

## **Master of Midwifery**

### **Submission for the 2000 USQ Awards for Excellence Design and Delivery of Teaching Materials**

#### ***Abstract***

This submission, for Excellence in Design and Delivery of Teaching Materials, outlines the Master of Midwifery course which has been developed, and is conducted in partnership between the USQ and a number of Queensland Health hospitals where students are in paid part-time employment. The Master of Midwifery was selected as a Flagship Course for the University of Southern Queensland and the CD-ROMs were developed using existing resources of DEC and the Department of Nursing. The Midwifery CD-ROMs project was a six-person project that demonstrates the best of academic-DEC teamwork.

The submission focuses primarily upon the design, development, implementation and evaluation of the four CD ROM based units which constitute the majority of the midwifery clinically orientated units. The Midwifery curriculum and the CD ROMs use a model of Situated Learning which means using real stories from childbearing women and midwives as the way of anchoring, and making meaningful learning. Key attributes of this approach to learning are demonstrated in the CD ROMs using new and existing interactive COOL Tools. These COOL Tools are embedded in a HTML framework to create rich, real and highly interactive environments for the learning of scientific, clinical and psycho-social knowledge and skills. Although the midwifery project developed and enhanced a number of existing interactive tools the major innovation is the 'Be the Midwife' learning and assessment scenarios which are life-like re-enactments of clinical situations where students are required to respond interactivity as if they were the clinician in the situation. The course has over thirty students currently enrolled and seven students have graduated. Both course and CD ROM evaluation has been on-going and quality improvements have been made on the basis of these evaluations. The Queensland Nursing Council has a peer-review committee that oversees our quality assurance project on a regular basis. Our most recent communication with QNC indicates that they are totally satisfied with the quality of our course.

This application is strongly supported by the Director of the DEC, the Deal of the Faculty of Science, and a number of peers in midwifery and educational technology. One peer review report is from the Center of Rural Health Training in Tasmania which will be using our Obstetric Emergency CDROM on a commercial basis with 260 students over the next three years. Students have been evaluated on a semester basis since the beginning of the course and these evaluations indicate continuous quality improvement and high levels of student satisfaction.

#### **TEAM:**

- Dr. Kathleen Fahy, RN, CM, BN, MEd, PhD
- Dr. Peter Evans BSc (Hons), Grad. Dip. Comp., PhD
- Dr. Ron Atkinson, BSc (Hons.), PhD
- Mr. Allan Edwards BSc, DipEd, BEc., Grad Dip Info Proc (distinction)
- Ms. Gabrielle Williams, RN, CM (employed by USQ between Dec '98 and May '99)
- Ms. Jackie Doolan, RN, CM, BN, M.Soc. Sci (Health)

(See Appendix 1 for outline of the role of each team member).

#### ***Background to the Master of Midwifery as a Flexible Learning Course***

The Master of Midwifery (M.M.) Course was designed with rural midwifery practice in mind. The development of this course occurs within the environment of a statewide shortage of midwives (Lenton, Carse & Norrie, 1998). The degree has been designed as a twelve unit Masters degree, of which four units are CD ROM based.

## University-Industry Partnership

The course was developed, and is conducted, in a partnership between the USQ, the Cairns District Health Services, The Toowoomba District Health Service and other maternity units within rural Queensland. It is offered part-time (over five semesters). Students are employed by one of the partner hospitals for five shifts per fortnight for three semesters of the course (see course outline Appendix 2). Residential school is held in two semesters in Cairns and another school is held in Toowoomba. The two major hospitals provide appropriate classroom access for the three weeks of residential and a dedicated computer with internet access for the students of this course.

Cairns and Toowoomba District Health Services continue to employ a full time, on-site midwifery educator who has an appointment as an honorary lecturer with the Department of Nursing at USQ. These clinical educators also have a small role in the teaching of the course. The clinical educators support the students in their computer-assisted learning, supervise their clinical placements, support the clinical teaching associates and conduct clinical assessments.

The primary clinical placements will be the Maternity Unit at Cairns Health Services (10 places) Toowoomba Health Service (12) and the maternity units of Innisfail (1) Ingham (1) and Thursday Island hospitals (1 part-time place). Negotiations have commenced with Mt Isa hospital. Rural students have an exchange placement with students who are located in the high-risk maternity services of Cairns and Toowoomba Base Hospitals.

### ***Educational Philosophy: Situated Learning***

(Extracted from Fahy, Evans and McDonald 1999, p1)

In basic disciplines, like science, knowledge is neatly packaged and well structured. They require textbook learning, without students necessarily having to develop skills to define the problem in the complex and time constrained world of practice. By comparison, practice professions, like midwifery are ill defined because practice is constantly changing, context specific and affected by individualistic characteristics of the clients (Jonassen 1998). Learning in the practice professions, therefore, happens most effectively if learners are provided with authentic cases or problems that demonstrate the emerging, complex nature of “real life” childbearing situations.

The Midwifery curriculum uses a model of Situated Learning (Lave 1998). A situated learning perspective is based on the belief that skill development and knowledge is contextually situated and is fundamentally influenced by the activity, context, and the culture in which it is used. Key attributes of this approach to learning are: cognitive apprenticeship, reflection, coaching, multiple practice, articulation of learning, including linking research evidence to practice, and use of stories from the field (Brown, Collins & Duguid, 1996; McLellan, 1996; Wilson, 1996).

The situated learning environment was designed within the broader educational theory of Constructivism. Constructivist conceptions of learning assume that knowledge is individually constructed and socially co-constructed by learners based on their interpretations of experiences in the world (Jonassen 1998). The Midwifery curriculum is designed to develop both individually and socially co-constructed knowledge through the interactive CDROM learning experiences supported by books of readings, online discussion groups, interaction with midwifery clinicians and the residential schools.

### **Midwifery Course Design and Development Processes**

The course development committee (CDC) comprised eleven people and was chaired by Kathleen Fahy. The committee members included the clinical midwifery educators from Cairns and Toowoomba Hospital, a midwife clinician from Thursday Island, a consumer, two USQ and one midwifery academic and Jackie McDonald as instructional designer. The CDC met approximately every two months through 1997 with remote participants joining in by teleconference. In between meetings Kathleen worked on the course philosophy, objectives, structure, unit specifications and the clinical components. When a near to final draft was ready it was sent to an external advisory panel of approximately 25 people, representing other midwifery academics with established courses, a professor of women's health, a professor of obstetrics, a number of clinicians from Cairns and

Toowoomba hospitals and maternity services consumers. The suggested changes were discussed with the CDC and the curriculum was modified and enhanced based on these recommendations. All curriculum decisions were made by consensus. The curriculum was subject to formal peer review by a midwifery panel of the Queensland Nursing Council and was approved as a course which leads to endorsement as a midwife in July, 1998. (Additional professional support for the Master of Midwifery Course are provided by Nicky Leap, a world renowned midwifery expert; See attached letter of support, Appendix 3).

The midwifery course continues to be developed using a process of continuous quality improvement. In July 1999 we undertook our first student evaluation which involved both course and unit evaluation (Results of Student Evaluations are included as Appendix 4). A number of issues were raised by the students that needed to be addressed and therefore a Course Review Committee (constituted similarly to the CDC) was held to address these concerns. Changes were made with the aim of quality improvement (See notes of CRC meeting 9/99 and actions arising, Appendix 5). An important concern at that time was that students felt unsupported in our partner hospital. This has since be rectified (See minutes of recent student meetings with CTAs also in Appendix 6).

The Quality Assurance processes within the Department of Nursing are overseen by a panel of midwives for the Queensland Nursing Council (QNC). The QNC is satisfied with our course and our QA processes. (Copies of correspondence between USQ and QNC are enclosed in Appendix 7 as evidence).

The full course Accreditation Submission is included as Appendix 8 An example Unit Specification is included as Appendix 9.

### Design and Development of the CD ROM Based Units

The course development team decided that four MM units should be developed using CDROM and Internet technologies (see table 1) rather than as a paper or residential school based units.

#### Midwifery Units on CD ROM

Unit	Year and semester
67571: Midwifery Foundations	98s3, 99s3, 00s2
67573: Midwifery and Collaborative Care 1	99s1, 00s1
67574: Midwifery and Collaborative Care 2	99s2, 00s2
67575: Midwifery and Critical Care	99s2, 00s2

This decision was based on a careful match between the educational philosophy and learning strategies best suited to communicate the content of the units. This meant that knowledge that could be well learned by looking and listening (like women's stories of their birthing experiences or a tutorial on examination of the newborn baby) or knowledge that was well learned visually and interactivity (like foundational anatomy and physiology) were included on the CDs. Specific clinical applications were taught in the maternity units at the hospitals during residential school and practised during paid clinical employment.

The development of the MM CD-ROMs used the existing ILS ML web publishing system that has previously been used in a number of other USQ units. The ILS ML web publishing system was initially developed by Peter Evans and undergoes constant development within the Interactive Learning Services (ILS). ILS ML was developed in response to the common problem of user disorientation which many web based learning environments creates. Disorientation causes an additional cognitive load which detracts from the user's ability to learn the unit content (Conklin, 1987). Within these CD-ROMs, therefore, great care was taken (e.g. consistent interface, history, tables of contents, printable files) to ensure that students do not become disorientated or "lost in hyperspace". This is evident in the CDs (Appendix 10) and is discussed on the accompanying video (Appendix 11). A copy of a full table of contents for one CD is included (Appendix 12). This table of contents can be expanded or contracted by the user to show the level of detail they want, from broad sections to the finest detail. Media tables of contents also allow students to ?? different tocs

The CD ROM design and development of the MM began in earnest in semester one 1998 and concluded in June 1999. Kathleen Fahy worked part-time in the IMM department (part-time in

Nursing) throughout the CD development phase in order to be able to network well with the team in the Interactive Learning Services of DEC. In addition she needed to work closely with the multi-media developers because the work was interactive and developmental in nature. The unit teams met frequently in IMM and work was planned based on clear role divisions and timelines. Gabrielle Williams joined the team in December 1998 and worked part-time in IMM from then until her contract concluded in May 1999.

### *Creating Rich, Interactive Learning Environments*

The CD-ROMs were created using a methodology that allows cost-effective production of very rich interactive environments that occurred at two levels. The higher level was the HTML presentation and navigation framework and the second level was imbedded within this as highly interactive Learning Objects (COOL Tools). This development methodology has evolved over several years within DEC and has been used to produce both CDROM and WWW sites. However the Midwifery units have been the single biggest user of these methodologies and in turn have advanced the development methodology significantly.

The four CDROM based units provide students with access to very rich learning environments. See the accompanying CDs and/or video to see examples of the diversity and quality of learning experiences. Table 2 gives an overview of the richness of the materials within the CD-ROMs. The richness and interactivity of the learning environment is enhanced by the use of thematic links that have been woven into the materials. These links allow students to make and discover meaningful connections between aspects of course content and to the accompanying book or readings, to information on the WWW and to tutorial questions posted regularly to the asynchronous discussion group.

<b>Number of</b>	<b>67571</b>	<b>67573</b>	<b>67574</b>	<b>67575</b>
<b>screens of information</b>	355	226	203	157
<b>video or audio and slide presentations</b>	32	15	32	30
<b>interactive images</b>	81	10	3	10
<b>images</b>	106	75	43	62
<b>Be the Midwife assessments</b>	3	4		4
<b>Quiz: matching</b>	10	4	0	0
<b>Quiz: question, answer and check</b>	0	0	57	0

A team approach to CD design and development was used. Essentially IMM programmers mentored and supported the content experts to create an HTML document using an interface, which is familiar to the academics (in this case Microsoft Word). The academics worked from their own desk or on a computer in IMM in much the same way that they currently write their distance education materials in Microsoft Word. In addition to containing text, however, the HTML document contains tags that represent interactive COOL Tools or images, video, or other elements so the academic can know when and when the COOL Tools are to be imbedded.

The COOL Tools themselves have also been created using an innovative approach whereby the programmer in IMM develops the COOL Tools framework as a text file. The academic is then given brief instructions in how to change the text file in ways that display content differently. The academic can then change the text file as often as wanted until the desired effect is achieved. For example, the interactive labelling for scientific foundations was mostly done by Ron Atkinson himself labelling scientific diagrams using a program created by Interactive Learning Services. The Emergency Scenario using the Be the Midwife COOL Tool was developed iteratively by the Kathleen Fahy, Gabrielle Williams and Jackie Doolan as they worked on Emergency Scenarios for assessment purposes. It was necessary to work in this way because when building something new and dynamic like the Be the Midwife scenarios. The creative process involves multiple cycles of change, evaluation, more change and more evaluation until the academic is satisfied with the educational and content validity of a particular piece of assessment. The processes of team work design and development and discussed and demonstrated in section four of the accompanying video.

The value of the interactive learning via COOL Tools is attested to in supporting letters from Janice Jonnies, Nicky Leap, Lyn Overton, Heather McGuire, Julia Monaghan and Roslyn Reilly in Appendix 3.

### ***Innovation in teaching materials: design, development, presentation***

This course has involved many significant innovations in Flexible Learning as discussed above. Contemporary innovations in teaching and learning (e.g. constructivism, situated learning and collaborative learning) are evident throughout the course. A major innovation of this course is that learning and skill development has been advanced through situated learning, not only in the practice setting but also in structured learning activities using COOL Tools.

For example, we have used over sixty oral stories (with image) from women, their husbands and expert practitioners as a way of situating learning in practice instead of textbooks. In viewing these stories the user is able to use a controller to stop, start and replay these stories and most are accompanied by photos of the speaker and other relevant images. Kozma (1991) suggest that characteristics of different media types (images, audio, video, and text) can either enhance or detract from the effectiveness of a desired message. The CD-ROMs contain several examples where a diversity of media elements are used synergistically to achieve a desired result:

- ◆ video: to represent dynamic events;
- ◆ text: to provide supporting and supplementary information and to allow student annotation; and
- ◆ Voice: to convey emotions and the "realness" of the situation.

Some of the COOL Tools, which were used in the MM CDROMs, had already been developed in ILS (eg labelling; media synch) and the midwifery content could be directly imported. In addition, new COOL Tools were specifically developed and are now available to other unit teams (eg Drop Down Menu Labelling, Quiz Matching, Quiz Q&A and the Be The Midwife assessment tool). These can be evaluated by reviewing the accompanying CDs. Some of these COOL Tools are also demonstrated on the accompanying video.

Probably the single biggest innovation is both a technical and educational innovation and that is the design and development of the 'Be the Midwife' scenarios. 'Be the Midwife' learning and assessment scenarios which are life-like re-enactments of clinical situations, including emergencies, where students are required to respond interactivity as if they were the clinician in the situation. In the emergency scenarios students are required to respond within a ten-minute timeframe as if they are the only registered health care practitioner in a rural hospital during an obstetric emergency. Students are required to answer directly into an embedded e-mail so that their answer comes directly to the lecturer's desk. Immediately following the student's answer being sent they are provided with expert feedback which shows how a practitioner actually responded (see accompanying video for an example).

There is a large amount of basic scientific knowledge to be learned in Midwifery. We have streamlined and enhanced the teaching-learning process of drill and practice learning by the use of the 'COOL Tools'. In addition, to support the students in meeting the required professional competencies a variety of new Be the Midwife simulated clinical practice situations were designed to assess the student's ability to think as a practitioner. This learning is supported by clinical feedback from skilled practitioners in the field.

Student-student interaction has been facilitated through designing group-based assessment tasks. This has involved two major assignments; one concerning evidence-based practice and one was a public presentation on a midwifery-related topic. In addition students interact with each other and the lecturers on the online discussion group (An example of this is included as Appendix 13)

Four papers that have been published from the Midwifery CD-ROM project are included as Appendix 14.

## ***Students: support and counselling***

### **Students**

The first group of students (10) to enrol in the Master of Midwifery commenced in semester two, 1998, and seven graduated at the end of semester 3, 2000. There were no withdrawals from this first cohort of students although 3 students prolonged their course and will complete later this year. The second cohort (22) commenced in semester two, 1999 and will complete in 2001. In addition a post-endorsement version of this course (using some of the CDs) is available only to currently practising midwives there are twelve registered midwives currently enrolled.

### **Support and Counselling**

Students doing these units are distant from the university. Our partnership arrangements with hospitals are central to supporting the student. The traditional lack of technological support and knowledge of nurses has been successfully bridged by a combination of support from I.T. staff in the hospitals, the skills of the clinical educator and our own help desk. We also provide a four-hour computer readiness course in Toowoomba at the beginning of the first CD ROM unit. The clinical co-ordinator provides a similar familiarisation in Cairns.

Avenues of support that are available to the students include:

- ◆ midwifery clinicians
- ◆ specially prepared midwives who act as preceptors
- ◆ clinical educators in Toowoomba and Cairns
- ◆ academics at USQ: residential schools, discussion groups, e-mail, telephone contact.
- ◆ other students: residential schools, discussion groups, e-mail, face to face at work and telephone contact.
- ◆ computer support offered through the IT student help desk and DEC (Allan Edwards)
- ◆ DEC Outreach Services

Students have regular meetings with their clinical coordinators and their preceptors (see Appendix 6 re Course QA).

### ***Processes for review and improvement and Measures of student learning***

The overall course review processes were described in the section Midwifery Course Design and Development Processes (p3 above). In addition we have conducted specific quality assurance research in relation to student feedback concerning their experiences with the flexible delivery aspect of the MM course. This was completed in February-March 2000 and is included in Appendix 4. The student evaluations indicate that a few problems were identified early by our surveys and, using processes of continuous quality improvement the student evaluations have continued to improve. The current students clearly prefer flexible learning compared with paper-based classes but are undecided about whether they would prefer lectures and tutorials instead. Clearly they find the CD ROMs user-friendly, easy to navigate and made content easier to learn. Most students see the CD ROMs as an advantage and would recommend this course to others because of the use of technology.

### ***Conclusion***

This submission has demonstrated our suitability to receive the university award for Excellence in Design and Delivery of Teaching Materials. The CD ROMs was developed relatively cost-effectively within existing resources. The strengths of our submission include the use of the HTML environment, which supports the use of multi-media including audio, video and interactive COOL Tools. This technical environment supports innovative, user-friendly, situated clinical learning of high quality.

The MM is a health practice course that has been positively evaluated by both students and professional peers, and has undermined the common assumption that classroom teaching is necessary for training health personnel. A further strength is that the course is based on industry partnership, which means that many students' learning is happening in the clinical setting, supported by clinicians

and clinical educators. This is a cost-effective model for the university whilst providing excellent combination of theoretical and clinical education for students. The COOL Tools and the course development processes have the potential to be used in other practice-based courses and to be used as the basis for commercial contracts. There is a huge potential to use this model of situated learning in course design and delivery as the basis for ongoing professional education in the health profession and any other practice profession.

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## **Appendices**

1. Team and Roles
2. Master of Midwifery Course Outline
3. Support Letters
  - \* Jim Taylor, Director DEC
  - \* Julia Monaghan Lecturer in Midwifery, University of Tasmania
  - \* Nicky Leap Senior Research Fellow Midwifery Flinders University
  - \* Lyn Overton Nurse Educator North Queensland Rural Health Training Unit
  - \* Roslyn Reilly Head, Department of Nursing USQ
  - \* Janice Jones NextEd
  - \* Heather Maguire USQ
4. Results of Student Evaluation
5. Course Review Committee Meeting (minutes and actions arising)
6. Minutes of Student Meeting with Clinical Teaching Associates (CTAs)
7. USQ & Queensland Nursing Council correspondence re quality assurance
8. Full Course Accreditation Submission approved by USQ and the Queensland Nursing Council
9. Example of Unit Specification
10. Four CD-ROMs
11. Video
12. Example of Table of Content from the 67571 CDROMCD
13. Example of Online Discussion Group
14. Published/Refereed Papers