ‘Arab’ is thought to mean ‘desert dwellers’ or ‘mixed people’ (Gibson, 2002 Etymological Use) and were those who lived in the Arabian Peninsula, and the north western areas of Jordan and Syria. The Arabian Peninsula is considered to be the homeland of the Arabs, and in recent times this area has been divided up into Saudi Arabia, Kuwait, Qatar, the Bahrain Islands, United Arab Emirates, and on the south-eastern border are Yemen and the Sultanate of Oman.

Oil was discovered in the Sultanate of Oman in the 1960s, but for years after, the then Sultan, Said bin Taimar, did nothing to help his people modernise and they continued to live as the ancient Arabs did. However, in 1970, a coup d’état took Oman “from feudalism almost into the ranks of developed nations in only a quarter of a century, [a feat] unparalleled in the developing world.”(Curtiss, 1995, July/August para. 2). After Qaboos bin Said returned from military education at Sandhurst in Britain in the 1960’s, he was put under house arrest by his father for suggesting that some of the country’s oil revenues be used for opening up schools and modernising the country. When Qaboos bin Said took over power from his father he began the building of the country and its education system, which had been virtually non-existent (Curtiss, 1995, July/August; UNESCO-UIE, 2002). Addressing the Omani people when he assumed power in July 1970, Sultan Qaboos bin Said said: “I promise you that the first obligation I shall impose upon myself is to begin modernising the government as quickly as possible.” (Ministry of Information, 2004 para. 4)

Formation of the Omani Government and its policies

Codification of laws of institutions, rights of the citizens and the government took place over the next few years and were set into law in 1975. The governing of the
country is through the Majlis a’Shura Consultative Council, which is elected by the citizens, and the Majlis Al Dawla, State Council, whose members are appointed by the Sultan.

From 1976, Oman's development has been guided through the adoption of Five Year Plans. Each of these has been comprehensive, holistic and based on the outcome of the previous plans. Regarding education, the earlier Five-Year Plans concentrated on providing free education for all children aged five to 15, education for illiterate adults, for the handicapped, for pre-school children and with gender and regional equity (UNESCO, 2000). By the mid nineties, a comprehensive reform plan was set in place to enable them to deal more effectively with problems that were arising, such as education quality, inadequate school buildings, shortage of teaching materials, outdated methods, and double shifts that were the norm for elementary schools. Thus the following five year plans concentrated on issues such as a building expansion programme, more educational facilities, text books, libraries, technology and in-service teacher training (UNESCO, 2000).

**Omanisation policies**

In 1990, on the twentieth National Day, Sultan Qaboos bin Said stated:

> The process of Omanisation will take place gradually without compromise to productivity... Omanisation is the basic requirement for the process of the economic and social development. Without it, we cannot create a future generation with a higher standard of living (Al-Marjan, 2004, August 10)

When the Sultan came to power, expatriates were hired to fill positions made available through the modernisation of the country and development of the infrastructure. Oman, at that stage, had the financial resources but not the human resources. With education as a high priority, Omaniis were educated and the government took on the responsibility of providing jobs for the graduates (Bahgat, 1999).

It was believed in the early days of the 1970s and 1980s that an education would automatically result in a government job that provided a good secure position for life.
However, as only twenty percent of jobs were in the government sector, this was an unrealistic view, and it was not long before large numbers of people found themselves unemployed. By 1990, most Omanis were employed in unskilled or semi-skilled jobs. The unemployment rate at this stage was high; the figures for 1991 were approximately 15% (Al-Lamki, 2000; Kapiszewski, 2000; Valeri, 2005).

It was within this environment that the Omanisation Policy was formulated; in the fourth Five Year Plan from 1991 to 1995, and then again in the 2020 Vision conference in 1995. The aim of the Omanisation policy was to provide jobs for Omanis and to train them so they could develop the skills needed to take over positions held by expatriates. The Higher Committee for Vocational Training, the Chamber of Commerce Training and Omanisation committee and others were commissioned to set procedures and plans for training and education, and to provide the mechanisms for Omanisation. Omanisation targets were set, and those that employed Omanis were compensated to offset the extra costs due to the lower salaries paid to those from the Indian subcontinent (Al-Dhahab, 2003; Al-Lamki, 1998; Al-Lamki, 2000; Ministry of Information, 2000).

However the pace of Omanisation has been slow. The public sector could not take any more Omanis in significant numbers; it became the responsibility of the private sector to provide employment. In 1998, eight percent of the private sector work force was Omani; six years later it had risen to only 12%, with 60,000 under twenty four years of age estimated to be unemployed (Al-Lamki, 2000; Valeri, 2005), and by July 2007, it was less than 18% (Kumar, 2007c), with only 3% of Omanis in these position having a degree (Kumar, 2007a).

Problems in reaching Omanisation targets

There have been several reasons identified that have caused a slow rate of Omanisation:

i) Reluctance by Omanis to take up employment in the private sector because of its inferior salary and benefits for the lower skilled jobs (Al-Lamki, 1998). The private sector works six days and forty to forty eight hours a week; the public sector works
five days a week and thirty-five hours a week. Public holidays are also shorter for those in the private sector.

**ii) Lack of motivation:** The Minister of Manpower found that between the years 2001 to 2005, 25,000 Omanis were expected to enter the workforce but only 17,000 did, with 30% of job seekers not being serious. He also commented that many people resigned due to work being incompatible with family and social commitments (ONA, 2005b).

**iii) Lack of skills in prospective Omani employees:** As companies must turn a profit, a skilled employee is preferable to a new graduate; therefore new inexperienced Omani graduates did not often replace expatriate employees. This indicated that the quality of the graduates needed to be increased, it was not sufficient to just focus on graduate numbers.

**iv) Human resources** had been overlooked in developing countries such as Oman, yet it is through skilled, trained and competent human resources that economic success is attained. This can be achieved through greater coordination between the private sector and the ministries, and with more emphasis in the education and training sector in providing graduates with marketable skills (Al-Lamki, 2000). Thus the education system needs to provide an education that can prepare nationals to be sufficiently qualified to be able to take their place in the workforce without compromise in quality. This means that there needs to be more awareness of which skills are required in the community, and training provided that can develop these skills in Omanis. This is why the Vocational Training Authority was set up in 1991 with the establishment of Vocational Training Centres (Ministry of Information, 2000). However, providing the right institutes is not enough, the teaching methodology must be able to meet community needs, as at present the teaching methods are predominantly theoretical with too many educators relying on memorisation instead of skills to develop more innovative thinking (Kapiszewski, 2000).

Thus, training and education then became key means for increasing the success of Omanisation, and therefore reform was needed to increase the quality of education and training.
Education in Oman

As previously stated, at the time Sultan Qaboos bin Said came to power, there were only three schools and 909 pupils, thus the 1970s focus was to develop the education infrastructure. In 1970 the Ministry of Education was given the responsibility of drawing up plans, programmes and projects to enable every child in the Sultanate of Oman to receive free education. As mentioned earlier, schools initially started in tents, and had double shifts. There were also Adult Literacy classes in the evenings. Teaching materials and teaching staff came from other Arab countries, especially Egypt and Jordan.

Expansion

The rapid population growth in Oman resulted in continual pressure to provide sufficient education for the population. When the Sultan came to power, the population was 654,000 (Kapiszewski, 2000); by 2006 it was 2,577,000 of which approximately 693,000 were expatriates (Kumar, 2007b). From three schools and 909 pupils in 1970 to over 1,000 schools with 577, 833 students in the 2006-2007 academic year (ONA, 2006), Omanisation of schoolteachers reached 81.5% by 2005 (ONA, 2005a). By 2000 there were 130 private schools, as well as a school for deaf and mute students, mentally challenged and for blind students (Ministry of Education, 2004). However, the amount spent on expansion of the education system was low, compared to other nations. Using the most recent figures available, Oman in 1999-2001 spent 4.2% of its GDP on education, which increased to 4.6% by 2003 (Encarta, n.d.). By contrast, New Zealand spent 6.6% and Denmark spent 8.3% in the 1999-2001 period. Even though most Gulf Arab states have a per capita GDP similar to industrialised nations (Kiernan, 1998), the other countries at a similar spending level to Oman in 1999 were Ghana, Malawi, India, and others considered to be poor developing nations. Australia and the United Kingdom were amongst the lowest of the developed nations at 4.6% (UNDP, 2004). Given that Oman is still in the process
of developing and diversifying its educational system, this expenditure rate may mean significant educational needs will be unmet.

Quality of Education

Since the early nineties, there has been concern about the quality of education. The World Bank (2001) reported that it took 12.6 pupil years to produce a graduate of the nine year basic education system, and most of those who passed their school leaving certificate with high marks still required an extra foundation year at university. There have been several means adopted to help deal with this issue, such as lengthening of the school year, raising pass scores, monitoring learning achievement and developing the examination system through a project with the Scottish Examinations Board.

There were also concerns about academic and pedagogical deficits. Tibi (1991, cited in Pollack, 1998 p. 9) commented that “A student …learns natural science or technology exactly as if it were sacral knowledge from the Koran or Hadith”. Memorisation skills have been the main method of learning across the Arab world. Rabie (1979, cited in Pollack, 1998) commented:

Students are given thousands of facts to memorize instead of the research skills that will enable them to find the facts when needed. Teachers and professors tend to cling to specific innovations instead of applying the principles of innovation, thus rendering the system rigid and conservative. Memorization, together with the authoritarian method of instruction, serves to inhibit rather than encourage students' ability to think and take initiative. The students' ability to develop realistic and imaginative solutions to whatever problem they may have to deal with is very much limited.

Reform recommended

Following World Bank studies (2001) on the effectiveness of their general education, it was realised that comprehensive educational reform was necessary to increase the quality of education. Some of the features of this reform included making the
education more student-centred, with more interaction, participation and independent learning, as well as the use of technology in some of the classes (UNESCO, 2004). Other issues in the reform included providing a more complete assessment and follow up of each child, emphasizing more mathematics and science, providing more technology in teaching, and introducing English in the earlier grades. These reforms started in the elementary schools with plans to implement this approach in the secondary schools. However by the 2004-5 school year, less than half of the elementary schools were on this system (ONA, 2005a), therefore it will be a while before significant changes will be seen in those who graduate from secondary school.

**Higher education**

*Expansion*

Rapid expansion occurred within higher education to provide sufficient places for increasing numbers of secondary school graduates. Initially, those wanting to pursue higher education studied overseas on government funded scholarships or were privately funded. By the early 1980s the two government higher education institutes were opened; in health sciences and in banking. The first and only government university, Sultan Qaboos University (SQU), was completed by 1986. This will probably be the only government university in the country, as Oman does not want to place too much reliance on revenue from oil. Therefore private institutions were encouraged as it was believed that there should be more reliance on investment from local and international sources (Al-Lamki, 2000), and subsidies were provided by the government. The first private colleges were opened by 1996 with 150 students. By the 2006-2007 academic year there were nearly 17,000 students enrolled in a total of sixteen private colleges and three private universities (Khan, 2007).

However, the Omani population growth rate indicates the escalating need for a greater expansion in higher education than is occurring. Forty percent of the population is 15 years of age and under. The annual growth rate is 0.2 for developed nations and 1.9 for the less developed. For Gulf countries, including Oman it was between 3 to 7 percent although this figure may be declining (Kapiszewski, 2000). The number of places available for secondary school graduates has not kept up with the number of
graduates. For example, between the years of 1996 to 1999, the numbers of students graduating from high school increased by approximately 5,000 each year (Al-Lamki, 2002). In 2005, there were 63,000 school graduates and only approximately 15,000 places available in higher education in Oman (Khan, 2007).

Further education

In 2001 there were 42 postgraduate degrees conferred at Sultan Qaboos University, and in 2006 there were 126 (Sultan Qaboos University, 2007). Oman, like others in the Gulf, has given only small consideration to postgraduate and continuing education but it must do so, as the ability to compete in the globalised market is not only about focusing on technology and science but it is also about providing continuing educational opportunities for everyone (Rassekh, 2001). Using data from 2002, Oman with a national population of 1.5 million, had approximately 30,000 students (Al-Yaqeen, 2004) in higher education. New Zealand by contrast with a population of 4 million, had 266,000 higher education students. New Zealand has similar standards of education compared to other nations (Scott & Scott, 2004) but, with its population only two to three times that of Oman, has eight times more students in Higher Education, including postgraduate, continuing and further education. Therefore Oman has a huge deficit of higher education opportunities available for Omani school leavers and for others already in the workplace requiring postgraduate or continuing education.

Challenges facing higher education

Education in Oman has shown incredible development over the last 37 years, but there are still significant challenges that need to be met, primarily that of quality and access to higher education. These are also issues that were addressed by the World Bank (2001) which commented that the education system is facing the “twin challenges of the need for quality and the need for expanding opportunities in the higher education system”(p. 15).

Although higher education has been provided at a phenomenal rate, there are still insufficient places for school leavers in a rapidly increasing population, and for
graduates and others in the workplace desiring further education. Continuing higher education must be provided if Oman is to compete internationally with those who consider life long learning to be a normal part of professional life (Al-Lamki, 2002).

Omanisation plans focused on the need to increase the quality of the education, which would prepare Omani citizens more effectively for life and work, to help develop skills for the globalised market place. As Oman’s Minister of Education commented: “To survive in a globalised world, countries need creative and flexible citizens who are technologically literate, can engage in critical thinking and are skilled communicators” (ONA, 2005a). Elementary and secondary schools are aware of the need to reform their educational approach and provide more interactive participatory student-centred learning. In an international conference in Oman on reform in secondary schools, it was noted that schools and the labour market need to understand what today’s requirements are and how the secondary school education system could meet these needs (Ghailani, 2002). This approach needs to be within higher education as well. All graduates, whether directly from high school or higher education, need to develop the skills required in the workplace, such as problem solving, developing communicative skills, independent learning, being able to work in teams, and having a motivated attitude to work.

This type of approach to teaching and learning is not found in most higher education settings; the lecture is the standard form of teaching; and although this may be one way to deliver large amounts of information, students are often passive and do not develop the desired skills needed as professionals. Therefore reform is necessary not only in schools but in higher education, to address both quality and access in learning.

**Using technology to address issues of quality and access**

The main recommendations of the World Bank for improving educational outcomes in Oman focused on increased parental involvement and the use of various assessment schemes. Technology was mentioned as being a necessary tool to learn, but the specific benefits of using technology as a tool for quality teaching and as a means to provide education for a higher number of students does not appear in these recommendations. Technology can be used to respond to these challenges and make a
Online Learning

Online learning can enhance the learning process through effective use of learning methodologies, the Internet and technology. It provides a way for learners to access their courses from any location, and can enhance or replace classroom-based teaching. E-learning technology can also provide access to education for large numbers of students, and has become a tool to transform the way people conceptualise the teaching and learning process. Technology may not always enhance the learning process; it is a tool, and therefore the way it is used is the deciding factor in the quality of learning. Therefore, as online learning is being increasingly used internationally for large numbers of students, its use should be evaluated to ensure it also provides quality learning for all learners.

Online learning is any learning that occurs within the Internet environment. This may include the delivery of and interaction with course material, multimedia activities, access to resources including the Internet, interaction with others and the performance of student assessment. Some courses use online learning for part of their teaching, and some use the technology only to store resources. These courses are often called ‘blended learning’ and ‘supplementary e-learning’ respectively. The term ‘e-learning’ is often used instead of ‘online learning’, but may not include the web-based aspect of learning (Conner & Conner, 2005; Stockley, 2006; Strawbridge, 2005).

Benefits of Online Learning

Increased access to courses:

Online learning can provide access to learning for large numbers of students. Studies on virtual consortia in the States have shown that several strategies can be used to do this (Twigg, 2003).
Online learning allows for large numbers of students in a class. Classroom-based teaching can mean a course is taught multiple times. With e-learning technology, the course content can be accessible to all students online, and may be supplemented with video and multimedia materials. Twigg (2003) gives examples of multiple repeats of a classroom-based course being changed into one course that was accessed by 800 to 1,500 students. This would not be possible in traditional classroom teaching.

Online learning can support the use of methods that help decrease the amount of time faculty spend teaching, for example by using automatic marking and grading in online quizzes, and enabling the use of a “differentiated personnel” strategy (Twigg, 2003 p. 29), where students or postgraduate students can moderate online interaction or mark assignments (Salmon, 2000). This enables a course to cater for larger student numbers.

Course design can be made more efficient using learning objects. These are independent chunks or units of teaching material that may be designed for one course, but made available for repeated use in other courses. Thus, reusable units can save time in the design of new courses but can increase course quality, as the designer is usually an expert in that topic (Wiley, 2000).

However, studies have shown that teaching online has resulted in increased teaching hours, usually attributed to increase time in interacting with students (Cavanaugh, 2003; Lazarus, 2003) teachers need new strategies in teaching so that greater access does not mean a significant increase their time teaching online.

**Increased teaching quality**

E-learning technology can support teaching that increases the quality of learning. It can provide learning contexts that resemble authentic professional work contexts through the creation of interactive simulations. Realistic contexts support useful cognitive skills in learners and can increase motivation to learn. Realistic environments resemble workplace practice, and can enable authentic problems to be designed in the learning environment. These environments can promote the
development of problem solving skills that learners require for the workplace, and therefore increase learning quality (Jonassen, Hernandez-Serrano & Jonassen, 2003; Jonassen, 1998).

Learning communities can also promote a social environment between peers and with the tutor in individual, group and class interaction. This environment can provide a means for learners to articulate, discuss and reflect on their learning, all helping to develop cognitive processes and internalising new concepts and terminology. Interactive digital media is being used more frequently within the learners’ social lives and within the workplace environment; therefore social interactive tools not only help the learners to use professional language in their course discussions, it also helps them work collaboratively in the authentic environment of the workplace (Brown, Collins & Duguid, 1989; McLoughlin & Luca, 2000).

**Addressing Oman’s higher education challenges**

Thus online learning can benefit learning through addressing the issues of quality and access for both campus-based and online learning courses, and therefore help respond to the challenges of higher education in Oman. However, these benefits are not automatic. There are several issues that need to be addressed to adequately support the use of online learning. These include the following:

- Adequate and reliable administrative and technical infrastructure support systems
- Sufficient professional development and support for teachers in the design of pedagogically sound online courses that help learners build their cognitive and collaborative skills.
- Knowledge on how to design and implement courses that meet the needs of learners in their own particular learning context. The learners’ individual needs may include several issues, such how the learners’ cultural values and preferences affect the success of their learning.

Oman would need to address all these issues if it intends to use the online environment to respond to its teaching and learning challenges. However, the final point is the focus of this research. This is because there is little available in the
literature concerning the impact of cultural values and preferences on learning, and therefore on how to design effective courses with this in consideration. If the impact is significant, learning may be compromised. Therefore suitable culturally appropriate course designs are necessary so that all learners have the opportunity for a successful learning experience.

**Cultural Preferences and Online Learning**

Culture concerns “the set of shared attitudes, values, goals, and practices” (Merriam-Webster Online Dictionary, 2008), and the “meaning and values of social groups” (Henderson, 1996 p. 86). Gutierrez and Rogoff (2003) describe culture as the “history and valued practices” (p. 20) of a community. Chen et al (1999) comment that societies “do not possess culture, they are cultures” (p. 219). These definitions of culture consider the cognitive and communicative perspectives of a society. Although there are many other definitions of culture, these have been selected because they focus on culture as belonging to a community or society, not as characteristics of individuals. This is important as individuals may have their own unique history or learning characteristics, but the cultural values may be evident more within a group than in an individual, and therefore may also relate to learning communities. If culture is defined as values belonging to a community, then cultural preferences in learning should characterise not the learners, but the design of the learning environment, as is the intention of this research

**Cultural preferences in teaching and learning**

Cultural preferences in learning are a significant issue today, due to the increase in cultural interaction as a result of globalisation and transnational education. Western universities are increasingly marketing their education overseas and targeting students from developing nations as a valuable source of income. This results in large numbers of students from different cultural backgrounds studying in their universities, either online or on campus. In developing nations, many higher education institutions form partnerships with Western universities and often the foreign institute will export its culture along with its curriculum (Altbach, 2004; Coffman, 2003). At the same time, these universities and colleges in developing countries will have teaching staff from
other countries, each with their own cultural values; or the local faculty may have
trained in foreign universities to prepare them to teach in their own countries. Thus,
the cultural mix in many universities and colleges may be considerable; both in
Western institutions that provide education to overseas students, as well as in
developing nations that provide education for the local context.

**Cultural preferences and practitioners concerns**

Many practitioners and researchers have consequently commented on the need to
address cultural values in online learning. Although technology can support learning,
it is thought to also affect the learning process (Joo, 1999). McLoughlin (1999)
believes that culture is an issue particularly when technology is used in learning
because it is a “cultural amplifier” (Newman, Griffin & Cole; cited in McLoughlin,
1999 p. 232). She further comments that this means that cultural contextualisation
must be considered in course design. Ziguras (1999) similarly notes that the
significance of the effect of technology is not being accounted for, neither in on
campus nor in the online environment. He believes that this is a critical issue because
of the increasing cultural diversity in online learning. Chen et al. (1999) comment
that this should be a “significant concern” (p. 217), as they believe that cultural
considerations are one of the foundations of effective technology based learning.

A lack of awareness concerning cultural issues can mean that teachers may not
understand how to deal with learners from different cultural backgrounds (Chen et al.,
1999). Gutierrez and Rogoff (2003), and Artiles, Trent, Hoffman-Kipp and Lopez-
Torres (2000) comment on the poor performance of children from minority cultures
and therefore the need to prepare teachers to teach effectively. Ziguras (1999)
believes that the problems the teachers can face include the different experiences and
expectations of the students, different traditions, and different social support students
require. Gerbic (2005) also adds that the lack of teacher understanding means they
have inaccurate conceptions about how students learn, which can result in a mismatch
between learning designs and learning needs. This was also a concern in work done
by McLoughlin and Oliver (2000) in the design of learning for a particular cultural
group. They comment on the importance for teachers to consider specific principles
relating to cultural values so that the courses designed can enable learners to achieve
success. Dunn and Marinetti (2005) believe that a lack of cultural adaptation is the main reason why people drop out of globally distributed online courses. Australia’s Access and Equity in Online Learning (2003) have a similar view; they comment that the “lack of culturally appropriate learning is considered to be a major cause of unsuccessful completions” (p. 8). They also note that inadequate teacher and provider sensitivity to cultural differences, lack of teacher relations with students and their communities, as well as language difficulties all contribute.

Researchers also comment on the lack of research in understanding how culture affects learning and therefore how to respond to this need. In the late nineties, there were several articles written concerning the lack of literature and the need to design online learning environments according to cultural preferences. Wild and Henderson (1997) comment that there is “little regard for appropriate pedagogical design models” (p. 180) for online courses, especially for learners from different cultural backgrounds. Henderson (1996) comments on the lack of research on the relationship between culture and instructional design, and Reeves (1997) notes that as cultural issues have been labeled as an issue for future concerns, nothing is being done in the present. The Australian Flexible Learning Framework’s (2007) guide to developing culturally sensitive courses does not present any research beyond the 1990s; thus it appears that little has been published recently.

Cultural Preferences and Online Learning in Oman

As stated, higher education in the Sultanate of Oman consists of one public university, and several private universities and institutes. The public university accepts virtually only Omani students. The private universities and institutes accept expatriate students, but the majority are still Omani. Faculty are multicultural, with the government university having the greatest number of Omani faculty members. All higher educational lecturers and teachers have obtained part of their education overseas. Thus the greatest cultural mix is in the teaching staff, not the students.
There is little in the literature on the concerns and perceptions of faculty concerning cultural challenges in teaching in Oman. However, personal observations and verbal comments by other practitioners provide some anecdotal evidence of perceptions and challenges concerning cultural values in online learning. This includes the following:

- Many students memorise course materials instead of focusing on understanding. This characteristic is the most often noted in this culture. Some courses encourage this type of approach to course work; others aim to build cognitive skills.
- Many students do not read for pleasure, many of them come from homes with few books, and Oman has no public libraries, yet most courses require significant amounts of reading.
- Traditional teaching tends to have a formal approach in the traditional classroom, but after teaching time, students frequently spend time on an informal basis with faculty in their offices.
- In the online environment, students who knew each other well interacted well, those who did not know each other interacted only very little.
- This community is visual and highly relationship orientated; yet teaching approaches tend to be text-based and individualistically orientated.

Personal observations also suggested that many of these characteristics could be explained by cultural values and worldviews of the Arabic society; that the learners’ values and expectations did not match those of the course designer or teacher. It was also observed that many practitioners comment on the way learners respond to their courses, without seeking to explain this from the learners’ perspectives.

Although this evidence is only anecdotal, and therefore has limited value, it is consistent with the comments made by other researchers and practitioners (Dunn & Marinetti, 2005; Ziguras, 1999). This suggests that in the Sultanate of Oman, cultural values and preferences are not considered in the design of teaching and learning, and therefore the learning process may be compromised. If technology does act as a cultural amplifier, then it is even more important to find a means to design courses for the e-learning environment that are culturally appropriate.
Conclusion

The transition from an ancient tribal lifestyle into participating in a globalised world in the space of thirty-seven years has resulted in some remarkable changes but also some significant challenges for the Sultanate of Oman, namely in the need to address the provision of higher education to sufficient numbers, and the quality of teaching and learning. It was proposed that online learning has the potential to meet these needs, as was supported by literature. It was found that there are several issues that affect the successful use of online learning, such as the impact of cultural values and preferences in the way that people learn. Anecdotal evidence also suggests that cultural issues may not be understood or accounted for in the design of learning in Oman, and little is available in the literature to address this challenge, in either a general manner or for Oman in particular.

If online learning is used in the Sultanate to respond to the issues of quality and access, then there needs to be a response to this problem of how to design learning in a way that considers cultural values and enables a successful learning experience. Research is required to find a solution that is practical and useful so that it may easily be implemented. Chapter Three describes the methodology of how the investigation will be implemented for proposing a model or design solution for effective online learning in higher education in the Sultanate of Oman.
Chapter 3: Methodology for Responding to the Research Problem

Introduction

Chapter Two presented the challenges that face higher education in the Sultanate of Oman. Although online learning may be an effective means of responding to these challenges, the success of online learning may be affected by the impact of culture on the way people learn. The literature suggests that culture has a significant effect on the learning process and that this is not being considered in the design process. Anecdotal evidence from Oman also suggests the same. This means that, if culture does impact learning, how can learning be designed in a way that considers cultural values and enables a successful learning experience? This problem is central to the research question that will guide the investigation of how can online learning environments can be designed for Omani contexts. In this chapter, the investigation procedure will be described as it relates to the rest of the thesis.

A Research Approach Appropriate for the Investigation

The aim of the research is to explore how online learning environments can be designed so they can be used effectively to address the issues of quality and access in higher education. One of the objectives in achieving this aim is to develop principles or guides that can be used to make online teaching and learning more effective. Another objective is the development of a learning environment for a particular context that can exemplify the role of the principles or guides. These desired objectives are both theoretical and practical: design principles and a practical model. Therefore a suitable research approach is one that can propose design principles and also guide the testing of it in a learning environment to ensure that it does what it proposes. For these reasons a Design-based Research approach has been selected, as this approach has been developed to not only contribute to theory, but also provide practical and useful solutions to design problems in teaching and learning (Allan;
Collins *et al.*, 2004; The Design-Based Research Collective, 2003). Design-based research guides the design of the investigation from the identification of a problem to the presentation of a theory-based practically tested solution. Since the Design-based Research approach guides the entire research, it is introduced at this stage to explain the process of investigation.

### Design-based Research

**Rationale for selection**

Design-based Research, also known as design experiments and development research, addresses practical problems that affect teaching and learning. Reeves (2000) comments that too much research in education is unrelated to real problems and that, meanwhile, there are many issues in education that need addressing. There is a need for more socially responsible approaches in educational research that address real issues in real situations. Reeves describes the features of responsible research: it should be applicable to practice, be clear and be of a sound quality, and that its goals should be to “solve real problems while at the same time constructing design principles that can inform future decisions” (2000, p. 25). These features are therefore compatible with the aim this investigation, to explore how learning environments can be designed, so they may be used to address issue of quality and access in learning.

**Key features**

The Design-based Research approach developed from the work of Ann Brown (1992) and Allan Collins (1992), who believe that education theory should be tested and shaped in sustained authentic practice, as this is the best environment to determine if the research has been able to improve teaching and learning. They describe the key features of Design-based Research as:

- Researching problems in authentic contexts with practitioners,
- Testing theoretical solutions, and
• Using the research approach to refine both the learning environment and the design principles (Reeves, 2000)

Thus this type of research focuses on both the practical aspect in learning as well as the theory that drives the learning design. This has several consequences:

• There are two products, the learning environment that has been refined through the research process; and the design principles, which may be used in other contexts.

• The theory is modified through the research process and through the response of learners in the learning environment. This means the theory is modified by practice, and practice is driven by tested theory, and can result in improving “theoretical accounts (2003 p. 7), or "propositions about teaching and learning" (Bannan-Ritland, 2003 p. 21).

• Modifications to theory tested in this manner can contribute to the knowledge about particular theories, and can therefore enable these theories to be practical tools that improve teaching and learning (Cobb, Confrey, diSessa, Lehrer & Schaub, 2003; Collins, Joseph & Bielaczyc, 2004; Reeves, 2000).

Design-based Research and the research question

The research question being addressed in this investigation is a how can online learning environments be designed for Omani contexts? A theory-based solution is being sought as an objective of the research, and that this solution may be implemented in the practical environment to both exemplify and modify it. This would mean that the benefit of using a Design-based Research is two-fold; theoretical design principles that have been tested and refined in an Omani context. This approach has been selected because these outcomes from a Design-based Research approach can help make a difference to teaching and learning for the context in Oman where the teaching and learning challenges were identified. According to the Design-based Research approach, the design principles that are developed in the study should also be of use in other contexts, thereby increasing the practical benefits of the study.
Using Design-based Research to guide the investigation

The rationale of Design-based Research approach guides the investigation process. This is in the problem identification, the purpose of literature review, the practical component and as well in the refinement of the design principles.

Please see print copy for Figure 3.1

Figure 3.1: Design-based Research (Reeves, 2006, p. 59)

As is shown in Figure 3.1, Design-based research consists of four phases. Each can inform previous stages and therefore it has a cyclical nature, as iterative testing and evaluation results in modifications at all phases in the investigation (Reeves, 2006).

The four phases in the research cycles

The first stage consists of identification of a problem or issue in teaching and learning, and its characterisation by practitioners and researchers to clarify the issues. These should be “chronically difficult problems” (Reeves, 2000 p. 26) related to the difference between expected learning and actual student performance.

In the second phase, a theoretical solution is developed. This may be from existing models or principles, or theories that have been evaluated for their suitability. This proposed model or theory should be practically useful, as it needs to relate to learners’ experience in their learning environments, and should also be able to explain how the theory works in practice and how practice affects the use of the theory.

The third phase is the testing and refinement stage and occurs in the environment of use. Here, the theoretical solution is tested or “put in harms way” (Cobb et al., 2003 p.
that is, the theory and learning design are evaluated and modified iteratively in the context of use. As this is a real-world environment, there is interaction between many variables that all affect the theories being tested, and make theory evaluation difficult. The Design-Based Collective (2003) comment that both failures and successes need to be documented, as they both help to provide a more complete picture of the relationship between the theory and the context.

The final phase is the production of a solution that has been tested and refined in the context of use. This solution has two products: design principles, and the practical product such as a modified learning environment or technological innovation.

**The iterations**

Design-based Research involves several cycles of research. As shown in Figure 3.1, the tested solution is reflected on and analysed so that modifications and refinement may occur in all phases of the research. The modified design principles obtained in the fourth phase are then used to modify the practical design. Therefore, the environment tests the effectiveness of the theory, and the theory modifies the environment (Cobb et al., 2003), with an “intertwining” (The Design-Based Research Collective, 2003 p. 5) of theory and practice during iterative testing in the real-world learning environment. This also shows that the research is essentially a series of formative evaluations as refinements made to the design can be tested for their effect and further modifications are then tested, refined and affirmed in “continuous cycles of design, enactment, analysis and redesign” (The Design-Based Research Collective, 2003 p. 5).

**The final product**

The Design-Based Research Collective (2003) comment that one of the characteristics of this type of research is that it “must lead to sharable theories” (p. 5). This type of research is theory driven and as these theories are tested and modified in practice, they should be then generalised to other contexts. They should also provide greater understanding about the theory and how it may be applied to practical environments.
Suitability for investigation for Omani learning contexts

In addition to the contribution to theory, these are very practical and useful research outcomes and are compatible with the aim and objectives of this research in an Omani context. It was proposed that online learning could be used to respond to Oman’s educational challenges, but that learning may be compromised by the effect of cultural values and preferences of the learners. Therefore guides or models are required that can be used to promote culturally suitable learning design. These design guides should be theoretically based but able to be applied to Omani learning contexts and be usable by educators in that context. This is a practical outcome requiring a usable theory in a particular environment. As the aim and objectives of this investigation match the goals of Design-based Research, it is a desirable approach to use.

Research Strategy Approaches

In the third phase of this approach, a theoretical solution is tested in the genuine environment in an iterative manner so that both components, a learning environment and design principles or guides may be formatively evaluated and revised. The manner of data collection and analysis is not described by the research approach. Therefore a research strategy is also required, and is selected based on its compatibility with the research questions and approach.

Case study strategy

In this investigation, a case study strategy was selected for the data collection and analysis because its principles are compatible with Design-based Research. Case studies are used to investigate “how” or “why” (Yin, 2003 p. 9) that participants respond in the way they do, as is asked in this research, that is, why do learners respond the way they do in the learning environment, and how can modifications be made to improve the design to make it more suitable for them (Soy, 2000; Yin, 2003). The main proponent of the case study strategy, Robert Yin (2003), also comments that this strategy is used when the study focuses on a “contemporary phenomenon within its real-life context” (p. 13), as with this research, where participants will be
investigated in the genuine context of an online learning course they are studying in. Also, case studies often use “prior development of theoretical propositions” (p. 14). This is compatible with the Design-based Research approach used in this study, which proposes that theoretical guidelines be proposed then tested in the empirical research. A theoretical model is proposed in this research and is a model or prototype. The case study strategy is then used to prove, disprove or modify it. The case study strategy also defines the boundaries of the study, as the theoretical proposal focuses the collection and analysis of data, and is a means to minimise the large amounts of data that can be generated from this type of research strategy (Hitchcock & Hughes, 1989; Mertens, 1998). It appears than that the case study strategy is highly compatible with Design-based Research and with the questions of this research and therefore was selected as the research strategy.

**Designing the case study strategy**

*Research participant numbers for selection*

A case study consists of research or a study on one person, a group of people, a context such as an institution, or a group of settings. The research may be performed on only one case; however this is for extreme or critical cases. Multiple cases are more usual and provide evidence that is more “compelling” or “robust” (Yin, 2003 p. 46). For example a study may be done using several participants each as a separate case, or several groups with each group as a case. The analysis concept in case study research is that each case is considered equivalent to a single experiment. Further cases that find the same conclusion as the first therefore support and strengthen the conclusion. The findings are not aggregated to form a conclusion, but a separate conclusion is made for each case in the same way that conclusions are drawn from scientific experiments, and then each conclusion is used as evidence for, or modifications of, the theory that was proposed (Soy, 2000; Yin, 2003).

*Participant selection procedure*

Participants are selected purposively, as in other quantitative research (Mertens, 1998 p. 254) In the case study strategy each case is selected for its ability to either provide a
literal replication through providing similar results, or a “theoretical replication” (Yin, 2003 p. 47) where contrasting set of results can also confirm the same conclusion. Therefore, participants are selected based on the potential of the results to support each other and therefore have the potential to strengthen the findings (Mertens, 1998).

Collecting and using multiple sources of evidence

There are two issues concerning multiple sources of evidence. The first is that large amounts of possible data require a framework for collection and analysis to focus the study and define the boundaries (Yin 2003). Therefore, to prepare for this research, a series of templates should be prepared for this purpose, as is also recommended by Miles and Huberman (1994). The second issue of multiple sources of evidence concerns flexibility in data sources. Where findings are inconclusive, further investigation can incorporate other data collection procedures to clarify findings. Therefore several data sources should be targeted and templates designed for collection and analysis. This includes participant observation, student interaction in discussion forums that can be analysed for several different learning concepts, as well as assignment analysis and interviews.

Using a qualitative research approach

The use of case study strategy can result in the selection of methods that are essentially qualitative, such as participant observation and interviews. Qualitative research is designed to enable researchers to understand how people respond to particular events in their natural setting. This data can include behaviour, opinions, experiences and feelings. However qualitative research is not used to analyse what is right or average, but instead is based in the conception of reality that individuals have. Qualitative research is based on an epistemology that proposes that truth is personally constructed, and is not a universal and uniform notion. Usually qualitative data collected is extensive as it involves descriptive texts such as from field observations and interviews. Thus qualitative research tends to focus on a small number of participants and locations, but at depth, with a large amount of data for each (Hancock, 2002; Mertens, 1998).
There are three ways that a case study can be different from some other qualitative research. Firstly, in most qualitative research, the researcher does not intervene or manipulate the situation, rather observes and records the findings. However, in a case study strategy research used in Design-based Research, the learning environment is manipulated iteratively as an application of the modified theory. Secondly, most qualitative research does not evaluate theory, rather it is inductive, allowing themes and principles to develop from the analysis of the data (Hancock, 2002). Case study strategies use theory as a means to guide and focus the research. Finally, a Design-based Research approach has modified theory as a goal, not just an improved learning design which can be achieved through the use of a case study strategy. Thus a case study strategy is different from some other qualitative research, as it can be interventionist, starts with a theory and can be used to develop both a modified practical product and refined theory.

Using Design-based Research in this Study

A Design-based Research approach was used to guide the investigation; and the thesis uses its stages to present the argument which is more clearly explained within a Design-based Research framework. The thesis is outlined here according to the four phases of this approach.

Phase One: Analysis of the practical problem by practitioners and researchers

Please see print copy for Figure 3.2

Figure 3.2: Analysis phase of Design-based Research (Reeves 2006)

Phase One, as shown in Figure 3.2, concerns the analysis and characterisation of a practical problem. This is the topic of Chapter Two and the exploration of the
problem focuses initially on the Sultanate of Oman, which is described in detail to explain the context of the research problem. Online learning was proposed as a means of meeting the needs of quality and access in higher education. It was noted that if culture impacts learning, then learning design must account for cultural needs. The lack of research on designing culturally appropriate learning environments for Omani contexts was discussed, and the problem was proposed that if culture does impact learning, then how can learning be designed that considers cultural values and enables successful learning for contexts in the Sultanate of Oman?

**Phase Two: Development of solutions informed by existing design principles**

![Please see print copy for Figure 3.3](image)

Figure 3.3: Development phase of Design-based Research (Reeves, 2006 p. 59)

Phase Two concerns the development of a solution for the problem proposed in Phase One. Chapters Four to Six describe how a theoretical and a practical solution are developed, as represented in Figure 3.3. Development begins with a search for existing models in the literature to be used as criteria, enabling the design of this solution to extend the work of others in the field. Relevant theories are investigated and analysed to propose draft principles. Initial design principles that emerge as an initial model are presented at the end of Chapter Four.

Chapter Five explores the theoretical use of these principles through examining empirical findings in the literature on learners’ preferences in the online environment. This is from both a general perspective and from the perspective of learners from different cultural backgrounds. These findings are used to develop design principles in proposing that learners’ preferences be used in the form of guidelines to inform the learning design.
In the final step for the development of a theoretical solution, the design principles are used in a specific context. This exemplifies the use of the design principles, and also enables the development of a solution for an Omani context which is the focus of this research. This is the subject of Chapter Six. In this chapter, the design principles are used to propose further design guidelines from literature on Arabic cultural values and world views. The final composite guidelines from Chapters Five and Six are presented and are specific for this context. A learning environment is developed using the design principles, including the context specific design guidelines.

Phase Three: Iterative cycles of testing and refinement of solutions in practice

Please see print copy for Figure 3.4

Figure 3.4: Iterative phase of Design-based Research (Reeves 2006)

The iterative phase involves testing and refinement of the design guidelines and learning design as is depicted in Figure 3.5. This was carried out in two online courses. The first implementation of the guidelines and learning design occurred between February and May of 2006 and is described in Chapter Seven. The second implementation occurred between September and December 2006, and is described in Chapter Eight.

Before the research started, tools and templates were selected and prepared for data collection and analysis that would use a case study strategy. The first implementation as described in Chapter Seven was on three case studies and used three iterations for collection and analysis of data, followed by modifications to the guidelines and the learning design. The second implementation, as described in Chapter Eight, was on six case studies with two iterations.

In each of the research cycles, the data collected was analysed for each case study, and then the conclusions were compared between each case. These findings were then
used to refine the design guidelines that had been proposed in Chapter Six. The modified guidelines were then used to modify the learning environment. The next cycle of research could then evaluate the effectiveness of the modifications. Therefore each cycle resulted in further modifications to the design guidelines and the learning design; these changes were dependent on the learning preferences of the cases studied and were also dependent on the theoretical basis of the guidelines. Therefore both the application of design guidelines and the practice were refined, and by each other.

The outcome of this implementation phase was two products: the refined design guidelines and a refined online learning environment.

**Phase Four: Reflection on the design solution**

![Please see print copy for Figure 3.5](image)

**Figure 3.5: Reflection phase of Design-based Research (Reeves 2006, p. 59)**

In this final phase, the tested and refined design products are presented, following the Design-based Research concepts shown in Figure 3.6. This solution includes the design guidelines and learning design that have been iteratively modified to more accurately reflect the cultural preferences of the learners in an Omani learning environment.

The solution is reflected on identify how cultural values are evident in the refined guidelines and learning environment. The analysis of the design guidelines also provides evidence on the impact of culture on learning. This is also discussed as its significance determines the importance of this design solution, and of continuing research.
Conclusion

To respond to the research question of how online learning environments can be designed for Omani contexts, a research approach was selected that provides a theoretically practical and useable solution that could meet the aims and objectives of this investigation. For this reason, a Design-based Research approach was selected. This chapter describes how this research approach can be used to direct the development of a solution that is tested and refined in a genuine learning environment, and therefore be a useful and practical solution for teaching and learning problems. A case study strategy was presented as the means for data collection and analysis since this strategy is compatible with the concepts of Design-based Research. As this research approach is used for the entire research, the four phases used in the study are also used for the design of this thesis, as was outlined in this chapter.

Chapters Four to Six will describe the second phase of this research: the proposal of a solution that is based on existing models, and developed from a review of the literature.
Chapter 4: Developing a Design Solution

Introduction

This thesis explores how learning environments can be designed for an Omani context so that online learning can be used effectively to address issues of quality and access in higher education. In Chapter Two, the context and nature of the problem was characterised in relation to the Omani context, the benefits of using online learning to respond to the issues of quality and access in learning, and the need for a learning design that can account for learners' cultural preferences. The process of investigation was outlined in Chapter Three, and it described the second phase of this investigation that begins in this chapter with the development of an initial design solution. This initial solution is theoretical. The first step is an analysis of existing models and principles to identify concepts so that this solution can be built on previous models. These concepts are used as criteria for the next step which is an analysis of relevant theories in the literature to extract principles for a design solution. The chapter concludes with the presentation of the draft design principles.

Existing Models and Principles

Several articles written between 1996 and 2000 called for cultural models for appropriate online learning design. Some models and guidelines were proposed as a response to this need, and these will be analysed to extract concepts for the development of a design solution for this investigation.

Henderson's Multiple Cultural Model

Henderson (1996) developed a Multiple Cultural Model, because of the effect of culture on learning, and the need to provide equity in learning for those from diverse cultural backgrounds. She notes that no instruction design is culturally neutral, that learning is imbued with cultural values, yet this has received “little attention in the
education technology and instructional design literature” (p. 85). Wild and Henderson (1997) also comment that there has been a lack of thought for “appropriate pedagogic design models” (p. 180) for learners of different cultural backgrounds learning in an online medium. Henderson (1996) developed her Multiple Cultural Model, based on a 14 dimension Model of Pedagogic Dimensions developed by Reeves (1992). Reeve’s model was designed to be a more effective means of analysing the pedagogical basis of authoring tools, in comparison to the most common focus of the media elements. He describes 14 different pedagogical aspects of technology design, with each having a value on a continuum, for example epistemology, with objectivism and constructivism extremes, or goal orientation ranging from sharply focused to unfocused. These dimensions can then be used to evaluate educational technology. Henderson (1996) proposes that this model can be applied to cultural appropriate courses, and she developed this model by adding further dimensions. Henderson (1996) explains that different cultural values would result in preferences for different positions on the continuum for each of Reeve's dimensions, and that instruction can be designed eclectically, to enable learners to choose a pathway that was suitable to their own ways of learning. In this way, cultural values are considered within the integral part of instructional design. Henderson's model considers the impact of culture on learning, has a comprehensive pedagogically based response, and provides flexibility for a wide range of different cultural preferences.

**Collis’s design guidelines for culture-related flexibility**

Collis (1999) comments that

> There appears to be little research yet that systematically relates design decisions for WWW-based course-support sites and systems to cultural appropriateness, builds upon this analysis to suggest design guidelines to make such sites and systems culturally appropriate, puts the guidelines into action in an institutional settings, and gets enough data to evaluate its proposals. (p. 204)

In response to this concern, Collis (1999) developed guidelines for designing flexibility in instruction design, based on Henderson’s (1996) model and in her own
model that was developed in previous research (Collis et al, 1997). Collis et al’s (1997) model was developed to provide flexibility in a large number of dimensions, in a similar manner to Henderson’s (1996). Collis et al's (1997) model was developed for teaching online and the dimensions concerned issues such as time, level, size and assessment standards. Although they identify these dimensions as significant aspects in learning design, Collis et al do note that it may be difficult implement all of these. In a later paper, Collis (1999) comments that they had found teachers tended to implement only a few of the dimensions. Based on these models and from her experience, Collis developed ten guidelines that she believes would be appropriate for culturally suitable online design. These guidelines appear to be more practical and usable than her Flexibility Dimensions that were proposed previously, perhaps in consideration of her findings of how teachers used them. These guidelines recommend flexibility in the type, delivery and presentation of course resource materials, variety in the roles of teachers and students and, as well, in the manner and tools of interaction and group work. Collis and her colleagues implemented these guidelines in over 30 courses, and found that the use of a flexible approach in these courses was satisfactory for both instructors and students.

**McLoughlin and Oliver's culturally inclusive design principles**

McLoughlin and Oliver (2000) further developed the concepts proposed by Henderson (1996), Collis (1999) and others, with the proposal of a culturally inclusive design principles. They emphasize the importance of a pedagogical approach that allows for cultural differences and the need for appropriate instructional design that would encourage participation of learners, regardless of cultural background. McLoughlin and Oliver (2000) added to the concept of using a pedagogical basis by proposing the use of learning designs with more active learning principles, such as the sociocultural or situated cognition theories. These, they state, can ensure flexibility and meet learner needs. It is interesting to note that Henderson (1996) comments that if learning theories such as the instructivist ones are selected as a basis for instruction design, then the cultural context is often “relegated to a variable of insignificance” (p. 90) as these focus on the content or problem, not on the social environment as is attributed to Vygotsky’s sociocultural theories. This would mean that a sociocultural approach may be effective as it emphasises the social environment in learning, and
consequently gives culture a significant place in the learning design. This concept is not further developed in Henderson’ model, but it is in McLoughlin’s (1999) work. In her research on indigenous Australian communities she found that learning within a sociocultural framework of socially situated learning provided a successful learning experience. This is further developed in McLoughlin and Oliver’s (2000) culturally inclusive instructional design principles. Some of these design principles build on the flexibility concepts of the Collis at al’s (1997) model in recommending flexibility in resources, and student and teacher roles; but other concepts are based on sociocultural theories, such as using communities of practice, authentic activities, and collaborative tasks. McLoughlin and Oliver therefore build on previous models that have a pedagogical basis but further develop them in that they use the sociocultural theory recommended by Henderson to give more significance to cultural values in the learning environment. This was found by McLoughlin (1999) to be a successful approach in their studies and also supported the concepts of flexibility proposed by Collis et al (1997).

Models and guidelines that propose general recommendations

Other researchers support the use of increased flexibility in the design of learning, for example, that of Joo (1999), Geer (2001), and Ngeow and Kong (2002) whose suggestions include considering different decision-making styles, the use of grammar in conveying meaning differently or the need for flexibility in learning goals. Although some mention the importance of pedagogy, none of these recommendations continue the work that has been discussed in the three previous models and principles.

Building on the existing models

Four main concepts emerged from the analysis of the models and guides that were examined. These concepts will be analysed for the development of criteria as for the development of a theoretical framework for the design solution.

A pedagogical basis
The three models discussed were based on a pedagogical approach for the design of a culturally appropriate learning environments, and as noted, this was also a recommendation of researchers in the field, for example Wild and Henderson (1997) who discuss the lack of thought for “appropriate pedagogic design models” (p. 180). For two models, that of Collis (1997) and Henderson (1996) the pedagogical concept resulted in a large number of dimensions that need to be accounted for in the design of instruction. Collis et al (1999) found that teachers did not use all the dimensions, and proposed a set of guidelines. McLoughlin and Oliver (2000) instead recommend the use of a learning theory as a basis to propose the design of a pedagogically-based learning environment. This resulted in ten guidelines, some being based in concepts of the learning theory, and others in the use of a flexible approach.

These models show that two pedagogical approaches were used to respond to cultural diversity in learners; either through providing diversity in a large number of dimensions or through the use of a learning theory. The use of flexibility dimensions may produce a comprehensive set of variables, but the challenge is in the ability of teachers to apply these effectively to the learning environment. The use of a learning theory as a basis may be able to provide a more practical application and is worth investigating. The challenge in this proposal is as Henderson (1996) comments, that the learning theory must be able to give significance to cultural values in the learning design. Thus the concept of using a learning theory to can apply cultural values to the learning design will be investigated in the development of a design solution for culturally appropriate learning environments.

*Learning Design*

In the models that were examined, Henderson’s (1996) Multiple Cultural Model was eclectic to enable learners to choose their own pathway. In Collis’s (1999) design guidelines, designers are recommended to provide flexibility with resources, and then provide opportunities for students to input into the course design in their own way during the course. McLoughlin and Oliver (2000) developed their ten principles for instruction design from concepts that emerged through researching a particular group of learners; they also recommend that learning be designed within the social constructivist epistemology and within the values of the learners’ social communities.
These models examined are consistent in recognising the need to relate the design of the learning to the values and preferences of the learners in that learning environment. The process for each model is different, Henderson’s (1996) proposes that the learners are evaluated during course implementation and the tasks can be adapted for specific learners, Collis’s (1999) allows learners to contribute to their course, and McLoughlin (1999) promotes research on learners before course design and implementation. Therefore these models identify the importance of using a learning design that can describe how learners’ cultural preferences can be applied to their own learning environment.

*Explaining Cultural Preferences*

Several articles (Dunn and Marinetti, 2005; Ngeow and Kong, 2002; Wild and Henderson, 1997) discuss the need for addressing cultural issues, not only for making the design culturally suitable, but also, as Reeves (1997) states, that the learning environment should be “enriched by the unique values that are inherent in different cultures” (p. 30). This would affirm and support students’ cultural values in the way they prefer to learn. The concepts drawn from this investigation of existing models have recommended the use of a learning theory that can apply cultural values to the learning design, and to the learning environment. This implies that there also needs to be a way to describe or explain the cultural values of the learners.

In the three models investigated, both Henderson's (1996) and Collis's (1997) were designed for multiple cultural student cohorts, therefore their focus is on a flexible or eclectic approach to cater for a variety of learning preferences. By contrast, McLoughlin and Oliver (2000) promote the investigation of the pedagogical aspects of the learners’ communities, and provide a list of questions on their learning preferences. In the ten guidelines that they propose, McLoughlin and Oliver (2000) describe cultural values and learning preferences that emerged from their research for each of these ten guidelines. This enabled them to design a learning environment based on descriptions of cultural values of a particular community.
Investigation of a community’s cultural values should mean that the learning environment can be designed to contain the tools and context that learners prefer to use. Linking the learning preferences to concepts of the learning theory, as McLoughlin and Oliver (2000) did, provides a way to link cultural preferences to learning design for a particular community. However, their model did not describe cultural theories or principles that guided the investigation for identifying these values and preferences of the community. As a learning theory is a preferred means to develop a pedagogical basis, a cultural theory or principles may be a preferred means for explaining cultural values in learning. Therefore these models identify the importance of cultural principles or a theory that can explain cultural preferences in learning which can be applied to the learning design.

Design Guidelines

Collis (1999) comments on the lack of research that uses design decisions for developing guidelines that “puts the guidelines into action in an institutional settings, and gets enough data to evaluate its proposals” (p. 204). This suggests that guidelines can be a practical application of more design principles related to cultural design, and that these guidelines should be used and tested in a real environment. These guidelines could therefore be a link between the theory guiding the model and the environment where the learners are.

All models examined included guidelines, but were developed differently. Henderson’s guidelines concern how the Multiple Cultural Model should be used, for example, which school cultures should be included in the model. Collis’s (1999) guidelines followed on from her Flexibility Model. It may be that Collis (1999) found that although the model developed previously (Collis et al 1997) was pedagogically sound, it was not well used by many teachers, and therefore a more practical application of her model was needed. The guidelines proposed in her later paper follow the same concepts of her and others’ models, as well as from her experience working with students from diverse cultural background. McLoughlin and Oliver (2000) developed their ten guidelines based on their knowledge of the learners’ cultural background as it related to learning issues, and also on empirical work on learners from the same community.
All three models show a relationship between theory, practical guidelines, research, and a genuine context of use. For Collis (1999), and for McLoughlin and Oliver (2000), the research and experience were used to develop the guidelines, but it is not stated if formative evaluation was used to further shape either the practical guidelines or theories and principles that were previously developed. Collis’s (1999) comment on the need for data to evaluate proposals suggests a more explicit relationship between the guidelines, the theories, and the practical environment, and would also provide a stronger argument in support of design models that are developed. Therefore a key concept identified in these models is the use of guidelines that can apply theory in a practical way and be evaluated in a genuine environment.

Table 4.1: Summary of Existing Models and Guidelines

<table>
<thead>
<tr>
<th>Pedagogical basis</th>
<th>Henderson's Model</th>
<th>Collis's Guidelines</th>
<th>McLoughlin and Oliver's Principles</th>
<th>Concept developed in Design Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Design</td>
<td>Diversity through many dimensions</td>
<td>Diversity through many dimensions</td>
<td>Based on a learning theory</td>
<td>Should use a learning theory</td>
</tr>
<tr>
<td>Explaining cultural preferences</td>
<td>Eclectic for learners to choose own pathway</td>
<td>Flexibility with resources, and learners contribute to the course design</td>
<td>Based on a sociocontractivist epistemology and on values of learners' communities</td>
<td>Should describe how cultural preferences can be applied to the learning environment.</td>
</tr>
<tr>
<td>Guidelines</td>
<td>Flexible approach for multiple cultural student cohorts</td>
<td>Flexible approach for multiple cultural student cohorts</td>
<td>Used questions to identify learners' preferences</td>
<td>Use a model or theory to explain cultural preferences</td>
</tr>
</tbody>
</table>

Table 4.1 summarises the key concepts identified in these models and guidelines. These are used as criteria for the development of the design solution.

**Criteria for the development of the design solution**

Analyses of existing models and comments from researchers, in the field have resulting in the identification of four concepts that can be used to guide further investigation for a design solution.
1. A pedagogical basis: The design solution should have a pedagogical basis that links to learning design and cultural preferences in learning. This requires established learning theories that describe how learning occurs and can inform learning design. These can inform the design of the learning, and therefore be able to link culture, learning design and theory.

2. Learning Design: The principles should include a learning design that can describe how cultural preferences can be applied to the learning environment. The learning design should also be based on a learning theory.

3. Cultural preferences: There should be a theory or model that can explain cultural preferences in learning for different communities or contexts. These descriptions should be able to inform the learning design.

4. Guidelines: Design principles should be able to be used in different situations. That is, they should be a practical means to direct the design of learning environments for individual contexts. These guides should be evaluated in each context of use.

**Analysing the Literature to Develop a Design Solution**

Four design criteria have been developed from existing models, and these will be used to develop a design solution in the investigation of how learning can be designed in a way that considers cultural values and enables a successful learning experience. These concepts all concern theory; therefore relevant theory in the literature will now be analysed to identify principles that may be used as a theoretical framework for the design solution.

**A learning theory**

The criteria for design principles recommended that the learning theory selected be an established one, as it would provide credibility for the principles. This selection involved the analysis of established learning theories; that they should be able to
explain cultural values and preferences, and be able to link them to the learning design.

*Behaviourist theories*

Early theories conceptualised learning as an observable trait, where learning is a result of a cause and effect process. Early theorists such as Ivan Pavlov, John Watson and Edward Thorndike used animal experiments in their studies and proposed that learning was the result of conditioned responses and could be seen as observable behaviours; these were called the Behaviourist theories. Thus, teaching could be seen as a measured approach, where the stimulus was given, and the learner would eventually develop the appropriate response through programmed learning. If the learner could not produce the response required, then the teaching would be adapted and repeated until there was the expected response (Mergel, 1998). This approach to teaching focuses on the external behaviours without acknowledging the need to consider the mental processes occurring during learning, or the ability of the individuality of the learner. As this approach focuses on the resultant behaviour of the learners, it is called the behaviourist approach.

*Suitability of Behaviourist theories*

These theories are established learning theories, however, they are not generally perceived as the best description for how learning occurs, partly because they are concerned only with the stimulus, or teaching material, and do not account for the cognitive processes in learning. Therefore learning design based on these principles would not account for cultural values of the learner or the context, as these are not considered in Behaviourist theories. This also means that the learning design would focus only on content and not on the manner of response by the learner during the instruction. As the evaluation criteria include the requirements of theories that can link to culture and to the learning design, these theories are not suitable for the design solution for this study.

*Cognitive Theories*
The growing awareness of the inability of the Behaviourist theories to account for the cognitive component in learning led to the development of Cognitive theories by Jean Piaget, Edward Tolman and others. Piaget proposed that cognitive skills developed from childhood, and develop automatically through four different stages of maturity as the learner interacts in the environment and learns to deal with cognitive conflict. The first two stages, sensorimotor and pre-operational, occur during early childhood. The second two are concrete operational and formal operational (Huitt & Hummel, 2003).

Some of these theories were developed as early as the nineteen twenties but did not have their impact on teaching and learning until approximately forty years later (Mergel, 1998). They propose that knowledge is made of symbolic representations that the learner organises into mental structures or schema in their mind. These theories attempt to describe the internal cognitive processes that occur during learning, but they do not consider how the learner responds to and processes the knowledge that is then built into the schema. Therefore instruction design based on this approach would not be able to describe different tools or processes that different learners may need to develop cognition. These theories propose that new knowledge is built on previous knowledge and that the learner’s prior knowledge is important in understanding their learning. Also, they do not consider the learning context, that is, the effect of other people or the type of activities the learner is involved in. Behaviourist and Cognitive theories differ in that one focuses on observable behaviours and the other on the internal processes but are similar in that they both aim to transfer or map knowledge into a learners mind and teach to a defined outcome. As well, neither considers how the learner responds during the learning process nor do they consider the value of the learning context.

Suitability of Cognitive theories

Cognitive theories are established learning theories, which fulfil the criteria for a pedagogical theory. However, they do not fulfil other criteria. These theories do not explain cultural aspects of learning or link cultural preferences in learning to the learning design. Although cognitive theories do consider the cognitive aspect of learning, it is in the mind structures, not in the manner in which the learner acts to
build knowledge. Culture is related to the practices, meanings and value systems of a community (Gutierrez & Rogoff, 2003; Henderson, 1996). This suggests that theories that relate culture to learning should be able to explain the actions or responses of the learners, for example within a community. As the cognitive theories do not account for these concepts, they are not suitable for the design solution for this study.

*Constructivist approaches to learning*

Constructivist approaches to learning are commonly described along with socioconstructivist theories or that they exemplify the core concepts in socioconstructivism. The position this study takes is that socioconstructivism is a mix of constructivism and sociocultural theories. Therefore the socioconstructivist approach will be examined after the other two have been discussed.

Constructivist views of learning developed out of Piaget’s theories and were further developed by Jerome Bruner, Ernst von Glasersfeld and others. Although the earlier views of cognition in learning proposed a passive role of the learner, more recent research described an active learner. For example, it is now known that cognitive development is not an automatic maturation process, as only a minority of people apparently reach this final stage (Huit & Hummel, 2003). Thus many adult learners may learn by using symbols related to concrete objects only and not to abstract concepts. More recent theories, such as Case’s neo-Piagetian theories (Huitt & Hummel, 2003), proposed that cognitive development occurs within two areas, the general or global cognition; and domain-specific cognition, that is, reasoning skills related to specific areas of learning. It is suggested that the specific skills are used to solve, think and reason in a particular domain, but if there are insufficient specific skills, then the global skills are applied. This means that the cognitive development may be more heterogenous in that some aspects of learning become more developed than others (Kail, 2004). Therefore learners in a particular learning environment may be at different levels of cognitive ability, and each person may have skills with differing levels of maturity. This would suggest that learners would respond to the same environment differently depending on the particular skills required and the learners’ own historical background. The choice of skill application also indicates the active role a learner may have in acquiring learning; that is, it is more than subjecting
learners to knowledge, but that the learner acts on knowledge, or processes it to develop skills.

These theories are significantly different from the Behaviourism and Cognitivism as they assume that learning is an active process. These theories can be described according to the action of the learner and the context where learning takes place.

The Learner: Constructivist theories propose that the learner is active in the learning process; that learning is the result of interaction with a problem, where the learners construct their own knowledge. The key concepts, as described by Glasersfeld (1992 p. 33) are:

- Knowledge concerns a student’s conceptual operations.
- Each individual must construct knowledge.
- Teaching is a social activity, but learning is a private activity.

Knowledge is not transferred passively, but is personally constructed. Glasersfeld (1992) comments that a person learns through trial and error; they must first learn and understand before they can share their constructs with others.

The Learning Context: The context in the Constructivist approach is significant because it provides the means to develop critical thinking skills found in professional practice. The problem is the central element of this context. As Jonassen (2000 p. 63) commented: “problem solving is generally regarded as the most important cognitive activity in everyday and professional contexts”. Therefore an analysis of the types of problems and the response of learners to these problems provides the keys to an effective learning context. For example, it is proposed that authentic problems build the types of skills learners need. These are problems that are ill-defined or ill-structured with “conflicting assumptions, evidence, and opinions” (Schraw et al., 1995 p. 523). This understanding about the nature of problems also explains the meaning of the authentic context of the professional world, that these are contexts that provide the same type of “cognitive challenges” (Jonassen, 1998 p. 221) as in professional practice or are “personally relevant to the learner”(p. 222). That is, the description of the authentic environment concerns only the problem, and not the community or culture that is the setting of the problem.
**Tools in the learning environment:** In this approach, cognitive tools are provided as supports for making learning easier. These are often described as computer tools that are used to “visualise, organise, automate, or supplant thinking skills” (Jonassen, 1998 p. 226). These can include, for example, concept maps, calculators, glossaries. These are supplied in the activity to support the learner in problem-solving or in being able to represent their responses to the learning (Ferry, Hedberg & Harper, 1999).

**Suitability of the constructivist approach**

Constructivist views of learning are an established approach to learning, fulfilling one of the evaluation criteria for design principles. However the constructivist conceptions of learning would preclude it for a design solution. This is firstly because they propose that learning is an individual activity, as exemplified in Glasersfeld’s (1992) comment that a child’s learning is “on the basis of failures and successes of its own actions” (p. 35). This means they would not account for the value of other people in the learning environment, and the significance of their social practices and shared values that describe culture. Secondly, the context of learning is the problem, not the social environment. That is, the focus on the problem does not include how the interaction with others would affect the learning process, and therefore the cultural values and preferences of the learners would not be considered. Finally, the tools that support these learning environments relate to the problem, not to other people in the context and how their support may affect the learning. Therefore as the constructivist approach does not account for cultural aspects in the learning environment and therefore could not link cultural values to the learning environment, it is not suitable for the design solution for this study.

**Sociocultural theories**

These theories developed from the work of Vygotsky and propose that learning is not just an individual matter, but that it is mediated and develops within the social environment (Vygotsky, 1978). As with constructivist approaches, sociocultural theories propose that learning is an active process and that the context has an
important role in learning. However, the nature of the environment and its role in learning are conceptualised differently.

*Learning is mediated:* Both the sociocultural and cognitive theories acknowledge a role of the social environment in learning. In the sociocultural theories, it has a central role, and without which, the “development of the mind is impossible” (Cole & Wertsch, 2001 p. 4). This is because learning is considered not to be an individual matter, but that it is mediated. Vygotsky proposed that cognitive development is not a direct result of activity, but it is indirect; other people such as experts or caregivers must interact with the learner and use mediating tools to facilitate the learning process. Brown, Collins and Duguid (1989) explain that cognitive development occurs as learners begin to use new conceptual knowledge, like a set of new tools, which must be used before they are understood.

*Sociocultural tools:* According to Vygotsky’s sociocultural theory, tools are “psychological” (Vygotsky, 1978 p. 53), and include language, signs, symbols, concepts, texts and mnemonic techniques. The most significant psychological tool is language as it is used to teach tool use and is vital in the process of developing higher psychological functions (Ageyev, 2003; Karpov, 2003; Rogoff, 1990; Sutherland et al, 2004). Mediator tools function in two places. They function first externally in interaction as the expert or parent teaches the learner how to use the tool. These tools, such as concepts, domain language or symbols, are the focus of the interaction because the learners need to understand the meaning and how they can be used. Once the learners understand this, they begin to use these tools in interaction or in other social activities. The second place the tools function is internally. The tools become internalised as the learners begin to use these new concepts and signs to express their thoughts. Therefore tools modify and transform the learners’ thought processes as they use new tools to express their thinking. Thus, these psychological tools do more than support learning or decrease the cognitive load, they become part of the learner’s new thought processes and language (Cole & Wertsch, 2001; John-Steiner & Mahn, 1996).

*The context* for learning therefore is a social environment because mediated learning requires the other people to help learners understand and use the new tools of the
learning domain. As this theory proposes that cognitive development cannot occur without the social environment then the learners must be with people who are more expert in the use of these tools. Therefore the learning environment must have the people who would use these types of tools such as concepts, language, and symbols in a natural and authentic manner. The activity that is part of this environment would also need to be an authentic one, as the type of language used by the people in the environment would be determined by the tasks they would be doing. A further development of this concept is that by Lave and Wenger who described this as a ‘community of practice’, as this is the context where the knowledge is used authentically (J. S. Brown et al., 1989). Here, learners will be able to learn how to use domain knowledge in the same way practitioners would and as they discuss and interact using the domain knowledge the learners require competence. Therefore the type of situation that is required for this interaction is tasks or problems that would normally be done by those in the field.

Zone of Proximal Development (ZPD) describes the type of environment that enables the learner to develop cognitively. When faced with a new situation, the learner needs new or more mature psychological tools and mental structures for this particular activity (Chaiklin, 2003). If the learning environment has the right amount of support from others, then the learner can gain maturity in new tools as they learn to use them in this environment, and the learner is said to be ‘learning in the ZPD’. It is not only the presence of other more mature people that is necessary, but that these people must be able to help the learners develop and enrich the particular psychological tools that are needed, and only when these learners are ready to move to the next stage of development. If these factors are all present, then the learners’ interaction in the social environment is able to help them achieve success in the learning activity, in a way that they could not have done without the social support (Chaiklin, 2003; Karpov, 2003; Kozulin, 2003). The cognitive apprenticeship theory of Collins, Brown and Newman (cited in J. S. Brown et al., 1989) develops this concept; its focus is to make the thinking of the expert visible to help model expert use of knowledge to the learner, again demonstrating the relationship in the theory between the social community, cognitive development and learning.
**Formal learning:** Sociocultural theories propose that ‘learning precedes development’ (Artiles et al., 2000 p. 81). This means that the first step is the learning of the new signs, symbols and concepts that the learners will use in the new learning context. Then secondly, as learners begin to use the tools and internalise them in other activities, the internalisation process modifies the thinking processes and so cognitive development occurs. Karpov (2003) described Vygotsky’s concern that this pre-teaching, or “formal learning” (p. 67) should not be aimed at providing information, but instead to lead and guide development through teaching “scientific knowledge” (p. 67), that is, both conceptual and structural knowledge. Learners must learn how to use these concepts so that when they start working on course activities they may understand how to begin to use and develop the psychological tools they will need.

**Suitability of Vygotsky’s sociocultural theory:**

Vygotsky's theory is suitable for a design solution as it is an established learning theory. It is suitable also because of the value given to the social environment. According to this theory, the social environment is needed for learning to understand how tools are used and to gain competency in the use of these psychological tools. The concept of ZPD supports this, in that it explains the active role of others; they must provide the right type of support at the right stage of development in the learner, or cognitive development will not occur. This central role of the community is compatible with the concepts of culture, which is described as the values and practices of a community (Gutierrez & Rogoff, 2003; Henderson, 1996). The comment that societies are cultures (Chen et al., 1999) would imply that learning within a social community is learning within a culture, a concept supported by Brown et al (1989) who described learning in a situated environment as a process of enculturation. Therefore this theory would be able to provide a link between a cultural theory and learning design, as is required by the criteria for a design solution. Therefore the sociocultural theory is strongly supported as a learning theory and for the development of a design solution for this study.

**Socioconstructivist theories**
The socioconstructivist theories are a commonly used theory. Principles of sociocultural theories and constructivism are often blended together to produce socioconstructivism. Socioconstructivism has been described “as an extension of the constructivist view of personal effort in meaning-making, socio-constructivism theorises that the meaningful construction of knowledge occurs when a learner interacts with other learners” (Low, 2003, para. 2), or similarly as in this definition: “knowledge construction based on previous knowledge and interaction with the social environment” (Synteta, Schneider, Morand, Girardin, Frété & Class, 2003 p. 1). The role of Vygotsky’s work is also not clear in some literature: “Constructivism, derived mainly from the works of Piaget, Bruner, Vygotsky, and Papert” (Nanjappa & Grant, 2003 p. 39), “social constructivism was developed by post-revolutionary Soviet psychologist, Lev Vygotsky” (Teaching Resource Centre, 2006 para. 1). However, as shown on Table 4.2, there are some fundamental differences between sociocultural and constructivist theories, which make it difficult to combine the two theories in teaching and learning practice.

### Table 4.2: Concept comparisons for sociocultural and constructivist theories

<table>
<thead>
<tr>
<th></th>
<th>Constructivist</th>
<th>Sociocultural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of learner</td>
<td>Active</td>
<td>Active</td>
</tr>
<tr>
<td>Learning focus</td>
<td>Develop cognitive skills and knowledge</td>
<td>Develop cognitive skills and knowledge</td>
</tr>
<tr>
<td>Primary place of Learning</td>
<td>In the individual’s mind (the social environment is beneficial)</td>
<td>In social practices (individual responsibility is also important)</td>
</tr>
<tr>
<td>How learning is initiated</td>
<td>Working on problem solving activities</td>
<td>Pre-teaching, and also in providing support in the ZPD</td>
</tr>
<tr>
<td>Context</td>
<td>Ill-structured problem</td>
<td>Problems are normally found in a community</td>
</tr>
<tr>
<td>Steps in learning</td>
<td>Act to learn (action is first)</td>
<td>First learn (learn concepts) then act (use the concepts)</td>
</tr>
<tr>
<td>Role of the activity</td>
<td>Drive learning</td>
<td>Increase competency in tool use.</td>
</tr>
<tr>
<td>Basic Unit</td>
<td>Individual</td>
<td>Individual in social interaction</td>
</tr>
<tr>
<td>Tools</td>
<td>Cognitive tools to help thinking or decrease cognitive load</td>
<td>Psychological tools mediate learning, and are internalised</td>
</tr>
</tbody>
</table>
Table 4.2 shows that the constructivist and sociocultural approaches are not compatible as many of the basic features are different. Ageyev (2003) commented that Vygotsky’s theories “contradict the core values of Western Culture in individualism” (p. 434). As the table shows, the basic unit for learning in constructivist theories is the individual but for sociocultural it is the individual in social action. For the constructivist approach, the learner acts alone first then interacts with others, for the sociocultural approach it is the reverse. In the constructivist theories, action is proposed to result in learning; sociocultural approach proposes learning first then action, and that action develops competency and cognitive development. Some of these differences emphasise different aspects of the learning process, for example the constructivist approach provides a comprehensive explanation of what makes an effective problem, and the sociocultural approach provides a comprehensive explanation of the roles of the social environment. Cobb (1994) comments both these concepts could be used to enhance the learning environment in that sociocultural studies provide “theories of the conditions for the possibility of learning” (p. 18), whereas in the constructivist theories, the focus on the content and process; and therefore learning is a process of “self-organisation” and “enculturation” (p. 18). However, as can be concluded from Table 4.2, there are a significant number of differences in their basic concepts, and a blend of sociocultural and constructivist approaches in course design is not supported as a theory to inform this study, and therefore is not supported for the design solution. Therefore the previous theory, the sociocultural theory is selected as a suitable theory for the design solution for this study.

Selection of a learning theory for the design solution

Vygotsky’s sociocultural theory has been selected as the most suitable learning theory to develop a design solution for this study, as it meets the design criteria. The characteristics identified were:

- It is a learning theory, therefore can inform the learning design for the learning environment.
• It is an established theory, therefore providing reliability in the basis of the theoretical principles or model.

• All concepts of this sociocultural theory, including mediation tools, the learning context and ZPD, all stress the significance of the social context in learning. As cultural values and preferences are found within the community, these theories would be able to link learning design to cultural theories.

A draft principle can be proposed:

• Use Vygotsky’s sociocultural theory to inform the learning design as it is an established learning theory.

Cultural theories

The proposal of a design solution also requires that theories or concepts be selected that can explain cultural preferences in learning, and therefore be used to explain how the learning may be designed for different cultural contexts or communities. Two groups of cultural theories are evaluated in this chapter, multi-cultural communication theories and histocultural theories. These are both established theories that have been frequently applied to the cultural aspects of learning.

Multicultural communication theories: National Characteristics model of Geert Hofstede

The most frequently used cultural model in understanding cultural responses to learning is the of Geert Hofstede (2003). His research from the nineteen sixties produced a list of cultural characteristics that were proposed to affect communication in business relationships between people in a large multi-national company. The study was a survey on over 100,000 people in over 50 countries and was then later validated through further research on students, professionals and others. The analysis of the surveys yielded five different recurring themes amongst the participants, and these characteristics were factorised to show the intensity of that characteristic within each nationality. The five characteristics are described in Table 4.3:
### Table 4.3: Hofstede’s (2003) National Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description of what the characteristic measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power-Distance</td>
<td>The distribution of power and wealth in a nation. Those nations with a high power distance index (PDI) have a hierarchical structure, and roles are prescribed according to the structure. Low PDI means everyone has equal power and opportunity.</td>
</tr>
<tr>
<td>Individualist or</td>
<td>Nations with a high Individualism index assert the rights of the individual. By contrast, a collectivist nation shows close, long-term commitments between members of families, tribes or groups.</td>
</tr>
<tr>
<td>Collectivist</td>
<td></td>
</tr>
<tr>
<td>Masculine or feminine</td>
<td>This measures how competitive and achievement orientated a nation is, that is, how much the nation reflects the western stereotype of male characteristics in business. Nations with high masculinity are proposed to be those that dominate women. Those with low masculinity are nations where there is compassion and nurturance.</td>
</tr>
<tr>
<td>Uncertainty Avoidance</td>
<td>This is a measure of how comfortable a society is with an unstructured environment. It is related to the amount of control in the forms of rules that are accepted within that nation.</td>
</tr>
<tr>
<td>Long Term Orientation</td>
<td>This reflects how much value a society places on tradition, which reflects how easy or difficult it is for the society to change. A high value placed on tradition is described by Hofstede (2003) as an impediment to change.</td>
</tr>
</tbody>
</table>

*Using this theory:* Hofstede’s indicators describe characteristics found in business relationships. Their aim is to increase communication and understanding. For example, people from Arab countries would be rated as having high hierarchical societal structure expectations as their PDI is 80 and the world average is 65. They would be expected to display collectivist values, as the Arab individualism index is 38 where the world average is 64.

*Multicultural Communication Theories: High and Low Context Theory of Edward Hall*

Work that was later related to, and frequently used alongside that of Hofstede is that of Edward Hall. He described cultures or societies as being high or low context, and as polychromatic or monochromatic, as shown in Table 4.4.
Table 4.4: Hall’s high and low context characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low context or high context</td>
<td>Low context cultures are those that do not need the context to provide understanding for a message. A high context culture is one where the members of that society, such as a family, understand the message context and therefore the actual message may need to be less direct or complete (N. Brown, 2001).</td>
</tr>
<tr>
<td>Polychromatic or Monochromatic.</td>
<td>Monochromatic cultures are proposed to prioritise activities over relationships, separate work time from personal time and value time over relationships. They tend not to multitask. Polychromatic cultures are the opposite.</td>
</tr>
</tbody>
</table>

Using this theory  Examples of low context cultures are proposed to be Scandinavia and North America; high context cultures include the Middle East, Japan and China. Middle East, Japan and China are also proposed to be polychromatic (Lindquist et al., 2001). These characteristics imply that countries such as those in the Middle East place a high value on relationships within both the personal and working environments and prefer to communicate in an indirect manner.

Multicultural Communication Theories: Cultural Classification Model of Trompenaars and Hampden-Turner

Fons Trompenaars and Charles Hampden-Turner developed a cultural classification based on surveys on business executives during the 1990s (Dahl, 2004). They developed seven value dimensions, most of which are similar to Hofstede’s cultural dimensions, as represented in Table 4.5:
Table 4.5: Trompenaars and Hampden-Turner’s cultural characteristics

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universalism or particularism</td>
<td>In a universal culture the general rules are more important than relationships. A particularist culture has rules that describe how members should relate to others.</td>
</tr>
<tr>
<td>Achievement versus ascription</td>
<td>This dimension describes how status is given, and is similar to Hofstede’s power distance index which concerns equal opportunity and hierarchical power structure.</td>
</tr>
<tr>
<td>Communitarianism versus individualism</td>
<td>This dimension is virtually identical to Hofstede’s individualism and collectivist index.</td>
</tr>
<tr>
<td>Neutral versus Emotional</td>
<td>This describes how openly emotions are expressed in the society.</td>
</tr>
<tr>
<td>Diffuse or specific</td>
<td>Specific cultures analyse items in a group separately and are concerned with facts and standards; diffuse cultures see the whole picture first then look at the parts.</td>
</tr>
<tr>
<td>Sequential vs. Synchronatic</td>
<td>This dimension is similar to the polychromatic dimension described by Hall, where monochromatic and sequential are similar.</td>
</tr>
<tr>
<td>Internal vs. External</td>
<td>Internal cultures are inner directed, and believe that humans control their own lives. External cultures aim to live in harmony with nature and have a more fatalistic outlook.</td>
</tr>
</tbody>
</table>

**Use of this theory** These indicators are used by businesses to develop a profile of their workplace by using the nationality indexes of individuals in their company. The resulting profile is then used to understand how to work and communicate together. For example, in a study (Berends, 2000), Oman’s score for the internal/external dimension was found to be 11, Japan was 19, United States 32; indicating the Omani culture may be less directed by inner resolutions than people in other cultures.

**Limitations of Multicultural Communication Theories**

These theories are established theories, supported by many years of research and are used extensively in business as a means to enhance multi-cultural communication. Their greatest benefit is that there is data on many different nationalities, for example Hofstede’s research was on more than 55 nationalities. Therefore, in seeking to understand cultural characteristics for any of many nationalities, these models provide
a large pool of knowledge from which to obtain some tentative information. However, these theories have a limited use because:

- The theories have assigned indexes for each nationality concerning the various characteristics, but there may be large differences between different groups who all have the same national background.
- An individual may not respond according to his or her own national background (Hewling, 2005); and it cannot be presumed that a people’s nationality is the prime motivator in the way an individual responds.
- The models describe nationalities, not individuals, and nationality may not describe the different cultures represented in that country, as no country is homogenous.

**Suitability of Multicultural Communication Theories**

These communication models are not suitable for a design solution for how learning can be designed in a way that considers cultural values. Firstly, research indicates that business communication theories are less predictive of peoples’ responses in the online learning environment (Gunawardena et al, 2001). Secondly, they do not explain cultural preferences and worldviews, but attempt to describe characteristics of individuals. Thirdly, they do not explain cultural preferences in learning. Therefore as they do not meet the criteria for design principles, they are not suitable for a design solution for this study.

**Histocultural Theories: Vygotsky’s theory**

Vygotsky’s sociocultural theory is a learning theory, but it is also a cultural theory because it explains how cultural values are passed on to others in a society. This theory proposes that learning requires other people in the process, that “social relations underlie … all higher functions” in learning” (Vygotsky, 1981 p. 163), and, as Brown, Collins and Duguid (1989) explain, learning is more robust when it occurs within the culture of the community of people who use that knowledge. This means that since caregivers or teachers mediate the learning process, they also pass on their own values and worldviews.
The link between learning and culture: Vygotsky’s theory describes the tools and people in the environment as mediators of the learning process. These mediator tools are symbolic artefacts such as signs, symbols, texts, formulae, and language itself, all of which have cultural values. Vygotsky (1978) describes these tools as being found twice, first externally in the interaction with the more experienced person, and second within the learner as a psychological tool that has been internalised and used to express new thinking. These tools are all developed by humans; and therefore learners must be taught how to use them, it does not happen automatically (Hung & Nichani, 2002; Karpov, 2003; Kozulin, 2003). Thus, the relationship between learning and the facilitator or the society is necessary for learning. If the type and structure of the tools used in a society reflect the values of the society, then teachers or caregivers will select the tools that reflect their values. They will then use these in mediating learning and therefore pass on those values to other members of the society (Faiola & Matei, 2005). This may mean that the learning processes and tools used by people reflect the values of their society, and that different societies may use different tools and symbols, and different expectations and procedures in expressing concepts and ideas. This would also suggest that people with different values may approach the same problem in different ways, use different cognitive strategies and may produce different solutions.

Different cultures have different tools and values: There have been several studies that have supported Vygotsky’s theory concerning the relationship between societies’ cultural values and the tools used in the learning process. For example, Nisbett (2003) found that when people from East Asia and the United States observed the same situation they evaluated it differently: where the Asians noticed the background or content, the Americans described the central object. In another study Norenzayan, Smith, Kim and Nisbett (2002) found that when Koreans made predictions about a situation, they included situational factors, whereas the Americans favoured personality factors. In their study, they found that European Americans used reasoning, whereas Chinese and Koreans used more intuitive strategies in a cognitive conflict situation. Yang and Sternberg (1997) found that Taiwanese-Chinese conceptions of intelligence included understanding and relating to others. These studies suggest that learners from different cultural backgrounds focus on different issues in the same situation, and process knowledge differently. Other studies have
shown a link between the values of the society and the way they teach their children. For example, a field study on Mazahua people in Mexico found that knowledge was considered to be that which is “acted out” (De Haan, 2002 p. 36); that knowledge was not considered to be an abstract concept but rather related to “one who knows” (De Haan, 2002 p. 36). Learning in this culture was through work, where parents would create opportunities for their children and where the parents could observe and direct or guide them. Their concepts of knowledge determined the way they taught their children; they understood knowledge as being related to people and therefore learning occurred within the social environment. This supports Vygotsky’s theory that mediators have a key role in the way that learners develop their cognitive processing skills; mediators’ values are reflected in the way they guide the learning process in what they value and how they pass these values on to learners, especially children. Mediators who reflect the values of their community will then pass these on to those they guide and mentor. Thus the social environment and the learning are part of the one system: cognitive development is a “process of acquiring culture” (Cole, 1985 p148) and this may be the means to preserve the community’s cultural values and traditions.

The historical aspect of culture: Vygotsky’s theory is often described as sociohistorical theories because of the historical nature of culture and because an individual’s cognitive development is essentially a historical process (Luria, 1974; Nell, 1999). Cultural practices and values appear slowly in society, building and adapting the previous practices; “everything cultural is historical” commented Scribner (1985 p. 123). Thus according to these theories, the historical background of a culture may provide an understanding of the values and psychological tools used in learning. Luria (1974) proposed that if history affects the cognitive processes, then changes in social organisation may cause changes in these processes. The Russian Cultural Revolution provided an ideal opportunity for him to test this hypothesis. He found people whose villages that had undergone social changes caused by the revolution showed changes in their cognitive processes, in comparison to those in villages untouched by the revolution, proving his theory of the relationship between social organisation of a society, its history and its cognitive processes. Luria’s studies were not well known and were not felt to be of great significance until recently (Cole, 1985; Nell, 1999).
Thus cognitive development concerns acquiring culture. As culture has a historical perspective, cognitive development also has a historical perspective. Luria’s studies showed that social changes in the history of a society affected cognitive development. Therefore, an examination of the social history of a community can describe its cognitive development, that is, which tools and values are preferred and selected. This relationship between history, social organisation and cognitive processing is used by Richard Nisbett to explain why people from different cultures think and process knowledge differently.

**Histocultural theories: Cognition and Culture theories of Nisbett, Luria and others**

Richard Nisbett’s (2003) research used Vygotsky’s theories to explain how cultural values affect cognitive processing, and how historical constraints and factors shaped the cultural values. These research findings can then be used to predict some types of cognitive strategies that may be used by a particular community.

**Social organisation and cognitive processing:** The studies of Nisbett and his colleagues supported those of Luria, showing a relationship between the society’s values and its preferred cognitive strategies. That is, the society’s belief systems influence which cognitive strategies people value and which they select when teaching their children. Therefore the society’s belief systems affect the development of the cognitive processes. In their research, Nisbett, Peng, Choi and Norenzayan (2001) compared two ancient cultures, Greek and Chinese, and found that their social practices were related to their belief systems, and their belief systems affect cognitive processing. Table 4.6 shows some of the social organisation patterns identified, and the belief systems that can be related to them. The two cultures used are different from each other in many aspects; and this contrast highlights the similarity between the social system and belief systems for each culture.
An example of the relationship between their social systems and belief systems is the high value placed on relationships within the ancient Chinese community; this is reflected in their observing objects within their surroundings, and not as an isolated object. This concept is reflected in their cosmic worldview, in that they saw a relationship between events in the heaven and on earth. Their medical practice was also more holistic than present day Western practice; they saw illness as in relation to the entire body, not confined to a specific diseased organ (Nisbett, 2003). By contrast, as shown in Table 4.6, the Greeks favoured individuality within their society, and their analysis of objects was as isolated articles and not within a context. Table 4.6 provides other examples of these relationships. Nisbett also proposed the origins of the social organisation patterns.

*Geography and social organisation patterns:* Nisbett (2003) and Lloyd (1996) both postulated that the differences in social organisation of cultures, such as the Chinese and Greek, can be explained through an understanding of their geographical origins. The ancient Greeks lived by the sea, were engaged individualistic activities such as fishing and came into contact with many other cultures. Individual activities such as debating were highly esteemed, and learning was pursued for its own sake. The
ancient Chinese, by contrast, lived in a more homogeneous situation in their villages where they worked together on farms, and where group harmony would have been important to enable the community to function. This suggests that geography is a key factor in how a society organises their social patterns and expectations; for example if peaceful relationships between people are necessary for the community to function, as was in the rural Chinese society, then it is likely that relationships will be more highly valued than other concerns, and more rules applied to ensure correct and harmonious behaviour between individuals. The geographical setting of the ancient Greek civilisation allowed a more individualistic lifestyle and personal identity was valued, and therefore there was less need to consider expectations and responsibility towards others. Thus the geographical setting can set constraints on the social organisation of the culture that can affect people’s worldviews and values. These views and values are still evident in these two cultures today. Therefore knowledge of the geographical background of a society may be a useful means to predict the belief systems and the cognitive tools used in a particular society today.

Belief systems in ancient writings: Lloyd’s (1996) studies of these two ancient cultures included the writings of their early mathematicians and showed the different ways mathematicians from these two cultures approached their subject. He noted that although a mathematical truth is valid independent of culture, the way the people reasoned or what they focused on was different. For example the Greek mathematicians in the third century AD used an approach demonstrated by Euclid and Aristarchus; where a hypothesis is proposed and “the mathematician proceeds to the strict deductive proof of a sequence of theorems” (Lloyd, 1996 p. 17). By contrast, Chinese mathematician Liu Hui did not solve a particular mathematical problem in the same way, but rather “an explanation of how and why it works” (Lloyd 1996 p. 18). Lloyd noted that Liu Hui believed that solving a problem by itself was “of no practical use” (1996, p. 19); its value was only in its use in another issue. This would imply that for him, knowledge was sought after only when it could provide practical benefit, in contrast to a Greek approach where knowledge was sought after for its own worth. Thus the two cultures, with different belief systems, were shown to use different strategies for the same type of problem. The Greek mathematician, from an analytical abstract individualistic culture, used an analytical abstract method. The Chinese mathematician, from a relationship-oriented culture, as shown in Table 4.6,
used a non-analytical method, and only valued an activity where there was a relationship involved. Therefore their worldviews were reflected in their cognitive processing, and this supports the concept that there is a relationship between the geographical setting, social organisation patterns, worldview, and cognitive processing.

Thus the social and historical basis for cognitive development was originally proposed by Vygotsky and Luria and then later developed by Nisbett and others. An analysis of the social values and the geography that constrained the society can be a means to understand their cognitive processes and strategies. The relationship between culture and cognition has already been described and history has now been identified as a means to determine the origins of the cultural preferences in cognition.

*Suitability of histocultural theories*

Three concepts of the histocultural theories can be used to explain the relationship between culture and learning:

- They explain how communities develop their different cultural preferences and values. This is because the geographical setting of the ancient society placed restrictions on a society’s social organisation patterns and belief systems, and this was a factor that determined its cultural values and worldviews.

- The historical setting of a society can be investigated to identify cultural worldviews and values. This is because these theories describe the society’s cultural values and preferences as having a historical perspective. As they change only slowly over time, these values would still have their effect on the community being investigated.

- The social environment explains how people take on the cultural values and worldview of their community. Within the social environment, experts or caregivers teach learners how to use the psychological tools, signs and symbols. What tools the expert selects and how they are taught depends on what is valued by the expert and the society. Therefore cultural values and practices are passed on to the learners through this relationship in the social environment.
Thus there are three related concepts that can be used to explain the development of cultural values and preferences: geography, history, and the social organisation of the community. The histocultural theories are also the sociocultural learning theories, and therefore the learning concepts from the learning theory perspective can be applied to the cultural perspectives. It was noted that learning is mediated in the social environment, and learners become enculturated, as they take on the signs, symbols and concepts of the social environment in which they are learning and working in (J. S. Brown et al., 1989; Cole & Wertsch, 2001; John-Steiner & Mahn, 1996). As the geography, history, and social organisation patterns determine cultural values, they also must explain the learning processes. Therefore this theory explains how people learn, how learners cultural preferences develop, how cultural preferences are different for different communities, and links learning to cultural preferences.

Selection of a cultural theory for the design solution

The criteria used to develop a design solution proposed that a cultural theory should be able to explain the cultural preferences in learning, and for different communities. Vygotsky’s histocultural theory, as extended by the work of Luria, Nisbett and others, is able to explain cultural preferences in learning, and for different communities, fulfilling the criteria for a cultural theory as a design solution for this study. As Vygotsky’s theory is also an established learning theory that was previously selected for the design solution, this strengthens the support of this theory as for the design solution in explaining cultural preferences in learning. These theories were also strongly favoured in the work of Henderson (1996), and McLoughlin and Oliver (2000) whose work was drawn on in the development of the design criteria.

A second draft principle proposed:

- Use Vygotsky’s sociocultural theory to explain how culture affects learning as it is also a cultural theory.
Learning design

Learning or Instructional design describes the systematic approach used to design the structure of a learning environment, such as in the use of content, interaction, tasks and support. The learning design is an application of beliefs about the learning process and therefore must apply the principles of the learning theories that are supported by the designer.

In this chapter, the sociocultural theories have been selected as the most suitable theory for a design solution. This section will demonstrate how the learning design is affected by the designer’s epistemology, and therefore how the sociocultural theories should be used for culturally suitable learning design.

Instructional Design Approach

Instructional design strategies originated with the work of Robert Gagne (Dick, 2003; Kearsley, 1994). He proposed that learning tasks for intellectual skills should be organised into a hierarchy and used for the design of instruction (Kearsley, 1994):

- Gain attention
- Inform learners of the objectives
- Stimulate recall
- Present the content
- Provide the learning guidance
- Elicit practice
- Provide feedback
- Assess performance
- Enhance retention

A very commonly used model is the ADDIE model, which also breaks the design of instruction into several steps of Analysis, Design, Development, Implementation and Evaluation. Other Instructional Systems Design approaches were developed later to provide a more flexible approach to the ADDIE and Gagne’s models (Mergel, 1998). These models are content focused, and base their evaluations on the ability of the
instruction to enable learners to achieve the predetermined outcome of the course. This is based on behaviourist or cognitive concepts of learning, as they assume that learning is based on how the instruction is designed, and not on how the learner responds. Therefore Instructional Design strategies such as these do not apply concepts of sociocultural learning theories and are not suitable for this study.

Active, student-centred learning designs

More recent design strategies are called ‘learning design’ not ‘instructional design’, indicating the conceptual difference in the approach to teaching and learning:

- Prescriptive instructional design concerns the teaching that is needed to reach course goals. It focuses on content and how it is developed in course design for students to master the knowledge.
- Learning design strategies focus on the learners, what their skill level is, and what support is needed to help them build knowledge and develop competency in the desired skills

Learning design strategies have been developed for applying constructivist concepts to the learning environment, and these will be analysed for their ability to also apply sociocultural concepts.

Constructivist learning:

A constructivist approach proposes that learning occurs while the learner is cognitively active. This means the focus is not the information, but the activity or problem, and therefore the design of the learning should focus on problem solving to develop cognitive skills in the individual.

The tasks: Constructivist learning environments are centred on the tasks or problems learners are required to solve. Once the topics are selected for a particular course, the learning designer develops a problem that will help learners build the skills and domain knowledge required for the course. The problems selected should be seen as worth investigating and representing ill-structured tasks as these build the skills that are needed the professional field of practice (Karagiorgi & Symeou, 2005; Riedel et al., 2003). The problems need to be analysed by the facilitator to determine which
types of cognitive tools will be required to be added into the learning design. If tasks are more complex than the learners may be ready for, Reidal et al. (2003) recommend that instead of making the task simpler, extra support should be provided.

The tools and resources: Constructivist theories propose that learning comes from being actively involved in the task and therefore the concept of using teaching materials or lectures is not supported. Instead, resources should be made available for learners to use if they require them, and these are made part of the learning environment (Jonassen, 1998). These include articles, interviews, and multimedia simulations, web-based materials and other resources for the learning environment. It also contains cognitive tools to support the learning, such as concept maps, glossaries, and calculators that can help learners to visualise the new concepts and help decrease the cognitive load in the tasks. Thus the learning environment is designed to contain all the tools and supports a learner may select from to complete the task. This environment may contain the social interaction which can help learners to get feedback on the new knowledge they have constructed and to adjust each other’s thinking (Glasersfeld, 1992; Jonassen et al., 1995).

Development of the Design: In an online constructivist learning environment, the online course would use an analysis of the learning needs to develop appropriate problems. These problems may be set in a multimedia environment, using multimedia, video or text. The analysis would help to determine what type of cognitive tools and resources should be provided for learners to access if they need them, such as with links or attachments within the problem context. Each course may have one or several problems, and the learner may perform the tasks individually or with some interaction with others.

Suitability of constructivist learning design

Constructivist learning design does not provide the means to apply all the significant concepts of the sociocultural theories. For example, mediated learning and the necessity of the social environment are not considered. According to the sociocultural theories, the social environment is a necessity for learners to learn and practice using the new signs, symbols and concepts being learnt. These elements are not considered
in the constructivist learning design, which is structured for individual learning. Therefore a constructivist learning design is not a suitable learning design for this research, and another strategy must be proposed that can support the concepts of the sociocultural theories so that it may link theory, culture and learning design, as is required by design principle criteria.

*Sociocultural Learning Design:*

Sociocultural theories propose that learning is active, mediated and requires the type of social environment that supports cognitive development; therefore the learning environment requires first the social environment, and then the problem that encourages learning and cognitive development.

*Course Tasks:*

- **Community Tasks:** The sociocultural learning environment centres on the community that would normally use the types of skills and topics of the course. As knowledge is situated in a community that it belongs to (J. S. Brown et al., 1989), the social practices of the people in that environment can enable students to learn to use the new knowledge in their interaction. The social interaction tasks should initially help the students to understand the concepts, signs and language they will use, and later interaction tasks are designed to enable learners to use these concepts or tools to work on the problem and develop competency. Therefore, several interactive tasks are included in the problem presented in the online environment.

Authentic practice may be simple or complex depending on what the learner is ready for, but learning should be embedded in the context and cultural practices of other people in that field. Learners perform authentic activities, with others, and through this, develop the cognitive skills that are necessary to be an effective practitioner in that field. Therefore the designer should select or design problems that are genuine practice and enable learners to function as a community, using the language, signs and symbols that are a normal part of that environment.
• *Individual activities:* Learners also need individual activities where they may work independently and therefore demonstrate their ability to do new tasks without the support of others. This would also be expected in a community; new people would take on the practices of the community and begin to use the signs, symbols and language they have internalised as they have interacted with other community members. Independent activities also show if the learners have internalised and gained some competency with the tools they have been learning how to use and therefore can be a way for the teacher to assess student achievement (Doolittle, 1997). Therefore initial activities should be designed in the social environment, but later activities should be designed as independent learning activities.

*Support:* As sociocultural theories propose that learning is mediated, students need to be analysed according to their maturity in the tools that will be used in the activity, so that the right amount of support is provided.

There are two ways that this support may be provided:

- *Through pre-teaching materials.* These should be accessed before the activity is accessed as sociocultural theories propose that “learning precedes development” (Artiles, Trent & Hoffman-Kipp, 2000 p. 81). This means that initial teaching notes and activities should focus on the meaning and use of the new signs, symbols and concepts that the learners will use in the new learning context. These should include structural knowledge showing learners how to use these concepts so that when they start working on course activities they may understand how to begin to use the tools that they will need for working on in the course problem. This instruction should be designed so that the learner is aware that the knowledge being taught concerns concepts to be used or they may be incorrectly seen as only information to understand (Artiles et al., 2000).

- *Through designing support into the course.* This support is set within the relationships between the learner and the more experienced others. More recent sociocultural theories suggest strategies such as modelling, coaching and scaffolding (J. S. Brown et al., 1989; Rogoff, 1990). Modelling concerns providing examples of expert behaviour that include explanations; coaching
concerns encouragement, diagnosis and direction; and scaffolding is the provision of structure or prompts in the learning environment. These strategies all provide support both within a course structure and through individual or spontaneous feedback to help learners gain mastery in the use of the tools they are learning how to use for the activities they are involved in. This support can be provided in conceptual, metacognitive, procedural, and strategic areas of learning. Hannafin, McCarthy, Hannafin and Radtke (2001) note that conceptual tools guide learners in what to consider and may use graphs for example; metacognitive tools help learners to think about how they manage their learning, for example in how a tool may relate to the goal; procedural tools help with knowing how to perform tasks; and finally strategic tools guide in the analysis of alternative approaches, as in analysis and planning. The teacher may provide this support through hard or soft tools (Saye & Brush, 2002). The hard tools include tools that are designed into the learning, such as scaffolds that are outlines of procedure to take, modelling in examples of how to answer a question, and graphs, maps, symbols or formula. The soft tools are the support, advice and encouragement that are provided in response to the interaction of the learner in course and interactive work, for example, feedback on project work. This means that learning support, involves not only the initial work in course design, but it means an active role for the teacher during the implementation of the course, in tracking the learners to provide timely and suitable feedback, ensuring learners have the scaffolding they need and are using the support provided. Dolittle (1997) comments that this is important in ensuring the learners are working on task, and that each student is ‘both challenged and developing’ (p. 95), that is, is working in their ZPD.

These concepts can be summarised in tabular form as is shown in Table 4.7.
Table 4.7: Concepts used for courses with a sociocultural approach

<table>
<thead>
<tr>
<th>Course Component</th>
<th>Sociocultural course design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aim of Course</td>
<td>• Cognitive development; to learn how to work in the community of practice</td>
</tr>
<tr>
<td>Learning Context</td>
<td>• A problem within a social environment where that knowledge is used</td>
</tr>
<tr>
<td>Instructor’s Role</td>
<td>• Provide support to help learners work in ZPD</td>
</tr>
<tr>
<td></td>
<td>• Help learners understand and use new tools.</td>
</tr>
<tr>
<td>Role of peers</td>
<td>• Provide the social environment where learners develop competency in tool use with each other.</td>
</tr>
<tr>
<td>Initial activity in course (after orientation)</td>
<td>• Provide conceptually based teaching for learners to understand new tools.</td>
</tr>
<tr>
<td>Initial context</td>
<td>• After formal teaching; the social environment</td>
</tr>
</tbody>
</table>

Development of the Learning Design: In the sociocultural online course, the basic format would contain:

- *Development of the problem* is designed within an authentic setting that begins with the social setting of that problem. The problem stages would then be planned out in steps, and include any practical or field work that is part of the problem setting or solution. Initial activities would be interactive between the learners and with the tutor. This may include interactive work to build understanding about the concepts that would be used, then further interactive work on the problem topic to enable learners to begin using the concepts to solve the problems. The final stage for each problem should include an individual activity for learners to express new conceptual thinking without the support of others.

- *Support for learning would begin with initial* activity that introduces learners to the new concepts they will use, for example, teaching notes, or access provided to specific resources that help learners develop understanding of new concepts and language. Support will include several interactive tools such as forums, chats and wikis (online editable documents) so that the learners can relate with each other and the facilitator as they begin to use the tools. The tutor should provide scaffolding, and this should include guides in the design, feedback during project work, and during other parts of the course.
• *Resources should also be designed* into the learning environment that students can access, including articles, databases, and previous solutions.

This learning design strategy is a suitable means for developing a course based on sociocultural theories because it applies concepts of these theories. Therefore, this design strategy provides a link between the learning theory, the learning environment, and cultural preferences.

**Selection of a learning design strategy for the design solution**

Instructional and learning design strategies have been shown to apply learning theory concepts to the design of the instruction. Therefore, the learning design strategy used for this study must be based on the sociocultural theories. Although the constructivist theories have some similarities to sociocultural theories, for example active learning, it was shown that constructivist learning designs do not apply key concepts of the sociocultural theories. Therefore, a sociocultural learning design strategy was proposed based on the key concepts of the sociocultural theory. This also means it meets the criteria for a design solution, in that it can provide a link between cultural preferences and the selected learning theory.

*A third draft principle is proposed:*

• Apply the sociocultural theories to the learning environment through a sociocultural learning design strategy. This can link cultural values and the learning theories to the learning design.

**Application of learning theories to the online environment using five online learning themes**

The sociocultural theory can also be applied to the online environment through five themes or concepts. These concepts describe the online learning process therefore can be used with the learning design strategy. These themes or concepts are: student-centred learning, cognitive strategies, development of social presence, interaction with others; and collaboration (Gunawardena & Zittle, 1996).
Student-centredness

In a sociocultural approach, students learn as they work together with others and supported by the facilitator in a cognitively active environment. This means that students need to learn how to use the online social environment to develop their cognitive skills and to contribute to others in the learning process. It also means that the learners need to use the authentic tasks provided as a means to be actively involved in learning. These are different expectations from traditional classes where student receive information passively. In student-centred learning, students learn to work both collaboratively and independently. Land and Hannifin (1996 p. 396) comment that these types of learning environments can help learners “address their unique learning interests and needs and deepen learning”. However, to be able to achieve this type of learning, learners need to develop skills that help them learn from sources other than the teacher. Student centred learning therefore usually means different roles for both the student and the instructor, as learners develop these types of skills.

Cognitive Strategies

The goal of learning is cognitive development. This is achieved initially in the social environment, and then in the individual’s mind (Vygotsky, 1978). Learners first need to understand the tools they will use, and then ability and competency is developed as learners engage in meaningful authentic tasks. During these activities, the psychological tools are internalised, and learners use the tools to express their new thinking as they solve authentic problems (Chaiklin, 2003; Karpov, 2003; Kozulin, 2003). Mediators can support the learning through various means such as scaffolding, examples or any support or guides that help the learning process, such as related cases, graphic representations, simulations and social interactivity (Saye & Brush, 2001). Therefore, the learners need to understand the tools they will be using, and have the right amount and type of support needed to help them develop cognitively. As tools mediate or support learning, they must be able to “engage students actively, support a deep approach to learning, provide support for a student to articulate his or her knowledge, be embedded in the educational environment with a particular educational intent” (Kennedy & McNaught, 2001 p. 926).
Social Presence

Sociocultural theories propose that learning is mediated; therefore interaction is vital in the learning process. A sense of community is important to help learners feel comfortable in sharing their new learning and in learning from others. However, the technology of the online environment can form a barrier that makes it difficult for learners to relate socially, therefore decreasing learning potential. This means that it is very important to understand how this barrier can be overcome so that a social community may develop and be supported.

The Social Presence theory was proposed by Short, Williams and Christie (1976) and defined as “the degree of salience of the other person in the interaction” (p. 64). Salience can be described as being composed of two factors, that of intimacy and immediacy (Gunawardena & Zittle, 1997; Short et al., 1976; Tu, 2001). If a conversation occurs in an immediate environment such as a face-to-face situation, people feel less comfortable talking about intimate topics. However, where the environment, such as a text-based one provides for less immediacy, people respond with more intimate language to develop the closeness of contact they desire. As presence is a perceived concept, different learners may feel different amounts of social presence in the same environment. When high social presence is perceived, learners see the technical environment as warm and friendly; and a caring community of learners can be supported. Studies have shown that this environment affects the way people communicate and respond to each other (Birnie & Horvath, 2002; H. Wang, 2004); this means it affects their learning, as sociocultural theories propose that the social environment is necessary for learning.

Interaction

Interaction provides the medium for developing social presence and therefore enabling the development of the social aspect of the learning environment that is central in the sociocultural theories of learning.

Interaction essentially is the response to others’ communication. In the online environment, it is more than just posting a comment on the discussion board; “using
threads to post mini essays is not a response” (Dennen, 2005 p. 136). Henri (1995) described people’s responses as being either independent or dependent of others’ contributions, with dependent comments referring either directly or indirectly to what others have said. It is these dependent responses to others that are the essential feature of interaction, as this provides the medium for developing the other online concepts already stated. Weekly independent contributions to a board cannot provide the same learning environment as those where interaction develops as participants respond to others comments and thoughts.

Collaboration

Collaboration can be defined as sharing at a conceptual level; working together for a “shared concept of a problem” where learners “jointly clarify their reasoning process” (Paulus, 2005 pp 112, 113), with a “development of shared meaning” (Moallem, 2003 p 100). Cooperative learning concerns shared tasks: with “a coordinated effort to reach a shared goal” (Zhang & Carr-Chellman, 2001 p 153), in “a particularly complex and lengthy team-based task with a primary tangible outcome” (Lambert, 2003 p 296). Both of these types of activities are used in sociocultural learning environments because both teamwork and collaborative work are found in many professional communities. Working within a community enables learners to develop their understanding of the concepts and symbols used in course tasks, and enables learners to develop competency in concept use as these are internalised through tool use in interaction. Conceptual interaction and development of shared meaning is also a means to help learners to develop cognitively, as those in the group who have more expertise in particular areas of the task provide support for others.

Use of the five online learning themes for the design solution

These descriptions show that the five themes may be a means to express or apply teaching and learning concepts of the sociocultural learning theory in the learning environment. As can be seen from the descriptions, these themes explain the practical ways of how people may use the online environment and what concepts may be important. However the descriptions do not explain how the learners respond in the online environment or what helps them learn effectively. Therefore an investigation is
required to identify these responses in previous empirical research. These finding may help determine what the key issues may be in how people prefer to learn online. If this data is analysed within each of these themes it could be used to inform the design of the learning environment in a practical way. This should be proposed in the design solution so it can be investigated.

Thus, the five themes apply the sociocultural theories to the online environment and may also be a framework for analysing learners’ preferences in online learning.

A fourth draft design principle can be proposed
- Use the five online themes as a framework for analysing learners’ responses to the online environment. These themes are a teaching and learning application of Vygotsky’s sociocultural theories.

Initial Design Solution

The analysis of relevant theory in the literature for a design solution resulted in the proposal of four draft design principles. These principles are proposed as the initial steps in the formation of a design solution that needs to be further explored:

1. Use Vygotsky’s sociocultural theory to inform the learning design as it is an established learning theory.
2. Use Vygotsky’s sociocultural theory to explain how culture affects learning as it is also a cultural theory.
3. Apply the sociocultural theories to the learning environment through a sociocultural learning design strategy. This can link cultural values and the learning theories to the learning design.
4. Use the five online themes as a framework for analysing learners’ responses to the online environment. These are a teaching and learning application of Vygotsky’s sociocultural theories.

These design principles are conceptualised as shown in Figure 4. 1, numbers in the figure relating to four design principles listed above.
The draft design principles that are emerging as a design solution, as shown in Figure 4.1, consist of two components: theoretical and application. The theoretical components, as shown on the left side of Figure 4.1 concern the sociocultural theories that form the theoretical basis for the draft principles, and as they inform the learning design strategy, cultural aspects and the online themes. The practical components of these draft principles, as shown on the right side of Figure 4.1, concern the proposed use of the learner preferences to inform the learning environment, through the use of the five online learning themes. Thus the initial design solution has being developed into draft principles that built on existing models. This emerging solution needs further investigation to test the proposal and to consolidate it before it is used in a specific context in the Sultanate of Oman.

Conclusion

In this chapter, the first step was made in the investigation for a design solution to respond to the problem of how online learning can be designed in a way that considers cultural values. Existing design models were examined and four key concepts emerged as criteria for effective design solutions. These were used in an analysis of relevant theory in the literature, and four draft principles were proposed as an initial emerging design solution.
All four draft principles are based in Vygotsky's sociocultural theory which was selected through an analysis of the literature and based on the existing models. It was found that this theory met the design criteria in the analyses for the most suitable learning theory, learning design strategy, and cultural theory, thereby providing strong support for this theory as a sound basis for the design solution.

The draft principles, as a design solution, propose that empirical research in the literature be used to analyse learners’ responses in the online environment. This may be a means to identify their preferences and then to apply them to the learning environment. It proposes that the five online themes of the sociocultural theories be used to be a theoretical framework for this analysis. This next stage of exploration of the design solution is described in Chapter Five. It describes preferences that are identified in learners from diverse cultural background, and how the design solution is refined and consolidated through this analysis.
Chapter 5: Exploration and Consolidation of the Design Solution

Introduction

In Chapter Four, draft design principles were proposed as a solution to the problem of how learning environments can be designed in a way that considers cultural values and enables a successful learning experience. This initial solution was proposed from an analysis of the literature, using criteria developed from existing design models and principles.

This design solution is based on Vygotsky’s sociocultural theory and proposes that empirical research should be used to identify learners’ preferences for developing guidelines to inform the learning design. General research literature with online learners, as well as research literature with learners from diverse cultural backgrounds is analysed to determine if the empirical research can yield data on how learners respond to the environment, and if these findings can be used to develop guidelines. This analysis will also show the potential of the design solution to be able to identify cultural preferences in the learners.

Also in this chapter, guidelines are proposed that will be used in the empirical stage of the research will be presented Chapters Seven and Eight. The ability to create guidelines from empirical research results in a modification of the design solution and proposes that guidelines are the key concept of a design solution for the development of culturally appropriate learning environments.

Exploring Online Themes and Learner Preferences

The draft principles propose that the five online learning themes can be used as a framework to analyse learners’ responses to the online environment. This concept is explored through an analysis of empirical findings in the literature from online learners, and preferences are identified from the learners in each of the five themes.
The learning preferences are proposed as guidelines to describe how online learning should be designed.

**Using online learning themes as a framework for learner preferences**

Empirical findings in the literature were analysed to determine what features in the design of courses encouraged learning, and what features decreased the amount or quality of the learning for the students who were investigated. Five online themes of the sociocultural theories are explained as these themes will be aligned to an analysis of research on learner preferences.

**Social Presence**

Social presence is a perceived indicator of the sense of reality of others in the class. This concept is found where technology is used in learning as its interface provides a barrier that learners must overcome to be able to learn. The following concepts found in the literature describe the response of learners to the different communicative tools and therefore this may describe how effective social presence may be developed.

*The use of different interactive tools:* Tu (2002) designed an instrument to describe and measure social presence. This was used with teachers and he found that the social context, online communication, interactivity and sense of privacy were important factors in developing social presence. He then found that social presence could be developed in the three communication modes he studied, with emails providing the highest social context and forums the lowest. Chat and emails gave the highest rating for interactivity. Although these findings have been described as “only the first stage” (Tu, 2002 p. 44) in exploring this concept, these are still useful findings. The results on the variables for each social presence characteristic showed that people respond differently to the three media; that is, the media meet different needs. In this context, all communication media should be used to help develop a sense of social presence online.
The importance of affective responses: Rourke, Anderson, Garrison and Archer (2001) define social presence as “the ability to project themselves socially and affectively into a community of inquirers” (abstract). Consequently their study examined expressions of interactive, affective and cohesive responses in discussion transcripts. They developed a tool that could be used to measure or describe the amount of social presence in a discussion conference. This may have benefit in describing which aspects to look for in a discussion forum to indicate that participants are using the right approach to building social presence. However, it does not take into account other communication tools that help build social presence, nor the fact that presence is a perceived concept. They found that the amount of affective responses was an indicator of high social presence, therefore this type of communication should be encouraged in online courses, and its lack can indicate to the facilitator that the students may need more support.

Maintaining social presence and developing use of affective language: Swan (2002) studied verbal immediacy; that is, the affective language that is used for people to project themselves into a medium. She found that graduate students in her online course used many types of verbal immediacy behaviours throughout the course, and this enabled social presence to be developed and maintained throughout the course. That is, social presence is important not only in the beginning of the course, but should be nurtured throughout the course to maintain the sense of community.

Social networks: Some studies have shown that classroom social networks have a significant impact (Wegerif, 1998; H.-L. Yang & Tang, 2003), therefore participants should be encouraged to enrol in online courses with people they already know, or work together in groups with those in their class with whom they already have a relationship.

Students need to cross a threshold to participate: Participants were found to need to cross a threshold in the amount of online interaction before the course became a warm and welcoming place to study (Wegerif, 1998; H.-L. Yang & Tang, 2003). Those who
do not interact sufficiently do not cross the threshold and they then find the environment unfriendly. Thus sufficient interaction needs to be developed for participants to develop social presence and a caring community.

Teacher immediacy describes the behaviours and responses of instructors as they relate to their students, that is, behaviours by the teacher that signal “positive regard and warmth between people, and communicate interpersonal involvement and inclusion” (Hess & Smythe, 2001 p. 199). Studies have shown moderate correlation between teacher immediacy behaviours and perceived learning in online environments (Arbaugh, 2001; Baker, 2004; Jiang & Ting, 2000; Richardson & Swan, 2003; Richardson & Ting, 1999). A comparative study by Richardson and Tring (1999) on postgraduate online and classroom learners showed that compared to the classroom-based learners, a significantly higher number of online learners found the response of the tutor important. This implies that teacher immediacy behaviours are even more important in the online environment. Therefore, teachers need to show immediacy behaviours in the online environment to support the learners.

A link between social presence and deeper learning skills Picciano’s (2002) study compared social presence and interaction with performance. Although he found no relationship with the end of semester exams, there was a positive relationship with performance in tests that were based on more constructivist objectives, thus demonstrating a link between interaction, social presence and deeper learning skills.

Using the findings from the literature review The literature review found six concepts that explain what encouraged the development of social presence in the learners who were investigated. These concepts describe what features students found were important in the design of a course to make the presence of others appear to be more real to them and what the teacher’s responsibilities are during the implementation of a course. These six concepts can be used as guidelines to suggest that features should be designed for developing effective social presence, as presented in Table 5.1.
Table 5.1 Social presence guidelines

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use discussion forums, chat and email</td>
<td>These interactive tools provide different amounts privacy, interactivity, and communication. Different learners have been found to respond differently to each tool, so all should be provided</td>
<td>Tu, 2002;</td>
</tr>
<tr>
<td>2</td>
<td>Use social networks of the classroom</td>
<td>Previous networks have been found to positively impact the development of social presence, therefore these should be used to develop relationships online.</td>
<td>Wegerif, 1998; H.-L. Yang &amp; Tang, 2003</td>
</tr>
<tr>
<td>3</td>
<td>Encourage interaction</td>
<td>Minimal interaction results in low social presence. Those who do not interact sufficiently do not cross the threshold and find the environment unfriendly</td>
<td>Wegerif, 1998</td>
</tr>
<tr>
<td>4</td>
<td>Develop and maintain social presence throughout the length of a course</td>
<td>A positive relationship has been found between social presence, interaction and performance in tests based on skill-based objectives, therefore maintaining social presence can increase learning outcomes</td>
<td>Picciano, 2002</td>
</tr>
<tr>
<td>5</td>
<td>Help provide an environment where affective language is used</td>
<td>The use of emotional language can enable learners to project themselves into a course and it was found that this helps maintain social presence throughout the course.</td>
<td>Swan, 2002</td>
</tr>
<tr>
<td>6</td>
<td>Teachers should use immediacy behaviours.</td>
<td>This affects student emotional response to the course and their perceived learning. Teacher immediacy behaviours are more important in the online environment compared to classroom teaching.</td>
<td>Durrington &amp; Yu, 2004; Picciano, 2002; Richardson &amp; Swan, 2003; Wegerif, 1998; H.-L. Yang &amp; Tang, 2003</td>
</tr>
</tbody>
</table>

Interaction Online

Interaction provides the medium for cognitive skill development, social presence and collaboration. Therefore good interaction enables these other learning concepts to be developed.

Interaction should be integral to the course. Courses that had the online component or online interaction as an optional activity showed minimal student response. In a study (Fung, 2004) on one self-instruction, theory-based distance education course the online component was optional. Of the 60 students, only 18 used the online component with only two of those being active, and most postings were not content related. Ng and Murphy’s (2005) study had similar results. The online discussion
postings were optional, and of the 20 post graduate students on their course, only six posted a total of 72 responses, with only three being interactive. By contrast, courses that had interaction as an integral part of the design generally showed higher levels of interaction amongst their students. This is particularly noticeable in Dennen’s (2005) study. She compared nine different online courses, mainly undergraduate, and showed that those where discussions were part of the course structure, such as for assignments, there was significantly more interaction than in the other online courses. Schiller (2003) and Poole (2000) also found good interaction in their courses that were designed to include collaborative work. Thus, using discussions in online courses starts with good instruction design. The discussion boards or chat rooms should be used as a tool to help meet course objectives or learning outcomes. These activities may include collaborative work or class discussions. The questions, as Dennen (2005) found, need to be clear and allow for everyone to be able to discuss their opinions. The courses that used this learning design stimulated the greatest amount of interaction.

Training students in using the discussion forum: Sorenson and Baylen (2004) compared two post graduate courses, and found one with significant interaction and the other with minimal. The interactive course had good instruction design but also had training for the students in how to use the discussion boards, resulting in effective interaction. The course that had no moderator training showed a significantly fewer number of postings, with most of these being off the topic or not based on a response to others postings. Wozniak and Silveira (2004) used online case studies in their science course but found that although the students enjoyed it and there was interaction, there was not much individual thinking, and many of the posts were related to the course structure. They then trained their students how to use the discussion boards. They found that the amount of interactive thinking increased from 6% of the total number of posts to 47%. The students also displayed deeper responses and built on each other’s contributions. Therefore training students in the use of discussion forums can increase the quality of interaction.
Using students as moderators: Poole (2000) and Wozniak and Silveria (2004) also used trained student moderators and found this was also an effective means to increase interaction. The use of students as moderators does not imply that the course tutor should be inactive, as inactive teachers can result in ineffective interaction between students (Bullen, 1998; Christopher, Thomas & Tallent-Runnels, 2004; Hara, Bonk & Angeli, 2000). However, it has also been found that if a teacher dominates the discussion board, then interaction between participants decreases. Durrington and Yu (2004) used teachers and students as moderators in both postgraduate and undergraduate online courses. They found that the significant difference in the thread length was not between graduate and undergraduate courses, but it was between the different discussion moderators. Teacher-led discussion threads averaged at four, student-led averaged at 14. In these latter courses, as Durrington and Yu (2004) explained, the students were given all the functions of the moderator, that of providing the questions and general topic context, prompting and recognising others’ contributions, as well as keeping the topic on task and summarising the discussion points. Even though participants in these courses had been shown to interact better without instructor interaction, they still needed to know that the tutor was present and involved in the course; participants in Durrington and Yu’s study (2004) commented that they benefited from the presence of the tutor on the course. Therefore, a trained student moderator can increase the amount of interaction, though the presence of the tutor is still important.

Using the findings from the literature review: As the literature review identified three concepts that explained what may encourage learners to interact in the online environment. These concepts are written as statements so that they can be used as guidelines, as presented in Table 5.2.
Table 5.2 Interaction Guidelines

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective interaction:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design interaction as an integral part of course design</td>
<td>Integral activities increase the likelihood of affective interaction. A reason for participation is necessary with a stated outcome of the discussion; and clear discussion questions are needed and should provide opportunity for everyone to be able to discuss their opinions</td>
<td>Poole, 2000; Schiller, 2003; Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004</td>
</tr>
<tr>
<td>2</td>
<td>Train students in how to use the discussion boards from a technical and educational perspective as well as training as moderators.</td>
<td>Training increases the quality of interaction. This includes training for students in how to use discussion boards from a technical and educational perspective, as well as training as moderators</td>
<td>Poole, 2000; Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004</td>
</tr>
<tr>
<td>3</td>
<td>Use student moderators in discussion boards</td>
<td>Using student moderators can increase the amount of interaction between learners, as compared to using teachers as moderators. Some moderator tasks may be divided between the tutor and the student.</td>
<td>Durrington &amp; Yu, 2004; Mazzolini &amp; Maddison, 2003; Poole, 2000; Wozniak &amp; Silveira, 2004</td>
</tr>
</tbody>
</table>

**Collaboration**

Collaboration is defined as a conceptual aspect of interaction where new knowledge is generated. However, the concept of cooperation with others is sometimes included in this definition. Although cooperation tends to be more task-based with less generation of new knowledge, both can support learning from a sociocultural perspective.

**Focusing on learning issues:** Research by Paulus (2005) found that the different tasks resulted in different types of responses. The groups that had the goal of understanding and developing a synthesis of learning theories showed that 60% of their responses were mainly conceptual responses to each other; that is, they were discussing their understanding of the theories. These conceptual responses included negotiating meaning, proposing compromises and sharing information. In a similar manner, Moallem (2003) used interaction as an integral part of her course. Postgraduate instruction design students were required to explore learning issues and apply theories to the development of instructional material in a problem-based setting. The students used large-group discussion forums for discussing issues and ideas that they had problems understanding, and these were found to be “highly focused” (Moallem, 2003).
Thus discussions that are focussed on learning issues help students to interact collaboratively.

**Separate tasks are not effective for collaborative learning:** The participants in the studies by Moallem (2003) and Paulus (2005) were not given separate functions, but they worked as a group and contributed to each others learning by the way they responded. Participants were able to learn from each other, and found that the perspectives of others enriched their own understanding of their learning. This type of learning was more at the conceptual or metacognitive level using activities where learners interacted together with the purpose of creating new ideas and concepts. Thus, where the learning activity focused on a learning goal, and not separate functional tasks, learners were able to contribute to each other’s thinking.

**Using forums for application of knowledge:** Paulus (2005) also found that for groups whose task was application of learning theories there was significantly less conceptual dialogue; over 70% of their conversation was non-conceptual; the conversations were focused either on actions, approach to the task, or suggesting responses from others. She comments that these results were consistent with other studies, that the “students were instructed to collaborate, but instead adopted a cooperative approach to the task” (p. 117), and that instead of completing a task through dialogue, they completed portions of the task individually. The students participating in the study by Iding, Vick, Crosby and Auernheimer (2004) were asked to develop a model with interaction as an integral part of the course design. It was shown that their conversation was based on completing the task. The conversations centred around three themes: the meaning of the task, group perceptions of the task, and technology issues. Student learning did occur but this was at the level of understanding how to design a model. McLoughlin and Luca (2000) also found similar results in a course they studied. Thus, activities that focused on the application of theory were not found to stimulate collaborative learning.

**Using multiple perspectives:** Moallem (2003) also notes that with discussion tasks that allowed for multiple perspectives, students tended to “share more ideas, discuss alternative ways of approaching a task and its solution, and spend more time trying to integrate different ideas into one solution” (p. 98). Gabriel (2004) also found
participants benefited from multiple perspectives on issues, as it encouraged sharing of their own thoughts, and the “learners reported that they learned about themselves as learners through their interactions and work” (p. 63). Therefore discussion topics with multiple perspectives encouraged collaborative learning.

Importance of defining collaboration The designer’s definition of collaboration was found to affect the type of activity designed and the learning outcome. Some researchers did not define collaboration; and this may have contributed to their disappointment in the results as with the study by McLoughlin and Luca (2000). It may have also contributed to poor collaborative design as in the study by Lou (2004). Lou designed her course to have learners gain benefit from the other groups in the class, but the only inter-group activities were observation and reflection. This she called collaboration. If she had clarified the meaning of collaboration, the activities would have probably included an interactive element in the inter-group activity and therefore strengthened the learning benefit of that activity.

Thus, the literature review found that the designer’s definitions of collaborative learning affected task design and learning achieved, therefore a clear definition is important. Collaboration will more likely be successful if the activity is part of a well-designed course, and if it aims to develop new understandings and where multiple perspectives can be allowed. Cooperative goals will more likely be successful where task activities and divided amongst the team members. These factors can be used to design guidelines as shown in the following table and can be used in the way collaborative tasks are designed.

Using findings from the literature review The literature review on learners’ responses to the online environment concepts that explained what may encourage learners to collaborate with others in the online environment. These concepts are written as statements so that they can be used as guidelines, as presented in Table 5.3.
### Table 5.3 Collaboration Guidelines

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective collaboration:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Use an informed clear definition of collaboration,</td>
<td>An informed definition can affect how the collaborative activity is designed and what type of learning is achieved. An unclear definition can result in an activity not being collaborative or not achieving teacher expectations.</td>
<td>Gabriel, 2004; Lou, 2004; McLoughlin &amp; Luca, 2000; Moallem, 2003</td>
</tr>
<tr>
<td>2.</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level</td>
<td>Learning at a conceptual level occurs where the goal of the activity is a synthesis of the issues. This was found to enrich learning as increase conceptual and metacognitive skills were developed in the activities.</td>
<td>Gabriel, 2004; Moallem, 2003; Paulus, 2005</td>
</tr>
<tr>
<td>3.</td>
<td>Design application tasks if a product, not conceptual learning, is required as an outcome of the activity</td>
<td>Application tasks often result in cooperative learning. These tasks result in the development of a product but have significantly less conceptual dialogue as the interaction may be based on completing the task. The learning will therefore be at a more functional level.</td>
<td>Akar et al., 2004; Iding et al., 2004; Lambert, 2003; McLoughlin &amp; Luca, 2000; Paulus, 2005</td>
</tr>
<tr>
<td>4.</td>
<td>Use separate roles or functions for some collaborative work.</td>
<td>Separate roles can develop team work although it can result in less learning as learners may each They may not interact sufficiently to benefit from each other’s thinking as conversation tends to focus on completing tasks.</td>
<td>McLoughlin &amp; Luca, 2000; Paulus, 2005</td>
</tr>
<tr>
<td>5.</td>
<td>Where appropriate, provide discussions that have multiple perspectives, not one right answer</td>
<td>Questions with multiple perspectives may result in more sharing of ideas, more discussion of alternative ways of approaching the task, and more time trying to integrate different ideas into one solution. Participants learn about themselves as learners through their interactions and task work.</td>
<td>Gabriel, 2004; Moallem, 2003</td>
</tr>
</tbody>
</table>

### Developing Cognitive Skills

Cognitive skills are developed through support provided in the environment and through tasks that focus on activities that learners would perform in the professional work environment. There were several key issues found in the literature that can be used to design courses that help develop cognitive skills.

*Embedded prompts:* Scaffolding can be applied to a learning environment through the use of embedded question prompts to develop metacognitive skills. Ge and Land (2003) found those who had metacognitive prompts did better in all areas of problem solving compared to other groups; this was in problem representation, solution,
justification and evaluation. Wang, Wang, Wang and Huang (2004) provided metacognitive question prompts at the bottom of each page in a first year biology course and this helped learners identify key points and become more motivated and reflective. Schmidt and Ford (2003) found that those who were given a metacognitive activity before the exercise, showed a statistically significant increase in cognitive outcome as compared to their classmates who did the exercise only. Additionally, Srinivasan, Crooks and Wang (2004) found that metacognitive prompts given for university students before a reading gave better outcomes, as compared to the learners who had prompts given during the activity. Thus, question prompts can be used to support learning, but their position in the course is important.

Examples and modelling have been shown to help learners. Hernandez-Serrano and Jonassen (2003) divided experienced food course students into three groups that had either access to a textbook and support, no help, or old cases written into story form. They found the group using case studies outperformed the other two groups. However, they also noticed that the learners did not make good use of the cases, otherwise the advantages would have been greater. VanLehn (1996) notes that in cognitive skill development, examples are more effective if the principles within the problem have been highlighted as this helps learners to understand how to apply the example. Therefore if the course facilitator in the study of Hernandez-Serrano and Jonassen (2003) had designed the case studies to highlight the principles, the students may have made better use of them and used more effective cognitive strategies in their project. Saye and Brush (2002) found modelling increased student learning. They had designed storyboard scaffolding for data analysis for a history class but demonstration was needed for it to be used properly. Thus learners need to be shown how to use strategies and tools. Therefore modelling and cases are important in learning, but students also need support in how to use the examples provided.

Using a variety of supports and tools: Groller, Kender and Honeyman (1991), and Lee and Nelson (2005) found that graphic organisers supported increased learning when learners were also given metacognitive instruction. Lee and Nelson (2005) used concept maps but found that learning with concept mapping helped to solve only well-defined problems, not the ill-structured ones of authentic environments. This
implies that ill-structured problem solving may require different strategies, as has been found in other research (Schraw, Dunkle & Bendixen, 1995).

Using starter questions as a scaffold: Discussions can be scaffolded by the starter question. Gogoulou, Gouli, Grigoriadou and Samarakou (2001) found that the starter question affected the quality of interaction for a group of inexperienced undergraduate and postgraduate students collaborating online. Lin and Lin (2003) found similar results with students in a graduate online course. Discussions that are scaffolded on an argumentation basis were found to develop critical thinking skills (Cho & Jonassen, 2002) in all aspects of argumentation, especially for the groups solving ill-structured problems. Similarly, Jeong (2003) found that of all the types of interactions his graduate students had, the greatest responses were related to disagreement and argument. Stepich, Ertmer and Lane (2001) tried several different types of online interaction as part of ill-structured problem solving for instructional design students. They found that although argumentation did help learners develop deeper thinking skills, they did not argue from their context of learning although this may have related to the question topic. They did find that structure was beneficial though, and found that using reflective questions and discussion chains promoted deeper learning. Stepich et al (2001) also found role plays to be beneficial in that they promoted the contribution of multiple perspectives, although the postings did not show learning to be as deep as in other types of discussions. Thus the types of questions affect the quality of interaction and the type of cognitive skills that develop, such as in the ability to solve structured or ill-structured problems.

Training students: In two postgraduate courses, deeper critical thinking skills were found to develop when students were provided with training on how to use discussion boards effectively (Wozniak & Silveira, 2004). Poole (2000), and Sorenson and Baylen (2004) reported similar results. Therefore correct use of discussion boards promotes cognitive development; this is also consistent with sociocultural theories that propose that learning occurs within the social environment.

Learning is deeper when there is a combination of cognitive support and when students and teachers are trained in how to support the learning. Saye and Brush (2002) embedded a scaffold into the course but also modelled it. They had also noted
that the class teacher did not provide the encouragement and direction needed in the activities and therefore learning potential was decreased. Spontaneous scaffolding through monitoring student learning followed by encouraging responses to learners can increase cognitive skill development. Students in the experiment performed by Hernandez-Serrano and Jonassen (2003) did not know how to make proper use of the case studies provided as examples, although the cases that were more similar to the problem question were made better use of. This also suggests that transferring concepts from one context to another is not easy and does need more guided help. Learners need not only training or modelling on how to use the cognitive tools, but also support should be provided by several modes, not just one.

Using the findings from the literature review  The literature review found many factors in the design of the course that can help cognitive development; this was both in the social support structures as well as in the way the tutor used the activities. These concepts should be used to guide the way that learning tasks are designed. The learning design should focus on the development of authentic environments containing the community of practice and the problem, according to sociocultural theories. The guidelines developed from this literature review would describe how these problems should be structured and how learners should be supported to help them develop cognitively through the tasks.

Table 5.4 presents guidelines developed from strategies that were found to affect cognitive development and may describe how learning environments can be designed to promote learning.
Table 5.4: Cognitive strategies guidelines

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop cognitive strategies</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Embed cognitive tools into the course design</td>
<td>Embedded tools can help learners identify key points and enable them to become more motivated and reflective. Tools given before the tasks can result in increased outcomes compared to those within the tasks. Examples include: questions, modelling and organisers.</td>
<td>Ge &amp; Land, 2003; Schmidt &amp; Ford, 2003; Srinivasan et al., 2004; T. Wang et al., 2004; Schmidt &amp; Ford, 2003; Saye &amp; Brush, 2002; Lee &amp; Nelson, 2005</td>
</tr>
<tr>
<td>2</td>
<td>Provide scaffolds for discussions</td>
<td>Scaffolds help learners develop cognitive strategies for completing new tasks effectively, for example starter questions, or other structures such as argumentation, role-plays or discussion chains.</td>
<td>Jeong, 2003; Stepich et al., 2001; Gogoulou et al., 2001; Lin &amp; Lin, 2003</td>
</tr>
<tr>
<td>3</td>
<td>Use a variety of scaffolds.</td>
<td>Different types of scaffold can result in different types of responses from the learners, such as the level of critical thinking or multiple perspectives initiated. Ill-structured problem solving may require different cognitive tools compared to well structured problems.</td>
<td>Hernandez-Serrano &amp; Jonassen, 2003; Saye &amp; Brush, 2002; Lee &amp; Nelson, 2005; Schraw et al., 1995</td>
</tr>
<tr>
<td>4</td>
<td>Provide a combination of cognitive tools</td>
<td>Different tools result in different strategies being developed in the learners, and can help learners develop the different types of strategies they need to learn how to solve different problem types</td>
<td>Saye &amp; Brush, 2002</td>
</tr>
<tr>
<td>5</td>
<td>Use soft or spontaneous scaffolding by monitoring student learning.</td>
<td>Where the facilitator provides spontaneous encouragement and individual support, and direction in the feedback, increased cognitive skills are developed.</td>
<td>Saye &amp; Brush, 2002</td>
</tr>
<tr>
<td>6</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them.</td>
<td>If learners do not know how to use the cognitive support tools, they will not be used properly, the tasks will not be done correctly and the amount of learning from the activity will be decreased</td>
<td>Hernandez-Serrano &amp; Jonassen, 2003; Saye &amp; Brush, 2002</td>
</tr>
<tr>
<td>7</td>
<td>Provide training or modelling for students and course facilitators on how to use the cognitive tools</td>
<td>Deeper critical thinking skills are developed when students are provided with training on how to use the tools effectively to gain the maximum amount of learning.</td>
<td>Saye &amp; Brush, 2002; Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004; Poole, 2000</td>
</tr>
</tbody>
</table>

**Student-Centred Learning**

Learners take more responsibility in sociocultural learning environments, but need the skills to be able to do this. The focus therefore in this approach is on learner skills instead of being on the teacher or on the course content.
Knowing how to use the learning tools: Students need to understand the benefits of a learner-centred environment, or they will use it only minimally or only if required by the course design. When course design does not make online course components an essential part of the coursework, novice students tend not to use them. Fung (2004), and Ng and Murphy (2005) both provided online discussions as an optional component in their courses. Both courses showed minimal postings with virtually no critical thinking. Bullen (1998) made interaction a weekly requirement, but as it was not part of the course design, of the very few students who did interact, most did not show the development of critical thinking through the interaction. Collaborative exercises aimed at fostering critical thinking skills, as in the course designed by McLoughlin and Luca (2000), tend not to achieve these skills in the learner unless the course is carefully designed to do so, and learners will otherwise use lower level cognitive strategies. Therefore, until learners understand their responsibility in the learning process and the benefits of student-centred learning, these types of activities need to be designed in such a way that learners have no option but to participate in a manner that can develop the required skills.

Students need to be trained: Students need to be taught how to use the online learning environment in a way that encourages student-centred learning. Discussion boards are an important part of learning, but can often be used in an unproductive manner. Wozniak and Silveira (2004) found that many of the student postings in their undergraduate course discussed issues of the course structure; most discussion topics were not responses to other people, and that many of the students did not know how to post and reply properly. In the following course, training was provided and students produced more on-topic discussions with a large increase in the amount of critical interactive thinking. Sorenson and Baylen (2004) found similar results when they compared two courses; the students who had training made better use of the discussion boards compared to the students who were not given help. Therefore training can help learners to use the course tools to develop their thinking processes.

Students required support: The student-centred learning environment requires support for developing cognitive strategies. Students need to develop these strategies to be able to learn and gain expertise without depending on the teacher as the knowledge source. A course researched by Sharma and Hannifin (2002) was designed to develop
learners’ critical thinking skills through meta-cognitive prompts. Initially the learners did not understand the purpose of these, and therefore did not make use of them in the right way. Saye and Brush (2001) found similar results with the history students they studied. The students were given several types of cognitive tools to support and direct their learning; these were not used and there was a low level of learning. Hernandez-Serrano and Jonassen (2003) provided cognitive tools as support for a group of their food course students and found the students did not make proper use of them. This means that to encourage effective learning, facilitators need to ensure that the tools are sufficient, suitable and are being used. If not, the tools need to be modified, facilitators need to provide more scaffolding, or training needs to be provided by the facilitator or course designer.

**Teachers need training:** Teachers need to understand their role in a student-centred course and how it differs from teacher-controlled courses. The teacher in the study by Saye and Brush (2001, 2002) had only teacher-centred experience and no learner-centred training. The teacher’s responses to the students focused more on encouragement, not cognitive support. Although this teacher explained that she saw how providing scaffolds benefited student learning, she still made little use of the scaffolds during the second course. Thus student-centred learning can be inhibited if the teacher does not act as a facilitator or mediator. The tools provided by Hernandez-Serrano and Jonassen (2003) were not supported by any mediator soft-scaffolding from the teacher nor from interaction with other students. In some courses, the teacher chose not to have a role in the discussions, and the amount of interaction was low, therefore limiting the learning that students gained from each other (Bullen, 1998; Christopher et al., 2004; Hara et al., 2000). In other courses, the teacher dominated the discussions and the amount of student-to-student interaction decreased. A study by Mazzolini and Maddison (2003) on thirty courses for adult learners found there was a negative correlation between teacher intervention and discussion thread length, implying the teacher’s contributions inhibited interaction and the conversation flow; however the research did not indicate how the interaction quality compared. The discussion board is one of the places that students are able to learn from each other, therefore they need the opportunity to do so; here the teacher is required to facilitate not control the discussions. Durrington and Yu (2004) facilitated student-centred discussions by providing training in the different roles needed for effective
interaction. They found that the students participated more effectively in these types of discussions but that the students still benefited from the presence of the course facilitator. Therefore, the teacher needs to understand how student-centred learning should be supported and how learners can use this type of environment to develop their cognitive skills. If the teacher does not understand this, then the activities in the learning environment may not enable learners to develop student-centred skills.

**Professional Development:** Teachers’ belief systems can be seen to affect the way they teach in the classroom, as was found in a study by Windschitl and Sahl (2002). Their study on the use of laptops in high schools was affected by the teachers’ beliefs about their educational benefits. Pederson and Liu (2003) interviewed high school teachers facilitating a computer-based science course and found that they held several different definitions of what student-centred learning meant; however, regardless of their definitions, these teachers actually provided a lot of control and direction to their students on the course; their definitions did not necessarily reflect their teaching practice.

Teacher beliefs about the concept of collaboration have also been found to affect the design of learning environments. Lou (2004) describes collaboration as including two strategies of “observation” and “reflection” (p. 62) and that is how she designed the learners’ collaborative activity. Definitions supplied by teachers may provide descriptions of what they believe; however, their practice may not always reflect those understandings. It may be, as Kim, Rich and Hannifin (2004) suggest, because teachers have difficulty in linking epistemological beliefs with teaching practice, that their beliefs are not sufficiently developed to be able to translate them into practice. Studies by Garet, Porter, Birman and Yoon (2001) and by Adams (2002) have shown that sustained professional development can help change teacher belief systems and enable them to link their epistemological beliefs with teaching practice. This means that they must be prepared for student-centred learning to occur. This preparation or training is in both the use of the tools of the environment as well as in a means to help faculty develop student-centred beliefs so that they will use the tools fully in the promotion of student-centred learning.
Using the findings from the literature review The literature review identified learner skills needed for learning in a student-centred environment, as well as the responsibilities and preparation required for the tutor in designing this type of learning. Therefore the findings from this review were used to develop guidelines that enable learners to use student-centred environments in a way that they prefer.

Table 5.5: Student-centred learning guidelines

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Provide training for learners on how to use student-centred courses</td>
<td>Students who have not had training use the tools minimally or only if they are required to, resulting in minimal interaction, less critical thinking skills are developed, and essential work often is not completed.</td>
<td>Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004</td>
</tr>
<tr>
<td>2.</td>
<td>Train learners so they can understand the benefits of a learner-centred environment.</td>
<td>Training is necessary for learners to understand how student-centred tasks are different from traditional ones otherwise tasks are not completed the right way or not at all, and lower cognitive skills may be developed instead.</td>
<td>Bullen, 1998; Fung, 2004 McLoughlin &amp; Luca, 2000 Ng &amp; Murphy, 2005</td>
</tr>
<tr>
<td>3.</td>
<td>Design activities in such a way that learners have no option but to participate.</td>
<td>Until novices understand how to use student-centred activities correctly, they tend not to use them in the correct manner or may not use them at all, therefore these activities need to be an essential component of the course.</td>
<td>Fung, 2004 Ng &amp; Murphy, 2005 McLoughlin &amp; Luca, 2000</td>
</tr>
<tr>
<td>4.</td>
<td>Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training.</td>
<td>It has been found that if the tools are not being used correctly, or if students do not know how to use them, then other means will be used to complete the task, and the required skills do not develop.</td>
<td>Hernandez-Serrano &amp; Jonassen, 2003; Sharma &amp; Hannafin, 2002; Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004</td>
</tr>
<tr>
<td>5.</td>
<td>Train teachers so they can understand their role in a student-centred course and how this differs from teacher-controlled courses</td>
<td>Teachers who do not understand this approach, tend to teach in a traditional manner, and the required support for student is not provided. Students then may not develop the skills required in the learning design.</td>
<td>Oliver, 1996; Saye &amp; Brush, 2001, 2002</td>
</tr>
<tr>
<td>6.</td>
<td>Provide training for teachers in how to use the tools to facilitate student learning</td>
<td>When teachers do not know how to use student-centred tools may not enable learners to use them, and therefore the students may not can the desired learning.</td>
<td>Lou, 2004; Pedersen &amp; Liu, 2003</td>
</tr>
<tr>
<td>7.</td>
<td>Provide professional development to encourage teachers' student-centred beliefs</td>
<td>As student-centred beliefs about learning take time to develop, professional development can enable teachers change their paradigm and help student use the tools fully and encourage a student-centred approach in the learning</td>
<td>Adams, 2002 Garet et al., 2001 Windschitl &amp; Sahl, 2002</td>
</tr>
</tbody>
</table>
Online themes and cultural responses in learning environments

Empirical research in the literature was also analysed to identify preferences in learners from different cultural backgrounds. This was performed to explore how these preferences can be identified and if they could be used to create design guidelines.

Social Presence

The literature review found that learners from different cultural backgrounds respond differently to the online environment, in their expectations and responses to others. These differences were noted in learners’ expectations for developing a sense of community with others.

*Students need different levels of interaction for social presence.* LeBaron, Pulkkinen and Scollin (2000) found that the Finns in their study communicated less online than did the American students. The Chinese graduate students in online courses in Tu’s study (2001) also felt comfortable with less discussion compared to the Americans on the course, but, as Tu commented they would have been “left out of the online community” (p. 52) without facilitator support. Perceptions of what was a positive environment were different for the Chinese people in Tu’s (2001) study. He found that Chinese perceived minimal concern in their well-being as being a warm and friendly atmosphere, in that they tended not to get involved in discussions but would only want to observe. It is not known if their responses were due to not feeling part of the community, needing less interaction for social presence, or if they needed the facilitator to direct them in a less democratic manner.

The issue of saving face was also found to be important in Tu’s study. This was noted in the way the learners composed their discussion contributions. Studies by Ku and Lohr (2003) and by Morse (2003) on online students from several cultures showed differences in their needs for the presence of community online, in the desire to learn more about the others in their courses, and in having face to face meetings. Mexican and American graduate students in online courses showed significant differences between their response to the tutor, and in the amount of support they gave to each other in the group (Gunawardena et al., 2001). Thus there was a variety in the amount of interaction and expectation of interaction when comparing different people.
However there may also be other issues involved, as noted with Tu’s study in that those students required intervention by the teacher before they would become more involved.

*Teacher Immediacy:* Cultural values can affect a learner’s responses to the tutor’s immediacy behaviours. This may be the cause of comments of students in a multicultural online business course: “assessment feedback was too direct, a little offensive”; “I really don’t care that the tutor is a world-class surfer” (Dunn & Marinetti, 2005 p. 3). A Chinese postgraduate student studying in an online course in America said:

I received an e-mail from the instructor. The text was all in red. I almost passed out. I guessed I might have done or said something wrong or offensive to the teacher, otherwise, the teacher wouldn’t have written to me this way (Tu, 2001, p. 52).

Tu goes on to comment that the tutor had used this colour for emphasis only, whereas in the Chinese culture, red was used for warning and correction, and this response of the tutor had promoted anxiety and stress in the student, instead of the encouragement that was intended. The efforts of the tutor in these examples were either misunderstood or were not appropriate; indicating that an understanding of the learners’ cultural background is important in the manner is which successful immediacy behaviours are portrayed by the instructor and to promote well-being in the learners.

Teacher immediacy behaviours have been found to be important for learners regardless of cultural background. Studies comparing French with American university students (Roach et al., 2005), Chinese with American (Ku & Lohr, 2003; Tu, 2001) and Kenyan with American students (Johnson & Miller, 2002) found that they all preferred teachers who demonstrated immediacy behaviours. This is in contrast to the type of teacher immediacy behaviours that are normally found in classroom teaching for some of these cultures, where the classroom is formal and the teacher is distant (Johnson & Miller, 2002). Johnson and Miller also note that in
studies on Asian, Hispanic and African-American there was a positive correlation between immediacy and perceived learning. Therefore it can be assumed that most learners, regardless of cultural background, will prefer to learn in an environment where the teacher shows immediacy behaviours, irrespective of the traditional methods used in classroom teaching. However the way that the immediacy behaviours are presented should be appropriate for the culture.

*The need for support:* Hewing (2005) found that all those he investigated preferred a learning environment with more support and with less uncertainty. This was also found by Gunawardena et al (2001) who found for the Mexican and American students she studied, they both preferred to have more support and guidelines in their courses.

*Culturally responsive guidelines:* Empirical research identified concepts that explained what may encourage learners from different cultural backgrounds to develop social presence in the online environment. These concepts are written as statements so that they can be used as guidelines, as presented in Table 5.6.

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Expect that learner may need different levels of interaction to develop social presence.</td>
<td>People from different backgrounds perceive the levels of social presence differently in the same environment, and what is adequate for some learners, may be insufficient for others.</td>
<td>Ku &amp; Lohr, 2003; LeBaron et al., 2000; Morse, 2003; Tu, 2001</td>
</tr>
<tr>
<td>2</td>
<td>Teachers should use immediacy behaviours for learners from diverse cultural backgrounds</td>
<td>Teacher immediacy behaviours are important for learners of all cultural backgrounds, regardless of how formal their traditional classes may be. However the desired manner of expressing immediacy may be different for different cultures.</td>
<td>Baker, 2004; Hess &amp; Smythe, 2001; Johnson &amp; Miller, 2002; Roach et al., 2005</td>
</tr>
<tr>
<td>3</td>
<td>Provide more support in the learning environment</td>
<td>It was found that learners feel more comfortable in an online environment when there is less uncertainty and more support and guidelines in the design and implementation of the courses.</td>
<td>Gunawardena et al., 2001</td>
</tr>
</tbody>
</table>
Interaction

For many online learners, two other major issues were found to affect their ability to interact; these are language and cultural issues. Although the focus of this literature review is the cultural preferences in learning, not language concerns, language is a crucial issue for some learners, and as well, it is not totally isolated from cultural issues, since language is used to for communication and to convey cultural values.

Language Issues For some learners, language issues were found to be the biggest barrier to interaction, both in traditional classrooms as well as online. Studies by Yildaz and Bichelmeyer (2003) with five students from Turkey, Denmark and Taiwan; as well as those by Thompson and Ku (2005), Tu (2001), and Ku and Lohr (2003) with Chinese students found students had difficulty interacting online as they had to compose the texts in English. Some Chinese study participants who Tu (2001) interviewed explained how all the English postings were translated into Chinese, responded to in Chinese, translated back into English, proofed by others or checked in a dictionary, and then posted online. Thus the anxiety produced by these predominantly language issues would have had a negative effect on the amount of interaction. Less interaction would therefore cause decreased sense of community and learning and therefore less incentive to post to the discussion boards.

Comprehension Issues: A non-native English speaker in an online course that Goodfellow, Lea, Gonzalez and Mason (2001) studied, commented that he wondered “how messages from native speakers are not completely one hundred percent understood by non-native speakers, because that is happening in fact” (p. 78). An example of this was the response from the tutor to a Chinese student that was written in red (Tu, 2001). What was intended to be encouragement was perceived through the Chinese cultural values as discipline. Emoticons are used in some courses to increase immediacy behaviours; Gunawardena et al (2001) found the participants from the USA used these more than the Mexican learners, but the Chinese in Tu’s (2001) study were found not to understand some of the emoticons used by others in their course, which made them feel left out. Therefore, even when learners have a high degree of ability in the second language, it may not prevent them from misunderstanding others and therefore can decrease the amount of interaction and social presence.
Training for interacting online: Holmes (2004) and Tu (2001) found that the Asian students in their studies did not understand how to communicate in the online environment; their academic cultural background was of a more formal classroom meant these learners had difficulty knowing how to communicate in an interactive class. This also may explain one of the reasons why these learners spent extra time preparing their discussion contributions and consequently produced smaller or more infrequent postings. Therefore the training that is recommended for students interacting online (Durrington & Yu, 2004; Poole, 2000; A. Wu, 2003) may be even more significant for those who come from a culture that has greater formality in the traditional classroom. Tu (2001) found that when the students in his studies understood how to participate, they found their interaction increased and their anxiety decreased. Thus training would be a recommended option, as this can help learners understand that the academic standard of the posts is not the same as for assignments. However, where the concept of saving face is an issue, training may not be the only means to deal with the issue; other aspects of social presence may affect the amount and quality of interaction.

Cultural or language barriers decrease online: Yildaz and Bichelmeyer (2003) found that the amount of interaction and socialisation between the students of Turkish, Danish, Taiwanese and American background was “equalised” (p. 184), in that the non-native speakers posted a similar number of discussions compared to native speakers. Many preferred discussion boards online as a mode of communication “I can prepare my writing so I won’t lose face because I have time” commented a Chinese student in Tu’s study (2001 p53). This suggests that online interaction can improve classroom interaction especially for students who have issues with their language ability. The ability to correct their postings can enable learners to feel they can respond to others as an equal without their language ability inhibiting them.

Length of postings may differ. A South American student in a study by Goodfellow et al (2001 p74) commented that he understood postings should be short but “it is a way which is difficult for the Latin”. However other studies showed a contrast: a Chinese student in Tu’s (2001) study commented that he read only short postings. Thus the difference in expectations in online interaction can result in the break down of
interaction. Therefore students and course facilitator should be aware of each others’ expectations and discussion styles.

**Different starter question for discussions:** Initial questions posted on discussion boards to start discussions should allow everyone to express their own opinions (Dennen, 2005). Gunawardena et al (2001) found that although the American students in her study preferred having alternative perspectives, the South Americans in the study took the initial opinions and developed a consensus from that, and the Mexican students generally agreed with the first opinion. The Chinese students in Thompson and Ku’s (2005) study also did not like conflict within the discussions, they preferred harmony to truth. This means that the way learners respond to starter questions may be determined more by cultural values than by the content of the question.

**The use of students as peer moderators:** The use of students as peer moderators may be valued differently depending on cultural values, but there is insufficient evidence to clarify this issue. The Taiwanese and Turkish students in the study by Yildaz and Bichelmeyer (2003) found it difficult to cope with not having the teacher offering opinions, but other studies have shown that the online environment tends to be more democratic (Al-Saggaf, 2004; Ku & Lohr, 2003) and an equaliser (Gunawardena et al., 2001; Ku & Lohr, 2003). Therefore this may not be a predominant concern. However, further studies are needed to understand the impact of local context on the effect of student moderators on interaction.

**Designing cultural preferences in interaction as guidelines:** This literature review found four different concepts that affected interaction for the learners from different cultural backgrounds. As language issues affected comprehension, these concepts were also included in this analysis. These concepts were written as guidelines, as is shown in Table 5.7.
### Table 5.7: Cultural guidelines for interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop interaction:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Orientate learners on how to communicate in an interactive online classroom</td>
<td>Some learners need to have awareness about how to interact in a non-formal environment and where mistakes in language are acceptable in most situations Anxiety and concerns about loss of face can decrease the amount of interaction for some second-language learners, which can affect their learning</td>
<td>Gunawardena et al. 2001; Holmes, 2004; Ku &amp; Lohr, 2003; Thompson &amp; Ku, 2005; Tu, 2001; Yildiz &amp; Bichelmeyer 2003</td>
</tr>
<tr>
<td>2.</td>
<td>Choose discussion questions that match the type of approach learners have to discussion topics</td>
<td>Styles of interaction will be different for people of different cultural backgrounds, which needs to be considered in how discussion topics are designed Debate topics for example may be ineffective for those striving for group harmony</td>
<td>Gunawardena et al. 2001; Thompson &amp; Ku, 2005</td>
</tr>
<tr>
<td>3.</td>
<td>Provide teacher and student awareness to the different ways learners and teachers may communicate.</td>
<td>Misunderstanding can very easily occur; in the use of unexplained emotions, in the content of messages between people of different cultures or language background, or in the amount of directness of the language</td>
<td>Goodfellow et al. 2001; Lambert, 2003; Paulus, 2005</td>
</tr>
<tr>
<td>4.</td>
<td>Move into student controlled discussions when learners are ready</td>
<td>Lack of teacher control in learning activities may make it difficult for some learners to learn in student-moderated discussions, as they have previously expected the teacher to be the source of knowledge. However the democratic nature of the online environment may mean the change will happen quickly</td>
<td>Al-Saggaf, 2004; Gunawardena et al., 2001; Ku &amp; Lohr, 2003; Yildiz &amp; Bichelmeyer 2003</td>
</tr>
</tbody>
</table>

**Collaboration**

Collaborative and cooperative learning requires effective interaction as learners are expected to understand each other and work together. Where there are language issues or different expectations in interaction, this may cause difficulties.

**Language Issues** A project designed for Thai and USA university students (Sarker, 2005) who collaborated in designing an information systems application was not successful because of poor communication. Both the Thai and USA students also found they needed to use interpreters. Taiwanese and USA high school students in the study by Lu, Yang, Peng and Chou (2004) found that their interaction and collaboration was not very successful; however some of the American students commented at the end of the course that they did not realize that language was the
reason their partners did not respond very often. The study by Akar, Ozturk, Tuncer and Wiethoff (2004) on Dutch students interacting with Turkish students in a university course found that only some thought that the collaborative activity beneficial and commented that they were not sure if the Turkish students understood them. Some Norwegians students collaborating in English with USA students also had language issues, as noted in a study by Andrusyszyn, Moen, Iwasiw, Ostbye, Davie, Storing and Buckland-Foster (2000). This was seen in the low number of postings they did as compared to the USA students. They used the term ‘cultural pain’ to describe the difficulties they had in expressing themselves in English. Thus, collaborative exercises were found to be ineffective where language caused communication breakdown. This may occur in multicultural or single culture classes.

**Participation preferences:** In studies where language issues were not identified as an obvious barrier, participants have been shown to have different preferences in the way they participate. For example Kim and Bonk (2002) found that with Finnish and Korean students collaborating with USA students, the Finnish students showed higher levels of reflection or monitoring behaviours, and the USA students were action-oriented and wanted results or solutions. They also found that the Koreans were less task-oriented; they were more socially driven; their interaction online showed more contributions of a social nature. The Finnish students were also more likely to work in groups compared to the others. Learners in Wang’s (2001) study described differences in the way they collaborated, which the learners stated were cultural differences. For example, a Chinese student expected there to be one leader with others following, an Indian student said she preferred to work individually, but felt that everyone should have defined roles and responsibilities. A Mexican student felt that the group should focus on cohesiveness and togetherness with positive feedback being important. Thus collaborative design should consider the cultural expectations of participants, in the amount of group work, the role of the leader and goals of the activity.

**Decision-making tasks in group work:** Students on the course studied by Akar et al (2004) had many difficulties. Some of the students did not like the way the groups were divided, and only some found the exercise beneficial. McGrath and Hollingshead (1993 p 91) have described groups according to the different types of tasks, such as creative, decision making and conflict resolution. Some of the task
types, such as conflict resolution, require a rich environment, that is, one where a person’s affective responses can be expressed and understood. Other tasks require a less rich medium, such as those that generate ideas, or solve problems that have just one correct answer (McGrath & Hollingshead, 1993). All task types require good interaction between participants so that they are able to communicate and understand the information shared, thus language barriers would affect all group task types. Task types that require a richer context additionally also require the affective dimension of interaction. McGrath and Hollingshead (1993) comment that these types of activities are not effective in an online environment because it is not a rich environment. The types of tasks selected for the groups should therefore depend on the depth or richness of interaction that has been developed in the group. Therefore, where there may be communication difficulties or less depth in interaction such as where there are language barriers, concept development or single solution problems may be the preferred option for group tasks.

Group work requires good social presence. Some research (Picciano, 2002; Richardson & Swan, 2003; Wegerif, 1998; H.-L. Yang & Tang, 2003) has shown that developing good social presence online enables participants to learn in a caring trusting learning community and provide the rich environment needed for effective group work. Developing social presence will probably take more effort in a multicultural environment. In the course studied by Akar et al (2004), there were several task types, some of which were context rich tasks such as decision making tasks and performing tasks in designing a product. The course participants appeared to perceive low social presence as noticed in some feedback, such as having “negative experiences due to cultural differences” (Akar et al., 2004 p. 351). Some found it difficult to make decisions with those in the other cultural groups and there were misunderstandings between the groups that the tutor had to sort out. This would suggest that the groups in the study by Akar et al (2004) did not have sufficient social presence to build the trust needed to overcome misunderstandings, and this may have caused the poor results reported in the study. Thus, using the model proposed by McGrath and Hollingshead (1993), it would suggest that the development of social presence is important for group work tasks that require an affective dimension, such as decision-making, and that this may be significantly more so where cultural issues cause communication barriers.
Designing cultural preferences in collaboration as guidelines The research identified four different concepts that affected learners’ abilities to collaborate together and learn. These were used to create guidelines as seen in Table 5.8.

Table 5.8: Cultural guidelines for collaboration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop collaboration:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Develop good social presence to overcome ineffective communication, and comprehension difficulties due to language difficulties</td>
<td>Ineffective communication may make collaboration unsuccessful. This can result in group members responding less frequently and others in the group or class not benefiting from their contributions. Good social presence can help learners overcome some of the difficulties</td>
<td>K.-J. Kim &amp; Bonk, 2002; LeBaron et al., 2000; Lu, Yang, Peng &amp; Chu, 2004; McGrath &amp; Hollingshead, 1993; C. Wang, 2001</td>
</tr>
<tr>
<td>2.</td>
<td>Use learners assumptions of how the group or the interactive class should function in the way activities are designed</td>
<td>Some learners are task-oriented in wanting action and results, some are more socially driven, and others want cohesiveness and togetherness. This may be reflected in the interaction and group outcome and how they assess the successfulness of the activity</td>
<td>Ge &amp; Land, 2003; Picciano, 2002; Richardson &amp; Swan, 2003, 2004; T. Wang et al., 2004; Wegerif, 1998; Yang &amp; Tang, 2003</td>
</tr>
<tr>
<td>3.</td>
<td>Provide group and individual work.</td>
<td>Some learners prefer one leader with others following and some require that everyone should have defined roles. In this local context, learners may prefer group work more than individual work.</td>
<td>Ge &amp; Land, 2003; Saye &amp; Brush, 2002; VanLehn, 1996; H. Wang, 2004</td>
</tr>
<tr>
<td>4.</td>
<td>Decision-making tasks should not be used if there are communication difficulties between learners.</td>
<td>Communication difficulties can result in unsuccessful decision-making activities. These types of tasks may be successful only if there is sufficient social presence developed to provide a trusting community. Other task types such as problem-solving should be chosen instead</td>
<td>Hernandez-Serrano &amp; Jonassen, 2003; Saye &amp; Brush, 2002</td>
</tr>
</tbody>
</table>

Cognitive Strategies

No empirical research has been identified for learners in secondary or higher education concerning the impact of culture on developing cognitive skills in the online learning process.

Student-Centred Learning

Student-centred learning approaches may be less effective where learners have expectations that the instructor is the source of knowledge, however, the online environment may provide learners with different expectations.
The teacher may be assumed to be the only source of knowledge: Taiwanese and Turkish students in the study by Yildaz and Bichelmeyer (2003) commented on the role of the teacher in classrooms in their culture as being teacher-centred with one-way interaction. Chinese students in a study by Tu (2001) described the teacher as having absolute authority, and Johnson and Miller (2002) described a study in Nairobi schools where teacher-dominated classes with one-way action was perceived to be the norm. One of the Turkish participants in the study by Yildaz and Bichelmeyer (2003) felt that the teacher was the only source of knowledge, and the Chinese students in Tu’s (2001) study believed that the teacher has absolute authority and felt anxious when asked to interact in a chat room with the course facilitator. The expectation of students therefore may make it difficult for learners to use other sources for their learning, or to question the validity of information from some sources including the facilitator. It may also mean that the learners will not value the student-centred learning opportunities provided, such as collaborative tasks.

The online environment may encourage a sense of democracy: Learners from these backgrounds have commented on the more democratic nature of the online environment (Gunawardena et al., 2001; Karagiorgi & Symeou, 2005). A Chinese student in the study by Ku and Lohr (2003) stated that “in the online classroom everyone is equal” (p. 101), and also noted that while she would allow others to have their opinion in the classroom, she was more interested in sharing her opinions online. Also, learners from all cultural backgrounds have been shown to prefer teachers who express immediacy behaviours, and this has been shown to positively correlate with perceptions of increased learning (Baker, 2004; Hess & Smythe, 2001; Johnson & Miller, 2002; Roach et al., 2005), therefore learners prefer a less formal learning environment.

Designing cultural preferences in student-centred learning as guidelines: Two student-centred learning concepts were identified that explain what may encourage learners from different cultural backgrounds to interact in the online environment. These concepts are written as statements so that they can be used as guidelines, as presented in Table 5.9
Table 5.9: Cultural guidelines for student-centred learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design the initial activities where learning is gained from the teacher</td>
<td>Students may expect or assume that the teacher is the only source of knowledge, as in some cultures the teacher is seen as the only authority, limiting their expectations of learning form other sources. Therefore there needs to be transition time for learners to understand how to learn from other sources.</td>
<td>Johnson &amp; Miller, 2002; Tu, 2001; Yildiz &amp; Bichelmeyer, 2003</td>
</tr>
<tr>
<td>2.</td>
<td>Use a student-centred design for learners of any cultural background</td>
<td>The online environment can encourage a sense of equality where students feel freer to express their opinions. Learners from diverse cultural backgrounds prefer teachers who show immediacy behaviours and providing a more informal learning environment.</td>
<td>Baker, 2004; Gunawardena et al., 2001; Hess &amp; Smythe, 2001; Johnson &amp; Miller, 2002; Karagiorgi &amp; Symeou, 2005; Ku &amp; Lohr, 2003 Roach et al., 2005</td>
</tr>
</tbody>
</table>

Significance of findings on learners from diverse cultures

The research on literature on learners from diverse cultural background identified learning preferences that could be written as design guidelines. It has also shown that learning preference can be identified in most online learning themes, in a similar manner for the creation of guidelines on research from a general background. This therefore suggests that cultural preferences can be identified from research with learners, and these preferences can be written as guidelines for application to the learning design.

Significance of the online themes

It was found that online learners’ preferences from the literature could be identified and described within all five online themes. As the online themes can apply to all aspects of the sociocultural learning environment, the themes have the potential to enable the development of a comprehensive set of guidelines from empirical research with learners and within a theoretical framework.

It was found that learners’ preferences could be identified from empirical research with culturally diverse learners, exemplifying the potential of using the online themes for proposing cultural preferences of learners. Therefore the online themes may
provide a framework for the proposing cultural preferences from cultural theories, as is explored in Chapter Seven.

**Consolidation of the Design Solution**

Design principles were proposed in Chapter Four as an initial solution for the research problem. The second research sub question asks for principles to guide in learning design. This infers that the proposed principles should be of practical benefit, which should be reflected in the design solution.

**Using learning preferences in research to derive a set of design guidelines**

Exploration of the initial design solution, the draft design principles, found learning preferences could be identified from empirical research with online learners of diverse cultural backgrounds. It was also found that the preferences could be rewritten as statements or guidelines which may be used to inform the learning design. As the online themes were used as a framework for developing the guidelines, this means the sociocultural theories provide the theoretical basis to the guidelines.

This exploration of the design principles has resulted in the identification of the design guidelines as the key concept. As the guidelines are theoretically-based, can inform the design of the learning environment, and can describe the preferences of learners through empirical research, the draft design principles should now be modified to reflect their significance.

**Modification of the proposed design solution**

The use of the draft design principles, as described in this chapter, resulted in the identification of the design guidelines as the key concept. It was found that the guidelines should be developed and used in the following manner, and as is represented in Figure 5.1:
1. Analyse empirical research to identify learners’ preferences.

2. Create guidelines from the learners’ preferences, within the five sociocultural online themes.

3. Apply the design guidelines to the learning environment, within a sociocultural learning design strategy.

4. Propose learning preferences from an investigation of learners worldviews and values, within a histocultural theoretical framework

![Diagram](image)

**Figure 5.1: Modified design solution**

The use of cultural theories, as shown in the figure was not explored in this chapter, but will be in Chapter Six, where the design solution is applied to an Omani context.

As this modification has developed from the initial design solution, it is still consistent with the criteria developed from existing design models and principles:

- Vygotsky’s sociocultural theory is an established theory that provides a pedagogical basis that links to learning design and cultural preferences in learning. This theory provides the framework in the modified solution.
- The learning design strategy is based on Vygotsky’s sociocultural theory, and any modifications to the learning environment are framed within this strategy.
- Cultural worldviews and values will be identified using Vygotsky’s sociocultural/histocultural theory and the work of Nisbett and Luria. These values will be used to propose learning preferences.
• The design guidelines will be developed from the learning preferences and be framed within the five online themes of Vygotsky’s sociocultural theory. The design guidelines will be applied to the learning design.

Therefore, design guidelines that are developed using these criteria as a framework will build on existing models with a sound theoretical basis.

Initial Design Guidelines

In this chapter, empirical research in the literature was analysed to identify learning preferences and to develop guidelines as a design solution. Twenty eight guidelines were proposed from general research and 13 from research with learners from diverse cultural backgrounds. This set of guidelines will be expanded in Chapter Six, following exploration of the use of histocultural theories in proposing learning preferences. These guidelines will be tested and refined in empirical research, as described in Chapters Seven and Eight to provide principles for the design of culturally appropriate learning environments in Oman.

Conclusion

This chapter described how empirical research in the literature was used to identify learning preferences for developing design guidelines. This research was with learners from a general background and from learners in culture related studies. Guidelines were developed from both groups of learners, and within all five online themes of the sociocultural theories. Thus it was found that empirical research can be used to identify learning preferences, and it is proposed that these preferences, in the form of guidelines, can be used to inform the learning design.

This exploration resulted in a modification of the design solution. As the design guidelines are proposed as a means to apply learning preferences to the learning design, these should be the focus of the design solution. As depicted in Figure5.2, the
design guidelines should be created from learning preferences that are identified from empirical research, or proposed from world views and values of the learners’ histocultural background. The guidelines should be applied to the learning design, and thereby provide the means for learners’ preferences to inform the learning design.

The development and application of the guidelines described in this solution is within the framework of the sociocultural theories, and consistent with the design criteria proposed from existing design models and principles. The use of guidelines as the design solution may be a means for identifying learning preferences for each context and enabling a learning environment to be developed that is culturally appropriate for those particular learners. This would be consistent with the aim of this research, which is to explore how online learning environments can be designed for Omani contexts. This is the subject of the next chapter.
Chapter 6: Application of the Design Solution to an Omani Context

Introduction

The aim of this research is to explore how online learning environments can be designed for Omani contexts so that online learning can be used effectively to address issues of quality and access in higher education. It was noted that as cultural values and worldviews may affect how people learn, this must be considered in the design of the learning environment. In Chapters Four and Five, a design solution was developed, based on existing models and principles. This draft solution is in the form of guidelines and created from learning preferences that were identified in previous empirical research, and using Vygotsky's sociocultural theory as a theoretical framework. This design solution also proposes that the sociohistorical background of the learners may be used to identify learning preferences for the creation of cultural guidelines. This would enable learning to be designed that is culturally appropriate, and meet the aim of this research.

In this chapter, the sociohistorical background of the learners from an Arabic cultural background will be investigated, as this is the background of the learners in this study. This will explore the ability of Vygotsky’s theories to identify learning preferences in an Arabic culture. Figure 6.1 represents the proposed design solution and highlights the components that are the focus of this chapter.
The proposed learning preferences will be written as guidelines and added to those already proposed in Chapter Five. These guidelines will be used to design a learning environment for a context in Oman; resulting in guidelines as a draft theoretical solution and the learning environment as a draft practical solution.

The development of the draft guidelines and learning environment complete the theoretical section of this investigation. In the practical section of this thesis they were tested and modified in a learning community in Oman to exemplify the use of this design solution. The guidelines were refined for a context in Oman in response to the question of how can learning environments be designed for Omani contexts?

**The Learning Community Used for the Study**

The investigation was performed in an Omani educational institute, Sultan Qaboos University. As the design solution was proposed for a particular community of learners, the cultural setting is explained, so that research for guidelines may be based on the cultural background of these participants.

**Sultan Qaboos University: Context of the learning community**

*Development of the University*

In 1980, in the tenth annual celebration of the renaissance of Oman, Sultan Qaboos bin Said declared that Sultan Qaboos University (SQU) would be established and would provide courses to the highest international standards (Ministry of Information, 2000). In 1986 SQU opened its doors to the first intake of students. Initially there were 557 students within the five colleges: Education and Islamic Sciences, Medicine, Engineering, Science, and Agriculture. A few years later, the College of Arts and Social Sciences, and the College of Commerce and Economics were added. More recently diploma programmes have been added in Computer & Information Systems and in Accountancy. In September 2006 an eighth college, the College of Law, was
added. Sultan Qaboos University is still essentially an undergraduate university, though there have been an increasing number of students taking Masters Degrees. By the 2006 academic year there were 14014 students; with approximately 50% being females. Five hundred and sixty seven students were registered for the Masters programmes and 368 for the Diplomas (Sultan Qaboos University, 2007).

**Cultural Setting**

This government university is for Omanis only, with a small quota of approximately ten places kept for non-Omani Gulf Arab students. The students at this university come from all over the Sultanate, as it is the only free university. Other higher education institutes are open to fee paying students of all nationalities although the student population remains predominantly Omani. Sultan Qaboos University faculty members are approximately equal numbers of Omanis, non-Omani Arabs and those from the rest of the world. Approximately three quarters are male (Sultan Qaboos University, 2004). Private universities have a lower number of Omani faculty members. Most Omani instructors undertake their postgraduate studies in the West. Therefore, although the students are from predominantly one cultural background, the teaching staff is not; they are either expatriates or some of their qualifications were gained outside Oman. Thus, higher education in Oman demonstrates a cultural mix as is present worldwide. However this diversity in Oman is within the teaching staff, and not within the student body as it is elsewhere.

**E-learning in the university**

**Introduction to E-learning**

In 2001 e-learning was introduced to the university with the purchase of a Learning Management System license. By 2005, an e-learning strategic plan had been accepted by the University Academic Council. However, no funding was provided for its development, and no incentives were provided to encourage faculty to develop e-learning courses. As well, there was only minimal encouragement from College Deans for faculty to use it in their teaching.
The Centre for Educational Technology at the university provides e-learning support for the university through administrative support of the Learning Management Systems and technical backup. Also provided are a variety of professional development courses to help faculty use e-learning in their teaching; one of which was used for this study.

**Cultural background of the research participants**

A professional development course provided at the Centre for Educational Technology was the learning environment used in this study. Research participants selected for the study were faculty from an Arabic cultural background. This was because:

- The majority of students in Oman are Omani, learning preferences for those from an Arabic cultural background were considered to be the most suitable focus for the study.
- This was a course that had been taught several times, therefore there was already expertise in design and implementation that would enable effective management and observation during the empirical research stage of the study.

**Cultural Background of the Arab World and the Sultanate of Oman**

The sociocultural theory as a cultural theory was proposed in Chapter Four to explain how culture affects learning. It was also shown that Nisbett’s (2003; Nisbett *et al.*, 2001) histocultural developments of Vygotsky’s theories provided a means to do this: this concerns the use of the historical and social organisation patterns of a society’s culture to understand its world views and values, and therefore its learning preferences. This investigation starts with a study of the geographical background and its affect on the Arabic society, and the value historically placed on its language.

**Geographical background and Arabic cultural values**

The Arabian Peninsula is characterised by a large expanse of desert and an overwhelming lack of water, which defines the lifestyle of the inhabitants. Early
Arabic civilisations were found originally in the northern and eastern edges, whilst another Semitic group, the Sabeans, which the Arabs later subdued, settled in the south near the spice trade routes (Hooker, 1996). However, a large number of the Arabs were Bedouins who had a nomadic existence in the search for water and other resources. The harshness of this existence forced them to live in small tightly knit tribes, and Arabs who settled often lived around oases with a similar lifestyle to the nomadic Bedouin. Clans were the basis of their society, and were made up of several families with a number of kindred clans making a tribe. Hitti (1996) commented that this ‘demands boundless and unconditional loyalty to fellow clansmen (para. 6) and that “devotion to the common good have not gone beyond the tribe” (para. 1). The loyalty and identity with each other in the community was so strong that, as Hitti (1996) commented, “no worse calamity could befall a Bedouin than the loss of his tribal affiliation, for a tribeless man is practically helpless” (para. 6). Therefore, it can be seen that the early Arabic civilisation was collectivist, that is, community orientated, in its nomadic existence and in the closeness of the tribe, with harmonious relationships and shared understandings being characteristic of their family lifestyle. The culture is still collectivist today, with an emphasis on family and tribal loyalties.

**Language and cultural values**

The geographical background of the ancient society may not be the only defining factor in their lifestyle and value systems; language may be another fundamental issue in shaping their thinking, and defining their cognitive processes. The Arabic language is highly valued in the Arabic culture primarily because of its artistic appeal (Zaharna, 1995). As a Semitic language, Arabic is rhythmic and has always been a source of pleasure for its people to listen to: “Arabs in the pre-Islamic era were rhythmists. They did not use rules, only their ear. They used rhythm spontaneously and also used rhyme in prose and oracles” (Jousse, 1990 p. 117). Their use of language was in itself a work of art:

The Arabs did not build up an argument like the Greeks did. Instead they used subtly tuned proverbs, which struck the audience by the elegance of the clichéd expressions (and) the skilful construction of (the) rhythmic schema. They practiced from childhood and the Arabs considered themselves more skilled in the
art of oratory than all other peoples, and prided themselves on this (Jousse, 1990 p. 127).

Language is also valued because of the relationship between Arabic and Islam:

The Qur'an, the Holy Book of Islam, was revealed to the Prophet Muhammad and subsequently, recorded in Arabic. Thus, for the Muslim Arab of that time, as well as today, his language and the language of God (Allah) are identical. Arabic remains the primary vehicle for prayer in Islam. (Arab Information Centre, 1999 Arabic section, para. 3).

Finally, many Arabs value the Arabic language because they feel it identifies them as being Arab. Zaharna (1995) commented that there is a link between Arab nationalism and the Arabic language; that the Arab world does not want to take on the secular values of the Western world, it wants to preserve its Arabic culture, and with it the value placed on the Arabic language.

The Arab identity, poetic nature of their language and its relationship to Islam, Zaharna (1995) notes, are “participatory and a group experience”, that is, their language is a “device for social means as much as it is for carrying information” (p. 246). Thus the value placed on their language promotes collectivist values and supports and affirms the socio-historical preferences of their community.

That Arabic is participatory and a group experience means it is a language primarily to be heard more than silently read. In his seminal studies on oral cultures and language, Walter Ong (1982) proposes that the way a language is used affects the way people think, as this would determine how knowledge, skills and traditions are transmitted within the society. The Arabic language is valued essentially as a spoken language, as can be seen in the appreciation of its pleasure to the ear, and in the value placed on memorisation and recitation of the Qur’an. A culture that values its spoken language is described as an oral culture, as evidenced in the Arab culture (Havelock, 1986; Ong, 1982; Pollack, 1998; Zaharna, 1995). An oral culture is not necessarily one that is not literate or has no printed word. Rather, it is a culture where their language is valued in its oral form and where the abstract characteristics of literacy
have not been interiorised within members of the society. Knowledge in an oral form, as Jousse (1990 p. 231) describes, is “designed to be remembered after simply having been heard”. People of an oral culture maybe highly educated and have had their language in a written form for hundreds of years, but if the language is used with oral values then the culture is oral. Ong (1982) describes the key to understanding an oral culture as being in the mnemonic basis of the language; this is because rhythm and rhyme is used to help recall information in a sustained manner.

The collectivist close-knit tribal structure of their social background and the oral nature of their language are therefore both proposed to affect the cultural preferences of the Arabic society. These values and preferences are examined later in this chapter in the manner in which they relate to preferred ways of learning.

**Arabic cultural values and learning preferences**

The Arabic cultural values that were described can be used to propose cultural learning preferences and then guidelines for the design of learning environments for an Arabic context.

- As is consistent with a collectivist culture, relationships have a high priority. Nisbett’s (2003) theories propose that a society with this type of social organisation is more likely to see items less as discrete objects, and more likely in context with its environment. This may result in a less deductive approach to understanding and explaining individual items, and a greater awareness of the context of the item to carry the meaning. Commitment to others more than to individual needs would mean that the group would provide the support and responsibility; therefore the individual may look to others for goals and expectations (Shkodriani & Gibbons, 1995; S.-Y. Wu & Rubin, 2000).

- People from an oral background tend to use more visual methods of learning. Zaharna (1995) explains that this is because they are more people or event-orientated, where objects are seen, not as discrete linear objects, but within the context of their environment. Nisbett et al (2001) notes this view of objects in the
more collectivist culture of the Chinese. As Magritz (n.d.) also found in the oral Navajo culture, visual imagery is an important tool in memorisation. Visual imagery can also be through the use of language to develop mental images. Egan (2001) notes that as it was important to retain all the culture’s knowledge through memory, oral cultures developed cognitive tools to support this type of learning; hence the use of myths and heroes or any similar tool that helped build these mental images. Egan (2001) suggests that this cognitive tool should be considered in the design of learning for oral learners. Thus, the visual presentation of the learning environment would be considered important. This also proposes that learners need to be provided ways where they can visualise the concepts that they are learning, either through multimedia aids, or through creative use of language that can enable learners to develop their own mental images.

- Ong (1982) describes oral cultures as having “aggregative”, rather than “analytic” (p. 38) language. That is, the language is more elaborate and picturesque. Zaharna (1995) also notes that as the Arabic culture is a high context culture, the language will also “express and evoke a wealth of affective responses” (p. 243). This may mean that the descriptions and context for learning may need to be more elaborate and picturesque rather than analytical and abstract.

- The story is a very powerful force within an oral culture. Zaharna (1995) points out that a single story can provide evidence for a conclusion, where as in a print-dominated society, it is factual accuracy that provides the proof. Stories provide the social-collective identity of the culture, and in the ancient Middle East the storytellers used tales, legends, epics, and poetry, music and sometimes dance and often fused together history, story and legend. Egan (2001) explains that they are used to carry important information in a memorable form. This would suggest that learners from this background might benefit from an environment that expects participation from them in the learning process. Learning based in stories could be more meaningful, and should allow for learner participation with other people, for example, with role-plays where appropriate.
• Ong (1982) explains that as knowledge in an oral culture is more human-related, learning therefore is more situational and centred around activities and with other people. Well-told stories and plays can also provide vicarious experience, which helps reinforce learning. Therefore learning should be situated within real world experiences and alongside an expert as occurs in apprenticeship (Ong, 1982).

• Oral cultures use metaphors to explain concepts. Jousse (1990) describes metaphors as language that “speak(s) fluently the figurative, symbolical” language such as in Hebrew “thirst” for “desire”, “covering” for “forgiveness”, “and straightness” for “good” (p. 47). Binary oppositions are also used to define the limits of an idea or thought, for example hot and cold, love and hate (Egan, 2001). Thus the use of participatory stories, visualisation strategies, metaphors, and binary oppositions may all be preferred ways of learning.

• In ancient oral cultures, the narrators held knowledge; there was no other source. Therefore they were held in great respect. Much of this knowledge was with the narrator, whose stories carried the values of the community, defined the culture’s identity and could be a force of disruption or of stability (Folaron, 2002). At the same time, the nature of the story-telling expects an emotional and participatory response from the audience (Zaharna, 1995). Thus, in a learning environment, the learners with these values may expect the course facilitator to be the only knowledge source and they could have difficulty in learning from other sources. Also, these learners may also expect a more emotional relationship with the course facilitator than those with other cultural values. As this is a high context culture, the facilitator may need to understand these types of expectations as well as understanding that message expectations are more of an indirect nature. Facilitators from low context backgrounds would need to understand these expectations to help foster learning.

Table 6.1 presents these Arabic cultural values identified from the literature review in the left hand column. The right hand column presents learning strategies or tools that have been created or proposed from these cultural values.
Table 6.1: Summary of proposed preferred learning tools

<table>
<thead>
<tr>
<th>Cultural Values</th>
<th>Proposed Strategies or Tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collectivist</td>
<td>• Descriptive analyses may be preferred more than deductive analyses.</td>
</tr>
<tr>
<td></td>
<td>• Items are understood in their context, not in isolation.</td>
</tr>
<tr>
<td></td>
<td>• Commitment to others more than to own needs</td>
</tr>
<tr>
<td>Oral Language</td>
<td></td>
</tr>
<tr>
<td>Visual imagery</td>
<td>• Language should be used to develop rich mental images.</td>
</tr>
<tr>
<td></td>
<td>• Other visual tools may be required</td>
</tr>
<tr>
<td>Story-based</td>
<td>• Situated learning that is story-based or provides a vicarious experience may be preferred</td>
</tr>
<tr>
<td></td>
<td>• Use of metaphors may be valued in descriptions</td>
</tr>
<tr>
<td>People-related</td>
<td>• Apprenticeships providing scaffolding and other people-based support may be preferred.</td>
</tr>
</tbody>
</table>

Proposed Arabic online learning preferences

These proposed Arabic learning strategies shown in Table 6.1 were then developed into proposed design guidelines using the five online themes a framework, as is shown in Table 6.2.

Table 6.2: Proposed Arabic cultural preferences in online learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Expect that learners may want high levels of affective language.</td>
<td>As relationships are valued in this culture, and with a language that expresses a wealth of affective responses, high levels of affective language may expected in online relationships between the students and with the tutor</td>
<td>Zaharna 1995</td>
</tr>
<tr>
<td>2</td>
<td>Expect that there will be high levels of interaction</td>
<td>Relationships have a high priority in this culture, and most activities are done in community, therefore high levels of interaction are found in all aspects of society. Therefore high levels of interaction would be needed in the online community to develop social presence.</td>
<td>Ong, 1982; Zaharna 1995</td>
</tr>
</tbody>
</table>
### Interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective interaction:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Orientate learners on how to communicate in an interactive online classroom</td>
<td>As the society is collectivist, interaction is less direct to maintain harmony. Therefore, direct or explicit messages may have a negative impact on interaction, and may cause loss of face may be a concern in the Arab culture.</td>
<td>Ong, 1982; Zaharna 1995</td>
</tr>
<tr>
<td>2</td>
<td>Use various styles of interaction.</td>
<td>Participatory interaction is preferred during the learning as emotional involvement by the group is valued in this culture, and therefore different styles of interaction are encouraged.</td>
<td>Magritz, n.d.; Ong, 1982</td>
</tr>
<tr>
<td>3</td>
<td>Move into student controlled discussions when learners are ready</td>
<td>In the Arab culture, knowledge has been held by people of influence and held in great regard. Learners may have teacher-centred expectations, and not wish to question this person who carries the knowledge.</td>
<td>Egan, 2001; Foloran, 2002</td>
</tr>
</tbody>
</table>

### Collaboration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop collaboration:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Identify the assumptions of students in group work</td>
<td>As a collectivist society, this culture may prefer harmony amongst group members and also because the society is comprised of tight knit families, living in small communities. As they look to others for goals and expectations, they may also look to others for a united outcome of a discussion point.</td>
<td>Ong, 1982; Zaharna 1995</td>
</tr>
<tr>
<td>2</td>
<td>Provide both group and individual work</td>
<td>Group work may be preferred more than individual work as the Arabic culture has collectivist values where the society lived as small communities. Those who did not conform were expelled and there was nothing worse than being without a tribe to belong to.</td>
<td>Shkodriani &amp; Gibbons, 1995; S.-Y. Ong, 1982; Wu &amp; Rubin, 2000</td>
</tr>
</tbody>
</table>

### Cognitive Strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop cognitive strategies:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Provide ways to help learners develop mental images</td>
<td>Visual imagery using multimedia or language helps develop mental images. Collectivist cultures tend to be more visually oriented as they are relationship oriented, and it is thought to be a cognitive tool to aid learning</td>
<td>Egan, 2001; Magritz, n.d.; Nisbett et al., 2001</td>
</tr>
<tr>
<td>2</td>
<td>Use a variety of stories for activities</td>
<td>Stories help information to be remembered. These may and should be designed in such a way that learners can participate in the story, such as role plays, case studies and problem-based learning</td>
<td>Egan, 2001; Foloran, 2002; Zaharna, 1995</td>
</tr>
</tbody>
</table>
3. Use a variety of ways to describe items. Content that is presented using binary oppositions and metaphors instead of abstract descriptions may help learners use their own cognitive tools. (Egan, 2001; Jousse, 1990)

4. Base activities in real world experiences. Situated learning and that centred on other people is preferred, for example by using apprenticeships. An oral culture understands knowledge as belonging to a context or with people, more than as an abstraction. (Foloran, 2002; Ong, 1982)

### Student-centred Learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Use teacher-centred activities initially, and then move to more student-centred activities.</td>
<td>The society is hierarchal, and those who held the knowledge of the society and its customs were held in great respect. Therefore, learners may have difficulty in using activities where they learn from each other or from other sources instead of from the facilitator.</td>
<td>Foloran, 2002; Ong, 1982; Zaharna 1995</td>
</tr>
</tbody>
</table>

---

**Guidelines and Learning Environment for an Omani Context**

A design solution in the form of guidelines is being proposed for an Omani context. Guidelines have been developed from a literature review, and are used to develop an online learning environment.

**Guidelines for designing the learning environment**

The design guidelines were prepared from general literature on online learners, as shown in Tables 5.1 to 5.5, from literature on learners from various cultural backgrounds, as shown in Tables 5.6 to 5.9, and from literature on the Arabic cultural background of the learners in the study as was shown in Table 6.2. These three sets of guidelines are integrated; for example Table 6.3 represents general, cultural and Arabic social presence guidelines, Table 6.4 represents general, cultural and Arabic interaction guidelines, Table 6.5 represents general, cultural and Arabic collaborative learning guidelines, Table 6.6 represents general, cultural and Arabic cognitive strategy guidelines and Table 6.7 represents general, cultural and Arabic for student-centred learning.
### Table 6.3: Composite guidelines for developing social presence

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Rationale</th>
<th>Rationale from supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use discussion forums, chat and email.</td>
<td>These interactive tools provide different amounts privacy, interactivity, and communication. Different learners have been found to respond differently to these tools, so all should be provided.</td>
<td>Tu, 2002;</td>
</tr>
<tr>
<td>2</td>
<td>Use social networks of the classroom.</td>
<td>Previous networks have been found to positively impact the development of social presence, therefore these should be used to develop relationships online.</td>
<td>Wegerif, 1998; H.-L. Yang &amp; Tang, 2003</td>
</tr>
<tr>
<td>3</td>
<td>Encourage interaction.</td>
<td>Minimal interaction results in low social presence. Those who do not interact sufficiently do not cross the threshold and find the environment unfriendly.</td>
<td>Wegerif, 1998</td>
</tr>
<tr>
<td>4</td>
<td>Develop and maintain social presence throughout the length of a course</td>
<td>A positive relationship has been found between social presence, interaction and performance in tests based on skill-based objectives, therefore maintaining social presence can increase learning outcomes.</td>
<td>Picciano, 2002</td>
</tr>
<tr>
<td>5</td>
<td>Help provide an environment where affective language is used</td>
<td>The use of emotional language can enable learners to project themselves into a course and it was found that this helps maintain social presence throughout the course.</td>
<td>Swan, 2002</td>
</tr>
<tr>
<td>6</td>
<td>Teachers should use immediacy behaviours.</td>
<td>This affects student emotional response to the course and their perceived learning. Teacher immediacy behaviours are more important in the online environment compared to classroom teaching.</td>
<td>Durrington &amp; Yu, 2004; Picciano, 2002; Richardson &amp; Swan, 2003; Wegerif, 1998; H.-L. Yang &amp; Tang, 2003</td>
</tr>
</tbody>
</table>

### Additional guidelines from general cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Expect that learners may need different levels of interaction to develop social presence.</td>
<td>People from different backgrounds perceive the levels of social presence differently in the same environment, and what is adequate for some learners, may be insufficient for others.</td>
<td>Ku &amp; Lohr, 2003; LeBaron et al., 2000; Morse, 2003; Tu, 2001</td>
</tr>
<tr>
<td>6b</td>
<td>Use immediacy behaviours for learners from diverse cultural backgrounds</td>
<td>Teacher immediacy behaviours are important for learners of all cultural backgrounds, regardless of how formal their traditional classes may be. However the desired manner of expressing immediacy may be different for different cultures.</td>
<td>Baker, 2004; Hess &amp; Smythe, 2001; Johnson &amp; Miller, 2002; Roach et al., 2005</td>
</tr>
</tbody>
</table>
8. Provide support in the learning environment. It was found that learners feel more comfortable in an online environment when there is less uncertainty and more support and guidelines in the design and implementation of the courses. Gunawardena et al., 2001; Hewing, 2005

Additional guidelines from Arabic cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence in Arabic culture:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>Expect that in this culture, learners may want higher levels of affective language.</td>
<td>As relationships are valued in this culture, and with a language that expresses a wealth of affective responses, high levels of affective language may be expected in online relationships between the students and the tutor.</td>
<td>Zaharna, 1995</td>
</tr>
<tr>
<td>7b</td>
<td>Expect that there will be high levels of interaction. This guideline will be combined with no. 7</td>
<td>Relationships have a high priority in this culture, and most activities are done in community, therefore high levels of interaction are found in all aspects of society. Therefore high levels of interaction would be needed in the online community to develop social presence.</td>
<td>Ong, 1982; Zaharna, 1995</td>
</tr>
</tbody>
</table>

Table 6.4 presents seven interaction guidelines.

Table 6.4: Composite guidelines for developing interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective interaction:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Design interaction as an integral part of course design.</td>
<td>Integral activities increase the likelihood of affective interaction. A reason for participation is necessary with a stated outcome of the discussion; and clear discussion questions are needed and should provide opportunity for everyone to be able to discuss their opinions.</td>
<td>Poole, 2000; Schiller, 2003; Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004</td>
</tr>
<tr>
<td>2</td>
<td>Train students in how to use the discussion boards from a technical and educational perspective as well as training as moderators.</td>
<td>Training increases the quality of interaction. This includes training for students in how to use discussion boards from a technical and educational perspective, as well as training as moderators.</td>
<td>Poole, 2000; Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004</td>
</tr>
<tr>
<td>3</td>
<td>Use student moderators in discussion boards</td>
<td>Using student moderators can increase the amount of interaction between learners, as compared to using teachers as moderators. Some moderator tasks may be divided between the tutor and the student.</td>
<td>Durrington &amp; Yu, 2004; Mazzolini &amp; Maddison, 2003; Poole, 2000; Wozniak &amp; Silveira, 2004</td>
</tr>
</tbody>
</table>
### Additional guidelines from general cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop interaction:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.</td>
<td>Orientate learners on how to communicate in an interactive online classroom</td>
<td>Some learners need to have awareness about how to interact in a non-formal environment and where mistakes in language are acceptable in most situations. Anxiety and concerns about loss of face can decrease the amount of interaction for some second-language learners, which can affect their learning.</td>
<td>Gunawardena et al. 2001; Holmes, 2004; Ku &amp; Lohr, 2003; Thompson &amp; Ku, 2005; Tu, 2001; Yildiz &amp; Bichelmeyer, 2003</td>
</tr>
<tr>
<td>5.</td>
<td>Choose discussion questions that match the type of approach learners have to discussion topics</td>
<td>Styles of interaction will be different for people of different cultural backgrounds, which needs to be considered in how discussion topics are designed. Debate topics for example may be ineffective for those striving for group harmony.</td>
<td>Gunawardena et al. 2001; Thompson &amp; Ku, 2005</td>
</tr>
<tr>
<td>6.</td>
<td>Provide teacher and student awareness to the different ways learners and teachers may communicate.</td>
<td>Misunderstanding can very easily occur; in the use of unexplained emoticons, in the content of messages between people of different cultures or language background, or in the amount of directness of the language.</td>
<td>Goodfellow et al. 2001; Lambert, 2003; Paulus, 2005</td>
</tr>
<tr>
<td>7.</td>
<td>Move into student controlled discussions when learners are ready</td>
<td>Lack of teacher control in learning activities may make it difficult for some learners to learn in student-moderated discussions, as they have previously expected the teacher to be the source of knowledge. However, the democratic nature of the online environment may mean the change will happen quickly.</td>
<td>Al-Saggaf, 2004; Gunawardena et al., 2001; Ku &amp; Lohr, 2003; Yildiz &amp; Bichelmeyer, 2003</td>
</tr>
</tbody>
</table>

### Additional guidelines from Arabic cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective interaction:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
</table>
| 4b. | Orientate learners on how to communicate in an interactive online classroom  
*This guideline will be combined with no. 4* | As the society is a collectivist, interaction is less direct to maintain harmony. Therefore, direct or explicit messages may have a negative impact on interaction, and may cause loss of face may be a concern in the Arab culture. | Ong, 1982; Zaharna, 1995 |
| 5b  | Use various styles of interaction.  
*This guideline will be combined with no. 5* | Participatory interaction is preferred during the learning as emotional involvement by the group is valued in this culture, and therefore different styles of interaction are encouraged. | Magritz, n.d.; Ong, 1982 |
| 7b  | Move into student controlled discussions when learners are ready  
*This guideline will be combined with no. 7* | In the Arab culture, knowledge has been held by people of influence and held in great regard. Learners may have teacher-centred expectations, and not wish to question this person who carries the knowledge. | Egan, 2001; Foloran, 2002 |
Table 6.5 presents nine collaborative guidelines.

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective collaboration:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Use an informed clear definition of collaboration,</td>
<td>An informed definition can affect how the collaborative activity is designed and what type of learning is achieved. An unclear definition can result in an activity not being collaborative or not achieving teacher expectations</td>
<td>Gabriel, 2004; Lou, 2004; McLoughlin &amp; Luca, 2000; Moallem, 2003</td>
</tr>
<tr>
<td>2</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level</td>
<td>Learning at a conceptual level occurs where the goal of the activity is a synthesis of the issues. This was found to enrich learning as increasing conceptual and metacognitive skills were developed in the activities</td>
<td>Gabriel, 2004; Moallem, 2003; Paulus, 2005</td>
</tr>
<tr>
<td>3</td>
<td>Design application tasks if a product, not conceptual learning, is required as an outcome of the activity</td>
<td>Application tasks often result in cooperative learning. These tasks result in the development of a product but have significantly less conceptual dialogue as the interaction may be based on completing the task. The learning will therefore be at a more functional level.</td>
<td>Akar et al., 2004; Iding et al., 2004; Lambert, 2003; McLoughlin &amp; Luca, 2000; Paulus, 2005</td>
</tr>
<tr>
<td>4</td>
<td>Use separate roles or functions for only some collaborative work.</td>
<td>Separate roles can develop team work although it can result in less learning as learners may each They may not interact sufficiently to benefit from each other's thinking as conversation tends to focus on completing tasks</td>
<td>McLoughlin &amp; Luca, 2000; Paulus, 2005</td>
</tr>
<tr>
<td>5</td>
<td>Where appropriate, provide discussions that have multiple perspectives, not one right answer</td>
<td>Questions with multiple perspectives may result in more sharing of ideas, more discussion of alternative ways of approaching the task, and more time trying to integrate different ideas into one solution. Participants learn about themselves as learners through their interactions and task work</td>
<td>Gabriel, 2004; Moallem, 2003</td>
</tr>
</tbody>
</table>
### Additional guidelines from general cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop collaboration:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Develop good social presence to overcome ineffective communication, and comprehension difficulties due to language issues.</td>
<td>Ineffective communication may make collaboration unsuccessful. This can result in group members responding less frequently and others in the group or class not benefiting from their contributions. Good social presence can help learners overcome some of the difficulties.</td>
<td>K.-J. Kim &amp; Bonk, 2002; LeBaron et al., 2000; Lu, Yang, Peng &amp; Chu, 2004; McGrath &amp; Hollingshead, 1993; C. Wang, 2001</td>
</tr>
<tr>
<td>7</td>
<td>Use learners assumptions of how the group or the interactive class should function in the way activities are designed.</td>
<td>Some learners are task-oriented in wanting action and results, some are more socially driven, and others want cohesiveness and togetherness. This may be reflected in the interaction and group outcome and how they assess the successfulness of the activity.</td>
<td>Ge &amp; Land, 2003; Picciano, 2002; Richardson &amp; Swan, 2003, 2003, 2004; T. Wang et al., 2004; Wegerif, 1998; Yang &amp; Tang, 2003</td>
</tr>
<tr>
<td>8</td>
<td>Provide group and individual work.</td>
<td>Some learners prefer one leader with others following and some require that everyone should have defined roles. In this local context, learners may prefer group work more than individual work.</td>
<td>Ge &amp; Land, 2003 Saye &amp; Brush, 2002 VanLehn, 1996 H. Wang, 2004</td>
</tr>
<tr>
<td>9</td>
<td>Decision-making tasks should not be used if there are communication difficulties between learners.</td>
<td>Communication difficulties can result in unsuccessful decision-making activities. These types of tasks may be successful only if there is sufficient social presence developed to provide a trusting community. Other task types such as problem-solving should be chosen instead.</td>
<td>Hernandez-Serrano &amp; Jonassen, 2003 Saye &amp; Brush, 2002</td>
</tr>
</tbody>
</table>

### Additional guidelines from Arabic cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop collaboration:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>7b</td>
<td>Identify the assumptions of students in group work.</td>
<td>As a collectivist society, this culture may prefer harmony amongst group members and also because the society is comprised of tight knit families, living in small communities. As they look to others for goals and expectations, they may also look to others for a united outcome of a discussion point.</td>
<td>Ong, 1982; Zaharna 1995</td>
</tr>
<tr>
<td>8b</td>
<td>Provide both group and individual work.</td>
<td>Group work may be preferred more than individual work as the Arabic culture has collectivist values where the society lived as small communities. Those who did not conform were expelled and there was nothing worse than being without a tribe to belong to.</td>
<td>Shkodriani &amp; Gibbons, 1995; S.-Y. Ong, 1982; Wu &amp; Rubin, 2000</td>
</tr>
</tbody>
</table>
Table 6.6 presents the 11 cognitive strategy guidelines.

### Table 6.6: Composite guidelines for developing cognitive strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop cognitive strategies:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Embed cognitive tools into the course design</td>
<td>Embedded tools can help learners identify key points and enable them to become more motivated and reflective. Tools given before the tasks can result in increased outcomes compared to those within the tasks. Examples include: questions, modelling and organisers.</td>
<td>Ge &amp; Land, 2003; Schmidt &amp; Ford, 2003; Srinivasan et al., 2004; T. Wang et al., 2004; Schmidt &amp; Ford, 2003; Saye &amp; Brush, 2002; Lee &amp; Nelson, 2005</td>
</tr>
<tr>
<td>2</td>
<td>Provide scaffolds for discussions</td>
<td>Scaffolds help learners develop cognitive strategies for completing new tasks effectively, for example starter questions, or other structures such as argumentation, role-plays or discussion chains.</td>
<td>Jeong, 2003; Stepich et al., 2001; Gogoulou et al., 2001; Lin &amp; Lin, 2003</td>
</tr>
<tr>
<td>3</td>
<td>Use a variety of scaffolds.</td>
<td>Different types of scaffold can result in different types of responses from the learners, such as the level of critical thinking or multiple perspectives initiated. Ill-structured problem solving may require different cognitive tools compared to well structured problems.</td>
<td>Hernandez-Serrano &amp; Jonassen, 2003; Saye &amp; Brush, 2002; Lee &amp; Nelson, 2005; Schraw et al., 1995</td>
</tr>
<tr>
<td>4</td>
<td>Provide a combination of cognitive tools</td>
<td>Different tools result in different strategies being developed in the learners, and can help learners develop the different types of strategies they need to learn how to solve different problem types</td>
<td>Saye &amp; Brush, 2002</td>
</tr>
<tr>
<td>5</td>
<td>Use soft or spontaneous scaffolding through monitoring student learning.</td>
<td>Where the facilitator provides spontaneous encouragement and individual support, and direction in the feedback, increased cognitive skills are developed.</td>
<td>Saye &amp; Brush, 2002</td>
</tr>
<tr>
<td>6</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them.</td>
<td>If learners do not know how to use the cognitive support tools, they will not be used properly, the tasks will not be done correctly and the amount of learning from the activity will be decreased</td>
<td>Hernandez-Serrano &amp; Jonassen, 2003; Saye &amp; Brush, 2002</td>
</tr>
<tr>
<td>7</td>
<td>Provide training or modelling for students and course facilitators on how to use the cognitive tools</td>
<td>Deeper critical thinking skills are developed when students are provided with training on how to use the tools effectively to gain the maximum amount of learning.</td>
<td>Saye &amp; Brush, 2002; Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004; Poole, 2000</td>
</tr>
<tr>
<td>No.</td>
<td>In order to develop cognitive strategies</td>
<td>Rationale</td>
<td>Supporting research and theory</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------</td>
<td>-----------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>8</td>
<td>Provide ways to help learners develop mental images.</td>
<td>Visual imagery using multimedia or language helps develop mental images. Collectivist cultures tend to be more visually oriented as they are relationship oriented, and it is thought to be a cognitive tool to aid learning</td>
<td>Egan, 2001; Magritz, n.d.; Nisbett et al., 2001</td>
</tr>
<tr>
<td>9</td>
<td>Use a variety of stories for activities</td>
<td>Stories help information to be remembered. These may and should be designed in such a way that learners can participate in the story, such as role plays, case studies and problem-based learning</td>
<td>Egan, 2001; Foloran, 2002; Zaharna, 1995</td>
</tr>
<tr>
<td>10</td>
<td>Use a variety of ways to describe items</td>
<td>Content that is presented using binary oppositions and metaphors instead of abstract descriptions may help learners use their own cognitive tools</td>
<td>Egan, 2001; Jousse, 1990</td>
</tr>
<tr>
<td>11</td>
<td>Base activities in real world experiences</td>
<td>Situated learning and that centred on other people is preferred, for example by using apprenticeships. An oral culture understands knowledge as belonging to a context or with people, more than as an abstraction</td>
<td>Foloran, 2002; Ong, 1982</td>
</tr>
</tbody>
</table>

Table 6.7 presents guidelines for student-centred learning.

**Table 6.7: Composite guidelines for developing student-centred learning**

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Provide training for learners on how to use student-centred courses</td>
<td>Students who have not had training use the tools minimally or only if they are required to, resulting in minimal interaction, less critical thinking skills are developed, and essential work often is not completed.</td>
<td>Sorensen &amp; Baylen, 2004; Wozniak &amp; Silveira, 2004</td>
</tr>
<tr>
<td>2.</td>
<td>Train learners so they can understand the benefits of a learner-centred environment.</td>
<td>Training is necessary for learners to understand how student-centred tasks are different from traditional ones otherwise tasks are not completed the right way or not at all, and lower cognitive skills may be developed instead.</td>
<td>Bullen, 1998; Fung, 2004; McLoughlin &amp; Luca, 2000; Ng &amp; Murphy, 2005</td>
</tr>
</tbody>
</table>
### Design activities in such a way that learners have no option but to participate.

Until novices understand how to use student-centred activities correctly, they tend not to use them in the correct manner or may not use them at all, therefore these activities need to be an essential component of the course.

**Fung, 2004** Ng & Murphy, 2005
**McLoughlin & Luca, 2000**

### Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training.

It has been found that if the tools are not being used correctly, or if students do not know how to use them, then other means will be used to complete the task, and the required skills do not develop.

**Hernandez-Serrano & Jonassen, 2003** Sharma & Hannafin, 2002; **Sorensen & Baylen, 2004**; **Wozniak & Silveira, 2004**

### Train teachers so they can understand their role in a student-centred course and how this differs from teacher-controlled courses

Teachers who do not understand this approach, tend to teach in a traditional manner, and the required support for student is not provided. Students then may not develop the skills required in the learning design.

**Oliver, 1996**; **Saye & Brush, 2001, 2002**

### Provide training for teachers in how to use the tools to facilitate student learning

When teachers do not know how to use student-centred tools may not enable learners to use them, and therefore the students may not can the desired learning.

**Lou, 2004**; **Pedersen & Liu, 2003**

### Provide professional development to encourage teachers’ student-centred beliefs

As student-centred beliefs about learning take time to develop, professional development can enable teachers change their paradigm and help student use the tools fully and encourage a student –centred approach in the learning.

**Adams, 2002**
**Garet et al., 2001**
**Windschitl & Sahl, 2002**

### Additional guidelines from general cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Design the initial activities where learning is gained from the teacher.</td>
<td>Learners may expect or assume that the teacher is the only source of knowledge, as in some cultures the teacher is seen as the only authority, limiting their expectations of learning form other sources. Therefore there needs to be transition time for learners to understand how to learn from other sources.</td>
<td><strong>Johnson &amp; Miller, 2002</strong>; <strong>Tu, 2001</strong>; <strong>Yildiz &amp; Bichelmeyer, 2003</strong></td>
</tr>
<tr>
<td>9</td>
<td>Use a student-centred design for learners of any cultural background.</td>
<td>The online environment can encourage a sense of equality where students feel freer to express their opinions. Learners from diverse cultural backgrounds prefer teachers who show immediacy behaviours and providing a more informal learning environment.</td>
<td><strong>Baker, 2004</strong>; <strong>Gunawardena et al., 2001</strong>; <strong>Hess &amp; Smythe, 2001</strong>; <strong>Johnson &amp; Miller, 2002</strong>; <strong>Karagiorgi &amp; Symeou, 2005</strong>; <strong>Ku &amp; Lohr, 2003</strong>; <strong>Roach et al., 2005</strong></td>
</tr>
</tbody>
</table>
### Additional guidelines from Arabic cultural preferences

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Rationale</th>
<th>Supporting research and theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>8b.</td>
<td>Use a teacher-centred approach initially, and then move into a more student-centred one. <em>This guideline will be combined with no.8</em></td>
<td>The society is hierarchal, and those who held the knowledge of the society and its customs were held in great respect. Therefore, learners may have difficulty in using activities were they learn from each other or from other sources instead of from the facilitator.</td>
<td>Foloran, 2002; Ong, 1982; Zaharna 1995</td>
</tr>
</tbody>
</table>

### Using the guidelines in the learning design strategy

Before the online course was designed or modified, the guidelines were reorganised into different categories such as guidelines for designing student orientation, for designing orientation, for the type of support required during course implementation, as is shown in Appendix no. 1. This reorganisation enabled the design guidelines to be used in a practical manner within the learning design strategy.

The learning environment was developed using a sociocultural learning design strategy as described in Chapter Four. The design was initiated with the identification of a community that would normally use those skills, and a genuine problem around which to build the course. These were developed and elaborated to form the outline of the course. Content, activities and resources were then selected to develop the course structure.

Following the development of the course structure, the proposed guidelines were implemented. Each guideline was examined to see how it may be applied to the learning environment. For example, application of social presence guidelines was mainly in the development of the orientation component of the course, and resulted in the creation of introductory forums, orientation materials, face to face meetings to encourage the development of relationships and an informal style of language was used in writing the course materials. Further examples of how guidelines from all online themes were instantiated are found in Appendix 2.
Designing the online course structure

After the course was designed it was uploaded onto Moodle. Moodle is software used to support online courses, and is an acronym of Modular Object Orientated Dynamic Learning Environment. The course was composed of five topics, as depicted in Table 6.8. The first and last were one week long and the other three were two week units. Participants were expected to work on these in their own time at work or at home. The initial course was designed to take 50 hours over an eight week period. Resources required for the course were included; these were readings, links and model examples. Table 6.8 presents screenshots from the Moodle course main page.

Table 6.8: Learning design content and resources

<table>
<thead>
<tr>
<th>Outline of each unit</th>
<th>Course topics, showing screen shots of each unit with hyperlinks to activities and resources.</th>
</tr>
</thead>
<tbody>
<tr>
<td>* Orientation was to be done online</td>
<td>Please see print copy for Table 6.8: screen shots from Moodle course main page</td>
</tr>
<tr>
<td>* Materials and sites, student-centred learning and the course structure was explained online.</td>
<td></td>
</tr>
<tr>
<td>* Participants were required to work on these individually but also had to introduce themselves to each other in the forum.</td>
<td></td>
</tr>
<tr>
<td>* Online examples of e-learning courses were provided for learners to visualize what their courses could be like.</td>
<td></td>
</tr>
<tr>
<td>* An activity was provided for learners to analyse sites for preferred features in an online course, and to share findings in class forums</td>
<td></td>
</tr>
<tr>
<td>* Learning was through a project question, with tutor feedback.</td>
<td></td>
</tr>
</tbody>
</table>
* Student-centred learning was introduced in the Notes, and developed through using articles and group work.

* Project work involved applying the learning by adapting one of their teaching activities into a student-centred activity.

* Feedback was provided for the project work.

* Different types of student-centred learning activities are presented and modeled, using articles and examples provided.

* Participants select a design and use it to create a new activity for a course.

* Learners complete project work and present to others

* Learners comment on each other’s projects and post reflections of their learning experience.

As can be seen in Table 6.8, each topic contained an activities page which describes the work required during the topic. Each activities page followed a similar format, and an example is provided in Table 6.9. This table also provides an excerpt from the
course project, which participants worked on individually as a means to apply their knowledge to a specific and realistic context.

Table 6.9: Activities Designed for the Learning Environment

<table>
<thead>
<tr>
<th>Description</th>
<th>Screenshot providing examples of course activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>The course project was an authentic activity where participants assumed they were in a university that required them to design a course for a particular situation. This took the length of the course, holding the topics together as a meaningful whole.</td>
<td>Please see print copy for Table 6.9: screen shots from Moodle course main page</td>
</tr>
<tr>
<td>This activity example shows learners had to initiate their learning, and collaborate with each other for part of the work.</td>
<td></td>
</tr>
</tbody>
</table>

The course design also included learning support, from both the tutor and the other course participants. Some support was designed before implementation; other support was spontaneous, and based on learner observations. Examples can be seen in table 6.10.
Table 6.10: Support provided in the learning environment

<table>
<thead>
<tr>
<th>Type of support</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>With other learners</td>
<td>Forums and chats for developing social presence, and developing understanding of the learning concepts.</td>
</tr>
<tr>
<td>With the course facilitator</td>
<td>Providing support and encouragement through individual emails, and notices on the course notice board.</td>
</tr>
<tr>
<td></td>
<td>Providing feedback for course assignments before assignments were completed at the end of the course.</td>
</tr>
<tr>
<td></td>
<td>Providing notices, deadlines, and reminders to help participants keep to task.</td>
</tr>
<tr>
<td>Cognitive support in the learning environment</td>
<td>Examples for course work designed into the activities, such as previous student’s work, or other examples from the internet</td>
</tr>
<tr>
<td></td>
<td>Outlines and guides provide to help the participants to structure or analyse their work.</td>
</tr>
</tbody>
</table>

Guidelines as a Design Solution

In response to the problem of how can online learning be designed in a way that considers cultural values, a design solution was sought through an analysis of the literature and based on existing design models. A design solution was proposed in the form of design guidelines that can be developed using the following principles

1. Identify learners’ preferences from empirical research in the literature. Learners’ responses to their learning environment can be used to propose learning preferences.

2. Create guidelines from the learners’ preferences, within the five sociocultural online themes. The learning preferences are rewritten as statements that propose the how the learning should be designed, with the supporting argument.

3. Apply the design guidelines to the learning environment, within a sociocultural learning design strategy. The design strategy provides the course structure and the tasks required, but the guidelines guide how the tasks are designed, according to the learners' preferences.
4. Propose learning preferences from an investigation of worldviews and values of the learners’ cultural background, within a histocultural theoretical framework. Literature on the historical background and social organisation pattern of the society’s history can enable worldviews and values to be identified. Learning preferences can be proposed from these values as described above.

These four principles for the development of guidelines are represented in Figure 6.2 and were used to develop guidelines for an Omani context as is described in Chapters Five and Six.

![Figure 6.2: Design guidelines as the proposed solution](image)

A Prototype Solution

This chapter completes the theoretical stage of the investigation with the proposal of a design solution in the form of guidelines. As previously stated, this solution was developed from existing models and theories, based in sociocultural theories as a theoretical framework, and uses cultural theories and existing empirical research to identify learning preferences. It is proposed that the identified learning preferences can be used to create the guidelines, and thereby enable the learning to be designed in a way that is suits the learners’ cultural preferences.

In Chapters Five and Six, this design solution was applied theoretically to a particular
context, and two products were developed as a prototype solution. The first product was guidelines that were proposed for an Omani context. Some of these guidelines were developed in Chapter Five using empirical research in the literature, and others were developed in Chapter Six using Vygotsky’s cultural theories. The second product developed was an online course for Omani context. This was created using a sociocultural learning design strategy, and the prototype guidelines.

In Chapters Seven and Eight, this prototype will be evaluated and modified in iterative research in the genuine context to refine it to be more suitable for the learners. This will exemplify the use of guidelines as a design solution for culturally appropriate learning design, and enable the solution to be evaluated for its ability to apply cultural learning preferences to the learning environment.

**Conclusion**

The aim of this research was to explore how online learning environments can be designed for Omani contexts so that online learning may be used effectively to address issues of quality and access in higher education. As there was little in the literature that explains how people from an Arabic culture learn, and how online learning could be designed in this context, a design solution is required. A design solution was proposed, using existing models and principles in the literature and through an analysis of relevant theory. An initial solution was developed in Chapter Four. It was further explored in Chapter Five, with a draft solution being proposed that focussed on the development of design guidelines that could apply learning preferences to the learning environment through a sociocultural framework.

The design of this investigation is in two broad stages, the theoretical and the practical. In this first stage a design solution was developed in the form of guidelines that are used for the design of a learning environment for a group of Arabic learners. In the second and practical stage, the design solution is tested and refined in a genuine context, so that the proposal became both robust and useful in that context of use.
In this chapter, a set of design guidelines was developed for an Omani context, and a
learning environment was design, using the proposed design solution. The guidelines
and learning environment became the prototype solution, and completed the
theoretical phase of this investigation. It was found that the design solution met the
design criteria that were developed from existing design principles and that the
prototype design solution was able to develop a comprehensive set of guidelines that
could be applied to the learning environment. Therefore there is strong theoretical
support for this solution as an effective means to respond to the question of how can
learning be designed in a way that considers cultural values and enables a successful
learning experience. The practical stage of the solution begins in Chapters Seven, with
the testing and refinement of this solution in an Omani context.
Chapter 7: First Implementation of the Design Solution

Introduction

The initial learning environment was designed, as described in Chapter Six, and was implemented and tested in two separate sequential courses. This chapter describes the first of these implementations. A case-study analysis strategy was used as was described in detail in Chapter Three. The concepts of this strategy are consistent with those of the Design-based Research approach, which this study is based on and is also described in Chapter Three. Before implementation of the first online course, the analysis strategy was designed, and data collection approaches and procedures were selected and prepared. These procedures are described in the initial part of this chapter, followed by the description of the implementation process and the findings during this process.

Preparation before Implementation

Preparation before the data collection and analysis included the design of research questions, data collection and analysis templates, and a research timetable of collection, analysis and modification.

General research questions

General questions were designed as a framework to focus the investigation, and keep it within the boundaries of the research (Yin, 2003). Yin comments that these are not interview questions, but are “reminders” (p. 74) to researchers of what information needs to be collected from the investigation and why. These questions were framed within the five online themes, as these were used to guide and focus data collection and analysis throughout the study.
Social presence

The investigation concerning social presence focused on participants’ perceptions of social presence, adequacy of preparation for learning online, perceptions of social networks, and perceptions of the amount of time needed for adequate interaction.

Interaction

For this concept, the research focussed on perceptions of what was important for the quality of interaction, teacher presence, question type, and the way participants responded to others online.

Collaboration

The investigation concerning collaboration concerned the benefits of the different types of collaborative and cooperative activities and what factors determined success.

Cognitive strategy

The investigation concerning cognitive strategies focussed on the types of cognitive support and their use and how the problem context affected the development of cognitive skills. The research also investigated the type of help required to achieve the perceived goals.

Student- centred learning

For this concept, the research focussed on how the learners used the different activities and what extra supports were needed to complete the activities and assignments.

These concepts were used to guide the investigation and were also reflected on during data collection and analysis to ensure that the investigation remained within the framework of the research.
Data collection sources and templates

Data collection was proposed to include several sources. The collection procedure for each was prepared beforehand:

1. Online Interviews

Interviews were prepared for investigating participant responses to the learning environment, for example in the cultural appropriateness of the course, and their thoughts about the changes in the course.

Interviews in qualitative research can be unstructured or semi structured depending on the goals of the interview. Semi structured interviews use questions that have been prepared, but these are used flexibly to follow up unexpected information that comes from the responses. Qualitative interviews also tend to be informal. If participants are expected to share personal information, there needs an atmosphere of trust (Fontana & Frey, 2000; Hancock, 2002). In this research, semi structured interviews were used. Questions were prepared beforehand, and a full list of questions is presented in Appendix 3.

The interviews were planned to be done online, in the instant messaging system of the Moodle learning management system or in a private Moodle chat room. This provides more flexibility for interviewees as participants could respond from their offices or from their home and at a time that was suitable for both them and the researcher. It also means that the interviews would immediately be in the transcribed form and therefore save time during the collection and analysis procedures. Fontana and Frey (2000) comment on the disadvantage of electronic interviews, that non-verbal features such gestures and facial expressions cannot be recorded. It may cause more problems in developing trust; therefore the researcher needs to develop a relationship with the prospective interviewees during the research time. This is possible where the researcher is also the course facilitator. Despite the limitations, this method was selected, because data collection and analysis could take only one week for each research cycle, as modifications had to be made before the next component of the
course was started by participants. Therefore there would not have been enough time for transcription of data whilst the researcher was also facilitating the course

2. Discussion forums:

A template was prepared to record how learners responded to each other, as well as the topic subject. The chart was to be used to record the numbers of each type of posting, with one template used for each case study, as is shown in Appendix 4.

The discussion forums were analysed for two interaction concepts:

- **Discourse**, which concerns the way that participants respond to one another. The analysis used was based on tools described by Henri (1991) which concern how the learner responds to others. Discourse may be directly through the use of another person’s name; these are explicit responses; it may be indirectly through responding to the conversation of another person, these are implicit responses. Discourse may not relate to any other person’s responses, these are non-interactive comments. The way the learners respond can indicate what value they place on others comments and how they value these compared to the teacher’s input. Therefore these three categories were used to classify the case responses to others, with the unit of analysis being an idea. This idea was either a sentence or a paragraph.

- **Content analysis**: This concerns the actual message that participants post. The analysis used was developed on the work by Poole (2000) which was based on work by Thomas, Clift and Sagimoto (1996, cited in Poole, 2000). Topic messages are those where the participant’s discussions are on the required topic. Content discussions concern the course generally but not the specific topic that should be discussed. Technical comments concern postings such as Internet access, and non-academic postings concern comments that did not relate to class work.
3. Participant observation:

Hoepfl (1997) describes observation as the “classic form of data collection” (p. 53) in naturalistic research. Observation can be done by a researcher who is involved in the context with the participants, or when distant through the use of videos or other recording devices. Observations can be of the context or of the participants, and can be more accurate than interviews because it can provide data on what participants actually do, not what they say they do. Observations may also deepen understanding of interviews, as they can provide information concerning the context of the interviewee’s responses. Therefore they provide both a support and a check of the data gained from interviews (Hancock, 2002; Hoepfl, 1997; Mertens, 1998). The template used for Participant Observation is presented in Appendix 5.

In this research, the five online themes were used to guide data collection for participant observation, and questions were used to direct reflection during observations. The researcher was involved to a “moderate” degree (Mertens, 1998 p. 318), that is participated in some interaction, and the observation was of both the cases studied and the context of the research. The context was mainly the responses of other course participants, as the research topic of cultural preferences was highly dependent on the social environment of the learners. The researcher observed the activity of the participants on the course in the amount of interaction, the timing, their response to others, and in their tasks. These observations were recorded weekly on the template. As the course was totally online, this data was collected from the Moodle records. Reflection on participant responses helped focus on the reasons why certain things happened, for example why there was a lack of evidence of collaboration, or why discussion boards were not being used effectively. Thus the observations highlighted issues that needed to be examined more clearly in the research, or showed which aspects of the data collection needed to be modified for researching during the following online course.

4. Task Analysis.

Course tasks such as assignments were to be analysed descriptively for how well learners achieved the task goals.
Data analysis templates

Data collection and analysis used a case study strategy. However, this empirical research was iterative, according to the Design-based Research approach used in this study, where the analysis of the data is used to modify and refine the design guidelines. Therefore the research included data collection, data analysis, modification of theory in the form of design guidelines, and finally modification of the learning environment to complete one cycle of research, as is shown in Figures 3.1 and 3.5. Each research cycle was initially planned to investigate each course module, but due to various constraints there were only three cycles within this first implementation of the online course.

Data analysis templates were prepared before the data collection started. This was because at the end of each research cycle, data had to be analysed, guideline changes proposed and then changes could be made to the course design. These changes would be analysed in the following iteration. Analysis followed data collection continuously throughout the empirical stage of this research and templates were a means for the research to be focused and defined.

1. Case study analysis template

This template, as shown in Appendix 6, was prepared for recording and discussing findings from the raw data collected in the previous templates. One template was to be used for each case study for each research cycle. This helped to ensure that conclusions were made for each case, and then the conclusion would be compared, as each research participant was considered as a separate case, and not as participants of one case study. Yin (2003) comments that each case consists of a “whole study” (p. 50), and therefore each requires a separate report.

As with other templates, the case study analysis template was based on and consistent with sociocultural online learning themes. This was to help focus the study and also enable the analysis to be more directly applied to the theoretical propositions that were being tested in the study.
2. Conclusion analysis

The analysis of each case study is compared with others to determine how replicable the findings are. Although a single case study may be able to stand on its own, each replication adds robustness to the findings; therefore the use of multiple cases as in this study provides more convincing evidence.

As is shown in Appendix 7, analysis of the conclusion from each case was used to propose a change to the theoretical guidelines that were used to design the course. All of the conclusion templates were categorised according to the five sociocultural online learning themes. As there were conclusions in each of these five categories, changes could be proposed to the guidelines in these same five categories. Therefore these changes proposed to the design guidelines could be made in a straightforward manner. During the analysis phase, changes proposed during previous research cycles were also investigated to determine if changes to the theory had been supported in practice.

3. Log files:

One log file template was prepared for each research cycle to record changes or support of the guidelines, as shown in Appendix 8. This was first based in the sociocultural online themes, and taken from the case study comparison templates that were prepared for the analysis in each research cycle. Peer comments concerning the validity of the proposed changes could also be included in the log. These logs also provided a means to record the changes made to the course design, some of which could be actioned immediately in the learning environment. As others might not be actioned until the following learning environment was designed, the log files provided a suitable means of storing the information for later use.

Timetable

A timetable was prepared beforehand to structure the data collection and analysis, as shown in Appendix 9. This was because this research required several cycles of data collection and analysis, and a large amount of data that needed to be collected.
Procedure for each cycle of research

The procedure for data collection and analysis was also planned and written in steps. This was followed in the investigation:

- First, for each participant, the interview perceptions was analysed according to the five online themes. The supporting data were analysed and then placed alongside the interview analysis to determine how it supported interview comments. A conclusion was made on each of the five principles for each participant as a separate case.
- The conclusions of the case studies were compared in each of the five online principles.
- An analysis was made concerning each principle. Where there was evidence that a change was needed in the theoretical proposal in each guideline, it was proposed.
- A peer checked the proposal to confirm if the conclusion had been adequately supported by evidence.
- The change made in that guideline resulted in changes to course design.
- The analysis and changes were recorded in the logs and the new version of the guidelines was made, with the version number recorded in the document.

This is shown in diagrammatic form in Figure 7.1. The figure shows the analysis for one cycle, but the same procedure was used for each research cycle.
Timing for data collection:

The collection and analysis was proposed to match the modules on the course. Although the timetable was not followed due to unforeseen circumstances, this describes the procedure that was proposed.

The interviews were planned for the end of the first week of a two-week module, and the rest of the data collection and the analysis planned to be done in the second week. The peer review was planned for the end of that week, and the course design changes proposed from the theory would be done before the following module was scheduled to start. Therefore the data from module one would be analysed while participants would be doing the second module, and changes would be made for module three. Therefore the collection and analysis from Topic One would be used to make changes in Topic Three, and that from Topic Two for Topic Four. The final cycle was planned to be completed after the course was completed.
Selection of participants

The course that was used in the study was a professional development course run for university faculty members once every semester. The course was designed to last 50 hours over an eight-week period at work or at home and started in the second week of the semester, in January 2006. The course facilitator was also the researcher and had run several similar courses over the previous years. Participants were provided with deadlines for the course units and assignments, as it was expected that they would work on the course together as a group. Flexibility was also provided in that they could work on the course components at any time of the day or any part of the week that was suitable.

Course participants

The course was advertised by email to all university staff and faculty at the beginning of the semester. Those interested filled in the online form. There were 37 applicants from colleges in the university; eight were Omani, 10 were non-Omani Arabs and 19 were from other countries including Nigeria, the United States and India. The application form asked if participants had already used the Moodle learning management system, so that those who had not were given a workshop before the online course started in the following week. Of the 37 applicants, six did not start the course, and a further 12 withdrew during the orientation. Nine completed the course work, and the rest dropped out at different stages in the course, stating various reasons.

Research participants

After the workshop, but before the online course started, some course participants were sent an email to request if they would like to be a research participant in the online course. In this research, people were selected who were from the Arabian Gulf or Egypt, as their cultural values and community background would be more similar than those from the Levant. Also, those selected had a sufficient level of English that would enable them to respond sufficiently in the interviews.
A participant information sheet and a participant consent form, as shown in Appendices 19 and 20, were sent to those who were interested in further information, and an opportunity was provided for them to ask further questions. The research was approved by the ethics committee at the University of Wollongong, and the Office for Postgraduate Studies and Scientific Research at Sultan Qaboos University.

There were three cases studied. To provide confidentiality; pseudonyms were used in the research discussion; these were Amal, Badar and Dawood.

<table>
<thead>
<tr>
<th></th>
<th>Case 1: Amal</th>
<th>Case 2: Badar</th>
<th>Case 3: Dawood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>Male</td>
<td>Male</td>
</tr>
<tr>
<td>Age</td>
<td>52</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>25 years</td>
<td>12 years</td>
<td>2 years</td>
</tr>
</tbody>
</table>

**Table 7.1: Research participant data**

**Implementation**

**The online course setting**

The course was entirely online, apart from the workshop introducing participants to the Moodle Learning Management System and most participants worked on the course from their offices at work. In the first week there was a two-day holiday when no one entered the course. There were also administrative problems. A face-to-face meeting organised did not occur because of these issues. It also resulted in the course participants taking longer to complete the first topic. Many took two weeks instead of one; therefore the deadlines were changed on the course to meet this need.

Course participants did not follow the timing that was given for them. Many participants took a while to get involved, and Dawood did not start interacting until the third week of the course. All course participants started Topic 2 at different times, and posted to the first forum over a four-week period instead of two weeks. Topic 2 should have been completed in mid February but some course participants were still posting in the Topic 2 discussion forum towards the end of March. This meant that the research timetable had to be reorganised because the interviews and data were
scheduled to occur after the first topic was completed. As the research participants took different amounts of time working on the topics, this resulted in the first set of interviews taking place over a two week time period instead of over two days as had been planned. This meant that analysis and subsequent modifications to the course were delayed and it also resulted in three research cycles being done instead of the proposed four.

The second cycle of research was on data from Topic 2, as shown in Table 6.8. Course participants were still not keeping to course deadlines, and therefore the data collection and analysis were done when the cases had completed this topic. However they were still working on Topic 2 when some other participants in the course were completing the tasks for Topic 3.

By the third cycle of research, it was found that Badar was significantly behind other course participants, and some changes could not be implemented into Topic 3. Although this was an eight-week course, many participants took up to 12 weeks to complete it, and some participants were about four weeks behind others. This meant that two more cycles of research during the course would not be beneficial, as course changes proposed in a third iteration could not be implemented or evaluated before the course was completed. Thus the final research cycle was the third one and it was done at the completion of the course. The changes proposed would then be applied to the second course that was tested in the following semester.

**Interviewing the participants**

Each research participant was interviewed in each of the three cycles. The first interview for Badar was online as was planned. Amal had problems with her computer and the Internet. Most of her interview was done online in the Moodle messaging system, but when her computer developed problems, the last part of the interview was completed on the telephone. The conversation was typed onto the computer during the interview, and then sent to Amal to confirm the accuracy of the recording. Dawood requested that the first interview be done in his office. This was done and the discussion was typed on the computer during that meeting. The document was then sent to him to confirm the accuracy of the recording.
The interviews for the second research cycle were done a month after the first cycle. These were held over two days in the middle of March, with the analysis and guideline changes being completed by the following week. Amal had problems with her computer throughout the course, so her interview was in her office. The interview questions, as shown in Appendix 3, were used as a template, and the conversation was typed during the interview and sent to her for checking. The interview with Badar and Dawood was online using private chat rooms. As was previously noted, time restrictions prevented interviews from being taped and transcribed.

For the third research cycle, the interviews were done last. Questions were designed as a general guide, as seen in Appendix 3, but they were also tailored for each case, to help affirm or modify the conclusions being drawn from the other data. These last interviews were done face to face, recorded on tape, transcribed and then sent to the participants to check the accuracy.

The interviews were analysed for comments relating to each of the five online sociocultural themes. Colour codes were used for ease of analysis, and these were copied into the templates that were prepared for each case study for each cycle. As the case studies were being analysed according to the five online themes, the transfer of the interview segments to the case study templates was a straightforward matter and worked well. After the interviews were analysed, other data from the course were recorded and analysed using the procedure described, and as demonstrated in Figure 7.1.

**Collection of interaction data**

The learning environment included discussion forums and chats. Each of the five topics in the course had its own space for these chats and forums, and copies were kept of all the postings made by each course participant. The date and timing of the postings were recorded, and they could also be viewed in the context of the starter question, and in the context of other responses to the posts. Therefore it was possible to record how often people posted and replied to others, and how frequently they interacted.
Procedure for refining the learning environment

A purpose of the iterative phase of this research is to refine and modify the design guidelines and model learning environment as a result of their implementation in this context. The iterations enabled the guidelines and learning environment to be tested and refined repeatedly.

Proposing refinement of the design guidelines

The data collected were analysed over three research cycles using the five online themes as a framework, and evaluated the adequacy of the proposed guidelines for describing a suitable learning environment for these participants. The analyses were compared to the guideline descriptions, and either support or modifications were proposed to the guidelines.

Peer evaluation of the proposed guideline refinements

In each cycle, the proposed modifications were presented to a peer in the field who examined the research data and commented on the adequacy of the results to support the proposed modifications. This peer is from an Arabic cultural background and has lectured in a similar field for over fifteen years. For all three research cycles, the proposed changes were supported, and the reports from this peer are presented in Appendix 15. The evaluation of findings by a colleague is consistent with a Design-based Research approach, which promotes accountability in research through the use of peer evaluation, and therefore increases the validity of conclusions.

Changes to the learning environment

After the guideline changes were accepted, changes were made to the learning environment, and in the following cycle, data were collected to find out if the changes provided a more suitable design. Therefore each cycle could result in further
modification or support of the guidelines. In some cases these changes could not be evaluated, for example where they applied to the orientation components.

In the presentation of the data analysis, each of the five online themes is discussed, showing the refinement of the guidelines and model course through each of the three cycles of research.

**First Research Cycle**

**Analysis of findings**

The following describes the analysis of the findings in the first research cycle. It includes the discussion and conclusions for each of the five themes, after the collation of analyses on the three case studies from their case study analysis templates. Examples of the data collected is shown in Appendices 10 to 12, and shows data discussions and conclusions for Amal, Badar and Dawood for the first iteration.

*Social presence analysis:*

None of the cases interviewed sensed any social presence in their two weeks of being on the course. Amal felt “alone and on my own”; Badar noted, “At the moment I feel I am working alone”; and Dawood said, “I feel alone so far”. Amal and Badar had made direct comments to others in the welcome or help forums and Amal had received a response from other people on the course, which she acknowledged. Dawood also recognised at least one other person on the course. However none of this was sufficient to make the participants feel they were part of the community. The emails from the facilitator and welcoming notices must not have provided research participants with a sense of social presence for the course either.

The three cases studied all commented on their desire to feel more of a community; for example, Amal said she wanted the “human touch”, for the course to become a place where people “love to communicate”. Badar want to “build bridges” between people and did not want to “miss the train”; and Dawood wanted to feel part of “the family of the course”. This may imply that they all have a preference and desire to work and learn with others as part of a community, and not as individuals.
They all suggested changes they felt that would help to make the course feel more like a community or family. Amal and Dawood suggested a meeting at the beginning to get to know each other, and all three felt that they would like to have a structured time when they know everyone is online together, and have a chat at that time. Badar also suggested more emails from the facilitator to the participants to encourage them “until they can stand on their own feet”. Dawood also noted that already knowing other people on the course could help build the sense of community. Badar also believed that this structure or support would provide the means to enhance the communication.

Amal and Badar both mentioned issues with time, both mentioned being interrupted while working on the course and not finishing what they intended to do.

I have time management crises …… I just need to sort myself out and manage my time properly [Interview with Badar].

Dawood mentioned that he used ideas provided by the facilitator to manage his time so he could do the course. This suggests that support needs to be provided to help course participants find ways to schedule the study time in a way that they can complete it uninterrupted

Guideline modifications:

Guideline 1: These findings suggest that there is not enough communication for these cases. Thus perhaps more use should be made of the chat room, and the sending of encouraging emails from the facilitator regularly until the participant is into the course community. These findings would affirm the importance of the Social Presence Guideline 1 that recommends that all communication media should be used to develop social presence, because the present methods used in this course appear to be insufficient. This suggests that this guideline should be modified to include the importance of using chat activities from the first week of the course.

Guideline 8: The findings also suggest that more support and scaffolding needs to be provided, either in the course design or as soft scaffolding through interaction with individual course participants. This can provide the structure for increased interaction,
a sense of community and a means for course participants to find the time needed to complete the course. This affirms Social Presence Guideline 8 which recommends more support in the environment, and the findings also suggest that the guideline be modified to suggest that there be should include, for example, more meetings, initially in a social setting, then online through regular chats where learners can all meet together synchronously, and additionally in a computer lab for technical and task help. It should also include help with participant’s own time management issues.

**Interaction**

Two of the cases studied showed there was a small amount of response towards other participants on the course, though this was only in the orientation unit, and Amal felt that she had only a small amount of time available to interact and Dawood commented that he might interact if he knew someone. This was not enough data to provide a recommendation for a guideline modification.

**Collaboration**

At this stage, postings were not focussed on participants learning from each other, and therefore no collaborative learning was identified in any data.

**Cognitive Strategies**

Amal and Dawood responded to the discussion topic in a general manner, not as directed. Badar required more help, through feedback from the facilitator, and he also commented more guidance would be helpful, as he said:

> I don't know whether I should write what I learnt from them or what I feel about them is more appropriate [interview with Badar]

Therefore this suggests that there may have been insufficient scaffolding provided for this activity, but this is not clear.
All three cases investigated found that the orientation material in the course was a negative part of the course. Amal thought it was “background” and implied that not all of it needed to be read, Badar was selective, and Dawood found it was “not encouraging” or “off-putting” in the same way an initial look at an exam paper is. This initial part of the course contained the preparation material that has been described as necessary for orientation to learning in a student-centred course, such as expectations in new learning approaches as in Student-centred Guidelines 1 and 2, and strategic tool descriptions for tasks and discussions, as in Student-Centred Guideline 4. Thus the findings suggested that the orientation should be either presented when and where it is needed, or be provided a context in which to give it meaning. For example, chat tips should be linked from the first chat room that will be used, and the discussion tips should be linked in the forums. Thus direct linking and soft scaffolding in the form of spontaneous feedback, modelling or verbal support can be provided to help ensure the tools are being used correctly.

**Guideline modifications**

The present design guidelines contain recommendations for training or preparation, for example Interaction Guidelines 2 which states “train students how to use the discussion boards”. These are also described in a more general way in Student-Centred Guidelines 1 “Orientate learners so they can understand the type of learning expected”, and, know what is expected of them. These guides and tools should all be placed in a context. Therefore Orientation may be more effective by other approaches such as by example activities and training, or perhaps preparation may be more effective in the context of use. Therefore Student-centred Guideline 2, and Interaction Guideline 2 should use the word 'orientation' instead of 'training', and should focus on the educational aspects of the interaction. Social Presence guideline 1 should be modified to recommend the use of modelling or examples in how to use the tools.
Guideline and learning design refinements proposed

Table 7.2 represents the guideline changes that were proposed based on the research findings in the first cycle of research, and the changes that were proposed to the design of the learning environment, based on the refinement of the guidelines.

Table 7.2: Guideline and learning design refinements from the first iteration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use discussion forums, chat and email.</td>
<td>Use discussion forums, chat, and email. More use should be made of the chat room from the first week.</td>
<td>Regular chat times were made available to give opportunity for participants to interact synchronously with each other. Two chat times a week were created, based on responses of course participants to times they would be available.</td>
</tr>
<tr>
<td>1.8</td>
<td>Provide more support in the learning environment.</td>
<td>Provide more support in the learning environment. This may include more meetings, initially in a social setting, then online through regular chats, and time management issues.</td>
<td>Initial classroom meeting for welcoming and technical support, regular chats from the first week and the use of a computer laboratory weekly will be provided while extra support is required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective interaction:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>Train students in how to use the discussion boards from a technical and educational perspective, as well as training as moderators.</td>
<td>Orientate students in how to use discussion boards in the context of use. This includes how to use discussion boards from a technical and educational perspective, as well as training as moderators,</td>
<td>Tips for using forum and chat were linked in the discussion forums and chat places for course participants to access those at the time of using these tools; that is, they are in the place of context</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Provide training for learners on how to use student-centred courses</td>
<td>Provide examples or activities that help learners to understand the type of learning that is expected of them in student centred courses</td>
<td>The orientation module will be redesigned to include activities to exemplify the type of learning expected in an online course.</td>
</tr>
<tr>
<td>5.2</td>
<td>Train learners so they can understand the benefits of a learner-centred environment.</td>
<td>Orientate learners so they can understand the benefits of a learner-centred environment.</td>
<td>As described in 5.1 modifications</td>
</tr>
</tbody>
</table>
Assessment by a peer: These were presented to a peer with supporting data. As shown in Appendix 15, the proposals were found to be well supported by the data and were accepted. Thus, the guideline changes were accepted, and the proposed changes were made to the learning design.

Log files

Analyses were recorded in the log, including the guidelines supported, the changes proposed and the peer comments. The log reports also described how the guidelines would be used to change the course design. Some of these changes could be implemented and tested in the following iteration. Thus these logs provided a record of how the analysis from the research resulted in design guideline changes and how these were used to change the design of the course.

Reflections on the first implementation

The effectiveness of using the design solution: In this initial testing phase, it was found that learner responses from the empirical research could be used to propose modifications to design guidelines that could then be used to make changes in the learning environment. This supports the design solution proposed in Chapter Five and as represented in Figure 5.2

Modifications found in only two online themes: At this stage, the modifications proposed concerned mainly social presence and student-centred guidelines. This may have been because the participants had not at that stage started the learning topics in the course, or these two concepts were very different to the preferences of the cases studied. Changes proposed for the learning environment were made, and the following research cycle should determine the effects of these changes on the learning.
The Second Research Cycle

Data collection

Context of the second research cycle

This iteration was on data from Topic Two, as shown in Table 6.8. A month after the first set of interviews was completed, the second set was done. These interviews were held over two days in the middle of March, with the analysis and guideline changes being completed by the following week. Amal was still having problems with her computer, so her interview was in her office. The interview questions, as shown in Appendix 3, were used as a template, and the conversation was typed during the interview and sent to her for checking. The interview with Badar and Dawood was online using private chat rooms. As was previously noted, time restrictions prevented interviews from being taped and transcribed.

Collection and analysis procedures

The collection and analysis procedures used were the same as for the first cycle. However, for the analysis phase, conclusions made for each case could now be compared both longitudinally and latitudinally. That is, they were compared to the comments. For example, if one case had discussion about social networks, then the other cases were checked to ensure data and conclusions were made on the same topic. This guided approach to analysis directed and focussed the research. This process is important in case studies, as they seek replicability of findings. Therefore each item identified for each case should be compared for the same issue in other cases to build robustness or provide a modification of a conclusion.

Analysis of findings

As with the previous cycle, the data collected were analysed through the use of the templates. As these were based in the five online learning themes, this meant that the sociocultural theories continued to guide the analysis of data and modifications of the guidelines and learning environment.
Social presence

Concerning previous changes made: Both Amal and Dawood felt more of a sense of community; and both had been involved in the chats. Amal appreciated the emails from the facilitator and Dawood a face-to-face meeting with others.

I haven't been communicating with others really, so yes I do (feel alone) [Interview with Badar]

Badar was not involved in the chats and did not attend a face-to-face meeting with others, although he did receive emails from the facilitator. Therefore these findings support the course changes of adding chat to encourage a sense of community and belonging.

Dawood appeared to benefit from the addition of a face-to-face session. Although he interacted with others in the chat room, it is those whom he had met or knew face to face that he commented about seeing online, suggesting that the face-to-face meeting was more important for feeling a sense of community. Badar did not attend and did not feel a sense of community. Amal commented that she now felt part of a community, but this was not with the whole group

I don’t have a good idea about the whole class, but just the people I have chatted with, yes I feel I have someone waiting there [Interview with Amal].

Guideline support: These findings show support for the modifications to social presence guidelines 1 and 8.

New guideline concerning responsibility and accountability: Both Badar and Dawood felt that responsibility to others is an important aspect on the course. For Badar, this was related to accountability and encouragement:

I am trying to contact (a participant on the course who messaged him) to chat with and I hope that will make me feel more accountable [Interview with Badar]
He felt this would increase motivation and therefore provide a reason to spend more time on the course. That is, that it was not so much time management issues that affected time online, rather the motivation that affected prioritising time. For Dawood, responsibility related more to helping each other reach a common goal; “we have a specific objective that all of us are trying to reach.” Although he felt this was important, he also realised he did not follow through with it. Amal did not feel any responsibility towards others as she felt that this was related to being an adult and the fact that the course was a short duration. Although the issues of responsibility and accountability were not commonly held by all cases studied, it was significant. If the Arabic culture is collectivist it can be expected that some members of the culture would feel more comfortable in an environment where social networks have responsibility and accountability. Therefore, if course activities were designed to provide learners with more accountability to others, this may provide a sense of community to those such as Badar and Dawood. It may also help with time management issues, as Badar mentioned that the focus of interaction should be to help one another “to make the bond to the course stronger”, and that he was able to spend a significant time on the course where he had “an obligation” to someone.

*Rationale for the new guideline, No 9:* Activities that are designed to increase participants' responsibility and accountability to others may have benefits for some in providing a greater sense of community and the motivation to be more involved in the course. Therefore this new guideline should propose that activities should be designed in a way that requires learners to be responsible to each other in completing the work.

*Interaction*

All three cases interacted less than the class average and less than they did at the beginning of the course. Amal commented that she was interacting enough for her needs, Badar commented that although he could interact more, the weekly chat was enough to build bonds, and Badar wanted to interact more but responded only to posts that he was interested in. However, as all three cases were motivated to complete the course, it may be that they did not see the benefits of interaction. As the learning forums contained only one posting from two cases, it was not possible to make any recommendations concerning these guidelines in this cycle of research.
Collaboration

Badar’s collaborative expectations were not met; when he commented on what tasks he wanted:

I will feel I am part of his/her learning process and he/she is part of mine and we both need to carry the weight to progress [Interview with Badar].

Dawood’s concerns for working together for group benefit were not met either:

We all have to be more genuine or enthusiastic because in doing so we are effectively helping each other [Interview with Dawood].

Guideline modifications: Even though both Badar and Dawood expressed the value of working together with others, only Badar responded in the group forum as he felt that there needed to be commitment to each other. This means that accountability and commitment could be developed in cooperative tasks where participants have separate tasks they must complete for each other as part of a group activity. Although collaborative tasks result in more conceptual learning, cooperative activities may be needed to increase accountability, and therefore both tasks types are needed. Collaborative and co-operative activities on the course were minimal. This recommends that Collaborative Guideline 4 be modified to propose that separate tasks be used, as it may help participants develop accountability and commitment to each other.

Cognitive strategies

Amal preferred to use guidelines and categorisation tools. Badar preferred examples

Your examples (in the assignment) certainly did help me to focus my thought, gave the confidence about what to write [Interview with Badar]
However, he showed no evidence of tool use in his assignment. Dawood preferred examples and models:

Guidelines are not received well unless they are supported by a living example [Interview with Dawood].

The three research participants did only the first assignment, and therefore there is insufficient data to use for evaluating the guidelines.

*Student-centred Learning*

*Concerning refinements made to guidelines 1 and 2:* Amal and Dawood either did not access or did not use some of the tools provided. Amal had commented that she had read only some of the orientation material, and the issues she was not aware of were in that material. Dawood found the orientation material “not encouraging”, which may have been the reason why he did not use the tools provided for his assignment. Thus the tools provided did not benefit Amal in understanding the course structure or Dawood in the use of tools for the assignment and discussion content, and all three in the learning benefits of using discussion forums. Therefore this would support the proposal in the previous research cycle, to provide orientation in a manner that the participants can access and use it.

There was insufficient data for evaluation of any other student-centred guidelines.

*Guideline and learning design refinements proposed*

Table 7.3 represents the guideline changes that were proposed based on the research findings in the second cycle of research, and the changes that were proposed to the design of the learning environment, based on the refinement of the guidelines.
### Table 7.3: Guideline and learning design refinements from the second iteration

#### 1. Social presence refinements

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use discussion forums, chat, and email. More use should be made of the chat room from the first week, and encouraging emails should be sent by the facilitator regularly until the participants are into the course community.</td>
<td>This guideline was supported</td>
<td>No further modifications</td>
</tr>
<tr>
<td>1.8</td>
<td>Provide more support in the learning environment. This may include more meetings, initially in a social setting, then online through regular chats, and time management issues.</td>
<td>This guideline was supported</td>
<td>No further modifications</td>
</tr>
<tr>
<td>1.10</td>
<td>New guideline</td>
<td>Design activities that require learners to be responsible to each other in completing the work.</td>
<td>The final project was modified to be peer marking with a rubric was provided to scaffold marking. Chat sessions used participants as moderators to increase learner responsibility.</td>
</tr>
</tbody>
</table>

#### 3. Collaboration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to promote effective collaboration:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4</td>
<td>Do not use separate roles or functions for all collaborative work.</td>
<td>Use separate roles or functions for some collaborative work.</td>
<td>This guideline modification was linked to Guideline 1.10, and they share the same learning design modifications.</td>
</tr>
</tbody>
</table>

#### 5. Student-centred Learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2</td>
<td>Orientate learners so they can understand the benefits of a learner-centred environment.</td>
<td>This refinement was supported</td>
<td>No further modifications</td>
</tr>
</tbody>
</table>

**Assessment by a peer:** As with the first research cycle, these were presented to a peer with supporting data. The proposals were found to be well supported and were therefore accepted, as shown in Appendix 15. Thus, the guideline changes were made, and changes were made to the learning design.
Reflection on results and analysis procedure

Research cycle timings: Following analysis in the first research cycle, modifications were made to Topic Three. However, the difficulties with the participants working at different speeds caused problems as some early participants had already started this Topic Three before the changes were made. In her second interview, Amal commented:

When you change Topic Zero (The news topic); it creates an impression on me; it encourages me. But when you change content I feel lost. Add new content documents, but do not change the old one.

Therefore this means that the timings of the collection, analysis and modification processes will need to be reviewed.

Ability to create as well as modify or support guidelines: In this cycle of research, a new design guideline was proposed, based on a concept that was common in the cases studied. This concept was based in practice and developed within the sociocultural framework and could be identified with values of the participants’ cultural background. Therefore this shows the ability of the design solution to incorporate findings from both theory and practice into the research cycle as design guidelines for testing and modification. The case study strategy makes this possible because it uses theory to define the areas of research, and Design-based Research uses iterative research to enable the proposals to be tested and refined. Therefore, these two research tools provide a means to manipulate the learning environment for testing theories iteratively and therefore can help identify concepts that may be significant in the learning environment but had not been extracted from the literature.

Refinement of data collection procedure required: During the analysis in this second cycle, it was found, when the cases were interviewed before other data were analysed, that some information from the data could not be checked with the research participant. For example where it was found the interaction was low, it would have been helpful to find why this was so. Therefore in the following research cycles, the interview was done last to help affirm or modify the conclusions being drawn on the other data.
The Third Research Cycle

Data collection

As Badar was significantly behind other course participants, some changes could not be implemented into Topic Three, as had been the original plans, as many course participants had already started this topic before the changes could take place. Although this was an eight-week course, many participants took up to 12 weeks to complete it, and some participants were about four weeks behind others. This meant that two more cycles of research during the course would not be beneficial, as course changes proposed in a third iteration could not be implemented or evaluated before the course was completed. Thus the final research cycle was the third one and was done at the completion of the course. The changes proposed would then be applied to the second course that was tested in the following semester.

Interviews: Following the completion of the course, data were collected and analysed in the same manner as for the previous two cycles. The interviews were done last. Questions were designed as a general guide, as seen in Appendix 3, but they were also tailored for each case, to help affirm or modify the conclusions being drawn from the other data. These last interviews were done face to face, recorded on tape, transcribed and then sent to the participants to check the accuracy.

Analysis procedure

The analysis procedure for the guidelines was also done differently, as proposed at the end of the second research cycle. Using a case study strategy, the evidence from one case should be sufficient to propose guideline modifications, but the other cases should either strengthen that conclusion or modify it some way. Yin describes use of conclusions in case studies as “pattern matching” (2003, p. 116), where the results are compared with the predicted patterns; in this research that is the proposed guidelines. In the first two research cycles, this approach to using case study conclusions was not done very clearly; the results were used to make a final conclusion for the different guidelines. In the third research cycle the conclusions about guideline changes were
made before the cases were compared, therefore the pattern-matching strategy could be more easily used. Yin comments that pattern matching is not an easy technique to use, and requires practice, as was found in the improvement in the way the conclusions were used in this research in the research cycles; it appeared that making conclusions about the guidelines for each case enabled pattern matching to be done more effectively.

Analysis of the findings

For each case, conclusions were made concerning the guideline topics. These conclusions were compared, and then analysed.

Social presence

Response to modifications of the learning environment from the previous iteration: In the final interviews, Badar described his discouragement because of the lack of commitment obligation and responsibility as a course member and as part of a chat group; and this was found to be a major factor in him not completing the course. This finding supported the need for committed responsible relationships as being a significant factor in course success for Badar. This is affirmed by Amal who had the opposite experience. Amal had two others from her department on the course, and she noted that “this helped us a lot”. The chat records from the course also showed that Amal had provided support for her colleagues in showing them how to use a chat room the day before a group chat activity. Therefore Guideline no. 10, developed in the second cycle of research, is supported in this research cycle.

Discussion of other social presence points

Using chat as well as forums: Chat was found to be beneficial for one case in one situation; the two other cases found language, technical issues and misuse impeded its benefits, as Badar commented:

These people who the language is not their native language tend to express views in different ways, joke in different ways and what is a standard view for
one is completely vague for the other [Interview with Badar].

Discussion forums were not found to build a sense of community in two cases. As well there was insufficient interaction, a language barrier, and a more formal style of interaction, as would be expected when course participants are not close to each other. Therefore, this suggests that chat and forums do not help initiate social presence development and other means need to be identified. These findings suggest that social presence cannot be built just by using the interactive tools in the learning management system.

*Guideline modification:* Guideline 1 should be further refined to comment that the use of discussion forums and chat may need to be encouraged through email, as they may not be the tools to initiate social presence.

*Using social networks:* It appeared that Amal’s social networks had a significant benefit for her. Amal and the two others from her department on the course worked together and supported each other and they all completed the course:

> We were together in one department … this helped us a lot; so many times [we were] discussing between ourselves in the corridors about the [course] [Interview with Amal].

All cases felt that working in groups with others from the same or similar department would provide a “close circle”, noted Dawood, or where “barriers could disappear” as Badar commented, and people could share more freely. By contrast, both Badar and Dawood felt that they were working alone, and did not develop social relationships with anyone online. Thus, previous or new social networks may provide a key to developing social presence.

*Guideline refinement:* As findings identify the significance of social networks, Guideline 2 should be refined to social networks the participants already have or support the development of networks in the learning environment where there no previous relationships, as they may be the most significant factor in developing social presence.
Frequency of interaction: All cases showed a low frequency of interaction in discussion forums. All had felt a lack of social affinity or sense of community on the course. The two with the lowest response felt alone. It may be that low sense of social presence caused by other factors discouraged the research participants from interacting frequently. Frequency of interaction may not be the factor that caused social presence, rather may be the result of social presence. This suggests that refinements should be proposed to Guideline 3 that state that interaction develops the sense of community. These findings suggest that a sense of community may first need to be developed.

Affective language: All cases felt there are restrictions in sharing freely in this part of the world. Two cases mentioned that the opinion of others is important; Badar commented it is hard to share jokes or personal thoughts in a society where “opinion matters” and as Amal mentioned, shyness can make free discussion between men and women difficult. Two cases felt that people would share more freely when there is less distance between people and they know each other better, and Amal felt discussions in single gender groups might be better:

You can’t just talk openly with a man. He will not take it easily [Interview with Amal]

This suggests that community and the sharing of a more personal nature may occur when participants are close to each other. This supports the findings for the relationship between community development and the sense of community, and proposes that getting to know others first may result in more personal sharing.

Guideline modification: Guideline 5 should be refined to suggest ways to promote the development of relationships such as in single gender groups as a means to help with more personal sharing. This may help with the use of more affective language which enables learners to project themselves in the medium.

Teacher immediacy: All three cases commented on the importance of the facilitator’s messages, and Amal said this was what motivated her to finish the course.
The student will be so proud that the teacher is actually recognising him as an individual [Interview with Badar]

Badar also commented that they don’t want to disappoint the teacher. Dawood commented that facilitator is the “string that keeps the bond alive”.

*Guideline modification:* These findings explain the importance of the facilitator in encouraging the participants in their work through the use of personal messages, and therefore this should be included in a refinement to Guideline 6.

*New Guideline, Face-to-face component of the course:* All cases commented on the importance of face-to-face components; Amal and Badar described the course as “dry” due to insufficient face-to-face contact, and two described the face-to-face component as the important “human touch”, as noted by Amal, or as the “human factor” said Dawood. This was regardless of the amount of interaction online with the tutor or other participants, and may help participants to get to know each other, to “strengthen relationships” said Dawood, and to help people want to communicate.

*Rationale for the new guideline:* This suggests that the face-to-face component is an important component of a learning environment in enabling participants to know each other and to be able to build relationships. This may motivate them to communicate and work together to develop a sense of community and therefore to relate online in a more satisfying manner. A new Guideline, number 11, therefore should be proposed that initial face-to-face classes should be designed in the course.

*Interaction*

*Response to previous modifications:* One refinement was made in the first iteration. Findings from the Student Centred guidelines suggested that orientation was required to enable participants to use the discussion forums effectively. This analysis was used to support the modification of Interaction Guideline 2 that was made in the second iteration. There was not enough data to make any comments on this guideline.
Other points: All cases showed a low frequency of interaction in discussion forums. All had felt a lack of social affinity or sense of community on the course. The two with the lowest response felt alone, therefore the interaction continued to be ineffective and by this final iteration, only Amal was active on the course.

How these findings relate to the guidelines: Poor interaction on the course resulted in lack of evidence for supporting or refining the interaction guidelines.

Collaboration

Response to previous changes: There were no previous changes to comment on.

Other points Although the collaborative activity in the final course unit was not done, Amal and her colleagues showed they were working collaboratively through understanding the readings together, sharing facilitators encouraging messages together and discussing the course together, as was noted in the analysis of social presence. Amal and her work colleagues finished the course and all of them implemented the course into their own teaching immediately. Badar thought that the collaborative activity was not successful because “the substances that keep them close together just aren’t there,” suggesting that networks and social presence may be significant before collaborative activities can be completed successfully. This may support the findings in the second research cycle concerning the relationship between social presence and collaborative work but there was insufficient data to make a proposal about the guidelines.

Cognitive strategies

Response to previous changes: There were no previous changes to comment on.

Other points: The previous iteration found that participants did not use the support tools provided in the course design, and this has continued to be so for Amal, the only participant to complete the course. However as it is not understood if this is due to unclear format of the course, or issues related to the learner, theory changes should not be proposed. No conclusion was made for any of the cases.
Student-centred learning

None of the cases used the tools that were provided for all their work, however there was insufficient data to draw conclusions.

Guideline and learning design refinements proposed

Modifications were proposed to the guidelines and learning design based on the analysis, as is represented in table 7.4.

Table 7.4: Guideline and learning design refinements from the third iteration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use discussion forums, chat, and email. More use should be made of the chat room from the first week.</td>
<td>Use discussion forums and chat and encourage their use through emails.</td>
<td>Both chat and discussion forums were integrated into the design of the course. Messages to groups and individuals were planned to help initiate social presence.</td>
</tr>
<tr>
<td>1.2</td>
<td>Use social networks of the classroom.</td>
<td>Use social networks the participants already have, or provide groups of people within a close circle.</td>
<td>Participants will be encouraged to register with a colleague. Groups will be set from the beginning of the course and based at the faculty level, the most likely place where there would already be social networks</td>
</tr>
<tr>
<td>1.3</td>
<td>Encourage interaction.</td>
<td>Encourage interaction by developing commitment and responsibility.</td>
<td>Refinements concern the use of emails that will be sent participants whenever interaction is low, to find out what the difficulty or problem is.</td>
</tr>
<tr>
<td>1.5</td>
<td>Help provide an environment where affective language is used</td>
<td>Provide the opportunity for participants to build relationships such as through small or single gender groups.</td>
<td>Groups will be designed into the course to promote deeper relationships, as was described for Guideline 2 modifications.</td>
</tr>
<tr>
<td>1.6</td>
<td>Build a sense of teacher immediacy for learners from diverse cultural backgrounds</td>
<td>Build a sense of teacher immediacy through the use of personal messages.</td>
<td>As the participants are encouraged by personal emails, these will be sent in the following course.</td>
</tr>
<tr>
<td>1.10</td>
<td>Design activities that require learners to be responsible to each other in completing the work.</td>
<td>This refinement was supported</td>
<td>No further modifications</td>
</tr>
<tr>
<td>1.11</td>
<td>New guideline</td>
<td>Provide initial face-to-face classes.</td>
<td>Participants will be in small groups and will get to know each other in a face-to-face environment at the beginning of the course.</td>
</tr>
</tbody>
</table>
Peer evaluation:

A peer accepted these guideline changes, based on the supporting data, as presented in Appendix 15. Therefore changes were made the learning environment, directed by these changed guidelines.

Reflection on results and analysis procedure

Guideline results: As with the other cycles, the changes concerned mainly the social presence guidelines. This may be because of its significance in successful learning, or it may be the way the research was carried out. The research process was refined as experience was gained during the process, and continued in later research cycles to help increase the effectiveness of the data collection and analysis.

Analysis procedure: This analysis showed that the social presence guidelines were more effectively analysed when the guidelines were used as a basis for developing conclusions for each case and then compared. However this analysis also showed that some findings in the other themes did not translate into guideline modification, support or creation. Therefore the analysis procedure needs to be further refined to apply more of the data to evaluating the guidelines.

Evaluation of the First Implementation

Refinements to the guidelines and learning environment

This first implementation of the theoretical principles, refined guidelines and a modified learning environment were developed as a practical outcome of this research.

Guideline refinements

There were ten guidelines that were modified and two new ones added as is represented in Table 7.5. These guideline refinements were used to modify the
learning environment, as described in this chapter and summarised in Appendix 13.
In this research approach, the analysis of the data was not used to modify the learning
environment directly. Instead, it was used to modify and refine the design guidelines,
and these directed the modifications to the learning environment. This is consistent
with a Design-based Research approach that develops both a modified learning
environment and a modified theory.

Table 7.5: Guideline refinements from the first implementation

<table>
<thead>
<tr>
<th>No.</th>
<th>Original guideline:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use discussion forums, chat and email.</td>
<td>Use discussion forums and chat and encourage their use through emails.</td>
<td>Modified in Cycle 1. Modification supported in Cycle 2. Further refined in Cycle 3.</td>
</tr>
<tr>
<td>1.2</td>
<td>Use social networks of the classroom.</td>
<td>Use social networks the participants already have, or provide groups of people within a close circle.</td>
<td>Modified in Cycle 3.</td>
</tr>
<tr>
<td>1.3</td>
<td>Encourage interaction.</td>
<td>Where the frequency of interaction is low, determine the causes of low social presence and encourage that.</td>
<td>Modified in Cycle 3.</td>
</tr>
<tr>
<td>1.5</td>
<td>Help provide an environment where affective language is used</td>
<td>Provide the opportunity for participants to build relationships such as through small or single gender groups.</td>
<td>Modified in Cycle 3.</td>
</tr>
<tr>
<td>1.6</td>
<td>Build a sense of teacher immediacy for learners from diverse cultural backgrounds</td>
<td>Build a sense of teacher immediacy through the use of personal messages.</td>
<td>Modified in Cycle 3.</td>
</tr>
<tr>
<td>1.8</td>
<td>Provide more support in the learning environment.</td>
<td>Provide more support in the learning environment. This may include more meetings, initially in a social setting, then online through regular chats, and time management issues.</td>
<td>Modified in Cycle 1.</td>
</tr>
<tr>
<td>1.10</td>
<td>New guideline</td>
<td>Design activities that require learners to be responsible to each other in completing the work.</td>
<td>New guideline in Cycle 2. Supported in Cycle 3.</td>
</tr>
<tr>
<td>1.11</td>
<td>New guideline</td>
<td>Provide initial face-to-face classes.</td>
<td>New guideline in Cycle 3.</td>
</tr>
</tbody>
</table>

2. Interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>Original guideline:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>Train students in how to use the discussion boards from a technical and educational perspective, as well as training as moderators.</td>
<td>Orientate students in how to use discussion boards in the context of use. This includes how to use discussion boards from a technical and educational perspective, as well as training as moderators.</td>
<td>Modified in Cycle 1.</td>
</tr>
</tbody>
</table>
### 3. Collaboration

<table>
<thead>
<tr>
<th>No.</th>
<th>Original guideline:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4</td>
<td>Do not use separate roles or functions for all collaborative work.</td>
<td>Use separate roles or functions for some collaborative work.</td>
<td>Modified in Cycle 2</td>
</tr>
</tbody>
</table>

### 4. Cognitive Strategies

No guidelines were evaluated.

### 5. Student-centred Learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Provide training for learners on how to use student-centred courses</td>
<td>Provide examples or activities that help learners to understand the type of learning that is expected of them in student-centred courses</td>
<td>Modified in Cycle 1</td>
</tr>
</tbody>
</table>
| 5.2 | Train learners so they can understand the benefits of a learner-centred environment. | Orientate learners so they can understand the benefits of a learner-centred environment. | Modified in Cycle 1  
Modification supported in Cycle 3 |

**Summary of changes that were proposed for the learning environment**

- Faculty registering for the course would be encouraged to ask colleagues to also register.
- Course interaction will be mainly through small groups and the orientation will provide participants the opportunity to get to know each other in a face-to-face environment at the beginning of the course.
- Group members will be selected based on their college; the most likely place where there would already be social networks.
- The use of e-learning tools will be redesigned through activities to exemplify the type of learning expected in an online course.
- Provision of an initial classroom get-together for welcoming and technical support, regular chats from the first week and the use of a computer laboratory weekly while extra support is required.
• The facilitator should also send encouraging personal emails in the first few weeks.

• Messages to groups and individuals will be planned to help initiate social presence.

• Tips for using forum and chat have now been linked in the discussion forums and chat places so course participants can access those as they are about to use these tools; that is, they are in the place of context.

• Group tasks and activities will be designed to encourage accountability, for example in divided tasks, assigning a person to be a group leader or to summarise discussion postings. Marking each other’s projects at the end of the course will also be designed into the course structure.

Initial evaluation of research tools and procedures

Data insufficiency

Of the three cases studied in the first online course, only one, Amal, completed the course. Some activities were not used by any of cases that were studied and this limited the opportunity for the related guidelines to be tested and refined. It was also noted that a large number of modifications occurred within the early part of the course. This suggests that the initial weeks of a course may be significant in determining whether or not the participants complete the work. Therefore, further research is required so that more guidelines may be evaluated and the research should focus on the initial course topics.

Data Collection

Reflection on the first implementation of the design solution in the form of design guidelines and the learning environment suggested that some of the data collection and analysis tools being used needed to be modified or extended:
• **Chat analysis:** The interaction measured was only that in the discussion forums. As a result of the course modifications, more chats were added but they were not analysed. Therefore chats will need to be analysed in the next online course, using the same tools as for the forums.

• **Social presence analysis:** A brief scan of the forum posts and chats indicated that one element of social presence communication was absent when scanning with a tool devised by Rourke, Garrison, Anderson and Archer (2001). This was noticed partly through this first part of the data collection. Therefore social presence analysis needs to be incorporated into the next research in the next online course, and applied to both chat and forums. This may help understand which communication medium engenders the development of social presence for learners in this context.

• **Collaboration analysis tools:** The forum postings were not clearly analysed for the collaborative aspect of learning, due to lack of concept clarity. The data were examined for specific collaborative activities such as group work. Instead, it should be examined for interaction that promotes the development or creation of new knowledge or a shared concept. Therefore this tool should be clarified in the research on the next online course.

• **The interviews:** It was found that some data from participant observation or from course work needed clarification from the participants. Therefore using the interview as the last step in data collection meant it could also be used to clarify findings from the rest of the data.

**Data Analysis**

The data analysis procedure changed during the three research cycles, as expertise was gained in this approach. However, on reflection it was found that more change was required. The findings for each case should be analysed for evidence concerning support or modification of the guidelines, and then be compared between the cases. This ensures that the research participants are being investigated as separate cases, as
was intended in this study. It can also ensure that data is searched for each case on the same guidelines. This is more inline with the principle of case studies: Yin describes this as “pattern matching” (2003, p. 116), where the results are compared with the predicted patterns; in this research that is the proposed guidelines.

Therefore, investigation of the second implementation of the learning environment should be based on these changes, and focus more on the responses of the participants in the initial stages of the course.

**Using the Design-based Research approach**

The iterative concept in this approach was found to match the cycle in the proposed theoretical principles model that linked guidelines, learning environment and learner responses. New guidelines could be created, within a theoretical framework, and then refined in the following cycles, as was found with two social presence guidelines.

The principle of iterative research produced some problems for testing and refining this learning design:

- **Course length:** As the course was only eight weeks, there was little time to make the changes and see their effect; therefore there was a limited amount of data that was found to show the effect of changes. This suggests that several iterations may not be more effective; instead fewer cycles of research may be sufficient and provide more time for analysis.

- **Pace of course participants** The course contained only four main units, apart from the review unit. Data collection from the first unit could be analysed only when participants were working on the next unit, so the modifications could be applied only to the third unit, then research on the second unit could be applied only to the fourth. This was also complicated by course participants working at different rates through the course regardless of deadlines provided. The case study participants were not the fastest people on the course, and this meant making changes to a unit that others had already started, which lead to confusion for other course participants. This suggests that there should be a smaller number of research
cycles for the next set of data collection, or that for similar short courses such as this, each course could be considered as one cycle of research.

- **Course topics are not repetitive** A lot of the data collected concerned the orientation of the course; therefore some of the new guidelines could not be applied to the present course. These new guidelines need to be applied to the next course that will be researched. Therefore, the results from this set of research contains some modifications proposed that have not been refined or have been modified only once. This means that one implementation of this research is not sufficient for this research; at least one more is necessary.

These limitations are not a weakness of the Design-based Research approach; rather it indicates that this approach needs to be applied in a way that suits the particular context. For courses that are short or are flexible in their use, it is perhaps better to use a smaller number of iterations or to use each course as one research cycle.

**Initial evaluation of the use of the design solution**

Using the design solution represented in Figure 5.2, the application of the sociocultural theory to the online environment was through using a sociocultural learning design strategy and use of the five online learning themes of social presence, interaction, collaboration, cognitive strategies and student-centred learning. These five online themes were found to be a useful and practical framework first for the formation of draft guidelines, and then for data collection and analysis during implementation of an online course.

During this first implementation, the five online themes made an effective link between theory and practice and therefore an effective tool to modify

- The theory, in the form of guidelines, based on empirical research, and
- The learning environment based on the theory.

This approach resulted in guidelines that were new, were supported or were refined. It also resulted in a learning design that could be changed as a result of the guideline changes, and the effects could be measured in later research iterations. This also
demonstrated the effectiveness of the cyclic nature of the design solution to be used for iterative research. Therefore, at this stage, the use of this design solution to develop design guidelines from learners’ preferences from the learning environment is supported.

**Conclusion**

In this investigation, guidelines were proposed as a design solution for the question of how can online learning environments be designed for Omani contexts. Learning preferences were proposed from the literature and used to develop design guidelines within a sociocultural framework and specific for an Omani context. These were used to develop an online learning environment, and both the guidelines and learning environment were proposed as the prototype solution of the research question.

This prototype solution was tested iteratively, as described in this chapter, within a Design-based Research approach. This involved three cases in three research cycles, and used a case study strategy for data collection and analysis. At the end of each cycle of research, responses of the cases to the learning environment resulted in refinements made to the design guidelines, and these were used to modify the learning environment ready for the next cycle of research.

It was found that guidelines designed for this course could be modified or created using data analysis from the cases that were studied, and that the cyclic nature of this solution made iterative research possible. The guidelines that were modified or created were used to modify the learning environment, and the modifications of the guidelines and the online course were presented in this chapter.

However, it was also found that there was insufficient data for an adequate analysis of the guidelines, and therefore a second implementation was proposed using a second learning online course. Several changes were also necessary to increase the quality of the research for this implementation:
• There should be only two iterations in the research for the next online course, giving more time to focus on analysis after the second module which was when two of the three cases stopped participating in the course.

• Modifications are required for the analysis of chat, social presence, and collaboration.

• Data analysis should be through a comparison of conclusions, therefore using a case study strategy more effectively.

• Interviews should be used to clarify inconclusive analysis from other data and therefore should be the final data collection method in each research cycle.

In Chapter Eight, the second implementation is discussed, using these recommendations; and the results and findings are presented.
Chapter 8: Second Implementation of the Design Solution

Introduction

In this investigation, a design solution was proposed to respond to the question of how can online learning environments be designed for Omani contexts. In Chapter Six, a prototype solution was proposed for a context in Oman, in the form of a set of design guidelines and a learning environment. This prototype solution was tested iteratively, as described in Chapter Seven, using a Design-based Research approach. Research on the study participants was used to propose refinements to the design guidelines, and these guided modifications to the learning environment, which were then investigated in the following iteration. Reflections on the findings from this first implementation recommended a further implementation of the design solution, and this was carried out five months after the completion of the first implementation. This second implementation is described in this chapter.

Modifications to the Research Approach

The guideline and learning environment modifications made in the first implementation were used in a second online course. Before research participants were selected and before the course started, research tools and analysis procedures were modified according to the recommendations that had been made during the first implementation.

New tools for data collection

Selection of a method for analysing social presence

During the first implementation of the design solution, it was noticed that the forum postings appeared less personal than expected. As no measure had been used to
measure this, the literature review on social presence was used to identify a suitable solution. Rourke, Anderson, Garrison and Archer (2001) developed a tool for measuring social presence based on previous work of Garrison, Anderson and Archer (2000, quoted in Rourke et al., 2001 para. 19). Through analysis of interaction transcripts, they identified three categories of communicative responses that contribute to social presence. These were affective, interactive and cohesive responses. Rourke et al describe affective responses as including humour, self disclosure and the use of emoticons; interactive responses include direct replies to others, and may include quotes from other people’s postings; and cohesive responses are those that give a sense of togetherness, such as talking about what participants are doing or learning together as a group. The social presence categories were used by Rourke et al to develop a tool to measure social presence density in course interaction. This was not required for this research; the purpose instead was to find out if any of these categories were missing or had a very low incidence. The research by Rourke et al (2001) was at an exploratory stage and the particular indicators had not at that stage been weighted for their relative importance; therefore results from using the tool would only provide an indicator for further investigation concerning social presence.

Therefore this tool was selected for this research; interactive, cohesive and affective words used in interaction were counted in these three categories for each case and added to the templates that collected social presence data. Where a specific indicator was much lower than the other two, this was used as the basis of questions in the interview, along with evidence concerning the amount of interaction.

Collaboration

It was found that there are several ways that collaborative activity can be measured, for example, using quantitative analysis such as in the numbers of new postings compared to replies, in the amount of information or reflective content (Lambert, 2003); using a five level analytical model of knowledge construction (McLoughlin & Luca, 2000) and using categories based on types of learning such as cognitive and metacognitive categories (Iding et al., 2004). Analysis of conceptual and non conceptual phrases (Paulus, 2005) was selected for this research as it showed itself to
be a clear and easy tool to use and the view of collaborative learning as conceptual
development was a suitable basis.

Therefore, the interaction in this second implementation was examined for conceptual
comments that were in response to other people’s postings, such as new concepts,
negotiating meaning and proposing compromises, but recorded only as conceptual
comments.

Statistics from Moodle learning management system

The log files from the Moodle database also provided data on student usage of the
different pages and activities that they engaged in. This also showed the amount of
time participants spent using different course components, for example how much
time was used looking at the discussions which contained concepts needed to write
assignments. This information was used to support participant observation data

Please see print copy for Figure 8.1

Figure 8. 1 Example of logs of participant action in the course
(The middle column that contained participant identification was removed for this
figure)

Using new tools for data analysis
Chat analysis was a new addition to the research. The chats were analysed using the same analysis tools as for forums. Two chats were conducted in Arabic and a bilingual speaker translated these after participant names were removed.

Social Presence indicators were added to the analysis tools for the forums and chats.

The collaborative indicator of conceptual responses was used in all interactive postings, focusing on all responses of the cases with other people in the course.

**The Fourth Research Cycle (First Cycle for Second Implementation)**

This second implementation of the design principles included two research cycles. These are described as cycles four and five as they continue the investigations started in the first implementation of the design principles.

The course was advertised by email to all university staff and faculty at the beginning of the semester. Those interested filled in the online form. There were 33 applicants from colleges in the university; 14 were Omani, nine were non-Omani Arabs and 10 were from other countries including Spain, India and the United Kingdom. Of the 33 applicants, eight did not start the course, and nine withdrew during the orientation module. Ten completed the course.

**Selection of research participants**

The online course started with a workshop on using Moodle, and then in the following week, two sessions were held in a computer laboratory to do Unit One, the orientation unit. Following this, six course participants who had attended some of these sessions and had completed the orientation unit were emailed to ask if they could be research participants. Those interested were sent the Participant Information Sheet and the Participant Consent form, as shown in Appendices 15 and 16, for further information and for signing before doing the research. One research participant withdrew after selection and therefore another was chosen who agreed to participate. The six participants were given pseudonyms to protect their identity. The names given to them were Faiza, Issa, Nasser, Majid, Salim and Talib.
Table 8.1: Research participant data

<table>
<thead>
<tr>
<th></th>
<th>Case 5: Faiza</th>
<th>Case 6: Issa</th>
<th>Case 7: Nasser</th>
<th>Case 9: Majid</th>
<th>Case 10: Salim</th>
<th>Case 11: Talib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Female</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
<td>Male</td>
</tr>
<tr>
<td>Age</td>
<td>26</td>
<td>42</td>
<td>50</td>
<td>48</td>
<td>45</td>
<td>37</td>
</tr>
<tr>
<td>Teaching Experience</td>
<td>1 year</td>
<td>15 years</td>
<td>19 years</td>
<td>15 years</td>
<td>14 years</td>
<td>8 years</td>
</tr>
</tbody>
</table>

**Data collection**

The workshop introducing Moodle was held in the second week of the semester, and the Unit 1 orientation unit laboratory classes were held in the third week. As with the first online course, there were problems with the timing. The Muslim religious fasting month of Ramadhan started after the first week of the course. Ramadhan lasts for about four weeks, and with the shorter work hours and increased social expectations required of the Muslim course participants, less online course work was done, and the second unit was completed two weeks later than planned.

*Timing of the first set of data collection:*

In the first implementation of the online course, there were three research cycles, labelled Cycles 1 to 3. In second implementation of the online course, there were only two research iterations in this course, labelled Cycles 4 and 5. These research cycles were at the end of the second unit of the course, and at the end of the course. This was because in the previous course, two of the three research participants stopped working on the online course at the end of the second unit or partly through the third. As there was double the number of cases in this implementation, it also gave more time for analysis.

*Interviews:*

Faiza’s first interview was in a secure online chat room. The other cases preferred a face-to-face interview, and these were transcribed during the interview, and then later sent to the interviewees to check for accuracy of transcription. Nasser and Salim read the questions first and asked for clarification for some of them before answering, as they were not very confident with using English. The interviews used similar questions as in the first set of case studies in the previous online course. Other questions were also added where clarification was needed for issues that may have
come up from the analysis of the other data; for example this may have concerned their responses to how they felt their chat went or why their group did not interact very much.

**Analysis findings**

Data analysis was helped by a one-week public holiday, which occurred as participants were completing the second unit of the course. As no one entered the course during the holiday, there was time for data analysis, and guideline and course modification without causing problems for faster course participants. As with the previous research cycles, data were collected from participant observation, contribution to interactive activities and course work, as is exemplified for the first and last research cycles in Appendices 10 to 16. Conclusions from each case are discussed here.

**Social Presence**

*Guideline 1 - Use of chat and forums:* All case studies were found to prefer chat to forums. Only Faiza showed evidence of social presence development in chats and forums. She had previous training with a senior faculty member and used the online environment interactively with students. She commented that her views are “not representative of the norm”. The other cases used chat more, and this was also where social presence indicators were more evident. More social presence indicators were found in chat, for example Issa showed 19 interactive responses to others in a chat, but only one in the forum. It was similar for Nasser and Salim.

When you have something to ask it is better to immediately get the answer like in the chat, not the next day [Interview with Talib].

This confirms the interest in immediacy in interaction as found in chat, and this was where social presence was more likely to be found.

Majid, Nasser, Salim and Talib showed limited interaction regardless of their intentions to do so and showed few social presence indicators. This suggests that other
conditions are necessary before they interact online significantly. That is, the chat and the forum are not the place to initiate development of social presence and the sense of community. The tutor sent many individual encouraging emails, and chat rooms were used in the first week; however a sense of community was evident only in Faiza’s interaction. Majid commented that there may have been a community “but I didn't notice them”. This indicates that emails from the tutor do not provide a sense of belonging to the course, although they may have other benefits, and this guideline modification was not supported.

Guideline refinement: Guideline 1 is supported in its first part, but the following modification concerning encouraging emails is not supported. Instead, chat should be proposed as the preferred option.

Guideline 2- Social Networks: It was found that no research participant was part of a previous social network, and only one developed networks online with her group members. Groups were set up in the course, but there was insufficient interaction in the orientation laboratories, and social networks were not found to have developed online, apart from Faiza. Lack of interaction between group members online indicated the difficulty of developing social networks online, and therefore the importance of using networks that have already been developed. This also suggests there should be more focus on the social aspects in the face-to-face environment at the beginning of the course to try and build social networks. All six cases were found to prefer to work in groups and the development of social networks in the initial stages of the course may be a key for interaction online and the support of social presence.

Guideline refinement: Therefore Guideline 2 should be further modified to propose that participants are given sufficient time and opportunity in the face-to-face environment, as this may be the most significant factor in developing social presence.

Guideline 3 Frequency of Interaction: Analysis of the discussion forums showed five cases demonstrated a low level of interaction. Some did not feel comfortable online and did not feel a sense of community.

When e-learning starts to feel easier I will interact more [Interview with Issa].
The need to feel comfortable is supported by Faiza who by contrast felt comfortable interacting online and comfortable interacting with people she had not met. She showed high levels of social presence indicators in chat and forums, high levels of interaction and commented that she felt part of a community. The other five research participants did not feel a sense of community, even though some used some chat activities and some did post a few comments to the forums. Therefore, the most consistent factor appears to be the lack of a sense of community. Those that sensed this lack did not interact frequently regardless of interaction being an integral part of the course design. Faiza found she could interact comfortably online with those she did not know, but others may need to know others before they can interact comfortably. Other factors may affect the lack of interaction, including time, the number of people they interacted with, and a sense of feeling comfortable interacting online.

*Guideline modification:* Guideline 3 should be further refined to comment that where the frequency of interaction is low, determine the causes of lack of community and encourage that; to increase interaction.

*Guideline 6- Building a sense of teacher immediacy:* For most cases, it was found that personal emails from the tutor, online messages and emails helped show accessibility of the course facilitator.

I liked it a lot when once you sent me a hello message when both of us were online [Interview with Faiza]

It makes people feel you are closely watching and are near [Interview with Majid].

As the course was not completed, it cannot be stated which factors help participants complete the course. No comments were made about rapid marking of work or online office hours.

*Guideline modification:* Guideline 6 was supported.
**Guideline 8- Provide more support and scaffolding:** This guideline has been transferred to Student Centred Learning guidelines.

**Guideline 10- Accountability and Motivation:** The cases showed that there was a relationship between interaction and accountability.

I felt obliged to do [interact] it because there are other people whose work depends on everybody's showing up [Interview with Faiza].

Nasser also felt accountable to Salim who was in his department. He organised a chat with Salim where he gave him advice. Issa, Majid, Salim and Talib felt no sense of accountability or commitment to others, and their and interacting with those they were committed to in the course chat activity. However, others who were not committed interacted to a low degree.

**Guideline modification:** Guideline 10 was supported.

**Guideline 11- Initial face-to-face classes:** Three initial compulsory face-to-face meetings were provided, but not all participants came to all the meetings. As well, the laboratory class layout was front-facing, limiting the amount of interaction between course participants. Therefore, with the lack of attendance and organisational problems, there were insufficient opportunities for group members to socialise sufficiently with each other.

For five of the six case studies, group formation did not develop online, and therefore the face-to-face orientation may require more emphasis on the social aspects so that group formation can occur in the classroom. Nasser felt that the orientation time is good, to know and "recognise each other”. Majid felt that “round tables” would help in the orientation for meeting each other. Therefore, it was found that the social interaction in the initial part of the course is important; if it is designed to more effectively help learners socialise and get to know each other, it may achieve what emails messages and guidelines could not, that is, to help participants build social networks and a sense of community.
Guideline modification: Guideline 11 was supported.

Interaction

Guideline 1 Design Interaction as an integral part of the course design
It was found in four cases that the work that was integral to the course was not done. Two cases, Issa and Majid, did the assignment but not the interaction and their assignment work did not reach the target. This means that designing interaction as integral to the course may not result in participation by everyone, other means or incentives may be required to achieve fuller participation.

Guideline refinements: Guideline 1 should be modified to include that interaction should be designed as integral in the course design, and encourage learners to participate so they may gain the full learning benefit and develop the desired skills.

Guideline 2, Orientate students in how to use the discussion boards in their context of use: It was found that in two cases, Issa and Majid, chat tips in their context of use were not seen or used. Therefore the tips need to be provided in a clearer manner. Statistics from Moodle indicated that some did not use the topic components in a linear manner; therefore the tips must be placed within the activity itself. It was also found in three cases that forums were not used correctly in the manner of responding to the previous participants to build on their argument.

Guideline Refinement: This guideline should include the need for orientation in chat as well as the forums.

Guideline 4- Orientating learners on how to communicate in an interactive online classroom: All interacting participants posted in a short non-formal manner. Some also showed spelling and grammar mistakes, including the facilitator. Issa commented “This was mentioned in the text and was understood [about it being alright to make mistakes].”

Guideline modification: Guideline 4 was supported.
Collaboration

Guideline 2: Base the discussion activities on learning issues to develop conceptual thinking: Discussion forums for Units One and Two concerned questions used to promote conceptual thinking about the unit topic. Two cases, Faiza and Issa, made conceptual statements, but the others did not, although all those interacting did focus on the activity topic. Therefore these course activities had the potential of developing focussed conceptual thinking but were not utilised well by all participants. It was also noted previously that interaction levels were low. Thus, if participants do not interact with each other in the forums or chat, they miss an opportunity to develop conceptual thinking. This means participants need to be encouraged to respond to each other’s comments in the chat and forum to develop their conceptual thinking.

Guideline Modification: Guideline 2 should be modified to comment that discussions should be based on learning issues to develop conceptual thinking where individual tasks are not provided, and participants need to be encouraged to respond to each other to gain the learning benefit.

Cognitive Strategies

Guideline 8- Use a combination of tools: Course units used short teaching notes and five-minute videos or audios as support. Of the four who commented, they all preferred the video to the audio. However it was also found that they all referred back to the teaching notes, so the audio and visual supplemented the notes and did not replace them. As well, the text nature of the online course was a problem for Salim: it “made me feel the course is very difficult”. This shows that learners have a preference for visual tools, but used the videos as a supplement to the text. No data were found to explain how these tools were used.

Guideline modification: Guideline 8 should be modified to include the preference for visual tools to support their learning process.
Student-centred learning

Guideline 2- Provide Orientation in the context of use, taken from Interaction
Guideline 2: Chat tips were placed in their context of use, but in two cases they were not seen or used. Others did not approach the course in a linear manner. This means that orientation placed prior to a new activity may not be used, but must be placed within the activity itself.

Guideline modification: Guideline 2 is supported.

Guideline 3- Design activities in such a way that learners must participate, taken from Interaction Guideline 1. It was found that designing activities, as integral to the course, may not result in participation by everyone. Other means or incentives may be required to achieve fuller participation. Faiza participated in all activities and her assignments were properly completed. By contrast the other research participants either did not do the assignment, or did not do the interactive work and their assignments were not completed properly. Therefore making work integral to a course does not mean that this work will be completed.

Guideline modification: It is proposed that Student Centred Learning Guideline 3 is modified to include the words to “encourage learners to participate”

Guideline 4- Ensure that the tools are sufficient, suitable and are being used: All participants used the chat and discussion tools, but three of them, Majid, Nasser and Salim, did not respond to the previous participants or build on their argument. Chat tips and two model answers were given. Therefore the tips may need to be modified or more support is needed to develop the forum responses. There is insufficient data on other tools, such as examples and guidelines, to propose guideline refinements.

Guideline 8- Students may expect or assume that the teacher is the only source of knowledge: It was found in five cases that the teacher was not expected to be the only source. Faisa said learners should be “self directed”, Issa wanted to work as a group, Majid worked without any support to complete his assignment, Salim wanted to share
“knowledge and skills” with others, and Talib did not asked the facilitator for any help.

**Guideline modification:** Guideline 8 should be modified to comment that activities can be designed where learning is gained from sources other than the facilitator.

**Guideline 10- Provide more support and scaffolding in the learning environment,** transferred from Social Presence category: It was found in most cases that increased support was preferred, for example, in help with meeting deadlines, as is shown in these comments:

> It will force us to follow deadlines. If you are flexible, they become more flexible. [Interview with Majid]
> Everyone has the same time free, to decrease the obstacles in their timing for doing the required study [Interview with Salim].

Time management support and external incentives were proposed as being beneficial.

The first assignment deadline was on the course home page and in the course calendar but only one case studied met the deadline. Group leaders selected were not successful in initiating group chats at the deadlines given. This suggests that either these particular approaches were not successful, or that external structure may not be the only factor involved in facilitating continuing activity in online courses. The previous research cycle found that committed responsible relationships were a key to motivate participants to go online and complete the course, not the provision of increased structure and external incentives. This was found with Faiza and Issa who both kept to deadlines, and expressed lack of interest in external incentives or time management.

This means that extra support may be helpful for some online course participants, but other motivational means are probably more important such as responsibility to others, as has been previously proposed.

**Guideline modification:** Guideline 10 is supported but with a modification that this should include for example organising of groups, emailed assignment due dates or calendar of deadlines and time management suggestions.
Guideline and learning design refinements proposed

These findings were used to propose modifications to the guidelines and learning design as in the previous implementation.

Table 8.2: Guideline and learning design refinements from the fourth iteration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use discussion forums and chat and encourage their use through emails.</td>
<td>Use both discussion forums and chat but chat is the preferred option.</td>
<td>Chat rooms became the main focus of interaction for Unit 4 as this was found to be the preferred option.</td>
</tr>
<tr>
<td>1.2</td>
<td>Use social networks the participants already have, or provide groups of people within a close circle.</td>
<td>Use the social networks that participants already have, or provide groups of people within a close circle, giving sufficient time and opportunity in the face-to-face environment.</td>
<td>A face-to-face meeting was designed in Unit 3, where participants met their fellow group members and were encouraged to work out common chat times.</td>
</tr>
<tr>
<td>1.3</td>
<td>Determine the causes of low social presence and encourage that where the frequency of interaction is low.</td>
<td>Where the frequency of interaction is low, determine the causes of lack of a sense of community and encourage that.</td>
<td>Participants were encouraged to interact together in their groups</td>
</tr>
<tr>
<td>1.6</td>
<td>Build a sense of teacher immediacy through the use of individual messages.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
<tr>
<td>1.8</td>
<td>Moved to Student-centred learning category, 5.10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.10</td>
<td>Design activities that require learners to be responsible to each other in completing the work.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
<tr>
<td>1.11</td>
<td>Provide initial face-to-face classes.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
</tbody>
</table>

2. Interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop interaction:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Design interaction as an integral part of the course design.</td>
<td>Design interaction as integral in the course design, and encourage learners to participate.</td>
<td>Participants were encouraged through email to participate in the course interaction.</td>
</tr>
<tr>
<td>2.2</td>
<td>Orientate students in how to use discussion boards in the context of use. This includes how to use discussion boards from a technical and educational perspective, as well as training as moderators.</td>
<td>Orientate students in how to use the discussion boards and chat in their context of use. This includes how to use discussion boards from a technical and educational perspective, as well as training as moderators.</td>
<td>Provision of orientation guides are needed in a more clearly in the discussion and forum introductions for the first few units.</td>
</tr>
<tr>
<td>2.4</td>
<td>Orientate learners on how to communicate in an interactive online classroom.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
</tbody>
</table>
3. Collaboration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop collaboration:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level; this should have a synthesis of the issues as the goal or outcome, and where individual tasks are not provided</td>
<td>Base the discussion activities on learning issues to develop conceptual thinking where individual tasks are not provided, and participants need to be encouraged to respond to each other.</td>
<td>Discussion questions in Unit 4 and 5 were designed to encourage conceptual interaction with others. This included comments on their course objectives in Unit 3, how they designed their activities in Unit 4, and reflection of learning in Unit 5, for others to respond to reflectively.</td>
</tr>
</tbody>
</table>

4. Cognitive Strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop cognitive-strategies:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td>Provide a combination of cognitive tools.</td>
<td>Use a variety of tools and support, including visual tools.</td>
<td>Group feedback, scaffolding and coaching from the facilitator were designed in the course.</td>
</tr>
</tbody>
</table>

5. Student-centred Learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.2</td>
<td>Orientate learners to help them understand the benefits of a learner-centred environment.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
<tr>
<td>5.3</td>
<td>Design activities in such a way that learners have no option but to participate.</td>
<td>Design activities as integral in the course design, and encourage learners to participate.</td>
<td>Emails were sent to participants to encourage them to participate in the activities</td>
</tr>
<tr>
<td>5.8</td>
<td>Design the initial activities where learning is gained from the teacher.</td>
<td>Provide activities where learning is gained from peers or other sources.</td>
<td>Group leaders were encouraged to organise meetings and course participants were encouraged to contact group leaders.</td>
</tr>
<tr>
<td>5.10</td>
<td>Provide more support in the learning environment include more meetings, initially in a social setting, then online through regular chats, and time management issues.</td>
<td>Provide more support and scaffolding in the learning environment through, emailed assignment due dates or calendar of deadlines and time management suggestions</td>
<td>Emails and notice were used to give deadlines for course components. Participants were encouraged to interact together in their groups.</td>
</tr>
</tbody>
</table>

Peer evaluation:

The proposals and the supporting data were given to a peer who found that the conclusions were soundly based on the findings, as shown in Appendix 15. Therefore these guidelines were then used to modify the learning design.
Reflections on the collection and analysis procedure

The analysis procedure

In this fourth research cycle, the design guidelines were used as a framework to search the participant data for relevant data. Also, the findings for each case were compared latitudinally and longitudinally. These approaches resulted in a higher yield of guideline changes. In the first implementation, the number of modifications or support proposed was five in each of the first two cycles, and seven in the third. In this research cycle, there were 16 changes or supports proposed. This may be because the analysis tools are being refined through reflection, and also being used with increasing expertise in both the collection and analysis phases. This is reflected in the Design-based Research approach model presented by Reeves (2006), which proposes that not only are the design principles refined, but the research methods themselves are as well, in a progressive and iterative manner.

The results

As with previous iterations, the categories that showed the greatest refinements or support were social presence, with six modifications, and student-centred learning with four. Some of these guidelines showed modifications in several cycles, for example the first, and second guidelines for social presence, the second interactive guideline and the second and tenth student centred one. Some guideline modifications proposed in one cycle were not supported in later cycles, for example the first social presence guideline. The findings from one research cycle could be proposed as a guide in a later reiteration and then tested; and therefore this meant that the design principles provide a means to test hypotheses about learning preferences; however it also means that each guideline may continue to be further modified as long as they continue to be tested.
The Fifth Research Cycle

This final cycle of research was completed in December after the online course was completed. This was four weeks later than expected. Of the six cases, four completed; Majid and Nasser stopped during the third unit of the course.

Data collection

Data continued to be collected during the implementation of the course, and completed with final interviews. These were recorded on audiotape and then later transcribed and sent to the participants for checking. The questions used were similar to the final interviews in the first online course, but adapted to check some of the findings in the other data.

Analysis of findings

As with the other research cycles, data from the discussion forums, chats, assignments, participant observation and interviews were used in the analysis according to case study principles. Detailed analyses on two cases from this final research cycle are in Appendices 13 and 14. These show how the data were used to make conclusions, which were then collated from each case for each of the five online themes.

Social Presence

Guideline 1 using the different interaction media: It was concluded for Faiza, Issa, Salim and Talib that chat was the preferred option and would more likely support social presence. Only Faiza envisaged the online environment developing a sense of others being present: Majid felt it carried virtually no social obligations

I probably don’t meet them so I don’t feel embarrassed [Interview with Majid]
For all cases, it was concluded that emails did not make a significant difference in online interaction. Faiza interacted well without extra emails from the beginning, and none of the others interacted more after receiving extra emails from the facilitator.

**Guideline modifications**: The findings for all cases supported Guideline 1.

**Guideline 2- building social networks**: Faiza felt comfortable in the online environment, interacted very frequently, and developed a sense of social presence and a sense of obligation to others in her group. Issa, Majid, Salim and Talib did not interact frequently, showed no evidence of social presence and were not obligated to others on the course. All cases studied, except Faiza and Nasser, also recommended the face-to-face environment as being important for developing friendships first. All except Faiza either felt uncomfortable online or did not envisage how relationships could be developed in that environment, as is shown:

> In a lot of courses you meet people from other colleges and they are active, you do the work with them and a friendship started from there, but the thing with this course is that everything is done remotely, that type of relationship is not built [Interview with Talib]

**Guideline modifications**: Both these extremes support the same concept in a design guideline, that if participants are not yet comfortable interacting and developing relationships online, there should be sufficient time and opportunity in the face-to-face environment for these relationships.

**Guideline 3- interaction frequency**: Findings from Faiza supported this guideline but it was also concluded in all the cases that the increase in encouraging emails from the tutor did not result in an increase in interaction either in the chat rooms or discussion forums. A lack of commitment and obligation was concluded to be a key factor for Issa and Majid and a possible conclusion for Talib. The conclusion for Faiza supported this modification, by demonstrating the reverse: she demonstrated high interaction, commitment and responsibility to the group.
Guideline modification: For Guideline 3, Encouragement through email was not supported for a significant increase in interaction, and the modification “develop the sense of commitment and responsibility” is proposed as the way to increase interaction.

Guideline 4: Developing and maintaining social presence: Social presence should be developed from the first unit of the course:

I think, if you want to make a successful group in the course, make the social group before the beginning [Interview with Salim]

It may be that if the networks were built beforehand it would be easier to meet online [Interview with Salim].

Without this opportunity to develop relationships, it was found that the cases preferred to be private:

You keep out your private life when you don’t know how they will react to it [Interview with Nasser]

This suggests that there needs to be a sense of trust between people before they will share deeper. The affective language that is then shared will support the social presence and sense of community, but the relationships must be there initially.

This was observed by contrast with Majid, who showed a lack of interaction and no affective responses. He did not complete the course, and his assignments did not meet course objectives. Therefore this shows a relationship between no or low social presence and low quality of coursework.

Guideline modification: Modifications to Guideline 4 is to propose that social presence must be initiated from the beginning of the course through developing relationships.
Guideline 5, Using small and single gender groups: It was found that the use of groups for developing relationships was supported by all research participants, as Faiza commented:

I felt that like when I see a contribution done by [my] group I felt like this is from somebody in my group so I have to read it really well and contribute to that [Interview with Faiza]

However, the proposal for single gender groups was not supported, as everyone commented on their preferences for a mixed group, and as Issa commented, that the 'barriers' between genders is lost online.

**Guideline modification:** For Guideline 5, the use of groups is supported, but single gender groups are not.

Guideline 6- Teacher immediacy: For four cases: Issa, Nasser, Salim and Talib there was insufficient data to make a conclusion. For Faiza and Majid, the conclusions were that personal emails and messages by the facilitator were the key factors for teacher immediacy.

**Guideline modification:** Guideline 6 was supported.

Guideline 9 - levels of affective language: There were low levels of affective language used in the interactive components of the course; sharing was at a more formal level. There was no conclusion for Faiza or Nasser, but for the other four cases it was found that the low levels of affective language may be due to the lack of relationships;

Maybe because they didn’t know each other so it was formal [Interview with Issa]

You keep out your private life when you don’t know how they will react to it [Interview with Majid]
This suggests that the affective language needed to support and maintain social presence occurs only after the relationships have developed, and as has been noted, this usually requires the face-to-face environment. This means that relationships must be built initially, otherwise the online environment will not be able to support community and the higher levels of interaction needed.

**Guideline modification:** Guideline 9 is proposed to include the necessity to help learners to develop a relationship with others before affective language may be evident.

**Guideline 10- Accountability and motivation:** It was found in all cases that accountability is necessary, as is proposed by this guideline. However, it was also found that learners must first be committed and accountable to others before they will be responsible in completing the work, as is evident in comments by Majid:

> If you get them to know each other at the beginning and talk, personally, I think they will have more obligation to be online later in the course [Interview with Majid].

Similar conclusions were found for Issa, Nasser, Salim and Talib. The data and conclusion for Faiza also supports this; from the beginning she felt committed to the group and the course, and acted responsibly to others in completing the work. Thus the first half of the guideline is supported and the second half modified as the reverse; that is, obligation needs to come first.

**Guideline modification:** For Guideline 10, it is proposed: “learners must first be committed and accountable to others before they will be responsible in completing the work”

**Guideline 11- Initial face-to-face classes:** For all cases it was concluded that this guideline is supported.

> Friendship is most likely built only in the face to face situation [Interview with Talib]
However, as was also concluded for Faiza, online relationships may be developed where people feel comfortable interacting online with others.

*Guideline modification:* Guideline 11 modification is proposed: “if they are not sufficiently experienced interacting in the online environment”.

**Interaction**

*Guideline 1 Interaction as integral:* Faiza did interact well, but it is not clear for which reasons this was therefore no conclusion was made. There was no clear conclusion for Nasser. The conclusion from the interaction seen online for Majid, Salim and Talib was that the guideline “encouragement to participate” did not result in more interaction; for Issa the conclusion was similar but less clear. For each of these cases it was also concluded that lack of responsibility to the course or to others was a key factor in not doing these tasks that were integral to the course structure, as was found in Social Presence Guideline Number 10.

*Guideline modification:* The middle section of Guideline 1 is not supported, concerning support, instead it should comment that increased learner commitment or obligation to the course and each other was necessary for their participation.

*Guideline 2 -6:* No data or insufficient data to make any conclusions.

**Collaboration**

*Guideline 2 basing discussions on learning issues:* For no case was it concluded that “participants need to be encouraged”, as increased encouragement provided in this research cycle did not result in increased conceptual comments in the interaction. Faiza was the only one who posted in the forums. The others contributed one or two chats and not weekly as they had originally agreed to. Therefore this modification is not supported. Conclusions from Issa, Majid and Talib described a modification, as “participants need commitment or obligation”. The conclusion for Faiza supports this; that accountability to the group was a prerequisite to collaborative learning, as
there needed to be interaction first before participants could contribute at a conceptual level.

*Guideline modification:* For Guideline 2, the modification from the previous cycle is not supported. The modification “participants need commitment or obligation” is proposed.

*Guideline 4:* There was insufficient data from Nasser’s case. The conclusion from Issa, Majid, Salim and Talib, was that the modification made in the second iteration was not supported, which stated that cooperative activities can be done to increase responsibility. The reverse was concluded for these cases, that commitment and responsibility must be present before cooperative tasks can be done successfully. The conclusion for Faiza supports this as it was found that accountability motivated her interaction in cooperative tasks from the beginning of the course.

*Guideline modification:* Guideline 2 modification proposed in the second iteration was not supported. Instead it is proposed that commitment and responsibility must be present before cooperative tasks can be done successfully.

*Guideline 8- working individually:* For all cases, groups were concluded to be the preferred option. All cases also concluded that they would prefer a leader who would provide support and organisation of meetings. The conclusions from Issa and Salim were that where participants did not act responsibly, participants may expect the leader to teach them. For example, in the chat for unit 2, Salim had not looked at the homework before the chat, but followed Nasser as he explained how to do the work.

I didn’t know my homework, just Nasser told me [Comment by Salim in a chat room].

*Guideline modifications:* Guideline 8 modifications propose that groups should be used for most tasks, and that the group leader may take on extra responsibilities for the group.
Cognitive Strategies

Guideline 5- Using soft scaffolding: There was no conclusion for Faiza and Salim, for this guideline. Issa found soft scaffolding in individual spontaneous feedback “was very very useful actually”. Talib commented “this is very helpful” and it was found that he made changes to his work based on the feedback as is also shown in Majid’s comments:

Definitely the feedback clarified my thinking and what I should be doing [Interview with Majid].

Guideline modification: Guideline 5 was supported.

Guideline 6- Designing tools so learners know how to use them: The conclusions from Issa and Faiza showed support for this guideline. Issa commented about his project

I didn’t know what to do, so I started reading articles about teaching [my subject] [Interview with Issa]. There were tools but he did not use them, and the project was not done correctly. By contrast, Faiza used the tools correctly and her project was done well. There was insufficient data from the other cases to make conclusions.

Therefore these two cases support guideline 6.

Student-centred learning

Guideline 1- provide examples to show the type of learning expected: There were sufficient data for conclusions for only two cases, Issa and Talib. Talib did not understand until the end the importance of some of the tools so he did not use them properly, as noticed in his comment:
Because most of the teachers are using the traditional way. So to give them a brief idea about what we are going to face, what we are going to see in this course [Interview with Talib]

Issa did not post in the forums. He said this was because he did not realise they would help with his assignment work. His assignment work did not meet the target. Therefore for both cases it was concluded that participants need to understand the benefits of the tools or they will not be used.

*Guideline modifications:* Guideline 1 is supported.

*Guideline 3- Encourage learners to participate:* Emails of encouragement were sent out to participants. However the only case that participated was Faiza who did so probably because of her commitment to others, not because of the emails. Therefore there was no link between emails and course involvement, and this guideline was not supported in the cases of Faiza, Issa, Majid and Talib. There was no conclusion for Nasser or Salim.

*Guideline modifications:* The refinement made to Guideline 3 in the fourth iteration was not supported in this cycle, and therefore the phrase “and encourage learners to participate” should be removed.

*Guideline 4- Ensuring the tools are suitable and are being used:* There was no conclusion for Faiza, Majid, Nasser and Salim. Talib found that most of his learning came from the teaching notes, and found only some types of examples were helpful, the ones that related to the local situation:

> When you get international examples from the web, some of them may be perfect, but …, sometimes you don’t think that the example is interesting  
[Interview with Talib]

Issa felt he did not have the skills to use forums and thought that “maybe we should be taught these skills”. This suggests orientation is required and the opportunity to
become familiar using new tools for learning. Thus the conclusion for these two cases is that modification tool use should focus on the learning benefits.

**Guideline modification**: It is proposed that Guideline 4 should be modified to focus on the learning benefits of the tools.

**Guideline 8, The teacher is not the only source**: The conclusion from all case studies was support for this guideline, but further refined with an extra phrase added. Case studies on Issa, Majid and Nasser concluded that there is an expectation of the teacher to provide the structure and reminders of course deadlines:

> Maybe we need to get your warnings. I think this would make sure the work is done, more instruction, more reminder, more email. There could have been more, and probably everybody would have finished [Interview with Nasser].

This expectation should be included in the modification of the guideline.

**Guideline modification**: Guideline 8 is supported, and also modified to include expectations of the teacher to provide structure and course deadlines.

**Guideline 9- Online encourages a sense of equality**: The conclusions for Issa, Majid and Nasser gave weak support for this guideline, in that their comments were democratic but there was insufficient interaction to demonstrate their beliefs. Faiza’s case gave stronger support as it was evidenced in practice, not just in interview. Her chats and forum posting in the course facilitator and one of her ex-teachers in her group both demonstrated a sense of equality.

**Guideline modification**: Guideline 9 was supported.

**Guideline 10- provide support and scaffolding**: It was concluded for all cases that the provision of extra support helped the participants feel comfortable in completing the work. If this support was not present, it was thought by Majid that they may not complete the work:
They will relax more sink in their chair and not do the work [Interview with Majid].

Therefore the first half of this guideline is supported. However it was also concluded for all cases that some examples of extra support did not help them to do all the activities or keep to the deadline; that there are other factors that are key for success, as is shown in these comments:

We need to make some kind of commitment [Interview with Nasser]
I think the commitment comes from the need, or the weight of the course itself [Interview with Talib]

The conclusion for all cases was that commitment was important. In Faiza’s case, she found the course support sufficient:

All of the time we were behind and you were very flexible. That was very comforting to us [Interview with Faiza]

However, her group leader provided deadline reminders in the form of group emails. This suggests that some expected functions of the facilitator could be passed on to the group leaders, as was proposed in Collaboration Guideline 3.

Guideline modifications: For Guideline 10, the concept of commitment should be proposed to be a modification for this guideline and the extra role of the group leader included.

These findings were then used to propose refinement to the guidelines and learning design, as was done in the other research cycles.

**Guideline and design changes proposed**

The following changes were proposed. The guideline changes were proposed based on the findings from the case studies. The learning design changes proposed were based on the guideline changes.
<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop social presence:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use both discussion forums and chat but chat is the preferred option.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
<tr>
<td>1.2</td>
<td>Use the social networks that participants already have, or provide groups of people within a close circle, giving sufficient time and opportunity in the face-to-face environment.</td>
<td>Design groups, using participants' social networks or from people within a close circle. For those new to online learning, give sufficient time in the face-to-face environment.</td>
<td>Social networks will be initiated in the face-to-face sessions from the first unit, to enable people in groups to get to know each other.</td>
</tr>
<tr>
<td>1.3</td>
<td>Determine the causes of lack of a sense of community and encourage that where the frequency of interaction is low,</td>
<td>Encourage interaction by developing commitment and responsibility.</td>
<td>Groups should be developed from departments and from any previous social networks. Groups should also maintain the relationships after the course has started.</td>
</tr>
<tr>
<td>1.4</td>
<td>Develop and maintain social presence throughout the length of a course</td>
<td>Initiate social presence at the beginning of the course by developing relationships.</td>
<td>Use the face-to-face class to initiate relationships between group members.</td>
</tr>
<tr>
<td>1.5</td>
<td>Use small or single gender groups to develop relationships, where affective language may be used.</td>
<td>Use small groups to develop relationships, where affective language may be used.</td>
<td>The learners should be placed in groups from the beginning, and the face to face initial class will be designed to help participants interact with each other, for example with food.</td>
</tr>
<tr>
<td>1.5</td>
<td>Provide an environment where affective language is used</td>
<td>Provide an environment where affective language is used by helping learners build relationships with others online.</td>
<td>This would be supported by the design changes presented in Guides 1 to 4.</td>
</tr>
<tr>
<td>1.6</td>
<td>Build a sense of teacher immediacy through various types of interaction, especially individual messages and providing contact details.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
<tr>
<td>1.9</td>
<td>Expect that in this culture, higher levels of affective language between learners may be needed</td>
<td>Enable participants to share affectively by developing relationships in the initial part of the course,</td>
<td>This would be supported by the design changes presented in Guides 1 to 4.</td>
</tr>
<tr>
<td>1.10</td>
<td>Design activities that require learners to be responsible to each other in completing the work.</td>
<td>Help learners to first be committed and accountable to others, to help them become responsible in completing the work.</td>
<td>Commitment and responsibility should develop if the previous points are met.</td>
</tr>
<tr>
<td>1.11</td>
<td>Provide initial face-to-face classes</td>
<td>Provide initial classes face-to-face for learners who are not sufficiently experienced interacting in the online environment.</td>
<td>The importance of face-to-face time should be emphasised before the course starts and organised at a time to enable everyone to attend. This may be actioned by using group meetings if the class cannot make it as a whole.</td>
</tr>
</tbody>
</table>
### 2. Interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop interaction:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Design interaction as integral in the course design, and encourage learners to participate.</td>
<td>Design interaction as an integral part of course design but participant commitment or obligation to the course and each other must be developed before interaction will occur.</td>
<td>Interaction will be designed as integral to the course but success will depend on the effectiveness of the Social Presence guidelines</td>
</tr>
</tbody>
</table>

### 3. Collaboration

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop collaboration:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Base the discussion activities on learning issues to develop conceptual thinking where individual tasks are not provided, and participants need to be encouraged to respond to each other.</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level but commitment or obligation developed before this task can be successful</td>
<td>Collaborative activities will be designed. These will be used in the later parts of the course, giving time for commitment and responsibility to develop.</td>
</tr>
<tr>
<td>3.4</td>
<td>Use separate roles or functions for some collaborative work.</td>
<td>Use separate roles or functions for some collaborative work, but commitment and responsibility must be developed before cooperative tasks can be done successfully</td>
<td>Cooperative activities will be designed. These will be used in the later parts of the course, giving time for commitment and responsibility to develop.</td>
</tr>
<tr>
<td>3.8</td>
<td>Provide group and individual work.</td>
<td>Design most tasks as group work, and give responsibilities to the group leader.</td>
<td>Groups will be set as the norm for most work, and the group leader will be asked to manage some activities.</td>
</tr>
</tbody>
</table>

### 4. Cognitive Strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop cognitive-strategies:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.5</td>
<td>Use soft or spontaneous scaffolding through monitoring student learning.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
<tr>
<td>4.6</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them.</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
</tbody>
</table>

### 5. Student-centred Learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Revised form of guideline</th>
<th>Modifications to the Learning Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Provide examples or activities that help learners to understand the type of learning that is expected of them in student centred courses</td>
<td>This guideline is supported</td>
<td>No modifications were made to the learning design.</td>
</tr>
<tr>
<td>5.3</td>
<td>Design activities as integral in the course design, and encourage learners to participate.</td>
<td>Design activities that are integral to the course structure.</td>
<td>This final modification found that encouraging emails do not increase participation directly, therefore, less emails need to be sent by the facilitator than was previously expected.</td>
</tr>
</tbody>
</table>
Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training.

The support tools for activities will be modified to focus on the educational benefits of these tasks.

Provide activities where learning is gained from peers or other sources.

Support and reminders may be provided by the group leader as well as the facilitator. Therefore both will be provided.

Use a student-centred design for learners of any cultural background.

No modifications were made to the learning design.

Provide more support and scaffolding in the learning environment. This should include for example initial face-to-face classes, organising of groups, emailed assignment due dates or calendar of deadlines and time management suggestions.

A leader should be selected for each group, and the course may benefit if that person is given organisational responsibilities. This person should be used to provide support for the other participants such as reminding them of deadlines and times for course activities.

**Peer evaluation**

The changes proposed were accepted by a peer who found that there was adequate support in the data for these conclusions to be made, as shown in Appendix 15. Therefore the changes proposed were used to modify the following online course.

**Reflection on the results and analysis procedure**

**Analysis procedure**

*Comparing conclusions:* In this final cycle, 21 guidelines were modified, compared to 15 in the previous cycle, and five in each cycle in the first implementation, demonstrating the increased refinement in using the tools to extract and analyse relevant data from the research. The conclusions concerning each guideline were clearly made for each case study then compared between each case and within previous cycles. This also meant that guideline conclusions could still be made even when only some of the six cases had sufficient data for a conclusion. This had always been the aim but the process was not initially carried out very clearly. Over the five iterations, the comparison process became more refined as expertise was gained in this analysis procedure. Each guideline was also used as a framework or a pattern to help extract significant data that related to each guideline. Therefore, developing
conclusions for each case first before comparison, and using guidelines as a pattern also resulted in an increasing amount of relevant data being identified and analysed.

*Benefit of the extra tools added:* The use of the social presence tools enabled the research to focus on the lack of one element of the development of social presence and community; that of sharing of personal issues and its link to the need for face-to-face time. Therefore this analysis tool helped identify further issues in learning preferences. Other tools, such as the clarification of collaboration and cognitive strategy tools enabled testing of more guidelines in more online themes.

*Using the interview as the final data collection* procedure was beneficial as it helped identify missing points or clarify issues. For example in asking why chats were not used very much, or why assignments were not done correctly, being able to ask what was used to help complete the assignment work.

*Results*

*Modifications to the guidelines:* In this cycle, there were 21 guidelines that had been tested, and were either supported, or further modified. Only six were supported without further modifications. Two were guidelines that had been modified in three previous cycles, and one was a guideline that had no previous modifications. Some findings from this research cycle found a previous modification was not supported. Therefore this suggests that although this study has been completed, the guidelines, and therefore the learning environment that were proposed are not the final most preferred design for this learning community; there should be continuing research until there are only a few modifications made.

*Dependent guidelines:* It was found that some basic concepts appeared in several guidelines, and as displayed in Appendix 16, social presence guidelines 2, 5, 10, and 11 were found to be key factors in the structure of other guidelines such as interaction 1 collaboration guides 2 and 4. This may mean that some guidelines cannot be properly tested until other learning preferences are met, therefore limiting initial research measures.
Retrospective Analysis of the Empirical Research

The fifth cycle of research completed the iterative evaluation and refinement of the prototype design solution that was proposed in Chapter Six. This solution was proposed as a response to the research question that asked how online learning environments can be designed for Omani contexts. Four objectives were proposed in Chapter One as a means to develop a response to this question. Evidence can be found from the empirical research to achieve these objectives. The evidence is proposed here and will be discussed in Chapter Nine as a means to answer the research question.

Objective One: To develop design principles

Design principles were proposed for a context in Oman in the form of guidelines. These were built on previous models and principles, and developed within a sociocultural framework using learners' preferences from empirical research and from cultural theories. Within each of the five research cycles, these design guidelines were modified, supported or not supported, and two new ones were created. Refinements to the guidelines were discussed at the end of each research cycle, and summarised in Appendix 16, and are presented in Chapter Nine as part of the design solution. The method used enabled new guidelines to be proposed and tested, and those previously proposed could be further tested and modified or supported. As these guidelines continued to be framed within the online themes, this meant that these guidelines were tested by practice and framed by theory, and were consistent with the principles of the initial design solution. The refined guidelines are present and discussed in Chapter Nine.

Objective Two: To refine a learning environment for an Omani context

The guidelines were used to develop a learning environment and refinements of the design guidelines were used to modify it in all the research cycles. These modifications to the learning environment were described after each cycle. Some modifications were made immediately and others were used for the learning
Objective Three: To analyse the design solution for evidence of the impact of culture

The guideline modifications can be analysed according for common themes as is shown in Table 8.4. This table contains a list of eight common concepts that were identified in 22 of the 25 refined guidelines. Some guidelines are represented more than once in this table when two different concepts were present in one guideline.

**Table 8:4 Common concepts identified from guideline research data**

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>Design groups, using participants' social networks or from people within a close circle. For those new to online learning, give sufficient time in the face-to-face environment.</td>
</tr>
<tr>
<td>1.4</td>
<td>Initiate social presence at the beginning of the course by developing relationships.</td>
</tr>
<tr>
<td>1.5</td>
<td>Use small groups to develop relationships, where affective language may be used.</td>
</tr>
<tr>
<td>1.9</td>
<td>Enable participants to share affectively by developing relationships in the initial part of the course</td>
</tr>
<tr>
<td>1.3</td>
<td>Develop the sense of commitment and responsibility where the frequency of interaction is low.</td>
</tr>
<tr>
<td>1.10</td>
<td>Help learners to first be committed and accountable to others, to help them become responsible in completing the work.</td>
</tr>
<tr>
<td>2.1</td>
<td>Design interaction as an integral part of course design but participant commitment or obligation to the course and each other must be developed before interaction will occur.</td>
</tr>
<tr>
<td>3.2</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level but commitment or obligation developed before this task can be successful</td>
</tr>
<tr>
<td>3.4</td>
<td>Use separate roles or functions for some collaborative work, but commitment and responsibility must be developed before cooperative tasks can be done successfully.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>Design groups, using participants' social networks or from people within a close circle. For those new to online learning, give sufficient time in the face-to-face environment.</td>
</tr>
<tr>
<td>1.5</td>
<td>Use small groups to develop relationships, where affective language may be used.</td>
</tr>
<tr>
<td>3.8</td>
<td>Design most tasks as group work, and give responsibilities to the group leader</td>
</tr>
</tbody>
</table>

environment that was designed for the following participants. These refinements are summarised in Appendix 17, and the refined learning environment is described in Chapter Nine as part of the design solution. This refined learning environment can be used in for learners in an Omani context and is a model of how learning environments can be used using the proposed design solution.
### 4. Support from others is needed to help learners

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.10</td>
<td>Help learners to first be committed and accountable to others, to help them become responsible in completing the work.</td>
</tr>
<tr>
<td>5.8</td>
<td>Provide activities where learning is gained from peers or other sources, but also provide the support and reminders of course deadlines.</td>
</tr>
<tr>
<td>5.9</td>
<td>Use a student-centred design.</td>
</tr>
<tr>
<td>5.10</td>
<td>Provide more support and scaffolding in the learning environment through, emailed assignment due dates or calendar of deadlines and time management suggestions</td>
</tr>
</tbody>
</table>

### 5. The visual element is important

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>Design groups, using participants’ social networks or from people within a close circle. For those new to online learning, give sufficient time in the face-to-face environment.</td>
</tr>
<tr>
<td>1.11</td>
<td>Provide initial classes face-to-face for learners who are not sufficiently experienced interacting in the online environment.</td>
</tr>
<tr>
<td>4.4</td>
<td>Use a variety of tools and support, including visual tools.</td>
</tr>
</tbody>
</table>

### 6. Face-to-face is important in developing relationships

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.2</td>
<td>Design groups, using participants’ social networks or from people within a close circle. For those new to online learning, give sufficient time in the face-to-face environment.</td>
</tr>
<tr>
<td>1.4</td>
<td>Initiate social presence at the beginning of the course by developing relationships. (This would be in the face-to-face environment)</td>
</tr>
<tr>
<td>1.11</td>
<td>Provide initial classes face-to-face for learners who are not sufficiently experienced interacting in the online environment.</td>
</tr>
</tbody>
</table>

### 7. Context of use, & using examples to show use

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.2</td>
<td>Orientate students in how to use discussion boards and chat in the context of use. This includes how to use discussion boards from a technical and educational perspective, as well as training as moderators,</td>
</tr>
<tr>
<td>5.1</td>
<td>Provide examples or activities that help learners to understand the type of learning that is expected of them in student-centred courses.</td>
</tr>
<tr>
<td>5.10</td>
<td>Provide more support and scaffolding in the learning environment through, emailed assignment due dates or calendar of deadlines and time management suggestions</td>
</tr>
</tbody>
</table>

### 8. Simulating face to face

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use both discussion forums and chat but chat is the preferred option (as chat is seen as more like the face-to-face environment)</td>
</tr>
<tr>
<td>1.6</td>
<td>Build a sense of teacher immediacy through the use of individual messages.</td>
</tr>
<tr>
<td>4.5</td>
<td>Use soft or spontaneous scaffolding through monitoring student learning. (This provides the individual response to the student)</td>
</tr>
</tbody>
</table>

### Other

<table>
<thead>
<tr>
<th>No.</th>
<th>Which guidelines exemplify this</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.6</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them.</td>
</tr>
<tr>
<td>5.2</td>
<td>Orientate learners to help them understand the benefits of a learner-centred environment.</td>
</tr>
<tr>
<td>5.4</td>
<td>Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training, and focus on the learning benefits.</td>
</tr>
</tbody>
</table>
The eight common concepts that were identified, as shown in Table 8.4 are compared to the cultural values and world views that were identified in Chapter Six for the Arabic culture, and as is represented in Table 6.1 (p. 129).

Table 8.5: Arabic cultural values identified in analysis of refined guidelines

<table>
<thead>
<tr>
<th>Collectivist Values</th>
<th>Proposed Learning Preferences</th>
<th>Guideline themes identified</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collectivist Values</td>
<td>Descriptive analyses may be preferred more than deductive analyses.</td>
<td>1 Relationships need to be developed</td>
</tr>
<tr>
<td></td>
<td>Items are understood in their context, not in isolation.</td>
<td>2 Commitment and responsibility need to be developed within the relationships</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3 Working in a group is important</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 Support from others is needed to help learners</td>
</tr>
<tr>
<td>Oral language</td>
<td>Proposed Learning Preferences</td>
<td>Guideline themes identified</td>
</tr>
<tr>
<td>Visual Imagery</td>
<td>Language should be used develop rich mental images and concepts.</td>
<td>5 The visual element is important</td>
</tr>
<tr>
<td></td>
<td>Other visual tools may be required</td>
<td>6 The context of use is preferred as is showing examples of use</td>
</tr>
<tr>
<td>Story-based</td>
<td>Situated learning that is story-based or provides a vicarious experience may be preferred</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Use of metaphors may be valued in descriptions</td>
<td></td>
</tr>
<tr>
<td>Human-related</td>
<td>Apprenticeships providing scaffolding and other human-based support may be preferred.</td>
<td>7 Interaction that simulates the face-to-face experience is preferred.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>8 Face-to-face is important for developing relationships</td>
</tr>
</tbody>
</table>

As shown in Tables 8.2 and 8.3, design guidelines were modified in all five online themes. This provides evidence that the guideline modifications proposed in this research were from all online themes, and could be related to Arabic cultural values and world views. It also provides evidence for the presence of learners' cultural preferences in the design guidelines. These findings are discussed in Chapter Nine as they relate to the responses to the research question of how online learning environments can be designed for Omani contexts.
Objective Four: To propose how the design solution may be generalised to other contexts

The design solution used in this research was in the form of design guidelines. Prototype guidelines were developed for an Omani context using this solution, as represented in Figure 8.1.

![Figure 8.2: Guidelines as the design solution](image)

During the empirical phase of this investigation, both the learning environment, and the guidelines were iteratively refined according to the principles that are described within this solution. This provides evidence for the generalisation of this solution for other contexts, as is discussed in Chapter Nine.

Summary of the research approach and strategy selected

The research approach was a Design-based Research approach, and a case study strategy was used for data collection and analysis.

Suitability of the Design-based Research approach

From the first research cycle, it was found that the iterative approach of Design-based Research was compatible with the design solution proposed, and that the responses of cases to the learning environment could be used to propose changes to the design guidelines and then to the learning environment. That is, the Design-based Research cyclic refinement of theory and practice, as shown in Figure 8.3 on page 227, was compatible with the cyclic aspect of the design solution composed of design
guidelines, learning environment investigation, learner preferences, as shown in Figure 8.2 on page 226

**Figure 8.3: Design-based Research cycle (Reeves, 2006)**

This approach enabled guidelines to be developed and modified in all five online themes of social presence, interaction, collaboration, cognitive strategies and student-centred learning.

However, it was also found that this iterative approach was difficult to use in a short course where each research cycle produced changes that could not be tested in the following cycle. For example, the orientation unit of the online course resulted in large amounts of data and guideline modification, which could be implemented only in the following course. Therefore these types of modifications proposed could not be further evaluated and modified as frequently as other changes. This means that short courses may better be tested as one cycle, giving more time for a more thorough data collection.

**Suitability of the Case study strategy**

This strategy was found to be able to use many sources for data, which was analysed using various concepts such as triangulation, pattern matching, longitudinal and latitudinal comparisons, as well as analysis for individual sets of data such as collating numbers for forum or chat postings. The case study strategy resulted in large amounts of data that had to be analysed over a short period of time, as the findings had to be checked by a peer and implemented into the learning environment within a week of completing data collection. This approach would be more effective where there is more than one researcher or where each research cycle is equivalent to one short
course. However, it was also found that this strategy was able to produce more than sufficient data to support conclusions proposed. The case study strategy proposes (Yin, 2003) the concept that each participant is a case and therefore equivalent to a scientific experiment and therefore each case would either support or modify the conclusions of a previous case. This concept was found to be effective in this study, as the conclusions from one case were used as a pattern to search for data on the same issues in another case, therefore extracting a greater yield of useful results.

Method modification: It was found that the data collection and analysis methods required modification and refinement over the research period, as the findings were reflected on and as research competency was gained. These modifications included addition of further tools for analysing some raw data, and the competency gained was mainly in the ability to use a pattern matching procedure in the analysis.

Therefore the Design-based Research approach and the case study strategy were found to be suitable methods for evaluating and testing the design guidelines, but modifications to how they are used would be beneficial for short courses such as this, and where there is only one researcher.

Issues of Quality in this Research

All research must be able show that it meets the criteria of quality. In quantitative research, this concerns validity and reliability and repeatability. Qualitative research has the similar concepts of quality, but is expressed as credibility, transferability, dependability and confirmability in qualitative research (Mertens 1998, p. 180).

Transferability

This concerns the ability to generalise the findings to other situations and this depends the similarity of the two contexts. Therefore this requires is a full description of the time, place, context and culture of the research environment; a “thick description”
In this research, transferability was seen in

- *A full description* is provided of the context, of both the physical setting and the cultural setting.

- *Replication Logic*: The conclusions from one case are confirmed or modified by conclusions in other case studies. In this research there were nine cases studied, three from one online course and six from the second. During each research cycle each conclusion was compared with the other cases, and each case added to the transferability of the theoretical findings. However, as Cronbach (1975, cited in Hoepfl, 1997 p. 59) commented, although the findings and modifications of theory would help provide transferability, at the same time, they resulted in guidelines that were becoming more specific for the context of the study.

**Credibility**

Credibility concerns how truthful the research is; how much the findings “represent empirical reality” or are “authentic representations” (LeCompte & Goetz, 1982 p 32), that is, the findings accurately portray the values and thoughts of the research participants. LeCompte and Goetz (1982) comment on credibility as being the strength of many qualitative studies, especially those that are done over an extended time, as it gives opportunity for the researcher to gain greater understanding of the research participants and their context. This research was done over nearly three months for each set of cases, as data was collected and analysed of the entire period of two online courses.

The case study strategy has several features that support the credibility of this research. This includes several means of data collection such as participant observation and interviews. These are descriptive and are of depth; therefore with large amounts of data, they provided the opportunity of obtaining a more complete picture of the context, participants and the research process used. Pattern matching in
case studies strengthens the validity of the findings. This is a comparison of an "empirically based pattern with a predicted one" (Yin, 2003 p. 116). Therefore, in this research credibility was seen in:

- **Matching of empirical findings to theoretical propositions.** Guidelines were used for course design and responses of cases studied were used to modify the guidelines. Guideline changes, and therefore participant responses all matched cultural values that could be identified in the literature on cultural values.
- **Pattern Matching:** the responses of cases matched each other. Therefore pattern-matching in this research supported the credibility of the study.
- **Converging results:** the findings from the participant observation, interviews, and course involvement were generally converging, that is each set of descriptions supported each other, which also helped to support the credibility of the study.
- **The research time:** the research was over a span of nearly six months, with a break of about four months in the middle, which allowed time for reflection, and modification of the research procedures.

**Dependability**

This quality measure concerns the ability of research to be reliable. Repeatability of results is not possible in qualitative research due to the changing nature of the research subjects and context, and the involvement of the researcher in the study. The question therefore in qualitative research concerns the dependability of the research (Hoepfl, 1997; LeCompte & Goetz, 1982; Mertens, 1998).

Case study designs recommend that the study procedures are documented in such a way that if a researcher was to perform the same research again on the same case, similar findings would be obtained.

In this research evidence for dependability can be seen in:

- **Documented steps:** all of the steps have been recorded for all cases, from the raw data to the conclusions first for each case and then between each case for each online course.
Log files: A log file was kept for each research cycle documenting the conclusions from each cycle, and the changes made to both the theory and the course design, that is the practical changes. Therefore there should be sufficient evidence in this study to show the dependability of the findings.

Confirmability

It is not possible for qualitative research to be objective, that is, free from researcher involvement or bias. Qualitative research usually relies on data that the researcher obtained through involvement with participants which is interpreted by the researcher’s own judgement. Therefore it is not possible to have objective qualitative research. Instead, qualitative research is recommended to be neutral in its interpretation, free from researcher bias (Lincoln & Guba, cited in Hoepfl, 1997 p 60); this is called confirmability.

Confirmability in case study research is through a 'chain of evidence' (Yin, 2003 p 34) This means that the steps in building the analysis are seen, from the raw data to the final conclusions where the process of interpretation and conclusion are clearly seen.

In this research confirmability is seen in:

- A chain of evidence was provided as all steps in the data collection and data analysis were kept.
- Multiple sources of evidence: Confirmability is evident in the use of multiple sources of evidence that is convergent as is found in this study. The use of interviews, participant observation and records from the online course provided evidence that generally supported each other. In this case study research, multiple sources of evidence included the use of several cases where the conclusions from each were compared.
- Peers to assess research propositions: The final source of confirmability in case studies is through the use of peers to assess the findings. In this research, a peer checked the findings in each research cycle to determine if there was sufficient
evidence to support the proposed changes to the theoretical propositions. In each research cycle, the peer affirmed the proposed changes.

Therefore the confirmability of the research was supported in this investigation.

**Ethical Issues**

Approval to conduct the research according to ethical guidelines was gained from the University of Wollongong and from Sultan Qaboos University Research Committee where the study was done. The interviewees had the purpose of the research fully explained to them, verbally and with a Participant Information Sheet, as is shown in Appendix 20, as informed consent was required for their participation in the study. All participants signed a consent form, as shown in Appendix 19, before the practical part of the research started. Additionally, there was an ethical approach in the way the research was conducted and the results were handled. The participants were responded to sensitively, and deeper thoughts were drawn out in a non-manipulative manner. All participants were reminded that the information collected was confidential. The results were reported anonymously and in a manner that respected the dignity of those interviewed.

**Conclusion**

Chapter Eight completed the iterative refinement phase of the design solution that began in Chapter Seven. Prototype guidelines and learning environment proposed in Chapter Six were tested and refined iteratively over five cycles of research in two online courses over a total period of approximately six months.

The empirical investigation used a case study strategy within the Design-based Research approach, on a total of nine case studies. Three of these cases were investigated during the first implementation of the learning environment, and six during the second. During the break between the two implementations, research tools
and analysis approaches were reflected on and modified to increase the quality of the data collection and analysis.

A total of 45 guidelines were proposed in Chapter Six for the prototype design solution for an Omani context. It was found that an analysis of the learners’ responses to the learning environment could be used to affirm or modify these design guidelines and also that new guidelines could also be created. The case study strategy enabled manipulation of the learning environment; therefore guidelines could be continually tested and refined as changes were made to the learning environment. As the guidelines were framed in the sociocultural online themes, and the learning environment was designed within a sociocultural learning design strategy, it meant that this design solution for an Omani context was based in a theoretical framework and on existing design models and principles.

An analysis of the empirical findings provides evidence for discussion of the design solution as will occur in Chapter Nine. This evidence is related to the objectives that were proposed as a means to responding to the research question. The evidence concerns:

- Guidelines that can be proposed, tested and refined as a design solution for an Omani context
- A learning environment that can be developed and refined, and be based on guidelines that reflect learners’ preferences
- Cultural learning preferences in the guidelines that identify the impact of culture on learning, and the presence of cultural values within the design guidelines
- How the design solution may be generalised to other contexts.

This analysis will be used in the discussion in Chapter Nine, where the design guidelines and the final learning design are presented as part of the design solution for the Omani context. There will also be a discussion concerning the research question of how can online learning environments be designed for Omani contexts.
Chapter 9: A Design Solution for Omani Contexts

Introduction

In Chapter One, it was noted that cultural preferences may affect how people learn online. If this effect is significant, then culture must be considered in the way that learning is designed. Online learning can be used to respond to the challenges of quality and access in higher education as is needed in the Sultanate of Oman, the context of this investigation. However, if culture does have an impact on learning, then culturally appropriate design principles are required if Oman is to use online learning effectively.

A preliminary investigation of the literature found that there was very little on how people from an Arabic culture learn, and no literature was found on how learning could be designed for these learners. Thus, an investigation was carried out for the problem of how can learning be designed in a way that considers cultural values and enables a successful learning experience. A design solution was proposed from a synthesis of the literature, was built on existing models and principles, and used a Design-based Research approach. The solution was explored through a theoretical application to a specific context in Oman and then tested iteratively to refine the design solution in a genuine context of use. These findings and products of the testing and refinement stages of this investigation will be used to explain the impact of culture on online learning, and what principles may be used to guide the design of culturally appropriate online learning environments, and therefore to explain how online learning environments can be designed for Omani contexts.

The research question asked how can online learning environments be design for Omani contexts. This question contained two sub questions that will be responded to first, as a means to answer the research question. The two sub questions are: How does culture impact on online learning and what principles may be used to guide the design of culturally appropriate online learning environments in Oman?
Research Sub-question: How does Culture Impact Online Learning

In the initial stages of this research, it was noted that many people commented on the impact of culture on learning, that it is “significant concern” (Chen et al., 1999 p. 217), that the Internet creates “cultural obstacles” in the classroom (Joo, 1999 p. 250), that “the pervasive influence of culture should be regarded as a significant concern” (Chen 1999, p. 217). However, these are mainly expressions of concern, not research that described or explained how learning was impacted or compromised.

Identification of cultural values in the refined guidelines

During the iterative phase of this research design guideline changes or modifications were made, based on learners' responses to the learning environment. The guidelines were analysed for common concepts and, seven categories emerged, as shown in Table 8.4 (p. 223). For example it was found that five of the refined guidelines focused on the need for commitment and responsibility, and three guidelines highlighted the importance of the visual element in learning. As is represented in Table 8.4, most of the guidelines could be identified in these seven categories. These categories compare very strongly to the cultural values of the Arabic society that were identified in Chapter Six and as represented in Table 8.5 (p. 225). That is, the refinements made to the guidelines show that the participants preferred to learn in an environment that can be identified as supporting collectivist values, providing visual and human-related tools and in a situated context. These values had all been previously identified in the Arabic histocultural background (Arab Information Centre, 1999; Hitti, 1996; Ong, 1982; Zaharna, 1995) as described in Chapter Six.

It is also important to note that many of the refinements were made to guidelines that had been proposed from general literature concerning online learning, and it was not realized that these guidelines carried cultural values. For example it is generally presumed that learners must interact online sufficiently to develop relationships (Wegerif, 1998). However in the Arabic context, it was found that relationships and responsibility to others must be built before interaction would occur. This indicates that many concepts that are assumed to be necessary for effective online learning may
instead be culturally-related concepts and may be important only for learners who value those particular concepts.

The social aspects of learning were impacted more than others

Most of the modifications made to the design guidelines were related to the social aspects of learning. As is noted in Table 9.1 (p. 239) the social presence category had the largest number of guidelines, and most refinements occurred in this category, as shown in Appendix 16. Social presence concerns the sense of reality of others in a technological environment. The concepts summarized on Table 8.4 also support this. It shows in the first two categories that there were nine guideline refinements that related to how relationships need to be developed for successful interaction and learning to occur. This strongly identifies in learners the preference to develop in the learning environment the type of relationships that are found within their own culture. Some of these social preferences were also found as prerequisites to refined guidelines in other online learning categories. For example, it was found that unless commitment and responsibility were first developed, learners would not interact or collaborate, and therefore not be able to complete course tasks. Therefore this suggests that the learners’ social preferences in learning may have significant impact on learning success. Others support the significance of the social preferences in learning, for example Geer’s (2001) theoretical research found that social preferences and expectations are important in culturally sensitive online environments. In McLoughlin’s (1999) work with indigenous Australians she used an approach that promoted learning through the social environment as a means for learners to develop a sense of community and use its skills to create a “unified and authentic environment” (p. 237). Thus, most changes in the learning design were identified as cultural, and that cultural preferences may be found in more aspects of online learning than previously presumed. This shows that the impact of culture on learning is significant.

How does culture impact online learning?

This investigation has found that:

- Cultural values impact all aspects of learning in the online environment,
The social aspects of learning were impacted the most.
Some concepts of learning considered to be general concepts had cultural values.

Therefore it is concluded that the impact of culture is significant, as it affects all aspects of learning, and therefore there is a necessity to consider cultural values in the learning design if online learning is to be used to respond to learning and teaching challenges in the Sultanate of Oman.

**Research Sub-question: What Principles May Be Used For Culturally Appropriate Learning Design?**

As cultural values have been found to impact learning significantly, then there is a need for culturally appropriate learning design. In this investigation, a design solution was proposed and investigated as a means to respond to the question of how can online learning environments be designed for Omani contexts. This design solution was applied to this particular cultural context and two products were developed as the design solution, through a synthesis of the literature and through empirical investigation. The products are refined design guidelines and a learning environment.

**Design guidelines**

Design guidelines were developed from learners’ preferences, within the framework of Vygotsky’s sociocultural theories, as was represent in Figure 8.2 (p. 226).

**Development of the guidelines**

The guidelines were originally developed as a prototype solution that was based on existing models, a literature review of learners from different cultures, and on learning preferences proposed from the sociohistorical background of learners from the Omani context. A context in Oman was used to modify and refine the guidelines over five research cycles. During the research cycles, the learner preferences were identified through data analysis and then used to modify the design guidelines, and these were used to modify the learning environment. There were originally 45 guidelines that
were proposed for the Omani context. During the iterative phase, 19 were modified, four were supported and two new ones were added. The refined guidelines for this context are shown in Table 9.1. Each research cycle resulted in more modifications of the guidelines. This means that these refined guidelines in this table are not a final solution for this context, but represent a solution that should be continuously evaluated and modified whenever it is used.

As was previously stated, the modified design guidelines are strongly aligned with the cultural values that were evident in the histocultural background of the learners in this context. As is shown in Tables 8.4, common concepts in the guideline modifications can be described in eight different categories. These eight categories, as shown in Table 8.5, all align with the Arabic cultural values that had been previously identified, as shown in Table 6.1 (p. 129). This shows that these guidelines can express learners' cultural values which may be applied to the learning design. For example, Guidelines 1.10, 5.8, 5.9 and 5.10 describe how learning should be designed to provide more support in the learning environment, as it was found that the research participants preferred this type of support. These characteristics are described in Table 8.4 and are identified in Table 8.5 as characteristics of a collectivist culture, which the Arabic society is. Refined guidelines 1.1, 1.6 and 4.5 state that chats, teacher immediacy and spontaneous scaffolding should be designed in the learning environment. These design factors simulate a face-to-face characteristic to the learning environment. This characteristic can be identified as in Arabic cultural value, as is shown in Table 8.5. This culture values face-to-face relationships as they prefer activities that are human-related and not impersonal.

It can be concluded that the refined guidelines

- Are based on the preferences of these learners and
- Reflect the cultural values of the learners' Arabic background,

This demonstrates the ability of this design solution to account for learners’ cultural preferences in the guidelines and in the learning environment.
Table 9.1 Refined guidelines for an Omani context

<table>
<thead>
<tr>
<th><strong>Social Presence</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use both discussion forums and chat but chat is the preferred option.</td>
</tr>
<tr>
<td>1.2</td>
<td>Design groups, using participants’ social networks or from people within a close circle. For those new to online learning, give sufficient time in the face-to-face environment.</td>
</tr>
<tr>
<td>1.3</td>
<td>Develop the sense of commitment and responsibility where the frequency of interaction is low.</td>
</tr>
<tr>
<td>1.4</td>
<td>Initiate social presence at the beginning of the course by developing relationships.</td>
</tr>
<tr>
<td>1.5</td>
<td>Use small groups to develop relationships, where affective language may be used.</td>
</tr>
<tr>
<td>1.6</td>
<td>Build a sense of teacher immediacy through the use of individual messages.</td>
</tr>
<tr>
<td>1.9</td>
<td>Enable participants to share affectively by developing relationships in the initial part of the course.</td>
</tr>
<tr>
<td>1.10</td>
<td>Help learners to first be committed and accountable to others, to help them become responsible in completing the work.</td>
</tr>
<tr>
<td>1.11</td>
<td>Provide initial classes face-to-face for learners who are not sufficiently experienced interacting in the online environment</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Interaction</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Design interaction as an integral part of course design but participant commitment or obligation to the course and each other must be developed before interaction will occur.</td>
</tr>
<tr>
<td>2.2</td>
<td>Orientate students in how to use discussion boards and chat in the context of use. This includes how to use discussion boards from a technical and educational perspective, as well as training as moderators.</td>
</tr>
<tr>
<td>2.4</td>
<td>Orientate learners on how to communicate in an interactive online classroom.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Collaboration</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level but commitment or obligation developed before this task can be successful</td>
</tr>
<tr>
<td>3.4</td>
<td>Use separate roles or functions for some collaborative work, but commitment and responsibility must be developed before cooperative tasks can be done successfully.</td>
</tr>
<tr>
<td>3.8</td>
<td>Design most tasks as group work, and give responsibilities to the group leader.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Cognitive Strategies</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td>Use a variety of tools and support, including visual tools.</td>
</tr>
<tr>
<td>4.5</td>
<td>Use soft or spontaneous scaffolding through monitoring student learning.</td>
</tr>
<tr>
<td>4.6</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Student-centred learning</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Provide examples or activities that help learners to understand the type of learning that is expected of them in student centred courses</td>
</tr>
<tr>
<td>5.2</td>
<td>Orientate learners to help them understand the benefits of a learner-centred environment.</td>
</tr>
<tr>
<td>5.3</td>
<td>Design activities that are integral to the course structure.</td>
</tr>
<tr>
<td>5.4</td>
<td>Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training, and focus on the learning benefits.</td>
</tr>
<tr>
<td>5.8</td>
<td>Provide activities where learning is gained from peers or other sources, but also provide the support and reminders of course deadlines.</td>
</tr>
<tr>
<td>5.9</td>
<td>Use a student-centred design.</td>
</tr>
<tr>
<td>5.10</td>
<td>Provide more support and scaffolding in the learning environment through, emailed assignment due dates or calendar of deadlines and time management suggestions</td>
</tr>
</tbody>
</table>
A modified learning environment

In this investigation, the use of these guidelines was exemplified in the development of a learning environment. This environment was used as the context to develop and modify the design guidelines, but it also became increasingly culturally-appropriate for the learners in this context. The description of the learning environment also exemplifies a learning environment that has accounted for the learners’ cultural values in the design. This design is represented in Tables 9.2 to 9.4. These can be compared to the prototype learning environment represented in Table 6.8 (p. 141) to 6.10 (p. 144) to identify some of the changes that were made.

The learning environment was designed using a sociocultural learning design strategy, for example in developing an authentic problem faced by a professional community, and then developing the resources, activities and support. The guidelines were used to develop the tasks within this structure. During the implementation of the iterative phases of the research, the learning environment was modified in each cycle, following design guideline refinement. Therefore over each research cycle, the learning environment more closely matched the learning preferences of the cases that were being researched. Appendix 17 describes the modifications made to the learning environment as a result of the guideline changes.

Course design

Table 9.2 describes the key features of the final design learning environment following completion of the research, and demonstrates the application of the guidelines to the learning design. The figures in Table 9.2 are screen shots from the online course on the Moodle Learning Management System, and each screenshot shows all the hyperlinked activities required in that unit. A Guide to Facilitators was also designed to be used with this course, as is shown in Appendix 21.

Modifications to the learning environment are demonstrated in Table 9.2. For example, in unit 1 tools are introduced inside each activity, that is, in context. This is based on Guideline 2.2 as shown in Table 9.1 and represents the Arabic cultural value of the importance of the context of use as noted in Tables 8.4 and 8.5. Unit 2
describes the use of real examples to help learners visualise their task. This modification was developed using Guidelines 4.4 as shown in Table 9.1, and relates to Arabic cultural values of the visual element of learning, as shown in Tables 8.4 and 8.5.

Table 9.2: Modified learning environment for an Omani context

<table>
<thead>
<tr>
<th>Course Outline</th>
<th>Course topics, showing screen shots of each unit with hyperlinks to activities and resources.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit 1</strong></td>
<td></td>
</tr>
<tr>
<td>*Two face-to-face classes to develop social networks and responsibility to others.</td>
<td>Please see print copy for Table 9.2</td>
</tr>
<tr>
<td>*All tools used in course are introduced and their use is described inside each activity.</td>
<td></td>
</tr>
<tr>
<td>*Activities exemplify their educational benefits; and are contextual, not abstract.</td>
<td></td>
</tr>
<tr>
<td>*Group activities start with the chat.</td>
<td></td>
</tr>
<tr>
<td><strong>Unit 2</strong></td>
<td></td>
</tr>
<tr>
<td>*Visualisation of e-learning through examining other online examples</td>
<td></td>
</tr>
<tr>
<td>*Audio or video introduction are provided.</td>
<td></td>
</tr>
<tr>
<td>*Chat is designed to help build relationships and obligation, and learn collectively.</td>
<td></td>
</tr>
<tr>
<td>*Reflective class forum as a tool to support project work</td>
<td></td>
</tr>
<tr>
<td><strong>Unit 3</strong></td>
<td></td>
</tr>
<tr>
<td>*Participants work cooperatively on a group activity to build knowledge on a new concept</td>
<td></td>
</tr>
<tr>
<td>*Chat develops concept understanding and use, which is then applied to their individual courses in their assignment</td>
<td></td>
</tr>
<tr>
<td>*Class forum helps learners reflect on their teaching goals, helping with their assignments, and learning how to learn from each other.</td>
<td></td>
</tr>
<tr>
<td>*Examples and scaffolds are provided.</td>
<td></td>
</tr>
<tr>
<td>Course Outline</td>
<td>Course topics, showing screen shots of each unit with hyperlinks to activities and resources.</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Unit 4</strong></td>
<td>* Teaching notes focus on concepts that will be used and developed in this unit.</td>
</tr>
<tr>
<td></td>
<td>* A real-world context is provided with participants working on their own courses.</td>
</tr>
<tr>
<td></td>
<td>* Group chats provide another opportunity for group support and responsibility to others,</td>
</tr>
<tr>
<td></td>
<td>helping participants to learn from each other, and in a real world social environment.</td>
</tr>
<tr>
<td></td>
<td>Please see print copy for Table 9.2</td>
</tr>
<tr>
<td><strong>Unit 5</strong></td>
<td>* Peer marking for learners to be responsible to others and to learn from each other</td>
</tr>
<tr>
<td></td>
<td>* Reflections help participants see how they have gained from a student-centred approach.</td>
</tr>
<tr>
<td></td>
<td>* The assignment completes the course, and provides further examples in this context for</td>
</tr>
<tr>
<td></td>
<td>participants.</td>
</tr>
</tbody>
</table>

*Design of activities*

The learning environment consists of short teaching notes, followed by activities that the learners must complete before doing the assignments, as the structured activities are the focus of the design of the units, according to a sociocultural learning design strategy as described in Chapter Four. Examples of these activities are provided in Table 9.3. The assignments focus on the participant’s own work and provide continuity for the course. The activity page shown is an example of the type of activities provided for each unit of the course.

As shown in Table 9.3, feedback is provided during assignment work to monitor progress, as is described by Guideline 4.5. This is an example of how cultural values may be applied to the learning environment through the guidelines, as feedback is described in Tables 8.5 and 8.6 as an application of cultural preference for the face-to-face environment.
### Table 9.3: Course activities

<table>
<thead>
<tr>
<th><strong>Description</strong></th>
<th><strong>Screenshot providing examples of course activities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>* The assignment is based in their own authentic environment.</td>
<td>Please see print copy for Table 9.3</td>
</tr>
<tr>
<td>* One part per each unit is done, allowing for feedback, i.e. soft scaffolding, on their work while it is being developed.</td>
<td></td>
</tr>
<tr>
<td>* It is a final task of individual work, using the concepts learned collectively in the course.</td>
<td></td>
</tr>
<tr>
<td>* It provides practical application of the learning.</td>
<td></td>
</tr>
<tr>
<td>* Participants work initially in groups to develop their understanding on concepts</td>
<td></td>
</tr>
<tr>
<td>* Local examples and scaffolds are provided to help them understand how to apply their learning to their own situations.</td>
<td></td>
</tr>
<tr>
<td>* The activity is based on their own work context.</td>
<td></td>
</tr>
</tbody>
</table>

**Design of support**

As is shown in Table 9.4, support is provided through the use of chats, groups and group leaders, and the use of committed responsible relationships, as is described in Guidelines 1.5, 1.10 and 3.8. These concepts have also been identified as Arabic cultural values, in the need for developing committed relationships as is shown in Tables 8.4 and 8.5.
Table 9.4 Support provided in the learning environment

<table>
<thead>
<tr>
<th>Type of support</th>
<th>Examples of how this support is provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>With other learners</td>
<td>* Chats are provided in each unit immediately after the course notes to help participants deepen their knowledge together as they discuss their thoughts and ideas.</td>
</tr>
<tr>
<td></td>
<td>* Groups help learners to be committed and responsible, and therefore help each other complete course tasks.</td>
</tr>
<tr>
<td></td>
<td>* Group leaders provide support, structure and encouragement to each other.</td>
</tr>
<tr>
<td></td>
<td>* Learners can provide examples of how concepts are exemplified through sharing their work.</td>
</tr>
<tr>
<td>With the course facilitator</td>
<td>* Providing support and encouragement through individual emails, and notices on the course notice board.</td>
</tr>
<tr>
<td></td>
<td>* Providing feedback for course assignments before assignments were completed at the end of the course.</td>
</tr>
<tr>
<td>Cognitive support in the learning environment</td>
<td>* Examples for course work designed into the activities, such as previous student's work, or other examples from the internet.</td>
</tr>
<tr>
<td></td>
<td>* Outlines and guides to provide help for the participants in structuring their work.</td>
</tr>
</tbody>
</table>

Exemplifying the use of the design solution

This representation of the online learning environment model demonstrates how the design solution has been used to develop a culturally appropriate learning environment.

The learning environment was designed using a sociocultural learning design strategy and has been modified and refined through application of the design guidelines developed for a context in Oman. It has demonstrated how guidelines can be used to manipulate a learning environment to more appropriately meet the needs of the learners. The refined guidelines were found to have characteristics of the Arabic culture, and it has now been demonstrated that these characteristics are also evident within this modified learning environment. That is:
• Learners’ preferences can be applied to the learning environment through the use of design guidelines

• Learners’ cultural preferences are evident within the modified learning environment

Therefore it can be concluded that the design solution can be used to develop culturally appropriate learning environments.

**Culturally appropriate learning design for other contexts in Oman**

The research question asks how learning may be designed for contexts in Oman, not just one context. This means the design solution should be generalisable to other contexts in Oman.

*Designs for other Arabic learning environments in Oman*

This design solution, in the form of guidelines, was developed for learners in a particular context in Oman. As shown in Tables 8.4 and 8.5, these guidelines relate to the cultural values of the Arabic society. This would suggest that these guidelines can be used to enable any learning environment to be culturally appropriate for learners of an Arabic cultural background. However, this investigation was carried out in only one context, and therefore did not determine how different cultural values may be in different Arabic contexts. Therefore, it is suggested that the guidelines that were developed in this investigation may be used in other Arabic contexts in Oman, but iterative research would be necessary to modify the guidelines for each context.

*Designs for learners from other cultural backgrounds in Oman*

The guidelines for an Omani context were developed from a proposed solution, as represented in Table 8.2 (p. 226), and, as described in Chapter 6, propose:

Identify learners’ preferences from empirical research in the literature. Learners’ responses to their learning environment can be used to propose learning preferences.
Create guidelines from the learners’ preferences, within the five sociocultural online themes. The learning preferences are rewritten as statements that propose the how the learning should be designed.

Apply the design guidelines to the learning environment, within a sociocultural learning design strategy. The design strategy provides the course structure and the tasks required, but the guidelines explain how the tasks are designed, according to the learners' preferences.

Propose learning preferences from an investigation of worldviews and values of the learners' cultural background, within a histocultural theoretical framework. Literature on the historical background and social organisation pattern of the society's history can enable worldviews and values to be identified. Learning preferences and guidelines can be proposed from these values as described above.

Chapters Six to Eight exemplify the use of this proposal for a design solution through the creation and modification of guidelines for an Omani context. This investigation found that Arabic cultural values could be identified in the guidelines and learning environment as represented in Tables 8.4 and 8.5, as was previously discussed. Therefore the effective use of this solution in an Omani context suggests that this solution described here may be generalised to other contexts where the cultural background is different, as the histocultural theories may be used to identify learning preferences specific for that culture. However further research would be needed to both test this proposal and to enable the guidelines to meet cultural needs of learners in each context.

It is proposed that this design solution may be generalised to other contexts:

- The guidelines developed in this investigation may be suitable to use in other contexts where learners come from an Arabic cultural background
- The design solution for proposing learning preferences from empirical research and cultural theories should be used to develop guidelines in a sociocultural framework for learners of different cultural backgrounds.
- Design guidelines should be tested and modified iteratively in each context to increasingly match the cultural preferences of the learners.
Therefore it can be concluded that this design solution may be used in other context as long as iterative research is used in the design process.

**What principles may be used to guide the design of cultural appropriate learning environments in Oman?**

This research found that

A set of guidelines that was developed for an Omani context in this investigation can be used to design culturally appropriate learning environments for learners of an Arabic cultural background. These guidelines should be tested and modified in each context of use.

Guidelines for other cultural contexts in Oman can be developed from a histocultural investigation of learners’ cultural background to identify worldviews and propose learning preferences. The guidelines should be used and tested iteratively within a Vygotskian sociocultural learning design framework.

**The Research Question: How can online learning environments be designed for Omani contexts?**

This research has demonstrated how online learning environments can be designed for contexts in Oman:

1. A set of 25 guidelines were developed for an Arabic context in Oman, using principles that were built on existing models and were based in Vygotsky’s sociocultural theory. These guidelines were applied to a learning environment and refined iteratively. Both the guidelines and learning environment demonstrated Arabic cultural values, therefore enabling the learning design to be culturally suitable for the learners.

2. Design guidelines can be created for non-Arabic contexts in Oman. This may be through identifying learning preferences from empirical research and from a
histocultural investigation of the learners’ cultural background. The research proposes that these guidelines should be framed in the five online themes of the sociocultural theories, and applied to the learning environment through a sociocultural learning design strategy. All applications of the design solution require iterative research to enable the guidelines to apply the cultural preferences of the learners to their learning environment in each context of use.

This research has also demonstrated that the impact of culture on learning is significant. All aspects of online learning were impacted by cultural values, especially those that related to the social aspects. As some general characteristics of online learning were found to contain cultural values, this suggests that culture has a more significant role in learning, and that learning designs must consider cultural values for learning to be successful.

A learning and teaching solution for the Sultanate of Oman

This investigation was carried out because of learning and teaching challenges that were identified in higher education in the Sultanate of Oman. As is common globally, Oman faces two challenges in higher education; that of providing quality education and the ability to provide access to increasing numbers of students at both undergraduate and graduate levels. Effective online learning has the potential to respond to both challenges, assuming that there is an adequate infrastructure, that professional development for faculty is part of the strategic approach, and that the learning is designed to meet students’ needs.

The design of learning to suit students’ needs includes the consideration of cultural values and preferences. The impact of culture on learning has become an increasing concern globally, and this research found that the impact of culture was significant and affects all aspects of learning. This means that if learners in the Sultanate are to have an equal opportunity for learning success, then it is necessary to consider culture in the design of learning.
A design solution was developed to respond to this problem. Existing models in the literature were used to guide and direct the development of the principles that were first developed from a review of the literature and then refined through iterative testing in an Arabic learning community in Oman. This research found that the design solution was effective for online learning that considers the cultural preferences of the learning community. Therefore it is proposed that this design solution is an effective means for the Sultanate of Oman to use online learning in response to the challenges of access and quality in higher education.

**Limitations of the Research**

**Limitations in the research process**

*Research cycle length*

The online courses used as a context for this research were only intended to be of eight weeks duration. Many of the modifications made to the design guidelines related to the orientation, and therefore could not be tested until the following course was implemented. Also, some research participants worked at a slower pace than others, and this made it difficult to implement changes to a unit that others had already started. This meant that some modifications to the guidelines and learning design were evaluated only once during the research.

*The number of modifications*

In this research, the number of modifications increased with each research cycle. This suggests that the expertise in the use of the data collection and analysis tools affects the outcome of the research, as can be expected when using a large number of tools in a limited space of time. As the final cycle of research contains mainly guideline modifications and only few of which were supported, the final refined solution is not be presented as a model course or guidelines.
Of the 45 guidelines proposed, only half were tested. This may have been for one of several reasons, for example, lack of sufficient data collection or analysis tools, or that one course cannot exemplify all the guidelines proposed. It was found that where some learning preferences were not met, there was lack of use of some course activities and tools, and therefore guidelines relating to this work could not be evaluated.

This suggests that the refined design guidelines represent a process, more than a conclusion, and therefore evaluative research is necessary when this design solution is used in any context.

**Designing for mixed cultural contexts**

This research was proposed for communities where learners are from the same cultural background. Most learning contexts do not have a single cultural society represented in the classroom, and as well, an individual may have a personal history that results in cultural values and preferences from more than one community. This perspective was not covered in this study either, and would mean that design principles from this research may not be able to be applied directly to these types of learning contexts.

The work by Gutierraz and Rogoff (2003) may provide a means to develop culturally appropriate courses for these types of multi-cultural classrooms. They propose that an analysis of “history and valued practices” (p. 20) of cultural groups should be used to understand learning processes or dispositions groups children may have, and that where there are several different groups, the commonalities may be used as a basis for teaching. This would require further research to determine the practicalities of this approach.
Recommendations

Further research

This research has used only one learning community to develop this design solution. Therefore further research is necessary, and in different contexts, for example:

- These principles and tested guidelines should be used with undergraduate courses at this university as they form the majority of students in this country.
- The principles should also be tested with learners from other cultural backgrounds to determine how wide the application of the principles may be and what further refinements are required.
- Classes with learners of multi-cultural background should be assessed to determine the applicability and practicality of using these design principles.

As the principles are being applied to institutional learning design, evaluation and guideline modification should become an integral part of the design process. Therefore a practical and effective means is needed to enable this research to be implemented within each course for feedback and development of increasingly effective guidelines and research database for the design principles. This may be, for example, through using an online survey that is automatically integrated into the final component of any online course at an institution, and analysed by learning designers and educators.

Design guides for practitioners

One of the goals that motivated this research was to find means for enabling educators to apply culturally appropriate learning design principles to their courses. As most educators are not learning designers, practical context-specific guides for course design would provide a useful tool. Therefore it is recommended that guidelines developed through research should be reorganized into categories for learning design,
and presented as tools or tips that can easily be used by educators. This may help improve teaching and learning.

The findings from this research should also be published to provide resources for the community, and therefore spreading the benefits of this research and enabling others in the community to build on this work and help respond to identified teaching and learning challenges.
References


Australian Flexible Learning Framework. (2007). Cross-cultural issues in content
development and teaching online. *Australian Flexible Learning Quick Guide*
Retrieved April 25, 2007, from
http://www.flexiblelearning.net.au/flx/webdav/site/flxsite/users/kedgar/public/
quick_guides/crosscultural.pdf

Australian National Training Authority. (2003). Literature review: Digital divide,
assess and equity in online learning. Retrieved April 25, 2007, from


Baker, J. (2004). An investigation of relationships among instructor immediacy and
affective and cognitive learning in the online classroom. *Internet and Higher

Bannan-Ritland, B. (2003). The role of design in research: The integrative learning

Retrieved February 1, 2005, from
http://euronet.uwe.ac.uk/emas/training/train1-4.htm

communication. *Journal of Computer-Mediated Communication 7*(4)
Retrieved April 30, 2005, from

in creating complex interventions. *Journal of the Learning Sciences, 2*(2),
141-178.


2005, from http://www.csiss.org/classics/content/13

education. *Journal of Distance Education/Revue de l'enseignement à distance*
Retrieved September 13, 2005, from
http://cade.athabascau.ca/vol13.2/bullen.html

Distance Learning Administration, 3*(1) Retrieved April 25, 2008, from
http://www.westga.edu/~distance/ojda/spring08/cavanaugh81.htm

Chaiklin, S. (2003). The zone of proximal development in Vygotsky's analysis of
learning and instruction. In A. Kozulin, B. Gindis, V. S. Ageyev & S. M. Miller (Eds.),
*Vygotsky's educational theory in cultural context* (pp. 39-64). Cambridge: Cambridge University Press.

design of technology-enhanced learning systems. *British Journal of

argumentation and problem solving. *Educational Technology Research and
Development, 50*(3), 5-22.

Encouraging high level thinking in online discussion forums. *Roeper review,
26*(3), 166-171.


Durrington, V. A., & Yu, C. (2004). It's the same only different: The effect the discussion moderator has on student participation in online class discussions. *Quarterly Review of Distance Education, 5*(2), 89-101.

http://encarta.msn.com/fact_631504834/Oman_Facts_and_Figures.html

http://jcmc.indiana.edu/vol11/issue1/faiola.html


http://nabataea.net/arabia.html


258


Richardson, J., & Ting, E. (1999). *Making the most of interaction: What instructors do that most affect students' perceptions of their learning.* Paper presented at the 5th International Conference on Asynchronous Learning, College Park MD.


Wang, C. (2001). Listen to me: Four web-based cscl students' perspectives and experiences in group collaboration and knowledge construction in cyberspace. Paper presented at the National Convention of the Association for Educational Communications and Technology, Atlanta, GA.


## Appendices

**Appendix 1: Design guidelines reorganised for using in design a learning environment**

### Table 1: Course Preparation

#### Training for students

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Provide orientation for learners.</td>
</tr>
<tr>
<td>2</td>
<td>Train students in how to use the discussion boards. This includes training for students in how to use discussion boards from a technical and educational perspective. Also train students as moderators, explaining all the functions of a moderator.</td>
</tr>
<tr>
<td>2</td>
<td>Ensure learners understand the benefits of a learner-centred environment.</td>
</tr>
<tr>
<td>3</td>
<td>Orientate learners on how to communicate in an interactive online classroom</td>
</tr>
<tr>
<td>4</td>
<td>Provide student awareness to the different ways learners and teachers may communicate.</td>
</tr>
<tr>
<td>5</td>
<td>Provide training or modelling for students on how to use the cognitive tools.</td>
</tr>
</tbody>
</table>

#### Training for faculty

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Provide teacher awareness to the different ways learners and teachers may communicate.</td>
</tr>
<tr>
<td>2</td>
<td>Provide training for teachers concerning their role in a student-centred course and how this differs from teacher-controlled courses.</td>
</tr>
<tr>
<td>3</td>
<td>Help teachers understand the concept of student-centred learning.</td>
</tr>
<tr>
<td>4</td>
<td>Use an informed clear definition of collaboration.</td>
</tr>
<tr>
<td>5</td>
<td>Training or modelling may need to be provided for course facilitators on how to use the cognitive support tools.</td>
</tr>
<tr>
<td>6</td>
<td>Provide professional development to develop teachers’ student-centred beliefs.</td>
</tr>
</tbody>
</table>
Table 2: Designing the Course

<table>
<thead>
<tr>
<th>Designing activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Base activities in real world experiences</td>
</tr>
<tr>
<td>2</td>
<td>Use a variety of stories for activities</td>
</tr>
<tr>
<td>3</td>
<td>Provide ways to help learners develop mental images as learners from different.</td>
</tr>
<tr>
<td>4</td>
<td>Design a student-centred environment for everyone.</td>
</tr>
<tr>
<td>5</td>
<td>Design activities to force participation.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Designing Interaction</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design interaction as an integral part of course design; and use clear discussion questions to provide opportunity for everyone to be able to discuss their opinions</td>
</tr>
<tr>
<td>2</td>
<td>Use discussion forums, chat and email</td>
</tr>
<tr>
<td>3</td>
<td>Provide scaffolds for discussions, for example with ‘starter’ questions, or other structures such as argumentation, roles plays or discussion chains</td>
</tr>
<tr>
<td>4</td>
<td>Choose discussion questions that match the type of approach learners have to discussion topics.</td>
</tr>
<tr>
<td>5</td>
<td>Design interaction that helps social presence to be developed and maintained throughout the length of a course</td>
</tr>
<tr>
<td>6</td>
<td>Help provide an environment where affective language is used</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Designing Resources</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use a variety of ways to describe items in course content, including binary oppositions and metaphors instead of only abstract descriptions</td>
</tr>
<tr>
<td>2</td>
<td>Use a variety of stories in content to carry the information for learners in a way that makes it memorable</td>
</tr>
<tr>
<td>3</td>
<td>Provide ways to help learners develop mental images, such as through multimedia or language that can build these mental images</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Designing Support</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Embed cognitive support tools into the course design, with modelling, examples and organisers.</td>
</tr>
<tr>
<td>2</td>
<td>Use a variety of scaffolds</td>
</tr>
<tr>
<td>3</td>
<td>Provide a combination of tools and scaffolds</td>
</tr>
<tr>
<td>4</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them</td>
</tr>
</tbody>
</table>
Designing collaborative and group work

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level; this should have a synthesis of the issues as the goal or outcome, and where individual tasks are not provided</td>
</tr>
<tr>
<td>2</td>
<td>Design application tasks if a product is required as an outcome of the activity</td>
</tr>
<tr>
<td>3</td>
<td>Do not use separate roles or functions for all collaborative work.</td>
</tr>
<tr>
<td>4</td>
<td>Where appropriate, provide discussions that have multiple perspectives</td>
</tr>
<tr>
<td>5</td>
<td>Use learners assumptions of how the group or the interactive class should function in the way activities are designed</td>
</tr>
<tr>
<td>6</td>
<td>Provide both group and individual tasks.</td>
</tr>
<tr>
<td>7</td>
<td>Decision-making tasks should not be used if there are communication difficulties between learners.</td>
</tr>
</tbody>
</table>

Table 3: Implementation of the Course

Using interactive e-learning tools

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Develop and maintain social presence throughout the length of a course</td>
</tr>
<tr>
<td>2</td>
<td>Develop good social presence to overcome ineffective communication, and comprehension difficulties due to language issues.</td>
</tr>
<tr>
<td>3</td>
<td>Encourage learners to interact frequently</td>
</tr>
<tr>
<td>4</td>
<td>Expect that learner may perceive social presence levels different</td>
</tr>
<tr>
<td>5</td>
<td>Use the social networks that are already in the classroom</td>
</tr>
<tr>
<td>6</td>
<td>Help provide an environment where affective language is used</td>
</tr>
<tr>
<td>7</td>
<td>Expect that higher levels of affective language between learners may be needed</td>
</tr>
</tbody>
</table>

Building Teacher Immediacy

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Build a sense of teacher immediacy</td>
</tr>
<tr>
<td>2</td>
<td>Expect that higher levels of affective language between learners may be needed, and the teacher may be expected to respond more affectively to the learners</td>
</tr>
</tbody>
</table>

Supporting the learning

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ensure that the support tools are sufficient, suitable and are being used. If not, the tools need to be modified or training needs to be provided for the learners</td>
</tr>
<tr>
<td>2</td>
<td>Use soft scaffolding through monitoring student learning</td>
</tr>
</tbody>
</table>
## Appendix 2: Application of design principles to the learning environment

### Social presence

<table>
<thead>
<tr>
<th>No.</th>
<th>Guidelines</th>
<th>Application to the learning environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use discussion forums, chat and email.</td>
<td>Weekly class forums and two group chats were designed; and the tutor sent regular emails.</td>
</tr>
<tr>
<td>2</td>
<td>Use social networks of the classroom.</td>
<td>Participants were encouraged to get to know each other in an initial face to face meeting</td>
</tr>
<tr>
<td>3</td>
<td>Encourage interaction.</td>
<td>Course facilitator initially provided a model of interaction in forums, and provided orientation material on benefits of interaction.</td>
</tr>
<tr>
<td>4</td>
<td>Develop and maintain social presence throughout the length of a course</td>
<td>Provision of introductory forum, and two optional face-to-face laboratory classes were designed to develop social presence.</td>
</tr>
<tr>
<td>5</td>
<td>Help provide an environment where affective language is used</td>
<td>All materials used a casual friendly style, and also encouraged the use of emoticons and sharing of thoughts and feelings in orientation materials and through modeling.</td>
</tr>
<tr>
<td>6</td>
<td>Teachers should use immediacy behaviours.</td>
<td>All materials from facilitator, including the course welcome page, notes, activities and communication used a casual friendly style,</td>
</tr>
<tr>
<td>7</td>
<td>Expect that learners may need high levels of interaction to develop social presence.</td>
<td>Regular forums were provided</td>
</tr>
<tr>
<td>8</td>
<td>Provide more support in the learning environment.</td>
<td>Emails were planned to be sent to participants from the first week</td>
</tr>
<tr>
<td>9</td>
<td>Expect that in this culture, higher levels of affective language between learners may be needed</td>
<td></td>
</tr>
</tbody>
</table>

### Interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>Guidelines</th>
<th>Application to the learning environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design interaction as an integral part of course design.</td>
<td>Interaction tasks were used to help meet learning outcomes</td>
</tr>
<tr>
<td>2</td>
<td>Train students in how to use the discussion boards from a technical and educational perspective as well as training as moderators.</td>
<td>LMS workshop and orientation classes were designed to show learners how to use the forums.</td>
</tr>
<tr>
<td>3</td>
<td>Use student moderators in discussion boards</td>
<td>Moderator training material was provided, ready to use when forums had sufficient interaction</td>
</tr>
<tr>
<td>4</td>
<td>Orientate learners on how to communicate in an interactive online classroom</td>
<td>Hint links were provided for participants to read concerning how to interact online</td>
</tr>
<tr>
<td>No.</td>
<td>Guidelines</td>
<td>Application to the learning environment</td>
</tr>
<tr>
<td>-----</td>
<td>---------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Choose discussion questions that match the type of approach learners have to discussion topics</td>
<td>A variety of starter questions were designed for the discussion forums.</td>
</tr>
<tr>
<td>6</td>
<td>Provide teacher and student awareness to the different ways learners and teachers may communicate.</td>
<td></td>
</tr>
</tbody>
</table>

**Collaboration**

<table>
<thead>
<tr>
<th>No.</th>
<th>Guidelines</th>
<th>Application to the learning environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Use an informed clear definition of collaboration,</td>
<td>This definition was clarified</td>
</tr>
<tr>
<td>2</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level; this should have a synthesis of the issues as the goal or outcome, and where individual tasks are not provided.</td>
<td>Developing an understanding of one concept included separate tasks for research on one aspect, then a combined task of developing a new definition of the concept</td>
</tr>
<tr>
<td>3</td>
<td>Design application tasks if a product, not conceptual learning, is required as an outcome of the activity</td>
<td>Application tasks were designed</td>
</tr>
<tr>
<td>4</td>
<td>Use separate roles or functions for some collaborative work.</td>
<td>Participants had separate roles</td>
</tr>
<tr>
<td>5</td>
<td>Where appropriate, provide discussions that have multiple perspectives, not one right answer</td>
<td>Discussion forum topics focused on students perspectives of different issues</td>
</tr>
<tr>
<td>6</td>
<td>Develop good social presence to overcome ineffective communication, and comprehension difficulties due to language issues.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Identify learners’ assumptions of how the group or the interactive class should function in the way activities are designed</td>
<td>This was not clearly identified</td>
</tr>
<tr>
<td>8</td>
<td>Provide group and individual work.</td>
<td>Both group work and individual tasks were provided in the course design</td>
</tr>
<tr>
<td>9</td>
<td>Decision-making tasks should not be used if there are communication difficulties between learners,</td>
<td>These tasks were not designed into the course.</td>
</tr>
</tbody>
</table>

**Cognitive Strategies**

<table>
<thead>
<tr>
<th>No.</th>
<th>Guidelines</th>
<th>Application to the learning environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Embed cognitive tools into the course design</td>
<td>Examples were provided in notes for participants to access</td>
</tr>
<tr>
<td>2</td>
<td>Provide scaffolds for discussions</td>
<td>Discussion questions were designed to show participants how to structure their responses</td>
</tr>
<tr>
<td>3</td>
<td>Use a variety of scaffolds.</td>
<td>Examples and modeling, were provided</td>
</tr>
<tr>
<td>4</td>
<td>Provide a combination of cognitive tools</td>
<td>Outlines and links to further information was provided</td>
</tr>
<tr>
<td>No.</td>
<td>Guidelines</td>
<td>Application to the learning environment</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Use soft or spontaneous scaffolding through monitoring student learning.</td>
<td>Individual feedback was planned for the course</td>
</tr>
<tr>
<td>6</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them.</td>
<td>This would be evaluated to see if the learners did understand the tools.</td>
</tr>
<tr>
<td>7</td>
<td>Provide training or modelling for students and course facilitators on how to use the cognitive tools</td>
<td>Examples and modeling were provided</td>
</tr>
<tr>
<td>8</td>
<td>Provide ways to help learners develop mental images as learners from different.</td>
<td>Examples of assignment answers were provided</td>
</tr>
<tr>
<td>9</td>
<td>Use a variety of stories for activities</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Use a variety of ways to describe items</td>
<td>Metaphors were used to describe some educational concepts</td>
</tr>
<tr>
<td>11</td>
<td>Base activities in real world experiences</td>
<td>The course assignments were based in a project that simulated a real-world environment. Activities used an educational institution for the setting as a real-world environment for faculty.</td>
</tr>
</tbody>
</table>

### Student-centred learning

<table>
<thead>
<tr>
<th>No.</th>
<th>Guidelines</th>
<th>Application to the learning environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Provide training for learners on how to use student-centred courses</td>
<td>Orientation material was provided to introduce participants to e-learning</td>
</tr>
<tr>
<td>2</td>
<td>Train learners so they can understand the benefits of a learner-centred environment.</td>
<td>Orientation material was provided to introduce participants to the benefits of e-learning</td>
</tr>
<tr>
<td>3</td>
<td>Design activities in such a way that learners have no option but to participate.</td>
<td>This was done</td>
</tr>
<tr>
<td>4</td>
<td>Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training.</td>
<td>This would be evaluated during course implementation</td>
</tr>
<tr>
<td>5</td>
<td>Train teachers so they can understand their role in a student-centred course and how this differs from teacher-controlled courses</td>
<td>The teacher was already trained</td>
</tr>
<tr>
<td>6</td>
<td>Provide training for teachers in how to use the tools to facilitate student learning</td>
<td>The teacher was already trained</td>
</tr>
<tr>
<td>7</td>
<td>Provide professional development to encourage teachers’ student-centred beliefs</td>
<td>The teacher was already trained</td>
</tr>
<tr>
<td>8</td>
<td>Design the initial activities where learning is gained from the teacher, and then move into student-centred activities.</td>
<td>Initial student-centred tasks were straightforward and required only a small amount of support</td>
</tr>
<tr>
<td>9</td>
<td>Use a student-centred design for learners of any cultural background.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 3: Interview Question example questions, designed for the first implementation

Interview One

Social Presence

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How do you feel when you are online? Do you feel it is a lonely place or not really?</td>
</tr>
<tr>
<td>2</td>
<td>Do you feel ‘part of the group’ online? What should people do to feel part of the group?</td>
</tr>
<tr>
<td>3</td>
<td>Do you think people share their feelings online?</td>
</tr>
</tbody>
</table>

Interaction

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you think using English causes people to misunderstand each other online sometimes?</td>
</tr>
<tr>
<td>2</td>
<td>Would you interact more if the discussions were in Arabic? Why do you think this is?</td>
</tr>
<tr>
<td>3</td>
<td>Do you feel anxious about writing in English? Does it bother you if other people write better than you in English?</td>
</tr>
<tr>
<td>4</td>
<td>How do you choose which messages to read? What types of messages do you like reading or want to see more of</td>
</tr>
<tr>
<td>5</td>
<td>What do you think of the type of questions used in the discussions? Do you think there are other types of questions that could get better interaction?</td>
</tr>
</tbody>
</table>

Collaboration

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How do you think the group or class should respond, that is should it aim for harmony or a diversity of viewpoints?</td>
</tr>
<tr>
<td>2</td>
<td>Which do you think is best, group work or individual work? What makes a well functioning group?</td>
</tr>
<tr>
<td>3</td>
<td>What kinds of benefits are there in interacting with each other online?</td>
</tr>
<tr>
<td>4</td>
<td>How does it feel having students leading the discussions? How did you like it when you lead a discussion?</td>
</tr>
</tbody>
</table>

Cognitive Skill Development

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How well do you think the activities match your learning style? What should there be more or less of?</td>
</tr>
<tr>
<td>2</td>
<td>Has there been enough support and structure to help you do the course activities?</td>
</tr>
<tr>
<td>3</td>
<td>What type of support works best for you? What other type of support would be helpful?</td>
</tr>
<tr>
<td>4</td>
<td>What do you think of the use of stories or people’s examples in the content or for doing activities?</td>
</tr>
<tr>
<td>5</td>
<td>What helps you the most in building mental images in your learning?</td>
</tr>
</tbody>
</table>

Student-centred Learning

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How important is it to have the teacher provide all the knowledge?</td>
</tr>
<tr>
<td>2</td>
<td>When you will facilitate a course, do you think you should do more in the discussions than what you have on this course? What type of contribution would be good?</td>
</tr>
<tr>
<td>3</td>
<td>Do you think your students may interact with you better online than in the classroom? Why do you think that?</td>
</tr>
</tbody>
</table>
**Interview Two Questions**

**Social Presence**

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Do you still feel alone on the course, now? Why is this?</td>
</tr>
<tr>
<td>2</td>
<td>What makes the facilitator seem to be present or absent on the course?</td>
</tr>
<tr>
<td>3</td>
<td>What parts of the course most feel like you are not alone?</td>
</tr>
<tr>
<td>4</td>
<td>Do you find you identify more with people you already new on the course or do you think new online friendships could be just as strong?</td>
</tr>
</tbody>
</table>

**Interaction**

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How much are you interacting with others on this course? Do you feel this is enough?</td>
</tr>
<tr>
<td>2</td>
<td>What makes you interact less than you think you ought to?</td>
</tr>
<tr>
<td>3</td>
<td>Do you like the discussion questions or do you think another type or style would be better?</td>
</tr>
<tr>
<td>4</td>
<td>Do you think people misunderstand each other on the course? Why do you think that might be?</td>
</tr>
</tbody>
</table>

**Collaboration**

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Which activities in the course helped you gain the most from other people?</td>
</tr>
<tr>
<td>2</td>
<td>What were your expectations of group work on the course?</td>
</tr>
</tbody>
</table>

**Cognitive Strategies**

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Where did you get your ideas from when you did the assignment?</td>
</tr>
<tr>
<td>2</td>
<td>Which type of help was the best: examples, outlines and lists, reflections on a topic, or ideas directly from the facilitator? Why did you prefer that?</td>
</tr>
<tr>
<td>3</td>
<td>If you had to rewrite one of the activities, which one would you choose and how would you rewrite it?</td>
</tr>
<tr>
<td>4</td>
<td>Did you find the Chat and Discussion Tips helpful</td>
</tr>
</tbody>
</table>

**Student-centred Learning**

<table>
<thead>
<tr>
<th></th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Were there enough guides and support tools for the activities you have done so far?</td>
</tr>
</tbody>
</table>
## Interview Three Questions

### Social Presence

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>How would you feel if people on this course started sharing more about their feelings and emotional response</td>
</tr>
<tr>
<td>2</td>
<td>Which parts of the course made you feel like you were part of the community? What could have made this better?</td>
</tr>
<tr>
<td>3</td>
<td>Do you think more use should have been made of emails and messenger?</td>
</tr>
<tr>
<td>4</td>
<td>People did not share much about their feeling or emotional response to issues on the course. Why do you think that was?</td>
</tr>
</tbody>
</table>

### Interaction

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Did you send emails or messages to any other people on the course?</td>
</tr>
<tr>
<td>2</td>
<td>We really only did one ‘small group’ thing. Do you think there should be more of that?</td>
</tr>
<tr>
<td>3</td>
<td>What could make it more cohesive? What size would be good?</td>
</tr>
</tbody>
</table>

### Collaboration

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Does leading a chat make you feel more responsible to others? Is</td>
</tr>
<tr>
<td>2</td>
<td>Is this important in courses do you think?</td>
</tr>
</tbody>
</table>

### Student-centred Learning

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Overall what were the main motivators that helped you complete the course?</td>
</tr>
<tr>
<td>2</td>
<td>So how important is interaction with the tutor?</td>
</tr>
</tbody>
</table>
### Appendix 4: Template for Analysing Forum Responses

<table>
<thead>
<tr>
<th>Number of responses</th>
<th>Iteration 1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discourse</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explicit responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implicit responses</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No interactive comments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On course topic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On general course content</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On technical topics</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On course procedures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-academic comments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total for participant</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class total</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extra comments</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Appendix 5: Template for Participant Observation

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social Presence</strong></td>
<td>To describe the social presence seen and the way the participants appear to fit in</td>
</tr>
<tr>
<td><strong>Interaction</strong></td>
<td>To describe amount of interaction in the class and how the participants compare to others.</td>
</tr>
<tr>
<td><strong>Collaboration</strong></td>
<td>To see how well the collaborative and cooperative work (both class and group) appeared to function in communication and achieving goals, speed of responses etc.</td>
</tr>
<tr>
<td><strong>Cognitive Strategies</strong></td>
<td>To reflect on how participants use the cognitive strategies or are doing the tasks as required.</td>
</tr>
<tr>
<td><strong>Student-Centred</strong></td>
<td>To describe how well learners seem to cope with a student-centred environment.</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix 6: Case Study Analysis Template

<table>
<thead>
<tr>
<th>Social Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>Discourse analysis</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>Discourse analysis</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>Content analysis</td>
</tr>
<tr>
<td>Task Analysis</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
<tr>
<td>Student Centredness</td>
</tr>
<tr>
<td>---------------------</td>
</tr>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>Content analysis</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
</tbody>
</table>
## Appendix 7: Template for comparison of Case Study Conclusions

<table>
<thead>
<tr>
<th>Social Presence</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to Changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conclusion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interaction</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to Changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conclusion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaboration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to Changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conclusion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory Change</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cognitive Strategies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response to Changes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conclusion</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Theory Change</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student-centredness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
</tr>
<tr>
<td>2</td>
</tr>
<tr>
<td>3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response to Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conclusion</td>
</tr>
<tr>
<td>Theory Change</td>
</tr>
</tbody>
</table>
Appendix 8: Template for Log Files

<table>
<thead>
<tr>
<th>Final conclusion from research results at the end of each research cycle, concerning guideline changes. Support and modification to the theory</th>
</tr>
</thead>
<tbody>
<tr>
<td>Feedback from a peer concerning analysis as a check for accuracy of research interpretation for design modification in each cycle.</td>
</tr>
<tr>
<td>Modifications made to the course design for each cycle.</td>
</tr>
<tr>
<td>Comments outlining the changes made.</td>
</tr>
</tbody>
</table>
# Appendix 9: Planned Research timetable

<table>
<thead>
<tr>
<th>Topic</th>
<th>Sat</th>
<th>Sun</th>
<th>Mon</th>
<th>Tue</th>
<th>Wed</th>
<th>Thur</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PO</td>
<td></td>
<td></td>
<td></td>
<td>2 Interviews</td>
<td>2 Interviews</td>
</tr>
<tr>
<td>Tasks</td>
<td>PO</td>
<td>Analyse forum</td>
<td>Theory</td>
<td>Theory</td>
<td>Theory check by peer</td>
<td>Course Design</td>
</tr>
<tr>
<td>3</td>
<td>Logs, PO</td>
<td></td>
<td></td>
<td></td>
<td>2 Interviews</td>
<td>2 Interviews</td>
</tr>
<tr>
<td>Tasks</td>
<td>PO</td>
<td>Analyse forum</td>
<td>Theory</td>
<td>Theory</td>
<td>Theory check by peer</td>
<td>Course Design</td>
</tr>
<tr>
<td>4</td>
<td>Logs, PO</td>
<td></td>
<td></td>
<td></td>
<td>2 Interviews</td>
<td>2 Interviews</td>
</tr>
<tr>
<td>Tasks</td>
<td>PO</td>
<td>Analyse forum</td>
<td>Theory</td>
<td>Theory</td>
<td>Theory check by peer</td>
<td>Course Design</td>
</tr>
<tr>
<td>5</td>
<td>Logs, PO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logs, PO</td>
<td>Four Interviews, tasks, theory check, questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(Key: PO= Participant Observation Theory= Data analysis. Logs: Record of changes to the theory and course design. Course design: Adapting course design.)
Appendix 10: Data Analysis from Case 1, Amal, in the first research cycle

<table>
<thead>
<tr>
<th>Social Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Interview analysis</strong></td>
</tr>
<tr>
<td>I feel alone and on my own. This is a good for me but for student at young age, if it is the same feeling it will be bad or maybe isolated. At the beginning of the course we need to be introduce to each other face to face..this make miracle ..as people get to know each other and love to communicate with new (connaissance) Just human touch</td>
</tr>
<tr>
<td>Discussion board comment following telling class she was deciding about using e-learning: and also encouraged by all comments from yours Either 1 fixed hour to get online chatting or to have a lab ..then if I get in I know people will be working at that time.</td>
</tr>
<tr>
<td>if we had a certain hour for all student to be online together this could be better . I: regular group chats for the people on the course? Amal YES ...but not open in subject , I preferred a pre-identified from topic point of view ..if there is any reluctance it will be from me and the short time that I am giving the course. My time not the course time I am not giving enough time. Related to more chatting yes of course! Either 1 fixed hour to get online chatting or to have a lab to have people to force them to work eg between 6 and 7 pm so that they know it is available especially if they live in the university. I am sure between 8 and 9 some will be chatting then if I get in I know people will be working at that time. You had to make some sort of background but I knew it. Having something to browse on it, it is very good. There could be 2 levels of reading, one essential and one extra</td>
</tr>
<tr>
<td>(The interaction): it is very short time , I feel interrupted by time , it is not continuously ...like one hour daily or something like this</td>
</tr>
<tr>
<td>Amal: No social presence seems to be perceived by Amal who feels that an initial face to face meeting would build a sense of community, to build a ‘human touch’, so that people can get to know each other and therefore ‘love to communicate’. She also feels that chat time would help people especially if everyone was there together, perhaps the virtual togetherness gives a feeling of togetherness more than the asynchronous interaction. Amal would like more support in the course, for example a regular chat time or a regular time</td>
</tr>
</tbody>
</table>
when everybody will be known to be online on the course at the same time. She thinks that if she knew other people were online at a certain time then she would also want to log on at the same time. She did comment that she was not giving enough time to the course.

Amal felt that the amount of material in the initial part of the course was needed, but that it should be divided as to what is essential and what is extra reading.

Amal could only interact on the course in short amounts of time, as she was often interrupted.

**Discourse analysis**

Of her 6 postings, three referred to other’s postings, two directly and one indirectly. Three people responded to two of her postings. Thus there has been interaction between this Participant and others in the class, but this was not enough for her to feel that she was part of a community.

**Participant Observation**

Most of the class was very slow at getting on to the course and this Participant was one of the early ones. Others did not reply to most of the postings, but this participant appeared to be more active and responsive than the others, and her technical questions suggest she feels quite confident in the online environment. Frequent emails sent to course participants have not resulted in increased participation.

**Conclusion**

Even though there has been interaction between Amal and others, with direct reference made to her postings and by her to others, she feels ‘alone and on my own’. Thus, even though she has had interaction with others from the first week, this is not enough for her to make it feel like a community. She commented that a face-to-face meeting at the beginning would help provide the ‘human touch’, and that as they get to know each other, they would ‘love to communicate’. She also said she would like 1 fixed hour to get online chatting, as then she would go online then.

Amal also felt that more time together on the course together such as with regular chats or a virtual class time would be motivating.

Amal also had time issues; she found that when she did try and work on the course, she was often interrupted. She is also behind in her work, suggesting that this is affecting her ability to complete the course. This may mean that support or structure to find time could be helpful.

**Interaction**

(Interacting): it is very short time

Amal has interacted for only a short amount of time online.
Most of the class does not produce interactive comments. At this stage it is mainly introductions and comments on the reflections forum. The size of the postings by most people is suitable for responses but there are few at this stage.

**Conclusion**

Amal has interacted with others more than the average, responding both directly and indirectly, but as with the rest of the class, it is still a small amount of about 1 per week. Thus there is insufficient data to be able to analyse for guideline affirmation or modification.

### Collaboration

**Interview analysis**

**Participant Observation**

**Conclusion**

No data

### Cognitive Strategies

**Interview analysis**

Yes ...just reading and thinking , I want to put something creative ...so I am still thinking of RUO(the course problem)

enough support , material are well design , and sufficient. It is clear

The strategies and activity design used by Amal appear to be suitable for her, and had no other comments.

**Content analysis**

There is only one ‘learning discussion’ so far; it is on the general topic of the course, but is not ‘on task’. That is, she has done a general discussion but has not talked on the required question of either tasks for this activity.

This is the same for many of the participants on the course

**Task Analysis**

Task not done yet

**Conclusion**

There is no evidence that the cognitive support provided has been used. Amal has responded to the discussion topic in a general way like many others, and has not responded specifically to the discussion questions.

### Student Centredness

**Interview analysis**

You had to make some sort of background but I knew it. Having something to browse on it, it is very good.

There could be 2 levels of reading, one essential and one extra.

The materials in the beginning provided the preparation for using student-centred learning but
It was seen as ‘background’ which she felt she already knew

**Content analysis**

Messages referred to others, not necessarily only to the facilitator, but others did not refer to anyone. Participant referred to others for help not just the course facilitator.

**Participant Observation**

The message that was posted did not appear to use the tools provided. Although she was one of the first to start the course, this participant still has not completed the course tasks.

**Conclusion**

Amal commented that there was a large amount of material at the beginning, but felt that it was needed, but that she saw it as ‘background’. She suggested it could be prioritised so people would not have to read everything. Amal’s posting on the discussion forum suggested that she did not use some of the guides in her posting, so perhaps this shows that some materials in the first topic did not benefit this participant; that is they need to be prioritised, modified, placed elsewhere or given in such a way that course participants will notice and use them.
Appendix 11: Data Analysis from Case 2, Badar, first research cycle

<table>
<thead>
<tr>
<th>Social Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
</tbody>
</table>
| I thought may be I'll initiate some discussion about them but the same time I don't to be seen flying in different zone.
At the moment I feel am working alone, I think partly because if me than others, may be have an online group meeting where we can discuss what we read and try to encourage those who feel they are behind.
(have a chat room), just once a week or so where the course members will talk live to each other and exchange their concerns, advise, ask for help and break barriers too. It will also make the bond to the course stronger.
I need to start doing it(interaction) otherwise I'll miss the train,… the course train.
I: they need lots of contact from the tutor in the beginning?
Badar I think yes, until they can stand on their own feet until now we haven't build the bridges between us, as we seem quite apart from each other, may be you could announce for an online chat one day and have a real starbyte. I need to start doing it[interaction] otherwise I'll miss the train.
.: I think have a time agreed by all to meet on is very good idea, for structure that will enhance the communication.
I have time management crises, I go online, I read for sometime and something happens to interrupt and I never come back to it again.
I think the course is well structured and it is not a factor in my problem with it, it is me who need to be well structured.
, I just need to sort my self out and manage my time properly and I think if you could contact them to ask how they are keeping would give some motivation to contribute and interact more… until they can stand on their own feet.

a) The participant comments have some statements that imply a desire to have a greater sense of connectedness: ‘break barriers’ ‘make the bond to the course stronger’ ‘build bridges’
b) He also felt that the relationship between the tutor and participants in the initial stages are important ‘to ask how they are keeping would give some motivation to contribute and interact more… until the can stand on their own feet’
b) The sense of there being no community sense in the course: ‘I feel am working alone’ ‘we seem quite apart from each other’ ‘until now we haven't build the bridges between us’
c) The desire to want to work together with others, or the desire to conform: I don’t to be seen flying in different zone

d) Badar would like more contact from the tutor in the beginning and chat to help meet this need.” I think have a time agreed by all to meet on is very good idea, for structure that will enhance the communication

b) Time management was an issue ‘I have time management crises’ ‘I just need to sort my self out and manage my time properly’ He found that interruptions prevented him carrying out his intentions. However, he did acknowledge that this was his responsibility; that is, he did not expect the course tutor to manage his time for him.

c) Badar would prefer more structure in the course, in relation to people getting together; ‘have a time agreed by all to meet on is very good idea, for structure that will enhance the communication’. That is, the course can be improved if there is structured opportunity for everyone to get together in a more organised manner. Although the facilitator would be expected to organise it, Badar sees that improvement comes from more time with others

Discourse analysis

Badar introduced himself but no one replied. He responded directly to two others but they did not acknowledge that response.

Participant Observation

There has been little interaction to build social presence. There were 73 postings for three weeks for 22-30 participants.

Conclusion

The lack of bonding and connectedness sensed by Badar is reflected in the small amount of posting on the course, of less than 1 a week, and in the lack of responses by others to his postings; regardless of his efforts. Thus, for Badar, this course has not generated any sense of social presence. He commented ‘At the moment I feel am working alone’ ‘until now we haven’t build the bridges between us’. He is aware that a greater amount of social presence is important to ‘break barriers’ ‘make the bond to the course stronger’ ‘build bridges’. He also felt that the relationship between the tutor and participants in the initial stages are important ‘to ask how they are keeping would give some motivation to contribute and interact more… until the can stand on their own feet’ He also sees that interaction is important in developing this sense of community: ‘I need to start doing it otherwise I’ll miss the train’ Badar would like more contact from the tutor in the beginning and chat to help meet this need. He also felt that a synchronous get together could be helpful: I think have a time agreed by all to meet on is very good idea, for structure that will enhance the communication . However, he had issues with his own time management issues. ‘I have time management crises’ ‘I just need to sort my self out and manage my time properly’ He also wanted to have more structure for the interactive aspects of the course ‘have a time agreed by all to meet on is very good idea, for structure that will enhance the communication’. This suggests that structured interaction time together for him is an important issue for course success.
<table>
<thead>
<tr>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>that well, I didn't do much of it yet, I need to start doing it otherwise I'll miss the train</td>
</tr>
<tr>
<td>a) Participant feels that his amount of interaction is low. 'I didn’t do much’</td>
</tr>
<tr>
<td>b) He is also aware that more interaction provides other benefits, that is, if not, he will ‘miss the train’</td>
</tr>
<tr>
<td>Discourse analysis</td>
</tr>
<tr>
<td>Two introductory postings were directed explicitly to other course participants.</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>The class postings have been about 73 for the three weeks so far, for 22-30 participants, depending on drop and ads. Badar has done four postings, compared to an approx class average of just over 1 per week.</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
<tr>
<td>Badar has posted perhaps an average number of postings compared to the class, but it is not possible to be definitive due to the low numbers involved and the changing numbers of participants in the class. Badar believes that his amount of postings is low</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>May wish to work with others, or be the desire to conform to other’s expectations: sometime I don’t to be seen flying in different zone.</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>Nothing observed</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
<tr>
<td>The interview indicates that Badar may like to work with others or to conform to what others want to do, but to date; there is no course requirement for this.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>I am suppose to learn from them not to criticize them, I don’t know whethere I should write what I learnt from them or what I feel about them is more appropriate. I ment criticising the sites the the guidelines are ok to me so far, I just find it difficult to come up with ideas ]: may be if you could add more guiding in what should we look for and hints to what would the one feel if.... kind of thing, do you get me?- looking at various sites, yes in away, (more experiential) as not all are expert in such field, may be once they pass that stage then they can analyse better I think</td>
</tr>
</tbody>
</table>
Visual imagery: same time I don’t to be seen flying in different zone. I need to start doing it otherwise I’ll miss the train

a) Badar is not sure how to analyse sites, this may be not using the guides properly, or if the guides do not match the learner’s own strategies. ‘I don’t know whether I should write what I learnt from them or what I feel about them is more appropriate’ The key issues are whether to learn or criticise; and learn(analyse) or a feeling response.

b) Badar suggests that there are two stages in completing this activity: first describing an emotional response or the bigger picture, and then later an analytical response to a part of the course; ‘not all are expert in such field, may be once they pass that stage then they can analyse better I think’

c) Badar would like more guidance ‘could add more guiding in what should we look for and hints’

d) Visual imagery used in descriptions, such as ‘course train’ ‘flying in a different zone’. Put together, this implies that the tools provided to help are either not well designed or not well used. For both of these situations, the tutor needs to work on both the presentation and soft support. The suggestion is that in URL site analysis the bigger picture and emotional aspect should be before the analytical, and that the analytical is less natural or more advanced.

Content analysis

Discussion topic was on topic, but incomplete. It included enjoyment/boring but also navigation issues etc. It was also originally put in the wrong discussion forum, that is he was not sure which activity he was responding to. A phone conversation was used to clarify the expectations of the first two discussion and tasks objectives.

Task Analysis

Not data

Conclusion

Badar wanted and needed more guidance on doing the activities, such as more hints and guidance, and perhaps having the questions as being less abstract ‘add more guiding in what should we look for and hints to what would the one feel if....’. He also expressed the need to see both initial emotional and analytical responses to the task at hand. ‘as not all are expert in such field, may be once they pass that stage then they can analyse better I think’ This may suggest a less analytical approach to some tasks could be preferred. His response to the discussion task contained both components.

Student Centredness

Interview analysis

I couldn’t do without (the reading), I also was quiet selective I didn’t want to read all and went to the titles that interested me

may be if you could add more guiding in what should we look for and hints to what would the one feel if.... kind of thing, do you get me?
Time management was an issue ‘I have time management crises’ ‘I just need to sort my self out and manage my time properly’ He found that interruptions prevented him carrying out his intentions. However, he did acknowledge that this was his responsibility; that is, he did not expect the course tutor to manage his time for him.

Badar appeared to know how to handle some aspects of a student-centred course in that he chose what he wanted to read ‘I also was quiet selective I didn’t want to read all and went to the titles that interested me’ However all the information provided was important, and this implies that providing the information beforehand may not be the best way for people to use it. Perhaps it needs to be right where it is going to be used, or it could be demonstrated and reflected on.

Badar did not feel there were sufficient tools for one of the activities. It may also have been that the type of guides provided did not match the way he was thinking, or he did not find the guides that were provided.

<table>
<thead>
<tr>
<th>Content analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Messages referred to others and not to the course facilitator.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Badar did not ask for help in working on the course, and neither did he expect the tutor to find information for him. However, when the first discussion topic was done, it was put in the wrong place, that is the question was not answered correctly and actually matched a different question. This implies that the tools provided were not used properly, were not clear or were in the wrong place.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>In this Case, the participant did not read all the support materials provided in the orientation ‘I also was quiet selective I didn't want to read all and went to the titles that interested me’, however he also did contribute to the discussion forum correctly, implying that some of the guides were not needed for him. He also expected something different in the guides than was provided ‘more guiding in what should we look for and hints to what would the one feel if’.</td>
</tr>
</tbody>
</table>
Appendix 12: Data Analysis from Case 3, Dawood; 
first research cycle

<table>
<thead>
<tr>
<th>Social Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>I feel alone so far but in a day or two I feel I will be getting into the community. I read an interesting article by John and I replied. Maybe this helps, if you already know someone, this helps you to go to reply to someone on the course. I know I should read more to get into the family of the course. If we can all go online at the same time then we can chat, and this helps us as we read other’s comments and chat in a more interactive way.</td>
</tr>
<tr>
<td>: The course needs deadlines otherwise people may never finish it. Timing [of when the course started] could be a contributing factor to why people don’t keep to the deadlines. The first two weeks are the busiest for me. For this course I am now doing about 2 hours after work. As you suggested, I lock the door switch off the phone. I do the course after 4 o’clock; at that time you don’t want to do anything scientific, you just want to do something else like this course. If we can all go online at the same time then we can chat, and this helps us as we read other’s comments and chat in a more interactive way.</td>
</tr>
<tr>
<td>Dawood at this stage does not perceive any social presence, as he commented ‘I feel alone so far’</td>
</tr>
<tr>
<td>He also felt that deadlines are necessary but that people need to set their own structure for completing the course, which he did, as was suggested by the facilitator.</td>
</tr>
<tr>
<td>Dawood also felt that the extra support of more synchronous work would help participants work on the course better.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Discourse analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Of the three postings done, none referred directly or indirectly to other participants, and no participants have responded to his postings.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Participant Observation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dawood commented that he posted a reply to a friend, but no response was found, perhaps this was related to technical issues such as not using the save button, or using ‘add a new discussion’ instead of the reply button.</td>
</tr>
<tr>
<td>Dawood commented in a discussion with the facilitator that he expected that there would be a class get together to introduce everyone to the course and to show them how to use it.</td>
</tr>
<tr>
<td>Dawood has come to one lab session with others; this provides support but does not provide any ‘teaching’. As with others, Dawood is behind in his assignment deadlines.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dawood at this stage does not perceive any social presence, as he commented ‘I feel alone so far’. This is probably due to the low number of postings he has made, three, and that none these responded to others or were responded to. Dawood also expects there should be a</td>
</tr>
</tbody>
</table>
social presence which he described as ‘community’ and ‘the family of the course’. Dawood felt commented that this type of community sense could be developed through more synchronous time such as going online at the same time and also in having online chats. He also thought that ‘maybe this helps, if you already know someone’, that is, friendships formed outside of the online course can help make a person feel less alone on the course, that is, help build a sense of community. Dawood required help to access the course but then entered the course at his own time when his schedule was free after busy initial weeks. Following the facilitator’s guide, he has organised his own study time.

<table>
<thead>
<tr>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>No data from the interview</td>
</tr>
<tr>
<td>Discourse analysis</td>
</tr>
<tr>
<td>Of the three postings, none responded either directly or indirectly to other participants</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>Dawood posted three times this week (his first) compared to the average of just over one per week for the active members of the class. In class interaction, responses to others occurred only in the discussions where the facilitator intervened and asked participants about what they thought of responses of previous postings. He has attended the optional computer lab time as well as participating in the practice chat. It seems that now that he has got over the early semester rush, he is becoming more involved.</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
<tr>
<td>Although Dawood has produced more postings (three) than the class average (27/21), the responses are not interactive. This is the same as for the rest of the class; interactive postings occur at this stage only following prompts by the facilitator.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>No data from the interview</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
<tr>
<td>No data from P.O. The participants may be benefiting from each other’s postings but there is no evidence for this.</td>
</tr>
<tr>
<td>Conclusion</td>
</tr>
<tr>
<td>No data or conclusion for collaboration</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cognitive Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td>No data from the interview</td>
</tr>
<tr>
<td>Content analysis</td>
</tr>
<tr>
<td>The two relevant postings were on content but did not directly relate to the questions being asked.</td>
</tr>
<tr>
<td>Participant Observation</td>
</tr>
</tbody>
</table>
Although Dawood’s discussions are on content, not on task, they are reflective and concern the task topic in a more general way; that is, seeing the big picture first. This is similar to many people on the course. The discussion boards are not being used properly except where there is direct guidance from the facilitator in the specific discussion boards. Is this non-use of the tools, non reading of them, not understanding them, written in an un-useful way or were they put in the wrong place? The discussion tips are in an obscure place.

*Information on how to use* a discussion interactively was provided on a site in the orientation board, but very little was seen. When the facilitator added a post asking contributors what they thought of previous peoples postings, they responded in that manner; maybe soft strategies are more effective when there is a lot of reading, or that instruction at the minute is better than a just in case approach. If this is true, then the pre-course preparation should be provided when it is required and not all at the beginning. That is, maybe the instructions need their ‘context of use’, not just a pre-read’

*The example questions* resulted in more on-topic discussions but that was only in those threads; the other threads were still on content but not on topic. Also, those resulted in 4 and 8 in the threads. One by a student resulted in 9 in the thread, but it was on general topic and not directly on the question. Others posted separate discussion but got no responses. The on topic examples also showed *more direct and indirect responses*, some as a result of the facilitator asking specific questions of individuals who had already posted. Thus they appear to be learning how to respond more directly but are not transferring this to other discussions yet. Does this mean they have not read the discussion hints or is it they were not presented in a meaningful way or at the right time? This is the least known aspect of the course as it is ‘hidden’.

*Task Analysis*

No tasks/assignments have been completed yet.

*Conclusion*

Although Dawood’s discussions are on content, not on task, they are reflective and concern the task topic in a more general way; that is, seeing the big picture first. Thus the tools were not used as expected by the facilitator. This is similar to many people on the course. The discussion boards are not being used properly except where there is direct guidance from the facilitator in the specific discussion boards. Is this non-use of the tools, non reading of them, not understanding them, written in an un-useful way or were they put in the wrong place?

*Student Centredness*

Interview analysis

The first topic was not encouraging; there was too much text, but as I knew I wanted to finish the course, I persevered. But as I persevered, I got to understand its layout and then I felt it was easier to use. It is the same with exams; the first impression may be a bit off-putting; when you first look at the paper, you feel you can’t do it. But as you start to do one question,
The structure of the first part of the course initially ‘was not encouraging’ due to the amount of text, and Dawood explained how difficult it was to get into the course because of this and that perhaps in the beginning it may have seemed too difficult to get in to: ‘It is the same with exams; the first impression may be a bit off-putting; when you first look at the paper, you feel you can’t do it.’

**Content analysis**

Postings did not refer to others and were not on task, implying the guidelines were not used.

**Participant Observation**

No data

**Conclusion**

The structure of the first part of the course initially ‘was not encouraging’ due to the amount of text, and Dawood explained how difficult it was to get into the course because of this. ‘It is the same with exams; the first impression may be a bit off-putting; when you first look at the paper, you feel you can’t do it.’ As the postings did not show the guides were used, this suggests that their design or presentation needs to be modified.
### Appendix 13: Data Analysis from Case 5, Faiza; final research cycle

**Social Presence**

<table>
<thead>
<tr>
<th>Interview analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Did you feel a sense of community before you started working with the group, or (and) did you find that community developed online as well?</td>
</tr>
<tr>
<td>After I joined them I starting feeling the building up of that sense of community and interaction and so forth. Before that it was initially, especially as we were in groups, I felt part of my group rather than the whole class but after joining a certain group and working with it I started feeling okay this is where I communicate and I felt that like when I see a contribution done by the LC group I felt like this is from somebody in my group so I have to read it really well and contribute to that, probably more than contributions from people from other groups. This is a problem; we should feel the same towards everybody</td>
</tr>
<tr>
<td>You interacted really well in all discussion posts. Why do you think this was?</td>
</tr>
<tr>
<td>I like communication and in forums and chats you feel that you put something and people respond. Probably in chats, it’s livelier than forums. You may say something and then receive no response. But in the chat you are sure to get someone to say something. So I felt, you know where we have communication I felt comfortable. Probably its my nature because I talk a lot. I have worked a lot in this environment. My supervisor is interested in e learning and all the time I have worked with WebCT and Moodle, and this can be a factor. I felt from the very beginning, I enjoyed the discussion. I would relate it to the nature of the person.</td>
</tr>
<tr>
<td>What do you feel was important in building that community</td>
</tr>
<tr>
<td>Most importantly support and responsibility. You are doing something for your own learning and for others as well, otherwise it s not a community, you are just individuals just working together but in a community you have to feel that you are part and parcel of that group. So I think that is that sense of responsibility towards other members. And I felt that the LC group was, they provided me with that, and support so and Nola was trying to arrange everything so we felt that the whole group is working for every person so we felt that these are the two important things. You know in my teaching practice, I was trying to get people helping one another but what happened is that I failed to do anything to help; They need not contribute to add to someone. But in your course, everyone is trying to put something, well it’s my contribution, but it is my contribution to other’s learning. I think this is the most important thing, support.</td>
</tr>
<tr>
<td>How did you know or sense that I was interested in you online and how important was that?</td>
</tr>
<tr>
<td>Probably you remember that day, when I told you I like it when you were online and I am</td>
</tr>
</tbody>
</table>
online and you sent me a ‘good morning’ or a ‘hello’. Okay, so she’s there and she knows me. She’s following what everyone is doing and she’s there. Other people mentioned that in the goodbye forum; you were sending individual emails to people about their own case. And I was really happy when I was sick those couple of weeks and I received the email. Actually I didn’t see it until I saw you messages and I checked my email and I found a couple of emails asking about that, so you know the facilitator is interested in your being there. You’re not just a student in the course, but that student counts for the whole progress of the course, so if you are not there so something is missing and she’s trying to get us all on track. So I think it is the facilitator’s communication with individuals, you feel that you are there.

Did you think the groups should be single gender and from the same college?
In the online environment, it doesn’t really matter (about gender), because from my experience my own students and student teachers, they were comfortable. Even in the face to face environment, female and men can work together, can participate with, that’s regarding the older people; with professors or postgraduates, it’s fine because they start to now accepting things. I had the chance to attend with master’s students, lectures, and they were comfortable discussing things and exchanging materials and all that stuff. Some of them are supervisors and teachers with teaching experience and others are novice teachers with one or two years experience. So I started to see at the higher level, yes we still keep our culture while we know that interacting and working with men can be dangerous that is we understand it and know it, there are limits that we keep, so it is fine to interact and communicate. And I have noticed that in face to face and online and so I think that it is fine to mix. I think that it is good to mix with the other gender because they sometimes look at things differently. I think it is more effective in the same college or at least in fields that are the same in nature because first of all they will have to relate it to their own teaching or experience. So the experience in the scientific is different from the humanities. So it’s good for sharing of ideas when you have people from different fields, but when you think that it should be practical and applicable. So working together with people from the same background would be easier, especially when they come to designing an activity. I was very lucky working with the LC group. Probably it was better for me to be working with them than with the ladies because they are teaching English and I am teaching English, so we shared the same background. I even took courses from them [when I was a student]

Summary
Faiza was comfortable in the online environment, built up relationships online and showed affective responses which confirmed her sense of social presence. Her commitment was to the group more than the class, and preferred chats to the forum for its liveliness and sense of communication. She felt responsibility to the group that members to supported each other in their learning. The teacher’s presence was most importantly expressed in individual emails and messages.
Discourse analysis:

CHAT: Unit 3: DE=0 DI=31 DN=0  U4: DE=8 DE= 63 DN=0
FORUM: Unit 3: DE 4, DI 4 N 3, (11P) Unit4: DE 1 DI 2 DN O (3P) Unit5: DE 5 DI 1 (8 P)

Virtually all her postings were in response to others who also responded to her. Some of these times she addressed people specifically.


SP indicator analysis

CHAT: Unit3: SPA=2, C=0, I=41 Unit4: A= 3 C=13 I= 69
FORUM: Unit3: A 1 C 3 l 7 (11P) Unit4: A 2 C 1 l 2 (3P) Unit5 A 4 C 7 l 1 (8P)

Most of the time she referred to people indirectly; and affective responses were higher in the final unit, which finished the course with goodbyes and reflections. But the most comment was the interactive response. Affective responses were the lowest but still present in both the chat and the forum. She also had more affective responses than others, and also more postings than anyone else in the class, indicating the sense of presence and community she felt.

KEY SPA: Affective C: Cohesive I: Interactive Social Presence Response

Participant Observation

The get together in October was better than the first as the chairs were in groups and it was easier for social interaction. Also three people brought food.

This still required work on my behalf contacting people and directing them in what to do. Faiza’s group required less intervention, as it had a motivated leader, Nola, who organised chats and reminded the group of assignment deadlines.

For the online course group, most of the research participants are less active than some others. Faiza is as active as half of the people in her group; the others in that group are less active (interactive)

By unit 4, her group was the only one that continued to chat regularly, and considered doing some f2f social time, so they built a community online, whereas the others did not.

In the final reflection, Faiza commented: ‘Probably the most significant learning experiences I had were in the chats...’ However, the conceptual contributions were a similar frequency in both the chat and forum. Other comments Faiza made in the unit 5 forums include: ‘Chats were fun and enjoyable’ ‘attitude and emotions have a huge role in learning’.

It appeared that Faiza was very comfortable in wikis, chats and forums, and interacted with group and class members, with others in her group showing appreciation for her contributions.

Conclusion

**Guideline 1**: Faiza interacted frequently with others in both the forum and chat. Social presence indicators of affective responses were present in both media suggesting that she was able to maintain a sense of community in both these places. Faiza preferred the chat environment, because it is ‘more lively’ than the forum and she commented that it is a more
likely place to get a response from others. Faiza did not know most of the members of that group, but got to know them during the course in that online environment. This may have been because of the amount of time Faiza had already spent teaching online and her feeling ‘comfortable’ in this environment. Therefore she was able to develop a sense of community online, but preferred chat. Therefore, this supports Guideline 1 in that both chat and forum can be used but that chat is the preferred option. However, for Faiza these environments were the tools that not only maintained but also developed the sense of community, especially in the chat.

**Guideline 2:** Faiza did not need previous social networks to develop a sense of community, these developed online for her during interaction in the chat, wiki and forums. This may be because of the experience Faiza has in the online environment, and therefore the comfort she has in using this medium. Faiza described two reasons why she thought her group was able to build their community: ‘sense of responsibility towards other members’, and ‘we felt that the whole group is working for every person’. Thus for Faiza the issues were commitment and responsibility which she could recognise and develop without the need of a face-to-face environment. This suggests that commitment and responsibility are key issues for developing a group. If those group responses can develop in an online environment, then a face-to-face component in the course is less necessary, and the key issue is therefore, where the participants build that sense of responsibility. The degree of social presence is the degree of ‘reality’ of other group members, and therefore affected the degree of group responsibility Faiza felt. As Faiza felt comfortable interacting in an online environment and enjoyed interacting with others, she interacted very frequently in the chats and forums, using interactive, cohesive and affective responses, all which develop social presence and a sense of community and therefore responsibility to the group. Thus comfort in interacting online is a key issue. Therefore, this may suggest that the key issues for social networks are the comfort the participant has in interacting in the particular medium, which affects social presence and therefore the sense of responsibility and commitment to the group. Interaction, responsibility and commitment need to be built. If participants may not be able to do this online, then they need face-to-face time for the networks and responsibility to grow. Guideline 2 is therefore supported but also modified: ‘place participants in groups so they may develop commitment and responsibility to each other. If they are not yet comfortable interacting online, provide sufficient time and opportunity in the face-to-face environment’.

**Guideline 3:** Faiza did 37 forum posts, where as the other Arabic course participants averaged five between seven of them. Faiza found a sense of community and her interaction showed the different response types that indicate social presence. She interacted at this high rate from the beginning, therefore this was not the result of email encouragement from the tutor. Therefore this guideline is supported, but the modification that emails encourage this was not supported.
Guideline 4: No data

Guideline 5: It appeared that Faiza preferred to work in groups as she felt responsible towards her group more than to the class. ‘I felt that like when I see a contribution done by my group, I felt this is from somebody in my group so I have to read it really well and contribute to that’ She preferred groups of both genders as she thought that they think differently from each other. She interacted well in her online group that was mixed. She also thought that groups should be with those who teach similar subjects ‘they will have to relate it to their own teaching or experience’. During the course, she was able to discuss others activities with them in the chat ‘it was better for me to be working with them than with the ladies [group] because we shared the same background’. Therefore this guideline is supported, but the phrase ‘single gender groups’ is not supported.

Guideline 6: The teacher immediacy behaviours that were important to Faiza was the individual interaction with the facilitator, such as instant messages sent when they were both online at the same time, and the personal emails such as the ones Faiza received when she was sick and was not online. Therefore the second half of this guideline is supported

Guideline 7: No data

Guideline 8: Faiza felt part of the community from the outset of the course, interacted in chats and forums more that anyone else. She commented that the community was based on ‘responsibility’ and ‘support’ for each other. All social presence indicators were found in the chats and forums, confirming the sense of social presence and community. Affective comments were present, but there were no criteria used to rate the amount in comparison to other people. Faiza did not make a comment concerning the amount of affective language she would want or expect in the online environment. However as Faiza was able to immediately sense a feeling community through the awareness of responsibility to the group, and felt comfortable enough to interact frequently, build relationships and shared at an affective level. However, it cannot be concluded if this was a ‘higher’ level of affective language, only that it was present. Therefore no conclusion can be made.

Guideline 10: Faiza felt the group was based on ‘responsibility’ and ‘support’ for each other, and she was involved with every group activity. This included participation in the group wiki and participation in the peer marking for the projects as well as all chats and forums. She also commented that if her group posted then she was more likely to read and respond to them, more that to anyone else. Therefore her commitment was one motivating factor in her engagement online, and this supports guideline 10

Guideline 11: Faiza did not meet her group in the face-to-face classroom but was able to build a sense of community online. She commented that she felt comfortable interacting online,
partly due to her experience. Therefore, this suggests that if learners feel comfortable in the online environment and are able to perceive sufficient social presence to have a feeling of community, they may not need to build relationships in the face-to-face environment. Therefore this guideline is supported with a modification that face-to-face meetings should be provided ‘if they are not sufficiently experienced with the online environment’.

 Interaction

Interview analysis

How did you find it without my interaction in the discussion board, apart from the starter question? Or would you have preferred that I controlled the interaction more?

Certain discussion boards, everything was going on. I felt that people were on track. The facilitator should jump in when things are not quite right, getting off track or getting off focus, to get it on track. I felt that everything was going. But a comment from time to time about people’s contributions would be good. We were certain that you were following us in every step that we were progressing. But you know, again, the contributions to forums tell us that you are not only there but specifically in that forum. So that’s the kind of support also. But I don’t feel that well you needed to add. I felt that things were going well.

How comfortable were you in learning from others and the activities and not just from me?

I was really comfortable with the course, I didn’t give it that much time, but whenever I started doing something, I was comfortable with and I felt that I was doing something that I will benefit from, and was always rewarding to me. And because I’m doing that online teaching practice and all the time I felt that I can compare so it was kind of active learning. So I think this was probably why I was interested in the course. Well I was encouraged by my professor. He took the course before, and he felt that I would learn from the course. This is one of the reasons why I took the course.

Discourse analysis

CHAT: Unit 3: DE=0 DI=31 DN=0  U4: DE=8 DI= 63 DN=0

The interaction was in response to others postings and not in isolation. It was also greater that for any other person and also had a higher degree of response to others.


Participant Observation

For units 2,3,4, Faiza did 16 posts, 6 non- Arabic participants did 37 forum posts, and the 7 Arabic ones did 5 She had the highest number of forum posts of anyone, and was in the chat group that was most effective for the content, numbers and consistency in interacting. Faiza interacted in all interactive media- the chat, forum and wiki.(and messages and email with the tutor. She also did the peer marking and responded to other’s comments about her project.
**Conclusion**

*Guideline 1:* Faiza did all the interactive tasks. Some of the motivation for interaction was based on the responsibility she felt towards the group members, but she also enjoyed interacting online, was intrinsically motivated to do the course and was encouraged by her professor. *Therefore* there are many possible reasons that caused her to complete all the activities, and insufficient data to determine the critical factor.

*Guideline 2:* Faiza used the discussion forums and chat to interact on topic, in response to others often directly, with many conceptual comments made. Previous experience may be a significant factor, but there are many other possible reasons including full use of the orientation unit. *Therefore* there are many possible reasons that caused her to post quality interaction, and insufficient data to determine the critical factor.

*Guideline 3:* No data

*Guideline 4:* Faiza’s interaction online was non-formal and her English language ability was very high; therefore it did not affect her ability to interact. There is insufficient data to make a conclusion

*Guidelines 5 & 6:* No data.

### Collaboration

**Interview analysis**

*Which particular activities did you feel you learnt from others?*

I’m not sure. I do know I loved the chat. Wikis were more formal. But there is something in the wikis that you do not have in the other things. It was kind of organized, so whatever information was there, you could find it easily. But in forums and chat you need to follow and infer and get to make a conclusion so you can learn it. But in the wiki, it needs editing, but whatever it put there, it’s put in a section clearly and directly. I think for learning and information, its well more informative than the discussion and chat. Chat is more fuzzy. I like and it interested me but at the same time, it made me wonder. So many conversations can go on at the same time two people posting at the same time. Wikis were more informative and straightforward. But I learnt a lot from the chat. Just the experience of e-learning.

*How useful was your group? What do you think made it successful and what could have made it work better?*

Nola (leader) and Chris (group member) were probably the people who were the most punctual and organizing things, so even when the others were not there, I felt that the group was still functioning. So I didn’t really think of what can make it better.

Did you feel that Nola or Chris were like a mentor for you to rely on or lean on? Yeah, to a great extent, yeah. Even in the chats, whatever contribution they would say, I would respect it, like the facilitator’s comments, like this is a super-hero. Because they were always there, they were following, and their comments were always thoughtful. What they
were saying, I thought, okay this was something and it the reason was at the same time, they were doing the organisation thing. I can say to some extent, they were mentors. As students it’s always easier to communicate with each other than with the teacher or facilitator so yes if they feel that there is someone is there to support and help them and seems to be reliable, yes leaning on that person will be a factor that would get them to stick there for a longer time.

**Interaction (conceptual analysis)**

<table>
<thead>
<tr>
<th>Number of conceptual comments; Forums: 2 (11Posts), 2 (2Posts), 4 (8P)</th>
<th>Chats: Unit 3: 7 (44P) Unit 4: 4 (89P)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptual comments were posted in both chat and forums with approx the same frequency, but it means more is done in one hour on chat.</td>
<td></td>
</tr>
</tbody>
</table>

**Participant Observation**

Faiza appears to have made conceptual comments in all types of interaction with her colleagues, in the chat, forum and wiki. In all modes of communication she interacted frequently and with many different people.

**Conclusion**

**Guideline 1**: No data

**Guideline 2**: Faiza responded conceptually in all interactive work. She commented that she felt her accountability to her group motivated her to respond to their postings more that to others in the class. *Therefore* accountability may be a prerequisite to learning. Therefore ‘encouragement’ for collaborative work is not supported in this guideline, but ‘accountability’ may be.

**Guideline 3**: No data

**Guideline 4**: Faiza worked successfully with her group in a wiki cooperative task when she first became a part of that group. Although she was new to the group, she was motivated to do the course, and already had a sense of community. *Therefore*, the commitment and sense of community may have enabled her to work cooperatively, and not the reverse, which is how this guideline should be modified.

**Guidelines 5-7**: No data

**Guideline 8**: Faiza responded to and was more obligated to the group than to the class. Her group leader organised all their chat times, sent out reminders and reminded the group of assignment deadlines. Faiza commented on the group leader as being like a ‘mentor’, that she could learn from her and was a ‘factor that would get them to stick there for a longer time’. *Therefore* this supports the guideline that groups were preferred, and that a group leader was an organiser, support and mentor.

**Cognitive Strategies**

**Interview analysis**

*When designing assignment 3 activity, what helped you the most?*

The chat with the group where we were talking about the assignments. I don’t know if that directly appeared in my work, but I started really thinking about it when they started talking
about their assignments, their activities. The questions were how real was it, how related was it to the student’s life, and other things that related to our objectives. Now these two questions I was rehearsing them and asking myself while we were discussing and I went to my activity again. We didn’t really discuss mine. They asked me some questions and I started looking at my activity, thinking mostly of the comments I was making on their activities, saying do I just say things that are theoretical but not applicable so I just started trying to relate that and I felt that the ideas in the chat were helpful in that case just enough to make you think about it. And the other thing is, well, your course. I organized it in a way with forums and assignments in a way very much similar to yours. I think that I like the organisation of your course so I was trying to apply it, and then I felt reflecting on your course that communication was very important, so I keep it so whatever activity I will design I will have a part for communication, so course and the chat.

Were there enough examples and guides? Do you think these were clear enough? Or did you find you did not need them?

Well were just talking about how important modelling is but I am always cautious about giving examples, there is a big chance that people will be copying it. Just providing guidelines is enough and can be more helpful examples. But then in certain cases, examples are important but not too many of them because people will start restricting themselves there. Its like criteria, what ever is there we will compare. So I think more freedom is there with guidelines; they act like a check list. Probably we believe that an example is perfect, but guidelines are preferable.

**Tool selection**

All interactive tools were used, and the scaffolds for the assignments were also used.

**Evidence of tool use**

All chats, wiki, assignment, and forums were on tasks and appeared to be used properly.

**Assignment Analysis**

The first and second assignments covered all the questions and used the chats. Therefore the tools were properly used. The wiki exercise also was done correctly though it is difficult to know how much is prior knowledge and how much is through correct tool use.

In the course project, parts one and two did not need any coaching as the work done already met the target.

**Conclusion**

**Guideline 2**: Faiza responded equally well to the different starter questions. However there is not enough data to make any conclusions

**Guidelines 3**: No data

**Guideline 4**: Faiza used her reflections from the chat and the online course as a model to do her own assignment. She also commented that she preferred guidelines to examples as
examples may be used incorrectly as criteria. However, she did also comment on how important modelling can be: ‘I think that I like the organisation of your course so I was trying to apply it.’ There is insufficient data to make a conclusion.

**Guideline 5**: Although the assignment structure was set up to provide feedback for course participants, Faiza did not need coaching through feedback as all her assignments were done correctly. Therefore no conclusion can be made concerning soft scaffolding.

**Guideline 6**: Faiza used the tools and scaffolds correctly and her assignments were done effectively. This supports this guideline.

**Guideline 7 & 8**: No data

**Guideline 9**: The learning was embedded in the real world context of Faiza’s own teaching practice, for example in the chat: ‘The questions were how real was it, how related was it to the student’s life, and other things that related to our objectives’. In preparing the assignment she reflected on how it applied to her own teaching: ‘You know in my teaching practice, I was trying to get people helping one another but what happened is that I failed to do anything to help. But in your course, everyone is trying to put something, well it’s my contribution, but it is my contribution to other’s learning.’ She found that because the course could be applied to her own teaching, it was motivating: ‘And because I’m doing that online teaching practice … I felt that I can compare….. So I think this was probably why I was interested in the course’ Therefore, as Faiza found the learning applicable to her own teaching, it was motivating and therefore this guideline is supported.

**Guidelines 10-13**: No data

**Guideline 14**: Faiza interacted with others in the chat, forum and wiki, and these activities were used to help her learn and use in her assignment work. ‘The chat with the group where we were talking about the assignments. I started really thinking about [my assignment] when they started talking about their assignments, their activities.’ She found learning benefit in all these: ‘forums and chat you need to follow and infer and get to make a conclusion. Wikis were more informative and straightforward’. Her answer assignment one showed it was based in the discussions her group used in the chat for that topic.

**Student Centredness**

**Interview analysis**

**How comfortable were you in learning from others and the activities and not just from me?**

I was really comfortable with the course, I didn’t give it that much time, but whenever I started doing something, I was comfortable with and I felt that I was doing something that I will benefit from, and was always rewarding to me. And because I’m doing that online teaching practice and all the time I felt that I can compare so it was kind of active learning. So I think this was probably why I was interested in the course. Well my professor encouraged me. He took the
course before, and he felt that I would learn from the course. This is one of the reasons why I took the course.

Did the online environment feel like there was a ‘sense of equality’ or did you feel the normal work culture or hierarchy is still in place?

Well it hasn’t come to my mind that there has been some differences in treatment. If you hadn’t asked me that question, I wouldn’t have thought of it. I can say that I was comfortable, and when I look at other people’s contributions in the goodbye forum, I felt that everybody was. So I didn’t feel there was any kind of discrimination or anything.

On looking back, do you think there was anything that would have helped the course be more effective, or where people made more use of each other?

I was just wondering about the time. I mean all of the time we were behind and you were very flexible. That was very comforting to us. Even when we were kept by other stuff, we were still able to work. Flexibility should be kept. Overall it was very well organized and very easy to follow. It was a great experience and I was really sad when it finished.

Did you feel that Nola or Chris were like a mentor for you to rely on or lean on?

Yeah, to a great extent, yeah. Even in the chats, whatever contribution they would say, I would respect it, like the facilitator’s comments, like this is a super-hero. Because they were always there, they were following, and their comments were always thoughtful. What they were saying, I thought, okay this was something and it the reason was at the same time, they were doing the organisation thing. I can say to some extent, they were mentors. As students it’s always easier to communicate with each other than with the teacher or facilitator so yes if they feel that there is someone is there to support and help them and seems to be reliable, yes leaning on that person will be a factor that would get them to stick there for a longer time.

Content analysis

Chat Unit 3 A=30 others= 1each (44 Posts)  Unit 4 Academic=44 Content=3, Technical=2, Procedural=6, Non-academic= 12 (89 Posts)  Forum: Unit 3 Academic 11, others=0 (11 Posts)  Unit 4 3/3  Unit 5 Academic=5  Procedural=2 (8Posts)

The content of her interaction was mainly on the required topic, though sometimes covered other issues that were related to doing the course or relating with others.

Participant Observation

No one from the science group chatted on their given time on Saturday 4th. On Tuesday only two did but not the others. Only two or three did in Faiza’s during the weekend, though Faiza who is part of that group is probably ready to post. This implies that the rules and encouragement set did not actually change people’s habits. It must be something else.

Conclusion

Guideline 1: Faiza did all the work well so she knew what type of learning was expected.
Therefore there is insufficient data to make a conclusion.

**Guideline 2:** No data

**Guideline 3:** Faiza was involved in all activities from the beginning of the course. She commented on her motivation, and commitment to the group or course as being key factors not facilitator encouragement. Therefore ‘encourage learners to participate’ is not supported. Other reasons, as mentioned by Faiza may be more important.

**Guideline 4:** All tools were used correctly. Therefore there is insufficient data to suggest support or modification of this guideline.

**Guidelines 5-7:** No data

**Guideline 8:** Faiza was able to learn from the group activities and class forums that were done, as well as the guidelines examples and models provided. She found the support of her group, especially the leader and one other as very encouraging and helpful. She commented that the course was like ‘active learning’ because she was learning through the work she was doing on the course. Therefore Faiza did not look to the facilitator for learning, but instead to the coursework, peers for support and her own active learning. Therefore this guideline is supported but the last sentence is not.

**Guideline 9:** Faiza’s responses in the chat and forum showed that she interacted well with the others, including a participant who had been her teacher when she was a student at this university. The others in her group were experienced teachers whilst she was still training. Faiza commented that she had not noticed any differences or discrimination in the course. Therefore this supports guideline 9 concerning equality in the online environment.

**Guideline 10:** Faiza found the flexibility in deadlines was beneficial: ‘all of the time we were behind and you were very flexible. That was very comforting to us’ and commented that the flexibility in the course should be kept. Her group leader provided some structure, and some was in the course design, the calendar and some class emails. Her assignments were completed close to the deadline dates except when she was ill. In the previous round of data collection, Faiza commented in the interview of her expectation of participants to be self-directed and set their own study times. This suggests that self-motivation is important in meeting deadlines, more than imposed structure. Therefore, this course has sufficient structure for Faiza, and she felt that self-direction and other forms of motivation should be present as well. Therefore the structural may have some values but motivation, may be the key factor.
Appendix 14: Data Analysis from Case 11, Talib; final research cycle

<table>
<thead>
<tr>
<th>Social Presence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview analysis</td>
</tr>
<tr>
<td><strong>Did you feel that you were working alone or as part of a group, or class on the course? What made you feel like that?</strong></td>
</tr>
<tr>
<td>Working alone. It in the chat it’s seldom that you get someone to chat with you. It was difficult to get someone to chat with. So it’s like working alone. Reading the assignments, and reading the bits that you referred to in the assignments.</td>
</tr>
<tr>
<td><strong>Which medium did you prefer to interact in- chat or forum?</strong></td>
</tr>
<tr>
<td>Using the chat is much more easy for discussing. Using the forum its more useful in our case; because you put the subject there and someone will read it and answer it. But it needs more effort from you, think about it, summarise your ideas and put it there. Doing the chatting, you come fresh from the reading and you don’t have anything in your mind. You start chatting with each other and you help each other come out with certain ideas or certain thinking or something like that. When you want to put there something for someone to read and get back to you, you at least have to have something in mind, you have a thought you came up from the reading and you are presenting it to people.</td>
</tr>
<tr>
<td><strong>Does contribution to the forum require more skills that need to be scaffolded?</strong></td>
</tr>
<tr>
<td>I think it is not the presenting as participants are teachers, but it is the language. You have to put your thoughts in a correct way, especially as we know that there are people from the language centre are there. I don’t think my English is that bad.</td>
</tr>
<tr>
<td><strong>Why do you think you did not interact very much on the course?</strong></td>
</tr>
<tr>
<td>For myself it was not the language, it was the time, mainly. For me to read and article, in Arabic is very easy. But in English, I don’t need a dictionary, but I need to concentrate more. I need to spend more time. I can scan but then I only get a rough understanding. Also, it is my nature that I am a slow reader, I grew up like this. And I don’t read at work, I do it at home.</td>
</tr>
<tr>
<td><strong>What could be done to help you interact more?</strong></td>
</tr>
<tr>
<td>One thing, which may help, is to have a meeting at least once a week. Another difficult thing to organise a convenient time with the group. And one of the things that should be added to the course is the way that the groups are divided. One the things here, and most cases, you are going to have a leader and an engine in the group.</td>
</tr>
<tr>
<td><strong>What do feel the function of your group should have been?</strong></td>
</tr>
</tbody>
</table>
Inactive group, I think it was one of the main problems
What kinds of things did I do that helped you feel that I was interested in the course and in your learning?

It would help a lot (to start the groups off at the beginning). To make it clear to people who are registering for the course that all the work will be in English, reading writing in English, so those who are not competent with the language will give it a second thought. Registering and getting into the group, you are affecting other people.

Would it have been easier if the course was in Arabic?
Yes. It is easy to discuss, but when it comes to reading an article a long text, it takes more than elementary English. For a student, we force them to read in English or in Arabic. And they have to do that because they are thinking about the grade. But for a university teacher, it’s a little bit easy taking. We have lectures to do we have work to do. If its something to glance at and read quickly and that’s it its ok, but when it comes to sitting and reading and taking a dictionary and its only for a course that we are going to use or not use in the future I think this is one of the things that makes people draw out of it [from the course]. I would have done much more if it were equivalent to publishing a paper or something. But myself it is a good practice. You have to sit and read and concentrate and get out some of the information but if don’t complete it you don’t know that you are going to get something at the end. And of course if you have a language difficulty there will be no way you could go along with the course and complete it. If it is a lecture style, they may understand what it is about because usually the speaking and the listening skills are better than their reading and writing ones. If you can design it Arabic it would be nice.

Do you think meeting more makes people feel more obligated to each other?
If they are from the same college or department, although this is not a must. In a lot of courses you meet people from other colleges and they are active, you do the work with them and a friendship started from there, but the thing with this course is that everything is, everything is done remotely, that type of relationship is not built. It is most likely built only in the face-to-face situation. If the first part of the course will be in a class, even not a class, a group meeting. From my group I know only one who I knew from before the course. You know there was no commitment made for the course from the beginning. We even did not call each other to ask about anything on the course. I think the commitment comes from the need, or the weight of the course itself. Even if my friend next door is not interested in the course; we still meet but we may not mention the course. I think one of the most important things for us is to add to our knowledge, to add a new skill to our teaching. And for all of us, wishing that the next day we wake up with a new skill that we can improve our teaching style, to make life easy for us in improving our teaching. Maybe we don’t want to take the long run

How comfortable do you feel about sharing about your private life online? Does it depend on
**how well you know the others?**

It depends on the group. You cannot discuss it with the whole class, some of the things but if you have a group, and their relation is built in the right way, we could have discussed some of these things. We don’t feel it’s right to discuss some things of your private life with people you don’t know. I like sharing some of my private life with someone I have a relationship with.

**What group mix do you like**

If it is mixed (across the university) and built in the right way, it could have been better. You look at the things and the readings from a different point of view.

**What about guys and girls in the same group?**

It’s not an issue. On the contrary it could have been better because you find when it’s a mixed group it is more interesting to communicate, chat or something like that.

**Discourse analysis**

| 1 forum posting: DN and not responded to by others, a late posting for unit 2. |
| 1 chat in unit 3: DE=0 DI= 11 DN=0 |

**KEY:** DE: Explicit discourse response, DI: Implicit discourse response DN: Directed to no one.

**SP indicator analysis**

| 1 forum post: SPN 1 Chat: SPC=0 SPI=14 SPA=0 |

**KEY:** A: Affective I: Interactive C: Cohesive N: No social presence indicator

**Participant Observation**

He did not interact with anyone in the forums, and only with his group members after the facilitator had visited Talib for an interview and was requested to be online 2 hours later. In the final unit, Talib did some peer marking but it was very superficial and did not involve any social presence indicators. Therefore apart from attending the f2f mid course meeting and doing the one chat, there was no opportunity for Talib to develop any sense of presence in the online environment.

**Conclusion**

**Guideline 1:** Although Talib tried to chat with his group several times, it happened only once. He also did 2 forum postings, one that was late, and the other that was neither a response to anyone nor replied to by others, that is could not build a relationship. The facilitator had sent emails to Talib to encourage him to interact, and the only chat he did was following a face-to-face encouragement by the facilitator. None followed the mid-course face-to-face meeting. His chat showed no affective responses, so there is little evidence of social presence, and insufficient interaction to be the vehicle. Talib did say that felt like he was working alone and also thought that ‘thing with this course is that everything is, everything is done remotely, that type of [committed] relationship is not built’. Talib commented that he preferred chat to forums as he felt forums were more formal and the chat is easier: ‘Using the chat is much more easy for discussing’ therefore the chat would have greater potential for developing or maintaining social presence than would the forum. Therefore, for Talib, discussion forum and
chat are not the tools for developing social presence, as he cannot envisage how relationships can be developed online. The use of encouraging emails did not appear to have any effect on interaction. Therefore this guideline is supported, and the previous modification of the use of encouraging emails is not supported. It may be added that the chat has the greater potential of maintaining social presence compared to the forum.

**Guideline 2**: Social networks did not develop online for Talib, even though a group was organised for him and the facilitator used many opportunities to encourage interaction. They did not get to know each other in the orientation as two members only came to the second half of the third class. This group interacted only once in the chat and only some participated only once or twice in the forum and only one person had prepared for the chat. Therefore there was no interaction to enable social presence and relationships to develop. Talib did not envisage how relationships could develop online, which he compared to a face-to-face course: ‘you do the work with them and a friendship started from there’. *Therefore,* for Talib, face-to-face time is important at the beginning of the course to develop friendships. This means this guideline is supported, but an extra phrase may be added ‘where learners cannot develop relationships online’

**Guideline 3**: Interaction frequency and sense of community: Talib thought that the online environment could not help develop relationships, and as they had not met in the face-to-face environment, there would have been less reason for interacting with each other. Talib also felt that commitment to the course was an issue: ‘You know there was no commitment made for the course from the beginning’ and that it was also important in getting people to interact, as it would focus the interaction: ‘if my friend next door is not interested in the course; we still meet but we may not mention the course.’ He also stated time issues and commented on his group being ‘inactive’. *Therefore,* it is not clear which particular issues are key in the lack of a sense of community, as it may include commitment to the course, to each other, absence of the face-to-face environment to build relationships, or time. This means that no conclusion can be made.

**Guideline 4**: Social presence and assignment performance: Social presence did not develop for Talib as he commented ‘it’s like working alone’. Some of his skill-based assignment work achieved their target and some did not. His assignment preparation was not able to benefit from interactive work as he did not do any in a prepared manner, so he missed out on the learning benefit. *Therefore,* this may weakly support guideline 4

**Guideline 5**: Groups: Talib did not get to know others in his group. They did not get to meet in the face-to-face time and did not interact sufficiently online to develop a community there. This would have been the reason why the affective social presence indicator was not present in Talib’s interaction. He commented: ‘We don’t feel its right to discuss some things of your private life with people you don’t know’; and that he could not share with the class, only with a group if it is ‘built right’. This means the group needed to develop relationships first before the
affective language could be used, and this could only occur in the face-to-face environment, as Talib could not see relationships developing in the online environment. Talib also felt more comfortable interacting in chats, because he felt that a lot more understanding and preparation is needed to ‘present’ knowledge in the forum. Talib also preferred groups of both genders as he thought it would be ‘more interesting to communicate’. Therefore ‘single gender groups’ is not supported but the rest of the guideline is. An extra phrase should be added that these groups should get to know each other in the face-to-face environment unless they are comfortable doing so in the online environment’.

**Guideline 6-7:** No data

**Guideline 8:** Talib showed no affective responses in his chats, that is no comments that concern private or personal thoughts and feelings. He commented ‘We don’t feel its right to discuss some things of your private life with people you don’t know. I like sharing some of my private life with someone I have a relationship with.’ This implies that the relationships are built before affective comments are made. Therefore if the learner is not comfortable building a relationship online or did not get to know someone in the face-to-face environment, then the amount of affective language will be less or not present at all. That means that this guideline is not supported, and it should be modified to expect that there will be low levels of affective language unless the learner has developed relationships with others’ There was no data on the second half of the guideline.

**Guideline 10:** Talib commented that there was no accountability for the course, and this was evident in Talib in the lack of interaction in forums, chat and wiki, and late handing in of assignments. He did however comment on the importance of the course for him, ‘I think one of the most important things for us is to add to our knowledge’ and his desire to change the way he was teaching, ‘I am trying to run away from the traditional way of teaching; its tedious, its awful, and not the right way’. This motivation may have been enough to enable him to complete all the assignments, but it did not result in his active participation in the group work, therefore he missed out in a significant amount of learning, and his group missed out in his involvement. Activities that were designed for learners to be responsible to each other, such as the cooperative student-centred learning description, regular chats and the peer-marking task resulted in either low quality or little activity. Therefore the cooperative tasks did not succeed in building commitment and responsibility; the reverse is proposed to be correct.

**Guideline 11:** Talib’s group did not meet in the orientation meeting as two members arrived half way through the last meeting. Other members only attended some of the compulsory meetings and subsequently discontinued the course. As Talib could not see relationships developing online, sufficient time was necessary for friendships to develop in the face-to-face environment. These friendships within the group would need to develop to the level where
Talib would feel comfortable sharing at a more personal level; as he mentioned, if ‘the relationship is built in the right way, we could have discussed some of these things.’ These more personal issues would help maintain the relationships online through developing social presence. *Therefore* this guideline is supported.

### Interaction

#### Interview analysis

**Does contribution to the forum require more skills that need to be scaffolded?**

I think it is not the presenting as participants are teachers, but it is the language. You have to put your thoughts in a correct way, especially as we know that there are people from the language centre are there. I don’t think my English is that bad.

**Why do you think you did not interact very much on the course?**

For myself it was not the language, it was the time, mainly. For me to read and article, in Arabic is very easy. But in English, I don’t need a dictionary, but I need to concentrate more. I need to spend more time. I can scan but then I only get a rough understanding. Also, it is my nature that I am a slow reader, I grew up like this. And I don’t read at work, I do it at home.

**Would you have preferred it if I had been more involved in the chat or forum?**

It would have helped; it would make people feel that you are there, that you are watching us.

**Does the course need more scaffolds?**

Sometimes it helps but if the person is interested in the course and doing all the assignments, it is as a reminder.

I think the commitment comes from the need, or the weight of the course itself.

#### Discourse analysis

1 forum posting: DN and not responded to by others, a late posting for unit 2.

1 chat which was in unit 3: DE=0 DI= 11 DN=0 The chat was in interaction with two others. The forum post replied to the starter question and not to others in the forum. No one responded to his posting. The chat (17th Oct) was interactive. He made other attempts to chat (eg some rooms with 1 or 2 postings) on one other day (7th Nov) C11 did not honour obligations to the group in either chat times or wiki, even though they had agreed to chat twice a week. Neither did he honour his obligations by preparing for the chat.


#### Participant Observation

On Nov 1st and 2nd, Talib made a forum post and a short wiki contribution based on incorrect prior knowledge. Although another member of his group made a more substantial wiki posting, the activity had only one posting from each and was not completed. Talib spent 2 hours looking at assignments, Unit 2 and 3 tasks and the wiki. For units 2,3,4 Faiza did 16 posts, 6 non- Arabic participants did 37 forum posts, and the 7 Arabic ones did 5 in total; Talib posted one of these.

For unit 3 the only interaction he had was with his group in one chat, although in 3 other occasions he made contributions in short chats that explained why they could not chat.
Assignment 2: The video was seen once and maybe only a couple of minutes were spent on the notes, but about an hour on the tasks page. 90 mins on the task, and maybe a minute or two on the notes. Whilst doing this he also did unit 2- like he was doing them together. He clicked on the forums but did not read them or contribute in Unit 3. The answer was not based on the readings or wiki, although he did explain how it is applied in his own teaching. Blooms taxonomy was not well explained and the goals and objectives were not clear either. The objectives provided were at the lower end of the taxonomy.

Conclusion

Guideline 1. Although interaction was an integral part of the course, Talib participated only minimally with one chat and one forum and the learning benefits were lost. He was encouraged to participate more, and did mention that it 'sometimes helps’ though suggested that the person’s ‘interest’ in the course may be more significant, and that commitment to the course is important, it comes from ‘weight of the course itself’. Therefore, making interaction integral to the course did not result in these tasks being done, and encouragement did not motivate Talib’s fuller participation. His lack of interaction may have been because of language issues: ‘But in English, I don’t need a dictionary, but I need to concentrate more. I need to spend more time.’ It may have been because his commitment to the course was not strong enough; it is not clear what the reasons were. This means that this guideline is not supported: ‘encourage learners to participate’ is not supported. A suggestion that is weakly supported is to modify this to ‘and enable learners to develop more responsibility to the course or each other’ as this may come as a result of relationships and commitment to others and the course.

Guideline 2: Talib’s forum postings in this round and the previous round of research showed a lack of interaction with others on the course, in that he responded to the starter question and not to others. Also he did not prepare for the chat and did not read the chat instructions provided at the chat entry page. Therefore more effective orientation is required for both the technical and educational aspects of interaction. This guideline is supported.

Guideline 3: No data

Guideline 4: Although Talib was able to communicate comfortably in English, he was very conscious of other people in the class who were more proficient than him, such as English language teachers. However he did more forum posts in this class-wide forum setting, compared to group chats, which were with other Arabic speakers. Therefore, although his level of English was of some concern to him in the forums, it may not have affected his level of interaction. However there is insufficient data to draw a conclusion.

Guidelines 5 & 6: No data

Collaboration

Interview analysis

What did you feel the purpose of the chats and forums were for this course?
Most of us know that for chatting we have to discuss what we have learned or what is not clear from the reading, but when you go there and you didn’t do your reading, its like when you are discussing something in the classroom, you see the same thing you seen the student who prepared and the student who came with nothing.

**How do you think we could have made your group to interact more?**

I think to have a meeting at least once a week, another difficult thing to do at a convenient time for all the people. I think with the group more than with the class.

**What do feel the function of your group should have been?**

All of members will have completed their task. I think the result of the work will be much more better, and get a different point of view and correct some of your information, and maybe develop some of the ideas that you have.

I think it would have been much more better, if some people in the group have difficulties to do the work, so we get into the chat or meet sometime to discuss the issue, those who got the point will clear it up for the others. Inactive group, I think it was one of the main problems.

**How the groups are formed**

In most cases you have to have someone who is a leader and an engine for the group. To do that as the course is in English, have someone who is English speaking so that he will encourage the others. And when you have something to discuss, at least some of the guys who want to work will have someone with who they can discuss with. One of the things in our group particularly, did anyone finish the course? Most of the members of the group had a problem finishing.

**Do you think it is important to have a leader in the group? What should their role be?**

To have someone who is English-speaking person so that we will encourage the others. At least some of the people in the group will have someone they can discuss with in the group. Because one of the things in our group, the language is the main problem. At least as encourager, to encourage the others to participate.

**Interaction (conceptual analysis)**

No conceptual comments in forum or chat No conceptual comments in the student feedback

**Participant Observation**

The chats did not involve any discussion that represented new learning from the course. The only chats done were in unit 3, not in unit 2 or 4.

**Conclusion**

**Guideline 2:** Encouragement did not help Talib to participate at a deeper level of learning. He did not make any conceptual comments in the chat or forum, and the forum posting was not in interaction with others. There was insufficient interaction, no community and as Talib commented in the only chat he did that he did not prepare for the chat. **Therefore** there needed to be more commitment to the coursework and a community developed where there is sufficient interaction as a basis for conceptual comments to be produced between the
learners. This means ‘need to be encouraged’ is not supported in this guideline. Instead, it may read that ‘participants should be committed to the course and be part of a learning community’.

**Guideline 3**: No data

**Guideline 4**: There were two cooperative activities in the course and Talib did these to a minimal degree: the peer-marking and a conceptual description cooperative task which used incorrect prior knowledge and not based on course work and the task was not completed. Commitments to chat together were not honoured; it should have been twice weekly for several weeks but there was only one chat. Therefore the cooperative tasks did not build commitment and responsibility. It is suggested that these may be reversed, that once there is a committed community within the group, then the separate tasks may support commitment to each other.

**Guidelines 5-7**: No data

**Guideline 8**: Group work would give more effective learning for Talib. He commented that he would prefer to work with a group more than with the class, and that he would only want to share personal issues amongst people in a group, if it was built correctly and if he had a relationship with them. Therefore he is more likely to develop a learning community within the group and not within the class. He also commented that he would like to have a leader who would be there to participate with others in discussion and encourage the group to interact together.

### Cognitive Strategies

**Interview analysis**

**Did you notice the instructions at the beginning of the chat and forum pages?**
I didn’t read. Do not allow people to chat before they do the reading. I did not even notice it, to be honest. I also went straight to the issues (on the forum) and didn’t read. Having the instructions in both languages, it would help. We are in a hurry, we want to use the thing without reading the instructions. But if it is in Arabic we can get the point.

**What did you use to help you do the assignments?**
From the reading. You know doing some of the reading is tedious sometimes; they are talking about something you don’t have a clue of. And also from what we are applying from our own experience.

**How useful was the feedback for the assignments, in what way?**
It was great. It pointed out some of the weakness that the assignment had. In some cases they explained how it should be, and this is very helpful because when you do something that you are not sure about, and you want to know what is the right way, but when you explain it to
them, you should take this step and this step and that step you would guide them to do it the right way, and that’s what you did. And we really thank you for that because for myself most of the time, perhaps in correcting and [...]

Did you think some activities should have been explained or modelled more clearly at the beginning? Such as how do develop arguments on the forum or how to use chats or wikis to write your assignments?

Definitely examples help. But if it is short examples, homemade examples simplified because you know the culture, you know the status of the teachers here, and you know how most of them like to think. When you get international examples from the web, some of them may be perfect, but it’s still the way that he or she looks at the educational process, sometimes you don’t think that the example is interesting. The subject that you specialise in. For example if you give me an example in Medicine it may not be the right thing, I don’t know. The terminology issue and some of the techniques that they are using, it makes me, not even want to look at the example or something.

Where did you expect to get most of your learning?

I was thinking there would be some technical side in the course. Although, as I learned by the end, the theoretical side is very important, but as you said, the teacher gives more time and thoughts for course. I am trying to run away from the traditional way of teaching; its tedious, its awful, and not the right. I learned that way and I think that it’s the most awful thing to learn. In my teaching I am running away from it [memorisation]. In the English text course I am teaching they have to memorise the terminology. But I am trying to use other things to make them do that. But what I am telling them, if you are waiting to get your knowledge from me, you will not get ten percent of what you need. But I myself still lack the techniques. But I think me and others like me need help on that. I do assess myself when I am going to teach a course again. I mean you as a Centre, if there is a way that there is someone who will assist and assess the courses, I mean on whether the teacher wants to learn, he will have his course assessed it will be great, and I think it will be very critical for us here at the University.

Anything else?

If you can give an introduction to the course by giving some of the traditional teaching skills from the point of student-centred education; theoretical instructions about student-centred education. Because most of the teachers are using the traditional way. So to give them a brief idea about what we are going to face, what we are going to see in this course. Theoretically it would help a lot. When we started the part, which is talking about how to change the focus of the way of teaching, its lots of things need to be done there; lots of work, especially for those who didn’t have the skills, I mean if you are doing it in the traditional way. Then you won’t have a problem in applying it to the online media. But then if you are not doing it, if you don’t know about it, you are going about it in a hard way. The other thing if there is some at the end
of the class if there is an introduction to the techniques of designing of the course, it maybe helps in applying what you have as part of this course. Applying what we learn, and it also helps in remembering things if we use it. Up to now we have learnt something. If we are not applying it, then we will lose it.

### Tool selection

Talib did the unit 3 chat without reading anything before, but watched the video whilst doing the chat. He looked at the tasks before doing the wiki but did not, by November 12\(^{th}\) look at unit 3 teaching notes. Talib has completed two assignments- within two days. He spent two hours on the course on 7\(^{th}\) November, then three hours on 19\(^{th}\). Then he spent 30 minutes online before submitting Assignment 2 although he had done some of that work before. He had spent three mins on the video, and three to five minutes on the wiki, and 90 mins on the task. Whilst doing this he also did unit 2, as though he was doing them together. He clicked on the forums but did not read them or contribute in Unit 3.

Talib did one chat in unit 3 and none in units 2 or 4. The chat had no evidence of homework or of trying to learn or of a sense of responsibility to others in the group.

### Evidence of tool use

One discussion post for Assignment One, none for Assignment Two. The activity that was on the wiki was used. The notes were looked at once, as was the video, but more time was spent on the tasks. The discussions were not accessed to prepare for the assignment.

### Assignment Analysis

The student-centred learning task on the wiki was not based on the reading and it was not completed properly. It had a focus on technology.

**Assignment 1:** only one site was commented on, a summary was made of good features but does not show if he got this from the sites. He was able to apply this to his own teaching. Thus the work was done but it could not be seen how much was prior knowledge.

**Assignment 2:** The video was seen once and maybe only a couple of minutes was spent on the notes, but about an hour on the tasks page. 90 mins on the task, and maybe a minute or two on the notes. Whilst doing this he also did unit 2- like he was doing them together. He clicked on the forums but did not read them or contribute in Unit 3. The answer was not based on the readings or wikis, although he did explain how it is applied in his own teaching. Blooms taxonomy was not well explained and the goals and objectives were not clear either. The objectives provided were at the lower end of the taxonomy.

**Assignment 3:** The assignment was done properly but not all the assignment questions were answered. It is already an activity being done in the classroom and this was expanded, so it is not sure how much was new knowledge.

**Project:** This was edited, some based on my feedback. Some feedback was incorporated directly into the assignment (copied). Other suggestions were also used such as changes in objectives.

### Conclusion
Guideline 2: Talib made only one post to a learning forum, so there is insufficient data to make a conclusion on this guideline.

Guideline 3 & 4: No data

Guideline 5: Talib found the soft scaffolding for the three assignments very helpful, ‘this is very helpful because when you do something that you are not sure about, and you want to know what is the right way’. Talib made changes to his work based on some of the feedback and it increased the quality of his work. Therefore this guideline is supported.

Guideline 6: Talib thought that examples were helpful. However, he did not know how to apply them to his own teaching, particularly if they were not in his own subject area: ‘if you give me an example in Medicine it may not be the right thing, I don’t know’; or if they were not from the local situation: ‘When you get international examples from the web, some of them may be perfect, but …, sometimes you don’t think that the example is interesting’. Therefore this suggests that more scaffolding should be used with the examples, highlighting how they may be applied to different subjects and how they can be related to the learner’s own activity for the assignment. Therefore this supports guideline 6.

Guidelines 7 & 8: No data

Guideline 9: The learning activities on the course focused on redesigning part of a course the participant was teaching, therefore the learning was in a real-world context. Talib commented that he did not realise until the end of what the course would be like and suggested ‘Because most of the teachers are using the traditional way. So to give them a brief idea about what we are going to face, what we are going to see in this course. Theoretically it would help a lot’ This suggests that even though the description and goals of the course are clearly covered and explained in the course, further emphasis is necessary so the context of the learning is more clear. Talib also thought more time should be spent relating the principles of the course to his own teaching. Therefore this guideline is supported, but it may be modified to include the phrase ‘and ensure this concept is clearly presented at the beginning of the course’.

Guidelines 10-13: No data

Guideline 14: All units of the course started with activities involving interaction with other people. Talib did very few of these, but he did all three assignments which were real world activities as they related to his own teaching practice. However, Talib felt that the relationship between the theory and reality could have been more clear by moving directly into the practical application of the course: ‘at the end of the class if there is an introduction to the techniques of designing of the course, it maybe helps in applying what you have as part of this course. Applying what we learn, and it also helps in remembering things if we use it.’ That is, practical application would increase the ‘real world experience’. However the lack of interaction Talib had with his group or class in discussing the three assignments may have been the reason why he could not clearly see the application of his learning to his work.
Therefore, this supports the guideline, but there is a lack of clarity in other data to suggest any modifications.

### Student Centredness

#### Interview analysis

**Did you read some of the postings of others? Did you find you learnt anything from them?**
Most came from the notes. In some points (I learnt from the forums)

*What did you feel the purpose of the chats and forums were for this course?*
Most of us know that for chatting we have to discuss what we have learned or what is not clear from the reading, but when you go there and you didn’t do your reading, its like when you are discussing something in the classroom, you see the same thing you seen the student who prepared and the student who came with nothing.

**Do you think it would have been helpful if you could have spent more f2f time with your own group members throughout the course?**
I think to have a meeting at least once a week, another difficult thing to do at a convenient time for all the people. I think with the group more than with the class.

**Should you have spent more f2f time with the group at the beginning of the course?**
that it is all in English, so for those who are not competent with the language should give it a second thought, because registering and getting into the group, you are affecting other people.

**Would it have been easier if the course was in Arabic?**
Yes. It is easy to discuss, but when it comes to reading an article a long text, it takes more than elementary English. For a student, we force them to read in English or in Arabic. And they have to do that because they are thinking about the grade. But for a university teacher, it’s a little bit easy taking. We have lectures to do we have work to do. If its something to glance at and read quickly and that’s it its ok, but when it comes to sitting and reading and taking a dictionary and its only for a course that we are going to use or not use in the future I think this is one of the things that makes people draw out of it [from the course]. I would have done much more if it was equivalent to publishing a paper or something. But myself it is a good practice. You have to sit and read and concentrate and get out some of the information but if don’t complete it you don’t know that you are going to get something at the end. And of course if you have a language difficulty there will be no way you could go along with the course and complete it. If it is a lecture style, they may understand what it is about because usually the speaking and the listening skills are better than their reading and writing ones. If you can design it Arabic it would be nice.

**Where did you expect to get most of your learning?**
I was thinking there would be some technical side in the course. Although, as I learned by the end, the theoretical side is very important, but as you said, the teacher gives more time and thoughts for course. I am trying to run away from the traditional way of teaching; its tedious,
its awful, and not the right. I learned that way and I think that it’s the most awful thing to learn. In my teaching I am running away from it [memorisation]. In the English text course I am teaching they have to memorise the terminology. But I am trying to use other things to make them do that. But what I am telling them, if you are waiting to get your knowledge from me, you will not get ten percent of what you need. But I myself still lack the techniques. But I think me and others like me need help on that. I do assess myself when I am going to teach a course again. I mean you as a Centre, if there is a way that there is someone who will assist and assess the courses, I mean on whether the teacher wants to learn, he will have his course assessed it will be great, and I think it will be very critical for us here at the University.

Do you think there should have been more structure on the course?
Sometimes it helps (if emails are sent) but if the person is interested in the course and doing all the assignments, it is as a reminder. If he is not that much in the course, he would have said, ‘oh I should have done it. Now it’s finished and I couldn’t do it’. [If no reminders were given] you would have much more bad response because most of us have lots of things to do, and they are at work and home, and lots of things fill the mind, especially when it’s something that is optional. Payment is not the issue; sometimes we let go of some things that were beneficial financially because you don’t feel that it’s interesting.
If I did this course again, I would like to do it in a different way. In a way where most of the time where there is an interactive course with more structure like in a classroom. We can do 50% in the class and 50% at home. Its like, when you don’t follow things up and ask them face-to-face, they take it easy. A place where you meet, where you discuss, where you discuss your problem where you discuss the result of your reading and try to clear things up with others. In most cases the facilitator needs to be there. I think it is something to do with the classical or traditional thing. All of us have learned in the classroom and this is most of the time what we are applying to our students. Even for us it is hard to shift to a different media. Most of it is the willingness. Some of the techniques in the reading should be spelled out and discussed, from the theoretical part. This I find is more interesting than the actual reading. I think that would be more interesting and more beneficial to others. And also it depends on how people learn, classroom or grouping oriented.
Introduction to the course (from ‘Anything Else’):
Because most of the teachers are using the traditional way. So to give them a brief idea about what we are going to face, what we are going to see in this course. About .. how to change the focus of the way of teaching, its lots of things need to be done there; lots of work, especially for those who didn’t have the skills

Content analysis

Unit 3: On forum topic: 5, Procedural posts: 6, Non-academic posts: 2 ‘I did not read the materials yet’ This was shown in the lack of depth of the discussion. Although the discussion talked on target, it was not about their learning from the readings, it was prior understandings. This was similar to other chats. No understanding of academic purpose of the task.
**Participant Observation**

Talib did post some comments even though he had not done the assignment. In the mid-course face-to-face meeting all the groups agreed to meet in the chats but none did this. An email was sent specifically to for groups to meet but none did.

Two of Talib’s group chose some chat times together, and these timings were then posted on the chat entry page for units 3 and 4, but Talib did not use these at all after the first chat.

His assignments were 42, 17 and 23 days late. The project was about 1 week late. The peer marking feedback for the one he did was just cursory.

The lack of depth in the chats, as indicated above suggests that they did not understand the education goals of the discussion and chat. Or it meant that as they did not see each other f2f, it didn’t matter if they did the work and meet their obligations.

**Conclusion**

**Guideline 1:** Talib commented that he got most of his learning from the teaching notes, which were only the outlines of the main concepts of the course. He also noted he got some points from the forums although he did not contribute to the interaction. He commented that the chat is for discussing ‘what is not clear’. He did not do the proper preparation for the wiki, consequently everyone in the group missed out on the benefit it could have provided for their assignments that were based on it. The chat activities aimed to prepare them for the assignments were not done at all or not done properly by Talib. Therefore Talib, and his group, missed out on the learning benefits of these activities as well. Talib’s comments suggest he may not have had a clear conception of why these needed to be done. Not prepare beforehand. Talib commented that he did not understand until the end concerning the educational nature of the course ‘I learned by the end, the theoretical side is very important’.

This suggests that there needs to be more emphasis on the educational approach used not only in the individual activities, but also in the course as a whole, from the beginning, so that participants will understand how the activities all support the assignment; as Talib commented: ‘Because most of the teachers are using the traditional way. So to give them a brief idea about what we are going to face, what we are going to see in this course.’ Therefore this guideline is supported, but two extra phrases are proposed: ‘from an educational perspective’ and ‘in the course as a whole, as well as in individual activities’

**Guideline 2:** No data.

**Guideline 3:** Talib did not do some activities or did not do them correctly, even though they were integral to the course structure, such as some of the brainstorming chats, reflective forums, a cooperative task on a wiki. Encouragement from the facilitator was provided and may have had some benefit; ‘Sometimes it helps (if emails are sent)’, but the amount of interactive work was minimal and the assignments did not meet the target in several areas, therefore was less effective than Talib may have assumed. Therefore this guideline is supported, but the ‘encouragement to participate’ is not supported.

**Guideline 4:** Talib used discussion forums chats and wikis to a small degree but did not use the learning potential from the activities there to benefit his learning. Concerning assignments
he noted: ‘Most came from the notes. In some points (I learnt from the forums)’ This implies that he did not understand why or how these related to the assignment, or how they could help him apply his learning to his own teaching: ‘Up to now we have learnt something. If we are not applying it, then we will lose it.’ Talib thought that examples were good, but could not apply them to his own teaching unless they were from the local situation and in a subject that was close to his own: ‘if you give me an example in Medicine it may not be the right thing; or if they were not from the local situation: ‘When you get international examples from the web, some of them may be perfect, but …. sometimes you don’t think that the example is interesting’. This suggests that more scaffold needs to be provided with examples to help in their application. Therefore more orientation is required for showing the use or application of activities to coursework and own teaching practice and some tools such as examples need more scaffolding to help increase their learning benefit. This supports this guideline and suggests a modification: that the tools are sufficient, suitable, being used and their application to course work is shown’.

Guidelines 5-7: No data

Guideline 8: Talib was already using the concept of student-centred teaching in his own teaching practice: ‘But what I am telling them, if you are waiting to get your knowledge from me, you will not get ten percent of what you need’. Talib did feel that it was important for the facilitator to provide some structure in the way of emails but felt that the main emphasis in getting the work done was through ‘the weight of the course itself’. Therefore, this guideline is supported, but the last sentence is not.

Guideline 9: No data

Guideline 10: Talib felt that structure was beneficial: ‘Sometimes it helps’ because the work and home commitments can make him forget his commitments to the course, especially as it is optional. However, it can be seen that the significant amount of email encouragement and support was not able to help Talib keep to deadlines, do all the activities of the course, or honour the commitments to his group. His group decided on two weekly chats, but Talib did not attend any of these even though the facilitator sent reminders to him and posted the timings on the chat entry page. This means the tutor’s emails and course deadlines may have had only a partial role in enabling him to do the course work. It may instead be related to the commitment the participant has to the course or to each other, as he commented, ‘I think the commitment comes from the need, or the weight of the course itself’, and this is what needs to be encouraged. Therefore the first half of the guideline is supported, but the structure that is provided may not be reason for success, other factors must be, such as the commitment to others or to the course (which) should be developed at the beginning of the course’
Appendix 15: Comments on Proposed guideline changes by a peer.

<table>
<thead>
<tr>
<th>First Research Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>The peer accepted these recommendations of changes to the theory based on the analysis of the data provided.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Second Research Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Peer who read this analysis has accepted that there was sufficient data to support the proposed tentative modifications.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Third Research Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Feedback</em> from a peer accepted that there was sufficient data to support the proposed modifications.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fourth Research Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>This is a very solid piece of work. You become much more on the track; seeing the light at the end. \nIdeas seem to fluently lead each other; and the analysis is objective. \nTherefore, the conclusions are correctly based on data derived from the field.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fifth Research Cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Well, it seems that conclusions drawn coincide with cases’ data discussed and analyzed. However, I should say that the frequent observation of: ‘no or insufficient data’ is a bit irritating. \nAll in all, it was really an exciting research journey. I wish you all the best in the next final steps.</td>
</tr>
</tbody>
</table>
Appendix 16: Guideline changes from five research iterations

### 1. Social presence refinements

<table>
<thead>
<tr>
<th>No.</th>
<th>Original guideline:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Use discussion forums, chat and email.</td>
<td>Use both discussion forums and chat but chat is the preferred option.</td>
<td>Modified in Cycle 1&lt;br&gt;Modification supported in Cycle 2&lt;br&gt;Modified in Cycles 3 &amp; 4 &amp; 5</td>
</tr>
<tr>
<td>1.2</td>
<td>Use social networks of the classroom.</td>
<td>Design groups, using participants' social networks or from people within a close circle.</td>
<td>Modified in Cycles 3, 4 &amp; 5</td>
</tr>
<tr>
<td>1.3</td>
<td>Encourage interaction.</td>
<td>Where the frequency of interaction is low, develop the sense of commitment and responsibility.</td>
<td>Modified in Cycles 3, 4 &amp; 5</td>
</tr>
<tr>
<td>1.4</td>
<td>Develop and maintain social presence throughout the length of a course</td>
<td>Initiate social presence at the beginning of the course by developing relationships.</td>
<td>Modified in Cycle 5</td>
</tr>
<tr>
<td>1.5</td>
<td>Help provide an environment where affective language is used</td>
<td>Use small groups to develop relationships, where affective language may be used.</td>
<td>Modified in Cycle 3</td>
</tr>
<tr>
<td>1.6</td>
<td>Build a sense of teacher immediacy for learners from diverse cultural backgrounds</td>
<td>Build a sense of teacher immediacy through the use of individual messages.</td>
<td>Modified in Cycle 3&lt;br&gt;Supported in Cycle 4</td>
</tr>
<tr>
<td>1.8</td>
<td>Provide more support in the learning environment.</td>
<td>Moved to student-centred learning</td>
<td>Modified in Cycle 1</td>
</tr>
<tr>
<td>1.9</td>
<td>Expect that in this culture, higher levels of affective language between learners may be needed</td>
<td>Enable participants to share affectively by developing relationships in the initial part of the course,</td>
<td>Modified in Cycle 5</td>
</tr>
<tr>
<td>1.10</td>
<td>New guideline</td>
<td>Help learners to first be committed and accountable to others, to help them become responsible in completing the work.</td>
<td>New guideline in Cycle 2&lt;br&gt;Supported in Cycles 3 &amp; 4&lt;br&gt;Modified in Cycle 5</td>
</tr>
<tr>
<td>1.11</td>
<td>New guideline</td>
<td>Provide initial classes face-to-face for learners who are not sufficiently experienced interacting in the online environment</td>
<td>New guideline in Cycle 3&lt;br&gt;Modified in Cycles 4 &amp; 5</td>
</tr>
</tbody>
</table>

### 2. Interaction

<table>
<thead>
<tr>
<th>No.</th>
<th>Original guideline:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Design interaction as an integral part of the course design.</td>
<td>Design interaction as an integral part of course design but participant commitment or obligation to the course and each other must be developed before interaction will occur.</td>
<td>Modified in Cycles 4 &amp; 5</td>
</tr>
</tbody>
</table>
### 2.2 Train students in how to use the discussion boards from a technical and educational perspective, as well as training as moderators.

Orientate students in how to use discussion boards and chat in the context of use. This includes how to use discussion boards from a technical and educational perspective, as well as training as moderators.

Modified in Cycle 1 & 4

### 2.4 Orientate learners on how to communicate in an interactive online classroom.

This guideline is supported

Supported in Cycle 4

### 3. Collaboration

<table>
<thead>
<tr>
<th>No.</th>
<th>Original guideline:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.2</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level; this should have a synthesis of the issues as the goal or outcome, and where individual tasks are not provided.</td>
<td>Base the discussion activity on learning issues if the goal of the collaboration is to develop deeper learning at the conceptual level but commitment or obligation developed before this task can be successful.</td>
<td>Modified in Cycle 4 &amp; 5</td>
</tr>
<tr>
<td>3.4</td>
<td>Do not use separate roles or functions for all collaborative work.</td>
<td>Use separate roles or functions for some collaborative work, but commitment and responsibility must be developed before cooperative tasks can be done successfully.</td>
<td>Modified in Cycle 2 &amp; 5</td>
</tr>
<tr>
<td>3.8</td>
<td>Provide group and individual work.</td>
<td>Design most tasks as group work, and give responsibilities to the group leader.</td>
<td>Modified in Cycle 5</td>
</tr>
</tbody>
</table>

### 4. Cognitive Strategies

<table>
<thead>
<tr>
<th>No.</th>
<th>Original guideline:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.4</td>
<td>Provide a combination of cognitive tools.</td>
<td>Use a variety of tools and support, including visual tools.</td>
<td>Modified in Cycle 4</td>
</tr>
<tr>
<td>4.5</td>
<td>Use soft or spontaneous scaffolding through monitoring student learning.</td>
<td>This guideline is supported</td>
<td>Supported in Cycle 5</td>
</tr>
<tr>
<td>4.6</td>
<td>Design cognitive tools or scaffolds in such a way that helps learners to understand how to apply them.</td>
<td>This guideline is supported</td>
<td>Supported in Cycle 5</td>
</tr>
</tbody>
</table>

### 5. Student-centred Learning

<table>
<thead>
<tr>
<th>No.</th>
<th>In order to develop student-centred learning:</th>
<th>Revised form of guideline</th>
<th>Cycles where support or modifications occurred</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Provide training for learners on how to use student-centred courses.</td>
<td>Provide examples or activities that help learners to understand the type of learning that is expected of them in student centred courses.</td>
<td>Modified in Cycle 1 Supported in Cycle 5</td>
</tr>
<tr>
<td>5.2</td>
<td>Train learners so they can understand the benefits of a learner-centred environment.</td>
<td>Orientate learners to help them understand the benefits of a learner-centred environment.</td>
<td>Modified in Cycle 1 Supported in Cycles 3 &amp; 4</td>
</tr>
<tr>
<td>5.3</td>
<td>Design activities in such a way that learners have no option but to participate.</td>
<td>Design activities that are integral to the course structure.</td>
<td>Modified in Cycles 4 &amp; 5</td>
</tr>
<tr>
<td>5.4</td>
<td>Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------</td>
<td>---------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ensure that the tools are sufficient, suitable and are being used. If not, then modify the tools or provide training, and focus on the learning benefits.</td>
<td>Modified in Cycle 5</td>
<td></td>
</tr>
<tr>
<td>5.8</td>
<td>Design the initial activities where learning is gained from the teacher.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide activities where learning is gained from peers or other sources, but also provide the support and reminders of course deadlines.</td>
<td>Modified in Cycles 4 &amp; 5</td>
<td></td>
</tr>
<tr>
<td>5.9</td>
<td>Use a student-centred design for learners of any cultural background.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>This guideline is supported</td>
<td>Supported in Cycle 5</td>
<td></td>
</tr>
<tr>
<td>5.10</td>
<td>Provide more support in the learning environment.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Provide more support and scaffolding in the learning environment through, emailed assignment due dates or calendar of deadlines and time management suggestions</td>
<td>Modified in Cycle 1 &amp; 4</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 17: Modifications to the learning environment

Table 1: Course Preparation

<table>
<thead>
<tr>
<th></th>
<th>Training for students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Orientation tools in the context of use. Tips for using email and chat are linked in the discussion forums and chats so course participants can access those in the place of context.</td>
</tr>
<tr>
<td>2</td>
<td>Examples or activities are provided to help learners to understand the type of learning that is expected of them in student centred courses. The orientation includes activities to exemplify the type of learning expected in an online course, and their educational. This is also explicated verbally in the classroom.</td>
</tr>
<tr>
<td>2</td>
<td>Explicating the benefits: The f2f orientation unit run in class explicate the technical and educational uses of forums and chat, in both the orientation activity and the tutor’s face-to-face instructions in that unit.</td>
</tr>
</tbody>
</table>

Table 1: Designing the Course

<table>
<thead>
<tr>
<th></th>
<th>Designing activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Accountability: A peer marking activity is provided in the final unit where participants complete their folders and others comment on them using a rubric.</td>
</tr>
<tr>
<td>2</td>
<td>More accountability is provided in Unit Four in providing comments on each other’s activities, and in the peer marking in the final unit. This is done before the project is sent in to the facilitator.</td>
</tr>
<tr>
<td>3</td>
<td>Examples or activities are provided to help learners to understand the type of learning that is expected of them in student centred courses. The orientation includes activities to exemplify the type of learning expected in an online course, and their educational. This is also explicated verbally in the classroom.</td>
</tr>
</tbody>
</table>

Designing Interaction

<table>
<thead>
<tr>
<th></th>
<th>The importance of face-to-face time: This is emphasised before the course starts and organised at a time to enable everyone to attend. This may include group meetings if the class cannot make it as a whole.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Using social networks: Faculty registering for the course are encouraged to ask colleagues to also register. Groups are formed based on colleges, the most likely place where there would already be social networks. Social networks need to be initiated in the face-to-face sessions. The technical workshop and the two orientation workshops should be held in a room that enables groups to get to know each other while they do the course work. Groups also exchange email and cell phone numbers to help maintain the relationships after the course has started.</td>
</tr>
<tr>
<td>3</td>
<td>Chat sessions use moderators, to provide the opportunity for group members or leaders to have more responsibility for others. The chat sessions are weekly, and emails are used to advertise and remind but not seen to be the main initiator of interaction. These are the main focus of interaction.</td>
</tr>
</tbody>
</table>

Designing Resources

|   | Cognitive support: More variety in cognitive support was added including group feedback, scaffolding and coaching from the facilitator |
Designing Support

1. Working computers: The orientation meeting needs computers that work for everyone, all group members can be together and talk with each other, more group focused and organise times from the beginning. This may be in times that can be used for an extra f2f meeting, separate for each group. This maybe in the orientation, as a class and then the second around groups, or in the LMS workshop.

2. Provision of support and deadline reminders in the course and in class emails. However, this should not be expected to be the crucial factor in course completion; as the group responsibility also has a role.

Designing collaborative and group work

1. Using groups: The class is divided into groups from the beginning and a leader is chosen for each by the group. The leaders are given directions on how to lead, and in providing encouragement, support and structure.

2. Building a sense of commitment: Participants can get to know who is in their group from the beginning to help build the relationships, through initial class face-to-face meetings, and regular group chats and discussion forums.

3. Cooperative work is designed through using tasks where the work is divided between members; for example each person contributing one element of the student and teacher roles as is in the wiki.

4. Collaborative learning: More forum questions were added that encourage conceptual interaction with others. This includes reflections on their own course objectives, how they designed their activities, and reflection of their learning in the final unit, which others are required to respond to.

Table 3: Implementation of the Course

Using interactive e-learning tools

1. The provision of scaffolding to provide the support needed for the beginning of the course. This would be in the form of an initial classroom get together for welcoming and technical support, regular chats from the first week and the use of a computer laboratory weekly while extra support is required. The facilitator should also send encouraging personal emails in the first few weeks.

2. Interaction: Where low interaction occurs, the facilitator contacts the participant to determine the cause of lack of commitment to the others in the group and to the course.

Building Teacher Immediacy

1. Continuing emphasis is placed on enabling faculty to maintain relationships during course implementation.

Supporting the learning

1. Soft scaffolding in the form of spontaneous mentoring and feedback is provided by the facilitator for course activities and assignments

2. Emails: The facilitator should send regular personal emails or messages to the participants to encourage them.

Group leaders are encouraged to organise meetings and remind group members of deadlines. Course participants are encouraged to contact group leaders.
Appendix 18: Comments on final learning environment by two peers.

The peers were provided with a description of the research approach, a copy of guides for facilitators in implementation of the learning environment, and access to the learning environment. One of the peers had participated in a previous version of this course.

<table>
<thead>
<tr>
<th>No.</th>
<th>Evaluation Questions</th>
<th>First Peer's Comments</th>
<th>Second Peer's Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social Presence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Could learners get to know each other sufficiently well to build the type of relationships with each other?</td>
<td>Given the online nature I feel the course is suitably designed to acquaint participants to each other and allow them to know each other personally.</td>
<td>It appears to be suitable. My answer to the three questions is &quot;YES&quot;. This is clear in all the points you recommended to be looked at.</td>
</tr>
<tr>
<td>2</td>
<td>Would I help them feel <strong>comfortable</strong>, responsible &amp; want to interact with others?</td>
<td>I think the type of assignments which are wiki based and chat based and discussion based allow reasonably well to make them comfortable. How well these design features worked will depend on feedback after implementation. There will undoubtedly be suggested improvements and some areas of frustration by some participants.</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Evaluation Questions</td>
<td>First Peer’s Comments</td>
<td>Second Peer’s Comments</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>3</td>
<td>Is there opportunity to build ‘teacher presence’ the learners would appreciate?</td>
<td>It appears there is adequate teacher presence designed within the course; However, I feel this will also depend largely on how the facilitator deals with the course. Facilitator notes are nice; but I suggest they be expanded to allow for facilitator variation.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Interaction</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Is the technical &amp; educational orientation for good interaction sufficient?</td>
<td>I feel both orientations are suitable. Although, for the limited time I tried the course, there was some confusion about the technical issues. I expect that orientation (face to face) sessions should clear this confusion in advance.</td>
<td>Yes to all! There is adequate guidance for ensuring learner interaction.</td>
</tr>
<tr>
<td>2</td>
<td>Does it encourage learners to interact in a style that is conducive to learning</td>
<td>Yes it does.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Would it make them feel comfortable?</td>
<td>I think the interaction is designed to make learners comfortable; the question is does it actually do so after beginning the course? From a faculty member’s perspective the course material should not exceed the point where it becomes too much for his/her schedule.</td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Evaluation Questions</td>
<td>First Peer's Comments</td>
<td>Second Peer's Comments</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------</td>
<td>-----------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td><strong>Collaboration</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Are the activities designed to help these learners to share at a conceptual level in a way that would make them feel comfortable?</td>
<td>I feel the collaboration activities are quite suitable.</td>
<td>Yes, indeed! Your tasks from the very beginning of the course seem to have a built-in co-operative goal structure. And your simple peer marking tasks are really very interesting. They are easy to use and illuminating to both parties the assessor and the assessed.</td>
</tr>
<tr>
<td></td>
<td><strong>Cognitive Strategies</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>How well can this environment enable these learners to develop skills in online teaching?</td>
<td>Again, design for cognitive strategy development is apparent and seems suitable.</td>
<td>The course provides ample opportunities and adequate support for participants to develop the necessary skills for learning online. The problems they work on are suitable for developing those skills. So are all other enabling activities.</td>
</tr>
<tr>
<td>2</td>
<td>Is there sufficient suitable support for these students?</td>
<td>Probably more direct emphasis should be included and elaborated in the facilitator notes, with some example or concrete ideas.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>How suited does it seem to be to the ways these participants may learn?</td>
<td>Intended support seems to be suitable.</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Student-centred learning</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>How well does this course help learners use the tools provided in the course?</td>
<td>For a faculty member, I think course helps learners adequately.</td>
<td>This is a highly structured course with sufficient orientation and well-designed activities. What is interesting about this course is how both are very well integrated. It is really a good example to be followed.</td>
</tr>
<tr>
<td>2</td>
<td>Does it provide sufficient and suitable orientation for the use of the environment?</td>
<td>I feel orientation design is suitable.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Is the right amount of support provided?</td>
<td>Yes, I feel the structure is balanced to allow enough learner flexibility without compromising course objectives.</td>
<td></td>
</tr>
</tbody>
</table>
Individual Informed Consent Form for Research

DESIGNING ONLINE ENVIRONMENTS FOR THE LOCAL CONTEXT, AS EXEMPLIFIED IN OMAN

ANDREA HALL

I have been given information about ‘Designing Online Environments for the Local Context, as Exemplified in Oman’ and discussed the research project with Andrea Hall who is conducting this research as part of an Ed.D supervised by Assoc-Prof Peter Kell and Dr Jan Herrington in the department of Education at the University of Wollongong.

I understand that, if I consent to participate in this project I will be asked to:

- Participate in two one hour interviews, with one being in a secure chat room and one face-to-face in my office, or both in my office if it is more suitable for me.
- Allow my assignments, activities and discussion contributions be used as data for the study

I have been advised of the potential risks and burdens associated with this research, which include the time taken to do the interviews and have had an opportunity to ask Andrea Hall any questions I may have about the research and my participation.

I understand that my participation in this research is voluntary, I am free to refuse to participate and I am free to withdraw from the research at any time. My refusal to participate or withdrawal of consent will not affect my relationship with the researcher/course facilitator, or my relationship with the Centre of Educational Technology at Sultan Qaboos University.

If I have any enquiries about the research, I can contact Andrea Hall at ext 2884 or Associate Prof Peter Kell on 00612 4221 3857 or if I have any concerns or questions regarding the way the research is or has been conducted, I can contact the Complaints Officer, Human Research Ethics Committee, Research Services Office, University of Wollongong on 00612 4221 4457.

By signing below I am indicating my consent to participate in the research entitled Designing Online Environments for the Local Context, as Exemplified in Oman’ conducted by Andrea Hall as it has been described to me in the information sheet and in discussion with Andrea Hall.

Signed .................................................. Date ........../....../......

Name (please print)
Appendix 20: Participant Information Sheet

Participant Information Sheet

DESIGNING ONLINE ENVIRONMENTS FOR THE LOCAL CONTEXT, AS EXEMPLIFIED IN OMAN

ANDREA HALL

This research is being conducted at Sultan Qaboos University through the Centre for Educational Technology. This is also part of a Research Degree programme for the researcher; Andrea Hall. This document is intended to provide information so participants can acknowledge informed consent for participation in this research project.

Research Title: Designing Online Environments for the Local Context, as Exemplified in Oman

Principal investigator: Andrea Hall, Centre for Educational Technology, SQU.

Research supervisors: Assoc-Prof Peter Kell, Dr Jan Herrington, Faculty of Education, University of Wollongong.

The aims of the research: Learning involves interaction between people and it also uses concepts, symbols or examples. All of these can have cultural meaning, and therefore may not be understood clearly by some people of different cultures. Therefore, to provide effective learning we need to know how to design courses for the people that will use them. This research is designed to investigate how participants in this context of Oman respond to an online course so that guidelines can be developed to help faculty in the design of culturally compatible online learning courses.

Procedures: Data will be collected from 2 one hour long interviews. The last one will be a face to face interview that will be recorded on tape. The first one will be a online interviews if this is suitable and convenient, otherwise it will also be recorded on tape. The face-to-face interview will be done in the participant’s office. An anonymous transcript will be prepared from this. Data will also be collect from study participants’ course work such as activities, assignments and online discussions or chats. These will also be collected and stored in such a way as to provide participant anonymity.

Interview design: These will be semi-structured, and the questions will be focused on the participants' response to different aspects learning environment, especially where there may be cultural preferences or values involved.

Risks: There will be no risks incurred during the research. The only inconvenience involved will be the extra time involved in participating in the two interviews that will be held.

Publications: The results of the research may be published in journals. Permission will be requested from participants before any data concerning them will be used in any reports. Names and affiliations will not be revealed and the results reported anonymously and in such a way as to protect their identity.
The Researcher/Course facilitator: The researcher in this study is also the course facilitator. The researcher is both a student at Wollongong University, Australia, and a staff member at Sultan Qaboos University, Oman.

Benefits: No benefits will be given to the participants in the research.

Questions: Participants are free to ask the researcher any questions concerning the research, through email: andreah@squ.edu.om and through telephone: ext. 2884.

Withdrawal from the research: Participants are free to withdraw their consent. This refusal or withdrawal will not affect their participation in the online course, their relationship with the researcher/course facilitator, or their relationship with the Centre of Educational Technology.

Storage of Data: Data that is collected will be stored on a CD and kept in a secure environment, as will be the tapes from the face-to-face interviews. For confidentiality, pseudonyms will be assigned to participants to assure anonymity.

Questions: If participants have any concerns or questions regarding the way in which the research is being conducted, please contact the Secretary of the University of Wollongong Human Research Ethics Committee on 0061- 4221 4457, Monday to Friday (GMT +10hrs).
Appendix 21: Guides for the Facilitator

During Registration

1. The facilitator should ask participants for their timetables when registering so common meeting times may be fixed, and should also be reminded of the commitment to the course that is necessary to complete the work.

Initial Face-to-Face Sessions

For most faculty, face-to-face time at the beginning of the course is vital in enabling them to build relationships with the group of people they will work with on the course, as this helps in the quality of interaction and therefore in completing coursework well. Therefore the following is recommended:

1. Start with the first three sessions in a lab: that is one session on using the LMS, and then two sessions that will cover Orientation to E-learning (unit one). There should be sufficient technical support so that all participants will learn how to use all the tools of the LMS that are in the course.

2. The computer room used should be one that enables faculty to talk with each other whilst working on their computers. The recommended means would be Laptops in a social setting such as a common room or lounge.

3. Faculty should be put into groups from the outset, within similar backgrounds, namely the same department or college, where possible.

4. The three sessions should have all members of the group together at the same time. This may mean evening meetings.

5. Group members should be encouraged to choose a leader and swap email and GSM numbers.

6. A face-to-face meeting should be organized mid-course if the participants have not already done so themselves.

Implementation of the Course

1. Orientation Unit (as above): The unit contains all the necessary information, but important points should be noted in the classroom, such as the learning benefits of the particular activities, and ensure they access the tips provided for the chat and discussion. The facilitator should ensure all participants can access the course from their office and home computers, and provide extra help where required.

2. Emails to participants: two types should be provided regularly:
   - Personal emails of encouragement
   - Group or class emails reminding participants of due dates for course work. Participants should keep a record of their own deadlines, but the facilitator emails will help.

3. Group leaders should be encouraged to provide support for their groups and organized meeting times in chat or elsewhere.

4. Learning support is required during the course implementation:
   - Feedback for all the assignment work before it is marked,
   - Comments in wiki work where necessary
   - Monitoring of the chat and forums. Facilitator responses should be to guide the discussion, not answer the questions, and with only the occasional input to assure participants that they are on track with their responses.

5. Where commitment or obligation is low, arrange for face-to-face meetings for that group so they may improve the quality of their relationships.