

**MULTIMEDIA MODEL FOR SUPPORTING ABORIGINAL AND TORRES STRAIT ISLANDER HEALTH WORKERS
IN PREVENTING COMMUNICABLE DISEASES - FAEKA EL SAYED**

**MULTIMEDIA MODEL FOR
SUPPORTING ABORIGINAL AND
TORRES STRAIT ISLANDER
HEALTH WORKERS IN
PREVENTING COMMUNICABLE
DISEASES**

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1

Declaration

I declare that this thesis is my own account of my research and it does not contain material which has been accepted for the award of any other degree at any tertiary education institution; nor does it contain material previously published or written by any other person, except where due reference is made in the text of the thesis.

Faeka El Sayed

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This thesis is dedicated to the memory of my father.

DISSEMINATION OF THE FINDINGS

The research findings in this thesis have already been disseminated to, and published in, national and International journal and conferences throughout the evolution of this research. The following are articles that have been published, accepted, or are under review:

Journal:

El Sayed, Faeka and Soar, Jeffrey and Wang, Zoe (2010) *Developing a self-paced continuing training program for Aboriginal health workers - learning approach*. Aboriginal and Islander Health Worker Journal, 34 (4), pp. 28-31. ISSN 1037-3403

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El Sayed, Faeka and Soar, Jeffrey and Wang, Zoe (2012) *Key factors for the development of a cultural appropriate interactive multimedia informative program for Aboriginal health workers*, Australian Journal of Aboriginal Education, in publication.

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El Sayed, Faeka and Soar, Jeffrey and Wang, Zoe (2012) *Interactive multimedia health informatics CD-ROM for aboriginal health workers - formative evaluation* , HIC 2012 health informatics- building a healthcare future through trusted information, 30 July-2 August, Sydney, accepted.

ABSTRACT

The health and well-being of people around the world depend critically on the performance of the health systems that serve them,” Dr Gro Harlem Brundtland, Director-General, World Health Organization (Brundtland, 2000). This speech reflects the important role played by Aboriginal and Torres Strait Islander health workers in our health system. They are universally regarded as the main providers of primary health services to our Aboriginal and Torres Strait Islander communities, especially in remote and rural areas. The important work they do might be better supported through ongoing availability of health informatics programs in their practice locations, particularly those that encompass a culturally-appropriate multimedia model.

This study suggests the use of Information Technology, in the form of interactive multimedia self-paced learning methodology to develop system for a health informatics program delivery via a common multimedia storage drives CDROM/USB drive that can be used by Aboriginal and Torres Strait Islander health workers in their own work place. This assumption was assessed and explored through the design, development, and formative evaluation of an interactive multimedia health informatics CD-ROM program, entitled “Interactive Multimedia Health Program: Tuberculosis”.

The theoretical framework for this study based on the empowerment and community participation theory as outlined in the Declaration of Alma-Ata, World Health Organization (WHO).

This thesis reports on a qualitative study which has explored gaps in the current Aboriginal and Torres Strait health workers’ continuing education and professional development programs, and examined the need for new approach that differs from the traditional school-based ‘face to face’ approach; and rather advocates the need to deliver sustainable, efficient and cultural appropriate continuing education program for health workers.

The application of choice of a qualitative approach as a methodology for the study enables this assumption to be checked by testing this model against the ideas, experiences and recommendations of participants in the study; who have worked for many years in the field of the education and training of health workers of Aboriginal and Torres Strait Islander heritage.

The views of participants have been collected through a series of interviews and a review of the limited literature available in this field covering the following topic:

- 1) Aboriginal and Torres Strait Islander Australians history and health state with emphasis on the burden of communicable diseases, focusing particularly on Tuberculosis (TB);

- 2) Aboriginal and Torres Strait Islander health workers' history, role, challenges, education and training;
- 3) The potential for Information Technology to support health workers through the provision of self-paced health training programs as a tool for the delivery of multimedia information, and the future opportunity for the use of interactive multimedia technology in health care education;
- 4) Methodologies for multimedia model development and educational and systematic approach for multimedia model development;
- 5) Learning theories, principles and approaches;
- 6) Key factors that would impact model development, and
- 7) Australian Aboriginal learning approaches, values, and pedagogy.

This thesis adopts a research methodology is in the form of:

- 1) Qualitative semi-structured interviews with 10 various stakeholders from different backgrounds all are working in the field of Aboriginal and Torres Strait Islander health worker education. The research was supported by archival research, and then expanded to a study of the needs that exist for Aboriginal and Torres Strait Islander health workers in continuing their education and professional development. The author then searched for and analysed the techniques that might best address this need. Interviews were also conducted to identify the keys factors need to be considered in the development of an interactive multimedia informatics program to meet these needs.
- 2) Using a detailed approach to describe and review the process of preliminary model development entitled "Interactive Multimedia Health Program: Tuberculosis". The work begins with a review of relevant literature from the field of collaborative learning and multimedia, Tuberculosis, and Australian Aboriginal culture.
- 3) Employed the Likert Scale and open-ended questionnaire for the formative evaluation of the preliminary model through expert and peer review with 15 stakeholders in the fields of Aboriginal and Torres Strait Islander health workers' education, Information Technology.

The main themes that emerged from analysis of the data include those relevant to:

- Cultural appropriateness; Efficiency; Sustainability; The need for a unified government body;
- The need for greater coordination and consistency across The entire system of government agencies responsible for Aboriginal and Torres Strait Islander health workers and the management of their continuing education;

- The need to manage the gap between what health workers learned and what they did in their working lives;
- The need for better Information Technology tools; the ad hoc nature of workplace training to date; The need for relevant information; and The need for a business perspective.

The study highlights the effect of economic and cultural issues, and lack of coordination upon the development of a continuing education program for Aboriginal and Torres Strait Islander health workers. The finding of the study describes how issues such as cultural factors, learning aspects, computer literacy, availability of technological tools, and pre-existing knowledge of interactive multimedia principles are key factors in developing a CD-ROM model. Further, the findings point out the elements and cultural principles that are important to keep in mind when producing the model, such as cultural localisation, cultural context, cultural knowledge base, and oral cultural traditions for Aboriginal and Torres Strait Islander peoples. This premise has been tested and applied through the production of a detailed preliminary design for a culturally-appropriate multimedia model on CD-ROM, using Tuberculosis as a focus topic for the model, a copy of which find attached to this thesis.

In summary, the key findings are:

1. The identification of significant gaps in the current continuing professional development program for Aboriginal and Torres Strait Islander health workers. Three main issues in the current program were revealed: Lack of sustainability, co-ordination and consistency in Aboriginal and Torres Strait Islander health workers' continuing education and training; lack of efficiency of the current program and the presence of learning gaps between what health workers study and the tasks they perform. This inefficiency is an important factor in the struggle of health workers to fulfill their roles. There is also a lack of suitability and presence of a cultural gap in the current continuing education program; which is due to the lack of deep understanding of socio-cultural contexts in which health problems are constructed. This cultural gap is evident in the current program design which is concerned mainly with adding Aboriginal art and pictures without a deep look into cultural localisation, cultural contextualisation, cultural knowledge base, and their oral cultural background in the current program

The results presented here are indicative of the need for a different approach in order to deliver a sustainable, efficient and culturally-acceptable continuing development program. Using Information Technology is a promising new approach for closing this gap and in improving Aboriginal and Torres Strait Islander health workers' continuing professional development opportunities.

2. Identification of the methodology for the development of an interactive multimedia self-paced informatics health program, which is based on multi-disciplinary development methodologies, including educational and systematic approaches.

3. This study recommends the adoption of socio-cultural and constructivist learning theories, with adult learning, population health, narrative, and medical education approaches incorporated into the development of the program.

4. It is further recommended that a systematic approach to creating a culturally-appropriate program for Aboriginal health workers needs to be full mindful of and respectful of cultural dimensions during the design process; and similarly there is a real need to provide a culturally-sensitive learning environment.

5. The most important key factors for the development of an interactive multimedia/culturally-appropriate health informatics model could be categorised under four main headings: cultural factors, Information Technology availability and literacy, learning aspects, and interactive multimedia factors. Cultural factors included cultural inclusivity, oral cultural, pre-existing knowledge, and Aboriginal learning styles. Interactive multimedia factors included the requirements for the process, fitting and design of the program.

6. Formative evaluation of the model confirmed the study hypothesis that interactive multimedia CD-ROM/USB drive health informatics could be used as an alternative material for updating Aboriginal and Torres Strait Islander health workers' knowledge.

The study outlines several applications of these findings, focusing on how an informatics interactive multimedia program could be made culturally relevant to Aboriginal and Torres Strait Islander health workers.

Also the thesis provides recommendations for policy development and further research:

- The need to provide more culturally and contextually appropriate continuing education programs for Aboriginal and Torres Strait Islander health workers.
- The need to empower Aboriginal and Torres Strait Islander health workers through their involvement in developing the strategy and program for their continuing education is crucial for any improvement in their education and to closing their triple divided gaps (Health, Education, and Digital).
- The development of a best practice model in Aboriginal and Torres Strait Islander education resources requires input from members of the target audience through their continuing evaluation; this helps ensure that the resource is culturally safe, applicable and appropriate to the target group.
- There is need for further research and study. Detailed recommendations are provided in Chapter 11.

Overview

The principle objective of this study is to create a pedagogical tool that combines on-screen text, graphics, animation, audio and video in a credible and culturally-appropriate environment. This objective is met through the development and presentation in the thesis of an interactive multimedia self-paced health informatics program, delivered on common multimedia storage drives including CD-ROM/USB drive, titled “Interactive Multimedia Health Program: Tuberculosis”, that could be effective as a source of information for Aboriginal and Torres Strait Islander health workers, and could improve the workers’ capacity to independently control their learning within an attractive learning environment, with scope to strengthen their capacity for the provision of quality healthcare delivery and health outcomes.

My interest in under taking this study emerged out after the historic national apology to Aboriginal Australian people. I had just moved from New Zealand to Australia with my family, and began reading about Aboriginal Australian history regarding colonisation and its impacts on their current social and health life. I feel that I would like to use my medical background and my Information Technology knowledge in a useful way, and I am hoping to be able to help Aboriginal people to close the gap between the health of Aboriginal and Torres Strait Islander communities and that of the rest of the country.

This thesis charts the development of culturally-appropriate software that was designed to assist in the continuing education of Aboriginal and Torres Strait Islander health workers.

The process was accompanied by an assessment of their current continuing education program, and a formative evaluation for the model. The end result is the development of a culturally-appropriate interactive multimedia on CD-ROM which accompanies this thesis.

In this study an early hypothesis was identified, namely that using interactive multimedia self-paced technology for Aboriginal and Torres Strait Islander health workers’ continuing education could support them, and as a consequence, it is thought to have the potential for a positive impact upon improving the health of Aboriginal Australians.

At the beginning of the study an informal approach was made and a meeting was conducted with Aboriginal and Torres Strait Islander health workers’ training organisation staff members and managers (Cunningham Centre), and Aboriginal Public health officers (communicable diseases) at the Darling Downs Public health Unit (Southern Regional Services).

The aims of those informal discussion was to discuss the research idea, gaining a broad understanding of the area of study by getting information about the current continuing Aboriginal and Torres Islander health workers education in general, and in particular, regarding Tuberculosis as a starting topic for the project. We gauged their interest as to whether or not the

topic of the study was relevant to them, and obtained their input into the study design and recruitment decision, and helpful advice was provided about different ways for advertising the project. The discussions also addressed the training organisation's perceived need for, and willingness to integrate, our proposed training program into their courses.

The research idea was very welcomed and supported by both organisations. The Darling Downs Public Health Unit (Communicable Diseases) provided a letter of recommendation for the research, and mentioned that the research was likely to be a valuable addition and contribution to programs and services provided by the involved organisation and their support for choosing Tuberculosis as a starting point for the project, Appendix (13.1).

The training organisation welcomed the idea of using Information Technology as an alternative methodology for delivering continuing education for Aboriginal and Torres Strait Islander health workers. Their main objection was that while Tuberculosis was common in north Queensland, but was not a significant health concern in South West Queensland, and they suggested the life style diseases of diabetes, obesity and cardiovascular disease might be appropriate starting topics for the project.

Documentary research was supported the opinion of the Darling Downs Public Health Unit's opinion that there was a lack of any health informatics program about Tuberculosis for Aboriginal health workers, whereas there were already many programs targeting lifestyle diseases.

Previous research has shown that there is inadequate continuing professional development for Aboriginal and Torres Strait Islander health workers, especially in rural and remote areas. This is a major factor affecting the quality of primary health care services for Aboriginal Australian people. The data from this study supported the presence of this shortcoming.

The identification of this problem suggested the need for an efficient, sustainable, and culturally-appropriate program as a source of continuing information that could be used by Aboriginal and Torres Strait Islander health workers at their own practice locations, and the possibility for the use of interactive multimedia technology on common multimedia storage drives including CD-ROM/USB drive as a new training method that took a different approach than those traditionally offered through face-to-face training.

This study focuses on Aboriginal health, Information Technology, and Aboriginal and Torres Strait Islander health workers' continuing education, in particular upon communicable diseases, with an emphasis on Tuberculosis as an example explored in the CD-ROM model.

There is a recognised need for effective, well trained health workers in the primary health care sector, particularly in the field of early detection and the raising of public awareness. This study

focuses on the viability of producing interactive multimedia software for supporting Aboriginal and Torres Strait Islander health workers.

The study explores this proposed model through documentary analysis and qualitative interviews, incorporating multiple stakeholders' perspectives and tries to find a best-fit solution.

This thesis aims to explore and articulate the barriers to Aboriginal and Torres Strait Islander health workers' continuing education rather than simply listing them after the literature review.

Previous studies on producing health education program for supporting Aboriginal health workers have been designed with more traditional classroom-style form of education using verbal, face to face, and textural materials.

The study highlights an existing gap in the literature, as through my research I have been unable to find examples of the use of culturally-appropriate interactive multimedia programs for supporting Aboriginal health workers.

Although I could find no current examples of such programs, I did find some references that discussed the use of Information Technology for the support Aboriginal education and training programs in general.

This thesis has devised a theoretical framework for the development of an interactive multimedia health informatics program that was guided by the input the author gained from interviewing stakeholders and the literature review. This study was carried out from a non-Aboriginal perspective, indeed my own perspective as non-Aboriginal researcher affects the content and organisation of this thesis.

Endorsement of this study by the Aboriginal community is evident in the model development, which was revised and reviewed by Aboriginal health workers through their participation in the studies; and in the development of the model content, as the stories used have been adapted from anthropological studies from within Aboriginal communities.

Structure of the Chapters

Chapter 1

This Chapter offers some background to this research and a description of the nature of the study and its context, the aims of the research and its significance, the limitations and theoretical framework for the study.

Chapter 2

The literature review in Chapter 2 presents research findings from different fields that are considered relevant to this study. The areas of interest include:

- 1) Aboriginal Australian health and the burden of communicable diseases on them with particular emphasis on Tuberculosis,
- 2) Aboriginal and Torres Strait Islander health workers' role and their current and continuing work-based education and training,
- 3) The use of Information Technology in supporting health workers with emphasis on interactive self-paced multimedia technology, and
- 4) The effect of learning theory and principles in interactive multimedia model design, with special reference to the inclusion of Aboriginal cultural elements on the model design.

The literature review explores this and is complementary to and supportive of the interview results.

Chapter 3

In discussing the methodology used for this study, I dealt with the way that I developed the research from the initial proposal of the research idea, through the gathering of data and the use of qualitative methodology. A three-phase research design was used to address the following research objectives:

- 1) An assessment to explore the gap in the current Aboriginal health workers' continuing professional development and to identify the keys factors that should be considered when developing an interactive multimedia and culturally-appropriate program;
- 2) Developing CD-ROM health informatics program entitled "Interactive Multimedia Health Program: Tuberculosis"; and
- 3) Establishing a primarily formative evaluation for the program content, program's instructional and graphic design and user attitudes through expert, peer and end-user review.

Chapter 4

In this Chapter, I first outlined the rationale for interactive multimedia model development. This Chapter examines the methodologies for model development which consist of an educational approach and a systematic approach. It details the pedagogical methods of the program, exploring current theories of learning, learning principles, and learning approaches as they affect the multimedia design. This Chapter provides many specific guidelines to ensure that interactive multimedia model design were soundly based on active educational research.

Chapter 5

In this Chapter there is a detailed description of the systematic approach used for the interactive multimedia model. The Chapter includes details of the framework for the development of interactive multimedia model, with descriptions of the main three phases of model design.

Chapter 6

This Chapter reveals the first stage of the model development. It demonstrates in detail a model needs assessment that was undertaken through an analysis of the current Aboriginal and Torres Strait Islander health workers' continuing education program, from various perspectives through the experiences of key stakeholders, using a qualitative semi-structured open ended interview model. The assessment began with a systematic review of the literature.

Chapter 7

This Chapter elucidates the key factors that needed to be considered in the development of the interactive multimedia program. The clarification begins with a systematic review of the literature which served as background information followed by qualitative semi structured interviews. It ends with the inclusion of participants' recommendations for the development of the model.

Chapter 8

This Chapter looks at Aboriginal Australian cultural elements as they affect the development of the model development. It starts by exploring through learning from previous studies the need for improvements in the current continuing education programs for Aboriginal and Torres Strait Islander health workers.

Chapter 9

This Chapter details the process of software development. The framework and data analysis result provided in Chapters Four, Five, Six, Seven and Eight are employed for the model development. The documentation of the case itself occurs in this Chapter which describes in detail the procedure for the development of the software. Since this program focuses on Tuberculosis, I begin the first module of the model by illustrating a general information about Tuberculosis, and then go on to provide further details.

Chapter 10

This Chapter reports a small-scale formative evaluation for the planned preliminary model, and states the participants' recommendations for model improvement.

Chapter 11

I finalise the preceding chapters and discuss the research's major contribution to knowledge and its relevance. I conclude the thesis with discussion about the study, and some suggestions for further research and recommendations.

TABLE OF CONTENTS

DECLARATION	2
ACKNOWLEDGEMENTS	3
DISSEMINATION OF THE FINDINGS	4
ABSTRACT	5
OVERVIEW	9
Structure of the Chapters	11
TABLE OF CONTENTS	15
LIST OF FIGURES	22
LIST OF TABLES PAGE	24
LIST OF ABBREVIATIONS	25
CHAPTER ONE: INTRODUCTION	27
1.1 Overview	27
1.2 Background to the Research	28
1.3 Research Problem	31
1.4 Research Questions	32
1.4.1 Sub provision questions	33
1.5 Purpose of Study	34
1.5.1 Rationale for choosing Tuberculosis (TB) as a focus for the Model	34
1.6 Significance & Strength of the Research	36
1.7 Expected Benefits	36
1.8 Research areas	37

1.9 Limitation of the Research	37
1.10 Theoretical Frameworks	38
CHAPTER TWO: LITERATURE REVIEW	42
2.1 Aboriginal and Torres Strait Islander Australian	42
2.1.1 History	42
2.1.2 Health	46
2.1.3 Communicable diseases	50
2.1.4 Tuberculosis (TB)	50
2.2 Aboriginal and Torres Strait Islander Health Workers	58
2.2.1 History	58
2.2.2 Roles	59
2.2.3 Aboriginal and Torres Strait Islander health workforces	61
2.3 The Potential of Information Communication Technology (ICT) within the Context of Health	63
2.3.1 Self-Paced Health Program in Health Sector	65
2.3.2 Interactive Multimedia Technology	67
2.3.3 Strengths of Interactive Multimedia for Learning	68
CHAPTER THREE: RESEARCH METHODOLOGY	71
3.1 Qualitative Methodology	71
3.2 The Research Design	73
3.4 Methods	75
3.4.1 Ethical considerations	75
3.4.2 The participants	75
3.4.3 Data collection and recording modes	76
3.4.4 Qualitative open-ended interviews	76
3.4.5 Archival research (Documentary Material)	78

3.4.6 Formative evaluation	78
3.5 conclusion	81
CHAPTER FOUR: INTERACTIVE MULTIMEDIA PROGRAM METHODOLOGIES - EDUCATIONAL APPROACH	82
4.1 Overview	82
4.2 Educational Approach	83
4.2.1 Learning Theories and Their Relationship to Multimedia Education Program	84
4.2.2 Learning Principles	89
4.2.3 Learning Approaches	92
CHAPTER FIVE: MODEL DESIGN AND DEVELOPMENT - SYSTEMATIC APPROACH	97
5.1 Overview	97
5.2 Framework for the Development of Interactive Multimedia Model	98
5.3 Training assessment	99
5.3.1 Problem identification and general need assessment	99
5.3.2 Specific needs assessment	99
5.4 Task and Concept Analysis	99
5.5 Design	100
5.5.1 Phase one: Multimedia application design considerations	100
5.5.2 Phase two: Preliminary Program Description	104
5.5.3 Phase three: Detailing and communicating the design	113
CHAPTER SIX: A GENERAL ASSESSMENTS OF THE DEMANDS FOR THE MODEL	116
6.1 Aboriginal and Torres Strait Islander Health Workers Education and Training Framework	116
6.2 Aboriginal and Torres Strait Islander Health Workers Challenges	118
6.3 Current Approach for Aboriginal and Torres Strait Islander Health Workers' Continuing Education	122
6.4 Suggestion for Improving Aboriginal and Torres Strait Islander Health Workers' Continuing Education	123

6.5 Interviews	125
6.5.1 Ethical considerations	125
6.5.2 Participants	125
6.5.3 Getting in	125
6.5.4 Content Analysis	126
6.6 Interpretation of Findings	127
6.6.1 Sustainability	128
6.6.2 Efficiency	131
6.6.3 Acceptability	136
6.7 Outcomes & Recommendations	138
CHAPTER SEVEN: KEY FACTORS FOR MODEL DEVELOPMENT	141
7.1 Overview	141
7.2. Cultural Factors	142
7.3 Information Technology Factors	144
7.3.1 Information Technology within Aboriginal Australian	145
7.4 Learning aspects	146
7.5 Interactive multimedia factors	147
7. 5.1 Process Requirement	147
7.5.2 Fitting Requirement	148
7.5.3 Task Design Requirement	149
7.6 Interviews	150
7.6.1 Analysis	150
7.7 Interpretation of Findings	151
7.7.1 Cultural factors	151
7.7.2 Availability and literacy of Information Technology	153

7.7.3 Learning aspects in model development	154
7.8 Results & Recommendations	154
CHAPTER EIGHT: CULTURAL ELEMENTS IN MODEL DEVELOPMENT	157
8.1 Overview	157
8.2 Cultural Localisation	159
8.3 Cultural knowledge base	160
8.3 Cultural contextualisation	161
8.5 Oral cultural backgrounds	162
8.6 Recommendations	163
CHAPTER NINE: MODEL DEVELOPMENT- CASE STUDY: INTERACTIVE MULTIMEDIA HEALTH INFORMATICS PROGRAM - TUBERCULOSIS (TB)	164
9.1 Overview	164
9.2 Purpose	167
9.3 Audience	167
9.4 Goal	167
9.5 Concept Analysis	168
9.6 Program Objectives	169
9.6.1 Design objectives	169
9.6.2 Learner's objective	169
9.7 Multimedia application design considerations	170
9.7.1 Definition of the Computer configurations and CD-ROM	170
9.7.2 Multimedia building blocks	171
9.7.3 Choosing an interactive multimedia (IMM) methodology and Authoring Program	171
9.8 Program structure & content	171
9.8.1 Model structure	172

9.8.2 Model content	173
9.8.3 How the story written?	177
9.8.4 Medical terminology	177
9.8.5 Learning resources: Clarification of health information	178
9.9 Model design	178
9.9.1 Storyboard	180
9.9.2 Interactivity & Learner control	180
9.9.3 Navigation structure	181
9.9.4 Screen graphic design	185
9.9.5 Visual and multimedia elements	187
9.10 Program Implementation	187
CHAPTER TEN: FORMATIVE EVALUATION	188
10.1 Overview	188
10.2 Method	189
10.2.1 Determining the formative evaluation criteria	190
10.2.2 Questionnaire development	190
10.2.3 Validity and reliability	194
10.2.4 Getting in	194
10.2.5 Scoring and analysis	194
10.3 Results	195
10.4 Discussion	203
10.5 Recommendations	205
CHAPTER ELEVEN: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS	206
11.1 An Overview of the Research Findings	206
11.1.1 Qualitative Interview	208

11.1.2 Design and development of Interactive multimedia software	208
11.1.3 Formative evaluation for the planned CD-Rom model	209
11.2 Limitation	209
11.3 Conclusion	210
11.3.1 Answering the research questions	210
11.3.2 Major contribution to knowledge of research	211
11.4 Recommendations for Further Development & Research	212
REFERENCES	215
13.0 APPENDICES	235
13.1 APPENDIX: LETTER OF RECOMMENDATION FOR THE STUDY	235
13.2 APPENDIX: RESEARCH PLAN AND MILESTONE	236
13.3 APPENDIX: INTERVIEW GUIDE	239
13.4 APPENDIX: PARTICIPANT INFORMATION GUIDE	241
13.5 APPENDIX: CONSENT FORM	245
13.6 APPENDIX: INTRODUCTORY LETTER	247
13.7 APPENDIX: FLYER	249
13.8 APPENDIX: KEY CODES DEVELOPED IN DATA ANALYSIS	250
13.9 APPENDIX: QUALITATIVE DATA ANALYSES JOURNAL	252
13.10 APPENDIX: CONSTRAINTS	264
13.12 APPENDIX: STORIES	278
13.13 APPENDIX: FORMATIVE EVALUATION QUESTIONNAIR	285
13.14 APPENDIX: RECOMMENDATIONS	290
13.15 Appendix: A DETAIL DESCRIPTION FOR FIGURE 1.3	292

LIST OF FIGURES

	PAGE
Figure 1.1 Impact of multimedia model	28
Figure 1.2 Focus and boundaries of the study	33
Figure 1.3 Empowerment and Community Participation Theory	41
Figure 2.1 Aboriginal proportion of estimated resident population 2006	43
Figure 2.2 Urban centers, Aboriginal Australians counted in 2006	43
Figure 2.3 A summary of factors that impact on the health of Aboriginal Australians	48
Figure 2.4 Tuberculosis notifications in Northern Territory	52
Figure 2.5 Integrated model of multimedia effects on learning	70
Figure 3.1 Research Approach	73
Figure 4.1 Developing Methodologies of Interactive Multimedia Informatics Health Software	83
Figure 4.2 Educational Methodology	83
Figure 4.3 Cognitive Theory, Learning Process	86
Figure 4.4 Framework for learning approaches in model development	93
Figure 5.1 Systematic Approach	97
Figure 5.2 Frameworks for the Development of Interactive Multimedia Program	98
Figure 5.3 Model of basic navigational structures	103
Figure 5.4 Preliminary Program Description	105
Figure 5.5 The general structure and sequence of a tutorial program	109
Figure 5.6 Storyboard for multimedia program	115
Figure 6.1 Aboriginal and Torres Strait Islander Health Workers Primary Health Care Qualifications Framework	118
Figure 9.1 Base for Model Development	166
Figure 9.2 Concept analysis (Learning map)	168
Figure 9.3 Module one	173
Figure 9.4 Module Two	174

Figure 9.5	Module Three	175
Figure 9.6	Module Four	175
Figure 9.7	Module Five	176
Figure 9.8	Model framework design	179
Figure 9.9	Story board	181
Figure 9.10	Menu navigation structure	182
Figure 9.11	linear navigation structures	182
Figure 9.12	Flowchart of the planned Model	183
Figure 9.13	Flowchart of module one	184
Figure 9.14	Flowchart of quiz	184
Figure 9.15	Instructional Screen Template	185
Figure 9.16	Question Template	186
Figure 9.17	Menu Screen Template	186
Figure 10.1	Program Introduction	197
Figure 10.2	Presentation of Information	198
Figure 10.3	Learner control	198
Figure 10.4	Provident help	199
Figure 10.5	Ending of the program	199
Figure 10.6	program design	200
Figure 10.7	User Attitude	200
Figure 10.8	Program content	201
Figure 10.9	Increased this sort of program	202
Figure 10.10	Develop more program on other health topic	202
Figure 10.11	Increased amount of information in the program	203
Figure 10.12	No need for change	203

LIST OF TABLES	PAGE
Table 1.1 Barriers faced by Aboriginal people in accessing hospital-based specialist services	29
Table 2.1 Aboriginal and non-Aboriginal population distribution by urban centre, 2006	44
Table 2.2 Bacteriological-confirmed cases of Tuberculosis in Australia (1995-2005)	53
Table 2.3 Tuberculosis: numbers of new cases, Aboriginal people, Australia, 2002-2006	54
Table 2.4 Tuberculosis: numbers of new cases and age-specific incidence rates, 2002-2006	55
Table 2.5 Findings of two 5-year audits on Tuberculosis in Far North Queensland	57
Table 2.6 Numbers and proportions (%) of Aboriginal health workers, Australia, 2006	62
Table 2.7 Numbers and proportions (%) of Aboriginal health workers, by age group and sex, Australia, 2006	62
Table 2.8 Computer Based Learning categories	66
Table 3.1 Research Methodology	79
Table 4.1 Learning Principles for Interactive Multimedia	90
Table 6.1 Participants by role, gender and years of experiences	126
Table 7.1 Key Factors for model development, Comparison between the results of the research approaches	155
Table 8.1 Aboriginal and Information communication technology pedagogies comparison	160
Table 9.1 Tuberculosis type	174
Table 9.2 Aboriginal Concept on Health	177
Table 10.1 Decisions and questions in a formative evaluation	191
Table 10.2 Structure of interactive model evaluation questionnaire	192
Table 10.3 Formative evaluation form	193
Table 10.4 Evaluation Results, Descriptive Statistics	195
Table 10.5 Model evaluation results	196
Table 10.6 Most popular aspects of the program from a total 15 questionnaire	197
Table 11.1 Aboriginal health publications, 1987–2003	206
Table 11.2 Aboriginal & Islander health workers journal publications, 2006–2011	207

LIST OF ABBREVIATIONS

ACCHS	Aboriginal community controlled health service
AHPOs	Aboriginal Health Promotion Officers
AHWs	Aboriginal Health Workers
ADM	Aide au Diagnostic Medical
AIDS	Acquired Immune -Deficiency Syndrome
AMS	Australian Medical Syndicate
ATSICHS	Aboriginal and Torres Strait Islander Community Health Services
CBL	Computer Based Learning
CDNA	Communicable Diseases Network Australia
CPD	Continuing Professional Development
DOTS	Directly observed treatment short course
HIF-net	Health Information Forum
HIV	Human Immunodeficiency Virus
ICT	Information Communication Technology
IMM	Interactive Multimedia
IVIMEDS	International Virtual Medical School
LTBI	Latent Tuberculosis Infection
NHIT net	National Health Interactive Technology net
NSW	New South Wales
PHC	Primary Health Care
PNG	Papua New Guinea

QAIHF	Queensland Aboriginal and Islander Health Forum
QAIHC	Queensland Aboriginal and Torres Strait Islander Health Council
RHTU	Rural Health Training Unit
RAN	Remote Area Nurse
SP	Self-Paced
TAFE	Technical And Further Education
TSIHWs	Torres Strait Islander health workers
TB	Tuberculosis
VACCHO	Victorian Aboriginal Community Controlled Health Organization
WHA	World Health Assembly
WHO	World Health Organization