S+NIC

Students On-line in Nursing Integrated Curricula

A Reflective Account
of a Learning and
Teaching Journey

Editor: Carolyn Gibbon,
SONIC Project Manager,
University of Central Lancashire
Preston, Lancashire, PR1 2HE

STUDENTS ON-LINE

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Contributors to this Monograph and Members of the Project Team:

Ruth Glenister (Project Director)	University of Central Lancashire
Carolyn Gibbon (Project Manager)	University of Central Lancashire
Moira McLoughlin	University of Salford
Angela Darvill	University of Salford
Edward Stephenson	University of Northumbria
Stuart Taylor	University of Northumbria
Harry Gopaul	Liverpool John Moores University
Sue Ashton	Liverpool John Moores University
Catherine Badminton	University of Central Lancashire
Andrew Broughton	University of Central Lancashire
Richard Currie	University of Central Lancashire
Liz Hodgson	University of Central Lancashire
Sam Pollitt	University of Central Lancashire
Kay Wilkie	University of Dundee

Past Members:

David Hyde, University of Northumbria
David Nicholl, University of Northumbria
Cliff Richardson, Liverpool John Moores University
Ann Smith, University of Northumbria
Tim Snashall, University of Salford
Peter Thompson, Liverpool John Moores University

Members of the 2005 Steering Group:

Eileen Martin (Chair)	University of Central Lancashire
Pam Houghton	University of Central Lancashire
Ranald Macdonald	Sheffield Hallam University
Jill Wild	University of Salford
Mary Dunning	University of Northumbria
Michelle Laing	Liverpool John Moores University
Kwansuree Jiamton	Health Science and Practice Subject Centre, Higher Education Academy
Rhona Sharpe	Directorate of Human Resources, Oxford Brookes University
James Wisdom	National Co-ordinator

Cascade Members:

Bernie Carter, framework designer and critical friend
Janet Cooper, finance officer
Catherine Smillie, number cruncher
Diane Richardson, the voice of SONIC
Diane Scofield, transcriber
Tom Shaw, tracker
Gary Heywood – Everett and Joanne Doherty, video analysts

Administrators:

Jaclyn Ogden, Rebecca Kevill

Acknowledgement:

Charlotte Lepre-Slater, logo designer

IN NURSING INTEGRATED CURRICULA

FORWARD

Why develop online resources for problem-based learning? PBL is a pedagogy which requires students to seek resources for themselves. Providing students with easily accessible resources must surely run counter to the philosophy. PBL is first and foremost a strategy for learning; its overriding purpose is to assist learners to acquire, not only factual knowledge, but the transferable learning, critical thinking, and reflective skills necessary for professional life. PBL is thus ideally suited to the education of nurses.

In nurse education a tension exists between the need to develop critical thinking skills and the requirement to acquire, simultaneously, the clinical proficiencies set by the Nursing and Midwifery Council. Meeting these demands within the time frame of an undergraduate nursing programme presents a considerable challenge. This monograph details the journey of the SONIC project group as they met this challenge, maximising student study time by combining the benefits offered by PBL with online resources targeted to topics which nursing students traditionally find difficult. At journey's end their resources, offered freely, without the barrier of complex entry procedures, fit not only with the programmes run by the four partner institutions and other Schools of Nursing but also with programmes offered by other health care disciplines.

Kay Wilkie, University of Dundee

PREFACE

The impetus for this monograph came from a desire to let others know of our experiences of being a part of a 3 year FDTL project, and to have an additional tangible outcome from our work besides the web-based resources. Lecturers and students associated with the health care professions are frequently encouraged to reflect on their work, to determine what they have learned, and what can they teach others as a result of their learning. Thus, the project team took up this challenge to talk of their experiences of being associated with such a project.

The monograph is aimed at anyone who is interested in reading about our experiences. It is essentially a story about a journey – our journey - which we hope readers will find interesting. We hope it will resonate with readers' own experiences. It has been written with a light touch, rather than a more formal academic style.

The result is a monograph which is essentially a reflective log of the 3 years. It is divided into 'chapters' to reflect the name of the project and to emphasise the areas under discussion.

- **'Students'** focuses on the students who took part in the project and a number of their comments or 'sound-bites' are included. The majority of students were positive with their comments and some were happy to voice their concerns.

- **'Online'** focuses on the technology side, the development of the resources and some of the issues that were faced when creating web-based materials. Comments included here come from both students and facilitators.

- **'Nursing'** is taken in its broadest sense. In this part, members of the team reflect on how the team came together, how the journey has been for them, and what happens in the future.

- **'Integrated'** is also taken in its widest sense looking at the stages of evaluation and the outcomes from those evaluations.

- **'Curricula'** looks at the dissemination strategies that have been employed. It looks at some of the successes, especially the knowledge of having links with universities nationally and internationally. Facilitator feedback has been invaluable and their 'sound – bites' are included in this final section.

The monograph is drawn to a close with some final thoughts, including reflections about the project, the ongoing developments, and the scope for further work.

Carolyn Gibbon

November 2005

Partners: University of Central Lancashire (lead)
Liverpool John Moores University
University of Northumbria
University of Salford

Evaluation: Edge Hill College
University of Sheffield
Thames Valley University
University College Worcester
University of Liverpool
University of York

Programmes of study of students and facilitators engaged in the project

Institutions	Programme	Focus of Nursing
Edge Hill College	Degree	Adult and Child
Liverpool John Moores University	Diploma	Adult
Thames Valley University	Diploma	Adult and Child
University College Worcester	Diploma	Mental Health
University of Central Lancashire	Diploma	Adult
University of Liverpool	Degree	All branches
University of Northumbria	Diploma	Mental health, Learning Disabilities
University of Salford	Diploma	Child
University of Sheffield	Diploma	Child
University of York	Diploma & degree	All branches

GLOSSARY OF ABBREVIATIONS AND TERMS USED

- **Education related**

CFP Common Foundation Programme – the first 12 months of a 3 year nursing diploma or degree.

CPD Continuing Professional Development.

EBL Enquiry based learning – where the emphasis of learning is on the concept based, as well as the problem based exploration, as it is important that students recognise that not all problems have a solution.

Facilitator an individual (in this situation usually a lecturer) who guides and supports a group of students in their learning activities. The facilitator encourages an open atmosphere in order to encourage the students to identify their learning needs. The students will determine their information retrieval and the facilitator guides the students in their analyses and sharing of information.

Partnership the four universities involved in the development, evaluation and dissemination of the project.

PBL Problem-based learning involves learning from a clinical scenario which acts as the focus for exploring related issues. Despite differences in terminology, the focus of EBL/PBL is on student-centred learning, with students working in small groups to identify issues and determine ways in which knowledge can be retrieved, analysed and shared.

Resources are blocks of information used to support the original problem. In this case the resources are web based materials.

Scenario a description of a clinical situation under study.

- **Institution/University related**

UCLan University of Central Lancashire
JMU Liverpool John Moores University
FDTL Fund for the Development of Teaching and Learning
NHS National Health Service
DoH Department of Health
DfES Department for Education and Science
DDA Disability Discrimination Act

- **Other**

SONIC Students Online in Nursing Integrated Curricula.
W3C World Wide Web Consortium.
WebCT name of a virtual learning environment, where learning is via computer but contained and needs a password to access the information.
Blackboard as above, but slightly different configuration.
Reusable learning objects Blocks of learning which may be used in a variety of different situations.

Introduction

The Fund for the Development of Teaching and Learning (FDTL) (phase 4) awarded £248,297 to this project which aimed to develop and evaluate web-based, resource-enriched scenarios to support students undertaking problem-based learning (PBL). The Students On-line in Nursing Integrated Curricula (SONIC) project ran from 2002 – 2005 and successfully created five scenarios, which supported pre-registration curricula. These are now accessible to all students regardless of learning styles or needs and are widely used within nursing curricula. Nursing colleagues continue to disseminate and consolidate good practice in interprofessional learning by supporting the use of the scenarios and their resources by other professions.

The SONIC project was managed by a consortium of four Universities. The group was built on a number of commonalities including good subject benchmark scores (Quality Assessment Agency, 2001), with University of Central Lancashire (uclan) and Northumbria achieving a maximum of four in each of the six assessment areas. Whilst the partners are all situated in Departments/Schools of Nursing, a key issue for the group members has been collaborating with other health care professionals in formulating an on-line framework for scenarios, and building on a range of scenarios already used within institutions. The project centred on four key areas (Figure 1) along with each scenario being resource-enriched, using animations, photographs, hyperlinks, and self-assessments.

The scenario developed by UCLan was piloted with students in April 2003. The results were collated and a report produced. Initial outcomes suggested that the students enjoyed accessing the resources which they felt assisted them in understanding particular concepts.
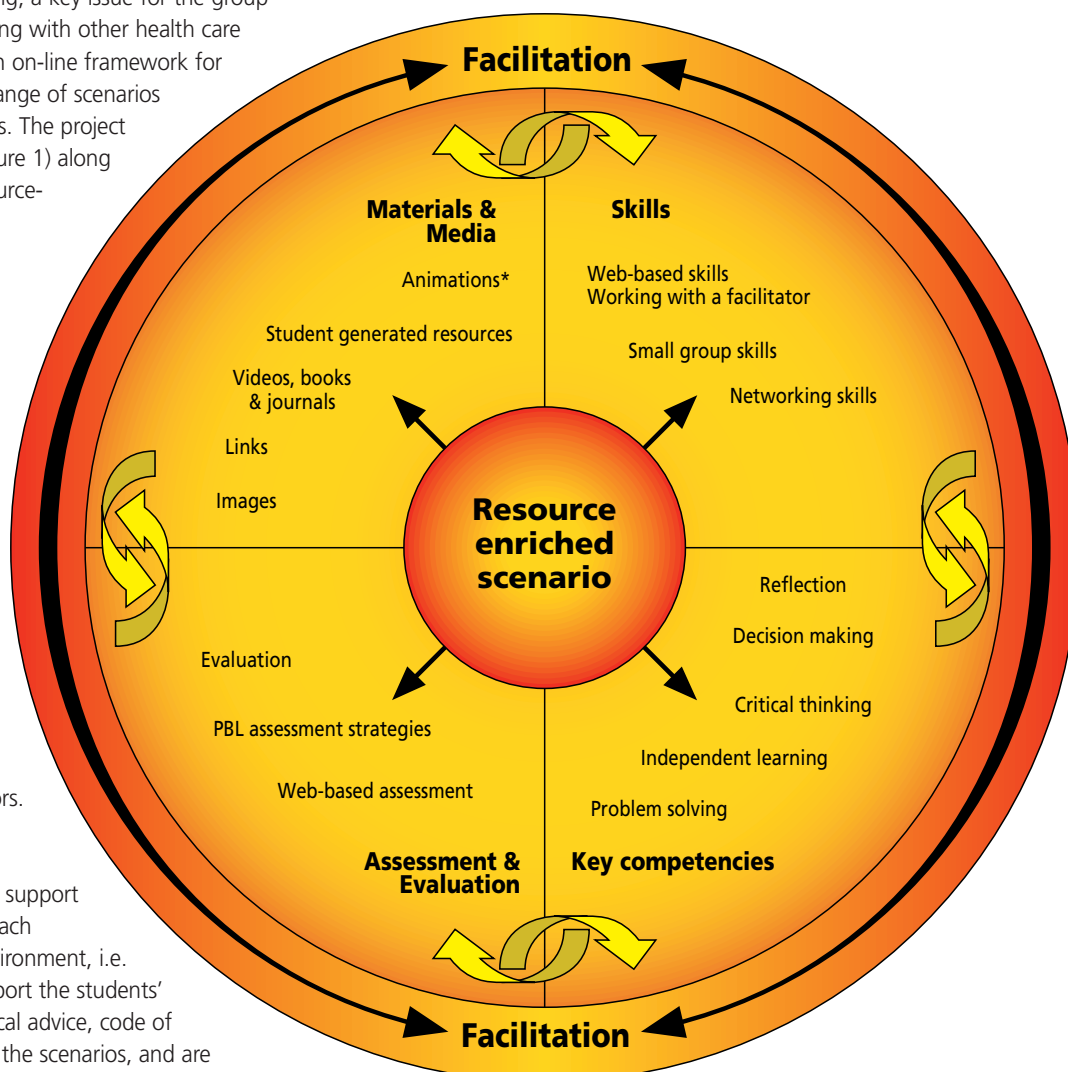
A website was developed (see www.uclan.ac.uk/sonic) to support students and facilitators. This site contains information about the project, PBL, the scenarios, resources and other support materials. This was linked to each University Virtual Learning Environment, i.e. WebCT or Blackboard, to support the students' learning. These include technical advice, code of practice, self-assessments and the scenarios, and are password protected. These resources are useful for mentors in practice settings, by providing resources to support a learning opportunity that is different to those usually available to them.

The evaluation strategy focused on the value that facilitators and students placed on using resource-enriched scenarios in pre-registration nursing education. Following the pilot study each of the partners used scenarios with their students. Feedback from this evaluation led to the development of a student workbook and facilitators' guide. To date these have been utilised by six other institutions. Evaluation was an iterative process, with learning integrated into the decision-making processes in years two and three of the project. This resulted in continual improvement of the quality of SONIC.

Dissemination of best practice, using the website and networking, has been a key strategy. In turn this has raised awareness of PBL as a learning and teaching strategy.

Figure 1: Framework for project

Figure 1: Framework for project

Facilitation

Materials & Media
Animations*
Student generated resources
Videos, books & journals
Links
Images
Evaluation
PBL assessment strategies
Web-based assessment

Skills
Web-based skills
Working with a facilitator
Small group skills
Networking skills

Resource enriched scenario

Reflection
Decision making
Critical thinking
Independent learning
Problem solving

Assessment & Evaluation

Key competencies

Facilitation

- 'SONIC' proves IT based PBL is a more interesting and exciting way of learning'

- 'SONIC' has great potential

- 'Interesting and informative overall'

- 'Excellent, accessible website which inter-relates theory and practice'

- 'Quite apprehensive at first but became hooked'

- 'A much more pragmatic and informative approach'

- 'Gives good perspective of how PBL can be used'

- 'Useful for assignments and revision'

- 'Really enjoyed different aspects of SONIC'

- 'I found the first activity took too long to do. I also found I had to search for articles and I think they should be provided.'

- 'As it was my first experience of PBL it was useful in that it pointed me in the right direction as to what information was needed.'

- 'I managed to change my font colour from red to black as it was more readable.'

- 'Good educational resource'

- 'I think SONIC is useful for students who are not confident in their searching skills as they are directed to information'

Introduction

Underpinning the development of this project was the desire to utilise more student-centred approaches to learning and teaching; which would address the demands of the practice environment and the requirement to ensure stronger links between theory and practice. Supporting the students on their learning journey was seen as a crucial element of, and fundamental to, the project.

Project background

Nursing has become increasingly complex. Problem-based or enquiry–based learning was introduced into nursing curricula as a result of each institutions consideration of implementing the recommendations within the Making a Difference report (DoH, 1999), thus strengthening students' fitness for practice and purpose at the end of their training. There was also a need to address a shortage of nurses by increasing the number of student nurses within all branches of care. With an increasingly complex environment which requires interprofessional approaches to care it was considered essential to maintain high quality in teaching and learning.

One way of enhancing support for students was by utilising small group, student centred learning, such as problem-based learning (PBL). The advantages and disadvantages of this method can be found elsewhere (e.g. see Glen and Wilkie, 2000). Widening the entry gate facilitated the entry of mature students; students with different but equivalent qualifications; and students with varying degrees of learning needs. Using PBL was regarded as advantageous for many of these students (Wilkie and Burns, 2003). However, despite these advantages, experience showed some students were adrift in the vastness of the World Wide Web. As a result of this Nurse lecturers from four universities came together to address this issue by using tried and tested PBL (or EBL) scenarios which could be web-based and enriched with electronic resources and with built in support mechanisms. The following box outlines the process of PBL, as carried out in a classroom setting.

Box 1: The PBL process

The students are asked to:
1) Clarify terms and concepts not readily understood
2) Define the problem
3) Analyse the problem
4) Discuss and organise ideas inferred from step 3
5) Generate learning issues
6) Collect information outside the tutorial group
7) Report on and synthesise the newly acquired information

Schmidt (1983) cited in Glen and Wilkie (2000)

How students learn from SONIC

There is evidence that students are increasingly turning to technology for information before other sources. Many students are members of the 'Playstation' generation (Ritzer 1996) and are using the technology for a mix of information and entertainment leading to 'infotainment'. During one facilitator focus group it was noted that students liked the 'fast click' of the mouse and virtually instant access to certain information.

How the students used the resources depended on whether or not they were using a scenario in its entirety or using the resources as reusable learning objects, a term discussed by Littlejohn (2003) to denote a single resource used in a multiplicity of situations. The flexibility of the site enables this to take place so that students can be in control of their learning. During the project it was observed that students used the resources in different ways by being focused on a particular task, or concentrating on one scenario. Others surfed or skimmed around the site, with genuine sounds of delight when they discovered what else was available.

The universities that were engaged in the evaluations also approached the resources in different ways. At one institution, the resources were used by students to gain an initial understanding about PBL and provide support for students in the development of their presentation skills. Another approached the child health scenario by using an interactive whiteboard. A third institution used the resources with two groups of students, one child health and one adult nursing. The child health students were observed to stay closely with the child scenario as

this scenario happened to reflect the one used in their own curriculum, whilst the adult nursing students tended to move around the website, picking up on whatever appeared interesting to them.

The students' understanding of the PBL process was demonstrated in the evaluations. Not all the institutions (outside of the partnership) use PBL and this was clear from some of the student responses. Others used the information about PBL on the website to support their current knowledge and to support their existing curricula.

Diverse Students

Health care students rarely fit the perception of a traditional university student. As a result of Widening Access and Widening Participation publicity (NHS, 2000, DfES, 2003) many nursing students are mature with additional caring responsibilities (e.g. children and/or elderly parents). Some are returning to study after breaks of many years from education and many are also undergoing a career change. Increasingly students with degrees of disability such as dyslexia, poor sight or hearing impairment are represented within the student body.

Each university has a range of policies and procedures to ensure compliance with the Disability Discrimination Act (DDA) (2005), having Codes of Practice which support a transparent and consistent service across campus and the wider community. At UCLan there are strong links between the Disability Advisory Service and the various departments and UCLan is also believed to be one of the first universities to appoint a Disability Advisor (in 1987) to provide support for staff and students in academic and clinical settings.

The Disability Advisory Service offers willing support to staff who are applying for projects (based on principles of inclusion), especially those which include disability issues at the design stage. Staff developing the SONIC project considered issues relating to accessibility and disability from the outset. Disability issues were considered throughout the whole project.

The following tables demonstrate the age range, gender, and educational attainment demonstrated by all the students involved with this project.
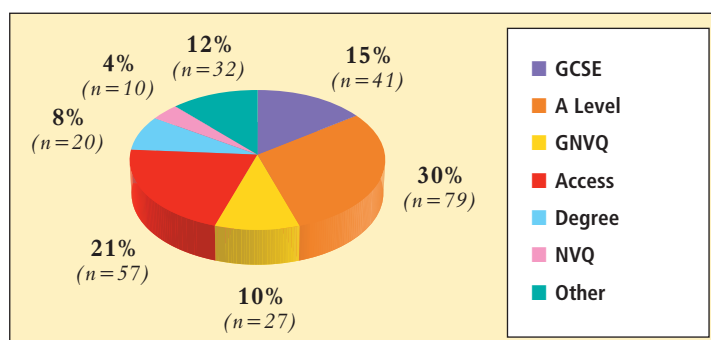
Figure 2: Age of students (n = 241)
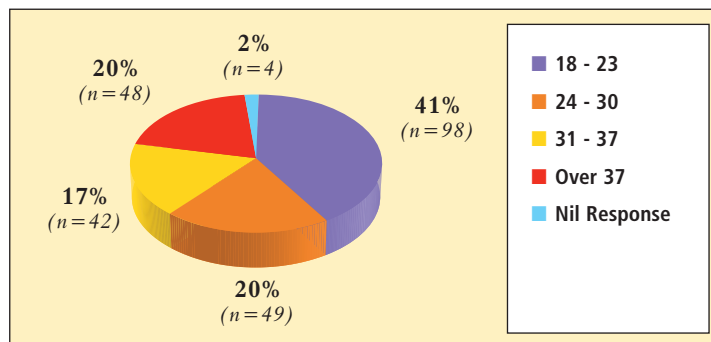
Figure 3: Gender of the students (n = 242)
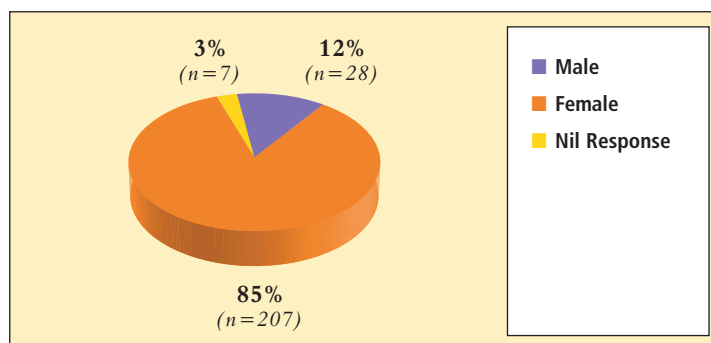
Figure 4: Entry qualifications to nurse education programmes (n = 266) (students responding on more than one occasion)

'Wish all learning would happen this way.'

'My first reaction is positive'

'Will not suit everyone's learning needs'

'Computers not always available to use such a resource.'

'Encourages you to research different branches [of nursing].'

'Quite basic, but easy to use.'

'Excellent revision tool.'

'Prefer face to face teaching.'

'Couldn't spend as much time as I would have liked on it due to placement.'

'I'm only a novice…and I actually quite liked doing this and I normally hate computers.'

'I found it quite valuable working within a small group and then doing it by myself as well.'

'I didn't find SONIC useful. Would rather learn from books and tutorials. It is a good website to look at, but I wouldn't say I gained anything from it.'

'More examples of PBL exercises would be useful in helping to develop student [nurses] skills.'

'I have learnt how to use the Salford model which better enables me to do PBL.'

'I really understood and found the layout easy to follow. I will most definitely use SONIC in the future.'

Introduction

The resources have been developed to support students and facilitators using a mix of face-to-face discussion and technology, known as a 'blended learning' approach (Thorne 2003). Online, in the context of this project, meant no passwords were required so there was free access to the resources whenever and wherever the student may be. Therefore this section is about the development of these resources and the development of the chosen resources.

Accessibility to online materials was one of the prime considerations of the project, and a significant amount of development went into ensuring compliance with the changing standards for best practice. Rather than produce a text alternative to the pages, the pages themselves were designed to be as intelligible as spoken text (such as for screen readers). Mouse activated events were avoided so that the site could be navigated adequately using only the keyboard if necessary. The web pages of the SONIC site are compliant with the current W3C (World Wide Web Consortium) guidelines as published by the Web Accessibility Initiative (2005). The pages are validated HTML 4.01, and the Flash animations provided a route to understanding for those who have difficulty reading large amounts of specialist texts. Audio commentaries and appropriate text descriptions were also added to enhance and supplement the animations.

The overarching aim of the team was to develop educational materials. The team aimed to enable students 'to be engaged in a variety of relevant learning activities, sometimes more easily than conventional teaching' (Biggs 2003:215). The scenarios and the accompanying questions enabled students to be engaged in appropriate learning activities, some of these activities are information giving, whilst others such as the self-test quizzes, are interactive.

In the following sections the scenarios are presented, each scenario is given a patient name, so Bobby is a child, Daniel is a 16 year old teenager, Roger is 19 years old, Janice is 42 years old, and Peter is 76. Each scenario is presented as each appears on the website. Designers were allowed flexibility about how the scenarios were presented, and this reflects the approach of EBL taken by Northumbria, whereas the other partners use PBL. There is also a brief commentary as to how the designing partner uses the scenario with their students. Also accompanying each scenario is another page from the website to illustrate a particular resource.

BOBBY BRAITHWAITE

Gathering resources for the scenario was challenging for the nurse lecturers (designers), especially since it is usually the students' 'job' in PBL. It was interesting to look at it from their perspective. Consultations were held with a nurse physiologist and a consultant nurse, as well as the technologist (animator) to develop the heart

animation. The PBL scenario had also been positively evaluated by students when used as a paper-based package at the University of Salford.

Bobby Braithwaite is a new born baby. He has Down's syndrome. He is the first child for Steve and the third for Joanne. He was born at 42 weeks gestation weighing 3.14kgs. At birth a heart murmur is detected. He was admitted directly to the neonatal unit and his heart murmur worsened. He is feeding poorly and has visible pallor and breathlessness. He is transferred to the Regional Cardiac Unit for further management.

Box 2: Supporting Resource for Bobby

The Braithwaite family

Joanne and Steve Braithwaite

Joanne has recently given birth to Bobby, this is Steve's first child but Joanne's third. They have been married for six years and live together with the family down the road from Steve's dad. Steve is an only child; Joanne comes from a large family although she doesn't often see them as they live in the next town.

Terence Braithwaite

Terence Braithwaite is an 18 year old boy who has just started University studying for a degree in Maths. He is highly intelligent and his Mother and Stepfather are optimistic for him. He is the eldest son of the family. Since starting University he has begun acting strangely. He has been diagnosed with Schizophrenia.

Mary Braithwaite

Mary is eleven years old and lives with the family. She likes Steve although he is not her biological father. She still sees her real Dad every month, but this causes problems with her Mum. She is just about to start Secondary School and has had some problems recently as people are making fun of her brother. She is glad that she has a little brother but would have liked a little sister better.

DANIEL MAKEPEACE

Enquiry based learning is used throughout the programme at Northumbria, so students are aware of the philosophy and the way in which it is implemented before using this scenario. The scenario had been previously evaluated by students and was felt to be a useful scenario for introducing students to the field of learning disabilities care.

Daniel is 16 years old and has lived in a number of local authority children's home since the death of his mother, Isabel ten years ago. For the last four years he has not had contact with his father, Frank, a retired miner, seventy-five years of age who now has senile dementia. Currently he resides in Langwell House, a local authority young person's home, for six children – age range 14–18 years and attends a local school. Over the next two years important decisions have to be made as Daniel reaches adulthood and will leave school and Langwell House. Daniel has a half-sister, Edna, who is fifty years of age. She is supportive of Daniel, although she can be rather dominant and over-protective, of him. She is married to Frank and they have no children. Daniel stays with her and Frank for weekend breaks and she envisages that, if all goes well, Daniel will move in permanently in the future.

Recently however Daniel has been showing signs of frustration with his limited life style and has talked about having his own place, getting out more and travelling. He is also beginning to be interested in exploring his sexuality and he says he would dearly love to have an intimate relationship. There have been some concerns expressed by teaching staff however about his inappropriate behaviour towards fellow pupils at school and Edna and Frank are also concerned about this.

Daniel also needs support from his GP, particularly since he has major epilepsy, which is poorly controlled in spite of receiving a high dosage of both Sodium Valproate and Carbamazepine. Bill, a CPN and Chris, a support worker, are also involved in providing support in the monitoring of his epilepsy and his medication.

Edna and Frank appear to be managing quite well with the weekend stays, although they have noticed changes in his attitude and level of compliance with their requests. Edna and Frank both tend to treat Daniel in a rather childish manner and Chris has expressed his concern about their rather overprotective nature.

Box 3: Supporting Resource for Daniel – Transcript of a conversation

What is it like to have epilepsy?

David: How long have you had epilepsy, Mark?

Mark: For as long as I can remember.

David: Can you explain to me, in your own words, what is it like to have epilepsy?

Mark: It depends, David. If I am at home it is not too bad because the nurses are there to help me and they understand. But if I am at MacDonald's it's awful.

David: Why do you say it is awful?

Mark: Because people stare when I start to have a "bad turn" and they crowd around me – it is not nice when I wet myself. People think I am dirty and I am not.

David: Mark, do you feel different to other people because you have epilepsy?

Mark: I do sometimes David but I'm not you know. I am the same as you.

David: Yes that is true.

David: Do you remember what happens when you have a seizure, Mark?

Mark: No, not all of it.

David: Can you tell me the things you do remember about the time you have a seizure

Mark: Well David. You might think that this is strange but I smell popcorn and my head feels a bit fuzzy, then I wake up and wonder what the heck happened. Then I realize that I have had a "bad turn". I feel tired and go to sleep.

David: Thank you for talking to me today about your epilepsy.

In order to maintain confidentiality the name Mark is a pseudonym.

ROGER GASCOIGNE

The scenario was developed from a "live case" that a Community Psychiatric Nurse and the lecturer had managed previously. It had been used with good results with the undergraduate mental health students in year two in an enduring mental health module. Its development into a web based format has further enhanced student's clinical reasoning skills by virtue of added material and the access the clinical staff now have to SONIC. The clinical staff have found the experience very positive.

Roger (aged 19 years) lives at home with Emily his mother in Northumbria Crescent and his brother David who is 17 and unemployed. Roger was considered to be difficult or ' strange' when he was a child, often playing on his own with imaginary friends. He dropped out of school at 16 and was prescribed medication for stress which was said to be caused by the pressure of high expectations of examination results but stopped taking the medication because "It did my head in."

Roger has been referred by his GP to a community psychiatric nurse. The GP considers that Roger may require specialist mental health services interventions, as he has a suspicion that Roger may have a form of schizophrenia and has asked for an assessment.

Although he is clearly very intelligent, at school he was an underachiever and was described by his teacher as a daydreamer. His concentration is very poor and he has never been able to hold down a job. Although very close as a family, Emily, his mother, and David his brother, have been under increasing strain, particularly since their father left two years ago. On occasions Roger appears to be responding

to other people in the room beside themselves. When approached about this he becomes defensive and argumentative.

For a while before the father left, the marriage had been under strain. He believed that both brothers were malingerers

and time wasters especially Roger. Much of his time spent communicating with his sons consisted of arguments, recriminations and accusations. He would be particularly scathing about Roger sitting alone mumbling to himself.

Although their father still helps out financially, money is tight as Emily can only work part time. She feels as if she has come to the end of her tether both in terms of supporting her family and knowing how best to help Roger. She blames the father for his lack of understanding and also wonders if Roger has been taking drugs. She is worried that he will be admitted to a psychiatric hospital. She is also concerned about David who confides in his mother about his fears of "ending up like his brother".

Roger tells his GP that he is not ill but very well and wonders why everyone is getting so wound up about his health. He is absolutely adamant that he is not going to take medication that will "alter his mind." He tends to accept the voices as a fact of life which other people experience too. Most of the time the voices take the form of a background mumbling but sometimes they give him instructions or make comments about other people. It is only when tell him to harm himself that he gets frightened.

Roger and his family are visited by John the CPN who is accompanied by Jaz, a second year student nurse. John assesses the situation. Like Jaz, you need to learn as much as you can from this situation if you are able to work as a qualified practitioner in the future.

Box 4: Supporting Resource for Roger – First part of commentary to accompany animation

If Roger is to make an informed choice as to whether to take his medication or not, he needs to understand more and will need clear information. As a practitioner you can only help with this if you have a working knowledge of the structure and functioning of the brain so you can better understand the actions of pharmacological interventions and the side effects which might occur. Drugs used for the treatment of schizophrenia are aimed at limiting the effects of:

• Positive symptoms such as hallucinations, delusions and thought disorders, abnormal behaviours

• Negative symptoms such as tendency towards social withdrawal, flattening of emotions, lack of interests, motivation and energy

Antipsychotic drugs are believed to act by blocking dopamine and other receptors but in the process may cause extra-pyramidal effects which may be categorised under two main types of motor disturbance (Rang et al 2003):

1. Acute dystonias - involuntary movements sometimes mainly affecting the muscles of face and jaw or causing akathisia (restlessness particularly of legs) or a Parkinson – type syndrome (lack of movement, muscular rigidity and tremor)

2. Tardive Dyskinesia (chronic condition, slowly developing and may be irreversible and which Causes abnormal involuntary movements of face and limbs)

Antipsychotic drugs may be classified as either classical or typical e.g. chlorpromazine or haloperidol or atypical such as cloxapine or risperidone. The atypical antipsychotic drugs are newer compounds which tend to cause less unwanted motor side effects and are also said to improved negative as well as positive symptoms. Make sure you are aware of the differences between these two types of drugs.

The animations are designed to help you understand the actions of antipsychotic drugs and why unwanted side effects may occur:-

JANICE BATTERSBY

The scenario and package have been used with the Diploma students, as part of the first module in the Adult branch, to consolidate principles and practice of Adult nursing in the curriculum. During SONIC the scenario was re-evaluated and enhanced as a resource.

Janice Battersby is a 42 year old lady who has been listed for a laparoscopic cholecystectomy. In the past year she has been admitted twice to surgical wards in her local hospital with abdominal pain and was diagnosed with acute cholecystitis on both occasions. She is now managing to remain symptom free on a low fat diet. Janice lives in a rented two-bedroom house with her husband Les and their two teenage daughters.

Box 5: Supporting Resource for Janice – Concepts related to past medical history

Anatomy & physiology of the gall bladder and associated structures

Pathophysiology of:

1. cholecystitis

2. stone formation

Consequences of stone presence other than cholecystitis

1. Pancreatitis

2. Jaundice

Epidemiology of gallstones

Use the resources on this site plus others to investigate these concepts.

PETER MURPHY

The development of this scenario is based on a lecturer's personal experience of nursing clients in a malnourished state. The scenario describes an elderly, recently widowed gentleman admitted to hospital in a confused state with a urinary tract infection. Before using the scenario for SONIC it had been used successfully with previous groups of students, who had evaluated it well. This influenced the decision to use this particular scenario with some further development which enabled it to be user-friendly via WebCT and a website. This scenario was used for the initial pilot study with a small group of students before wider access was given to all the students commencing Adult Branch.

Peter Murphy is 76 years old; his wife died six months ago and he has no other family. He lives alone. Since becoming a widower he frequently visits his local pub for company, although he is not an alcoholic. The pub landlord raised the alarm after Mr Murphy had not been seen at the pub for three days. His GP was alerted and, on visiting his home, found him in a confused and neglected state. Mr Murphy was conscious, but it was apparent he was unaware of his surroundings and had clearly been incontinent. He continuously repeated that he did not feel well and was alternately verbally abusive and passive. He is admitted onto the hospital ward, where you are working as a student, with a provisional diagnosis of urinary tract infection and inability to cope.

On admission you notice Mr Murphy's skin was dry and flaky; he "looked" dehydrated and his dentures were "loose". An aphthous ulcer was present on his lower jaw, under his dentures, and his tongue was coated; his mouth was sore at the corners (angular cheilitis). The preliminary diagnosis remained that of urinary tract infection and confusion, but he was also described as a "social problem". Blood samples were taken for biochemical and haematological analysis. The need for findings was not regarded as urgent and the results were not available for two days. An eventual dietetic assessment revealed Mr Murphy weighed only 58 kg and had lost 11.7% of his usual body weight in the last six months. His height was 1.72 m and his estimated current calorie intake was 600 kcal per day.

Box 6: Supporting Resource for Peter

Nutritional status:

- Dietary history.
- Healthy eating.
- Food, culture and religious belief.
- Nutritional intake.

- Metabolism - the sum of all the chemical changes in the body. There are two phases: anabolism, or constructive metabolism, which is concerned with the building up of materials and tissues, and catabolism, or destructive metabolism, which is the breaking down of materials and tissues.
- Malabsorption - set of symptoms indicating defective absorption of nutrients. It may occur as a result of structural changes in the alimentary tract or its adjacent organs, and failure of food to reach the absorptive surfaces. Symptoms include abdominal distension and pain, steatorrhoea and diarrhoea, anorexia and muscle wasting with loss of weight, and anaemia. Examples of disorders that show the malabsorption syndrome are celiac disease, cystic fibrosis, carbohydrate intolerance and pancreatic insufficiency.
- Malnutrition - simply stated, any disorder of nutrition; bad or excess health status due to either lack or excess of a nutrient supply. State of impaired biological activity or development due to a discrepancy between the nutrient supply and the nutrient demand of cells.

Nutritional support team:

- Nursing care.
- Role of dietician.
- Role of speech therapist.
- Role of medical staff.

Dietary care:

- Diet supplements.
- Catering services.
- Meal provision in hospital wards.
- Appetite regulation.

Development of animated resources

The Beginning

The challenge from the outset was how to represent human physiology in ways which helped students understand important concepts without overwhelming them with specialist jargon and experimental detail. Images can act as a universal language to describe objects in the real world and animation extends that language to describe dynamic processes. The project provided a wonderful opportunity to expand upon and utilise existing work on the animation of human anatomy and physiology.

The Issues

At the time the project commenced the potential value of animation was tempered with caution. The UK Special Educational Needs and Disability Act (2002) had led to concerns about the accessibility of animations. This was a very strange viewpoint to adopt when animation has huge potential for widening participation; fortunately the narrow focus on text-reading software on which those concerns were based, evaporated as the technology (and perceptions) matured.

Of equal concern was the argument about the cost and quality of animations. It is clear that animation allow representation of dynamic processes in a way that has been difficult or impossible in the past. However, the technology is in its infancy. It has power to engage students but that engagement needs to be productive. Lowe (2004) refers to a number of concerns. The student may engage with the animation but not what it symbolizes; they might be overwhelmed by the rate that information is presented in a realistic representation and even if they can control the rate, they might fail to focus on important features of the animation.

Resources

A number of objectives guided the production of the animations which needed to address a varied range of learner needs. Cost was also an issue, as was reusability and concerns about behavioural realism had to be reconciled with the dangers of over simplifications.

Cost and reusability

The main approach was one which involved the visual simulation of physiology and anatomy rather than using animation to construct an instructional environment. The reasoning being that this avoids restricting how the resources could be used. Text in the animations was limited and mostly loaded dynamically from external text files. This allows commentary to be easily changed to suit different groups of students. The process of production has also involved the recycling and creation of elements which form the building blocks of an animation. This method of development encourages re-use and cost savings.

Educational value

The aim was to keep the simulations simple in visual terms, avoiding distracting features whilst retaining sufficient fidelity with the real thing. The team has tried to show processes in context and whilst this might increase the amount of information presented to the student, it does provide an opportunity to see the relationship between these processes. Files of spoken narration were added as an alternative to text – partly in response to student feedback which confirmed recommendations by Clark and Mayer (2003).

The narration hopefully guides students to attend to important features but the main objective was that the animations would provide a mental hook on which students could hang the result of their own research rather than act as a complete resource in its own right.

Researching the information

The adoption of an approach which concentrated on visual simulation rather than instruction meant that all of the information about physiological processes had to be interpreted as images. The research undertaken to achieve this, highlighted the scarcity of good visual representations of physiological processes and demonstrates an academic tradition which fails to use visualisation to its full advantage. Our experience was that the animation process reveals gaps in our understanding which can be easily hidden or overlooked when we use text. For an animated simulation to work correctly there may be a need to research a broader set of information than for example, an essay.

Tracking the usage of the SONIC web site

The web pages on the site have included scripts which provide information on how the site has been accessed. Most of the detailed information has been collected over the final six months of the project.

The majority of the visitors to the site were English speaking, with 94% of users having their computers configured for the English language. Other configurations ranged from a total of 32 other languages. There are 20 UK users (universities and other organisations) with links to SONIC, as well as users outside the UK e.g. institutions in Thailand, USA, Slovakia, Spain, Australia.

Software availability

Early in the project there was some concern that some students might not have the appropriate software to view the animations. It was reassuring that the tracking software showed that at least 97% of visitors had the appropriate up-to-date software plugin to view the animations correctly.

Traffic

The number of visits to the SONIC site averaged 2863 per month with an average of 3 pages being viewed at each visit. This gave a figure of 9018 page views per month during the period April to October 2005. 10% of visitors were UCLan students. Of common paths taken by visitors, 42% went straight to the scenarios and others tended to look at the PBL page, the project page or the project description page.

Access to the site from search engines has increased from around 700 page visits per month earlier in the year to double that rate for October. It is possible that with links to other influential sites, its presence and ranking on search engines has increased.

NURSING

Introduction

Nursing is practiced in a variety of settings and requires a complex array of clinical and cognitive skills; these increase with confidence and experience in practice. Healthcare professionals engaged in care delivery and management range from cadet nurses right through to nurse consultants. In this section the concept of 'nursing' is taken in its widest sense. Whilst many of the team members are nurse lecturers all the team were committed to 'nursing' this project to a positive outcome. Capturing these experiences forms the basis of this section, as team members discuss their experiences of working on the project whilst still carrying out their 'day' job.

Bringing the Project Management Team together

The original meeting, following the announcement of funding for these national projects, was held at Kings College University, London. At the site of the Health Science and Practice (HS&P) Subject Centre[1] the HEA acted as hosts in bringing together interested parties. The partnership that emerged for this project were also members of a Problem-based Learning Special Interest Group which had started in the North-West of England in July 2001. The desire to have a project related to PBL led to the formation of a consortium which included the University of Central Lancashire (lead), Liverpool John Moores University, University of Northumbria, and University of Salford. Each partner institution offered nurse education programmes, more specifically a pre-registration curriculum based on the recommendations of the 'Making a Difference' Report (DoH 1999) which included using PBL as a methodology. More importantly, each university also had experience of e-learning and using platforms such as Blackboard, or WebCT for the development of materials. Following 12 months of the development and refinement of the original ideas, the team was successful in winning £248,297 to fund a three year project. One of the first tasks of the team was to design a logo, so that we could achieve recognition early on. Priory Sports and Technology College, Preston, as a local school, was approached and year 10 students undertaking GCSE Art became involved.

Figure 5: Project team at the SONIC conference

(Angela Darvill is out of shot on right of group, and Stuart Taylor was unable to attend)

[1] previously part of the Learning and Teaching Support Network, and now under the umbrella of the Higher Education Academy.

The winning design, chosen by the Steering Group, was by Charlotte Lepre-Slater and is featured on all documents related to the project.

Over the three years the team has enjoyed a high level of stability, with regular meetings on the uclan site. More importantly, the project team has also enjoyed a good level of support from 'cascade' members – people who have been willing to help in many different ways to ensure the success of the project. These people are listed at the front of this document. Team members have been included in other activities such as conference presentations and a number have felt that experience of working as a member of such a project team has helped in their personal and professional development.

Setting up a Steering Group

The Steering Group met every six months from the start of the project in November 2002. Members were drawn from a pool of national, regional and local organisations/initiatives with a range of expertise pertinent to the project aims. Each meeting was prefaced by the publication of a newsletter to update all members regarding progress of the project.

Each day was scheduled as a 'workshop' in the morning followed by a business meeting in the afternoon. This format was instigated by the external evaluator to establish ongoing interaction of all Steering Group members with the project and the process of learning. On two occasions the project management team joined the Steering Group workshop.

Membership and attendance was affected by he national profiles of group members and the time commitment and distance from UCLan. Difficulties in achieving regular discussion throughout the year were acknowledged by the group and influenced the ability of some members to influence the project positively.

Reflections from Partners

The following are brief reflections from members of the project team, written at the end of the project

- **Moira and Angela (Salford):**

'This project was the culmination of many years of being involved and enthused by how problem-based learning could transform some aspects of student learning. Having undertaken study at Masters level which explored particular issues of interest that had arisen through being involved in PBL, namely the effects on student learning and the role of the facilitator, this research identified some of the missing components for students of nurse education in particular the anatomy and physiology understanding for clinical practice. Involvement in this project combined the overarching interest in PBL with a desire to make the student experience of using this knowledge for clinical practice more effective. The role of the facilitator in SONIC remains crucial and should not be underestimated. SONIC is the value-added component that enriches the trigger (scenario) work and enables students to carry on learning after leaving the classroom sessions.

The other important aspect is that due to the medium involved, the students can actually take this out into clinical practice to further explore with mentors. The rewarding aspect of being involved over the past three years has been the teamwork and the learning that has taken place within the team. The fruition of all our hard work is now visible and being used and that is quite exciting!'

- **Stuart (Northumbria):**

'Working on the project offered me an opportunity to work with a medium different from the traditional training model, by showing me fresh ideas for future curriculum design. It also brought the students to a platform that addressed real mental health nursing issues in a holistic and interactive way. An important issue was recognising that PBL does not suit every student and that not all PBL material can be web-based, but the potential for SONIC to develop within the student a critical reviewing process of the knowledge base used within mental health practice, as well as enhancing their clinical reasoning was vital.

It also gave me an opportunity to support my clinical colleagues in mental health, especially the need for enhanced facilitation skills rather than teaching skills. It brought home the training and development still required to enhance one's facilitation skills e.g. Socratic questioning.

It also offered an opportunity for personal development in relation to designing implementing and evaluating the effectiveness of web-based materials'.

- **Harry and Sue (Liverpool John Moores University):**

'Nurse lecturers here are well experienced in delivering PBL and the aim of developing an on-line package for the enhancement of student learning was initiated and welcomed. This package was used to deepen, broaden and monitor students' understanding of basic principles of surgical nursing. Also there is consistency of presentation at all stages as 'computers do not have bad days'. So students can work on the material at their leisure. The variety of resources used helped to increase the students interest in the case, particularly the animations, which directed students to seek appropriate support and assistance. The SONIC project has a 'mix and bake to perfection' analogy of learning and offers an additional teaching and learning option'.

- **Cliff (previously JMU):**

'Deciding which resources to add to the scenario required substantial team work between the module team and the SONIC team, a process which was both hard work and fulfilling. Perhaps the most rewarding aspect though was when the scenario and the resources within SONIC were opened up to the students. The use of the SONIC resources enlivened the scenario and produced further triggers within the groups and as such produced some very positive evaluations. I value the experience very positively in my development as a PBL facilitator.'

- **Sam and Richard (UCLan):**

'There was a sense in this project of doing something different (novel and innovative) and it felt exciting to be a part of that. Many aspects of this project required the development of new skills (e.g. questionnaire design, WebCt, video evaluation of students). The learning curve was steep. Integration of the project into the module appeared seamless. This was probably because the scenario was already being used in the module. The project gave an added bonus in terms of the accessibility of the material.

Periodically, the workload associated with the project was very demanding. The project came along at a time of multiple, intense professional pressures from a variety of sources. This took place when Sam was new to lecturing and Richard new to the institution. In the early part of the project our purpose seemed clear, we had specific jobs to do. As the project progressed Richard found he was being asked to do things beyond his capability, for example 'demonstrate how SONIC had made a difference to students' learning'. The involvement of the Education and Social Science department seemed something of a relief at the time, and the support and learning from another department was invaluable.

Working with people from different departments and institutions was challenging. Felt able to accept and appreciate different approaches. This helped us to gain a broader perspective of the fundamental concepts of PBL and web-based resources. Intense discussion helped us to establish a common purpose and a sense of collective and collaborative working'.

- **Liz (UCLan):**

'I was the web developer, responsible for designing and updating the SONIC website. I had no experience of working with nursing lecturers prior to the start of the project, and I was pleasantly surprised by their unfailing good humour and professionalism, and their open approach to technological initiatives. My own background is in physics, where mathematical ability is prized over social skills, so it made an agreeable change to work with lecturers with such advanced 'people' skills!

The only problem I had was with the shifting sands of the recommended best practice for accessibility of web pages – the criteria were drastically changed during the project as the W3C moved towards XHTML. I had to completely rewrite the site half way through the project, but it proved to be useful training for carrying out similar restructuring on the larger site that I maintain

as my main job, so it was time well spent from my point of view. I really enjoyed working on the SONIC project, and I'm proud of the contribution I made.'

- **Catherine (Senior Disability Advisor - UCLan):**

'The SONIC project gave me considerable staff development. I learned about PBL, EBL and gained further insights into on-line learning. To engage fully with the student, to advise, guide, and improve the assessment of need, the service needs to keep abreast of current and future teaching methods'.

- **Carolyn (UCLan):**

'Managing the SONIC project has been one of the highlights in my career in nurse education. It was a steep learning curve, but it gave me many challenges, which I believe I was able to rise to. All my working life I have been involved in nursing and the project gave me opportunities to get out of the nursing box and meet many people from other disciplines. Conversely this gave me opportunities to fly the flag for nursing!

Early on in the project I was advised to keep a reflective diary. This was sound advice, as I wrote copiously in the early months of the project. As my confidence grew, the diary became less important, but the lessons learned remain with me. I would pass on this piece of advice to anyone who is embarking on the road of project management.

The team I have worked with over the last three years have been fantastic. They have been loyal and committed to the task in hand, and I hope they can say the same of me'.

- **Ruth (UCLan):**

'My role was a natural extension to the role of supporting the team to prepare the FDTL Phase 4 bid for submission to HEFCE. The 'Project Director' was identified as someone who will 'provide individual support to the project as required'. With this in mind, Carolyn and I defined the term 'as required' to include one to one meetings, attendance at project team meetings, developing the Collaborative Agreement for the project, budget management, facilitation of external quality review of scenarios, and liaison with the Steering Group.

The experience of developing a collaborative agreement was challenging and required negotiation through the University solicitors. The support and challenge provided by this process resulted in a sound document which was available if relationships had changed during the project.

External evaluation of the scenarios and the project played key roles in taking the project forward and the team were responsive to information from all sources throughout the project'.

- **Kay (Dundee):**

My contact with the project was looking in from the outside. In the first stages I was more fascinated with the group processes than the actual outcomes of the project. Early meetings seemed characterised by debate centred on differences between partner institutions, different models of PBL in use and the boundaries of the four branches of nursing. At times I wondered if there would ever be enough agreement for the project to achieve its outcomes. As the project progressed my fascination became frustration - exciting work going on and my input was limited to offering advice and introducing my own students in a small way to the SONIC resources. Diversity became a source of strength. Institution and discipline took a back seat as partners supported each other in the development, evaluation and dissemination of the shared resources. The disparate project group had become a PBL team.

Introduction

The project has been about bringing together different ideas and concepts and making them work. A large part of project time has been spent on evaluating the materials and determining whether they were 'fit for purpose'. This section focuses on evaluation, demonstrating a progression from a pilot of the resources through to engaging other higher education institutions to complete the evaluations from their perspectives.

Pilot study – UCLan

The first stage of implementation was completed and evaluated in April 2003 by 14 student nurses from the University of Central Lancashire. Students' responses to the questionnaire about SONIC resources were generally very positive, particularly the animation elements. Some technical and support issues were highlighted as problematic.

Accessibility and Availability

Students were generally positive about this aspect of the materials, though one student reported being unable to access SONIC. Students clearly come to SONIC with a range of computer skills and a variety of access to computer resources. This was highlighted by the unavailability of the appropriate version of Flash Player software on some networked PCs. Not all students felt adequately prepared to access and use the resources.

Learning Styles

Having a computer-based resource was viewed as positive. Of particular note was the students' responses regarding ease of access, ease of use, confidence in using the software and having a permanent resource to which they could refer back. Technical problems and unavailability were identified as negative aspects. Prior knowledge and skills in using computers was rated as a significant advantage, although one response suggests that support was available from within the student group.

SONIC Content

The most highly rated feature of the SONIC resources was the animation alongside the photographs. Opinions regarding the web links were mixed. The overall quality and amount of resources was generally positive.

Learning Outcomes

Students felt that SONIC was generally helpful in supporting them to meet learning outcomes. The overall usefulness of SONIC was rated generally high.

Links to Practice

The majority of students felt that SONIC had helped them to make links to practice. Those who made additional comments on this matter indicated a need to use SONIC more.

Based on the results of this pilot study, a number of findings were identified to enhance the students' experiences of using the SONIC resources.

Box 7: Results which influenced the next evaluation strategy

- More time should be spent in preparing students for using SONIC. Practical problems regarding access should be addressed. A 1-2 hour teaching session is recommended as a starting point.
- An instructional leaflet should be produced (perhaps incorporating a website map or navigation summary).
- Students should be provided with access to PCs with the appropriate version of Flash Player pre-installed.
- The extent to which students accessed technical support (e.g. Helpdesk) should be explored and their evaluation of such support should be obtained.
- The evaluation exercise should be repeated with other groups using the same as well as different scenarios.

Evaluation across the partnership

Pilot studies were carried out over the remainder of 2003 on all the partner sites. Following discussion and advice from the Steering Group the questionnaires were further developed to focus on the degree to which the SONIC materials impacted on the students' learning. Expertise in evaluation and the impact of learning was sought from the Department of Education and Social Studies within UCLan. This resulted in the development of a Student Workbook with an accompanying Facilitator Guide.

Students were asked to note what they were 'looking forward to'. Responses to this included a 'new information source' and 'gaining confidence in using the computer'. Students noted they were 'apprehensive about' being unable to access the website 'off campus'; 'lack of confidence in using a computer'; 'information overload'; and 'not finding enough relevant information'.

The Student Workbook contains five pages for 'jottings'. Students are asked to note the time they logged on and off, and, with the information available it would appear that students spent (on average) 50 minutes on the site at each visit. This was likely because of the 'new toy' phenomenon, as no where else in the evaluations were such lengthy times noted.

Generally they had used the time to widen their knowledge, gathering information and gaining confidence in using a computer. There were also some technical complaints about systems being slow and web links not always working. However they felt they had gained skills in problem solving and self-directed learning, as well as insights into other care areas. They enjoyed the graphics, used information as preparation for lectures/PBL sessions and would recommend it to other students.

The workbook also contained a 17 item questionnaire. Responses indicated that students have a preference to using the computer at home because of the flexibility it allows. They found the 'Getting Started' leaflet useful, though many students reported possessing computer related qualifications prior to commencement of their studies. An increase in confidence in using a computer based resource was reported by a number of more mature students. The resources were well received by the students as it made the links with practice more meaningful. Suggestions for improving the site included more animations and audio.

Facilitators observed and took field notes whilst the students were using the SONIC website for the first time, and reported that students were generally able to navigate their way around the site. The resources accessed first depended on their current area of study. Discussions between students tended to focus on what they could learn. Students worked through the resources systematically observing/using what was available.

Two students agreed to be videoed in the computer laboratory at uclan, whilst accessing the SONIC website. They:

- seemed impressed by animations but did not spend time analysing their learning at this point.
- spent some time on the quiz and discussed it together.
- helped each other with opening up a PowerPoint presentation.
- liked the websites but appeared to be unable to evaluate why.
- were seen to change to another item if they came across something which challenged them.

Overview of Evaluation by other Higher Education Institutions

Each institution used the resources in different ways because (non-partners) not all the institutions used PBL, nor were the scenarios expected to be an exact fit in curricula. This resulted in a wide range of valuable evaluations from students and facilitators. Due to the nature of each programme, students rarely used the resources in their practice areas, as they were in theory time during the evaluation phase of this project. However, Practice Placement Facilitators and Practice Educators have been involved in supporting the use of these resources in the practice area.

The following table indicates the number of students involved in the evaluation process at each institution. There is also information about the number of Workbooks requested and actually returned.

Table 1: Students involved in all the evaluations

HEIs	Students	Facilitators	Workbooks Sent	Workbooks Returned
A	68	4	100	68
B	9	1	12	9
C	18	2	36	18
D	21	1	21	21
E	8	1	20	8
F	14	4	35	13
G	20	2	20	20
H	15	2	15	15
I	13	1	13	13
J	56	1	100	56
Total	242	19	372	241

Facilitators

Generally, specific arrangements were made to introduce the resources to the students and support them, if needed, when using the resources. This included:

- Introduction in a specific session, frequently a computer room, to enable observation of students computer skills.
- Timetabled further access sessions.
- Working through scenario using interactive white board/live web link.
- Using the Salford Process and ONION Model (available on the website) which students found helpful in increasing their understanding of the process of PBL.
- Using the resources to support the development of presentation skills.

The facilitators have been supportive of the resources in enabling student learning, with one facilitator stating that it is an 'excellent resource'. They went on to state that whilst 'We don't use PBL; the resources were used as an excellent additional teaching and learning resource'. Another facilitator found that the students liked the group work, were clear about their roles and that note taking carried out on the screen by the scribe in the group informed their group learning methods. In at least two institutions there were mixed responses from the students who identified workload issues. In these institutions the resources had been introduced to large groups and students complained of lack of support.

Summary of Students' Comments:

The following are a summary of comments made by the students in relation to the areas of 'learning', 'technical' and 'other'. Each section is then followed by actual comments to illustrate some of the points made.

Learning
- The novelty of the approach, and judging by facilitator observations, the resources appear to have suited a number of different learning styles.
- An expectation of increase in knowledge and understanding.
- Gaining insights into what they did not know. This can be exampled by the students looking at a particular issue and applying it to local needs.
- Some students wanting to see the resources as finite. Their expectations were that the website would provide all the answers.

- Finding the resources useful and helping them with their learning and understanding of particular situations. One student noted it would help when he was next in his mental health placement.
- The students found the resources useful and they did help their learning and understanding. This suggests that the SONIC resources provide some value added learning.

- *'I very much liked the way the quiz was laid out and was easy to answer. What struck me was the physiology aspect of the case study which involved illustrations of the diagram and seemed very clear.'*

- *'I do think I used my time effectively as I found it easy to understand, as the layout was good, and there was a lot of knowledge on the website.'*

- *'I have learnt more about PBL as relative to Mental Health nursing. Really good 'grounding' information.'*

Technical:
- Apprehension about any technical difficulties and being disappointed.
- Navigating around the site, which they found to be straightforward.
- Confidence in their computer skills grew.
- Few difficulties in logging on, usually from campus when passwords have been forgotten (password not required elsewhere).

- *'Quiz helped to consolidate e-learning.'*

- *'Animations and weblinks were very helpful.'*

- *'I will probably spend longer on activities – actually found using the computer for work enjoyable.'*

- *'Holding interest fully as I was able to negotiate at my own speed. Animation extremely helpful.'*

- *'Used the computers on campus to begin with, then at home for peace and quiet and to work at own speed.'*

Other:
- That they were looking forward to using this resource, particularly where timetabled.
- The overall evaluation by the students indicated that the resources had largely met their expectations and they were pleased not to have had any access problems.
- Using the resources and being satisfied with the support they received.
- Regarding the use of electronic resources as information to supplement their learning rather than a substitute for teaching.

- *'I felt I learnt on the animations, especially about schizophrenia and just little things that made it much clearer to me.'*

- *'As a website it works perfectly well, nicely laid out and all the buttons etc. work, which is unusual and pleasing in an academic site.'*

- *'I think SONIC is useful for students who are not confident in their searching skills as they are directed to information.'*

- *'An easy website to access and simple to use. Some websites can be stressful to use, but the SONIC website is user friendly.'*

Impact and Outcomes

The evaluations did not specifically elicit what the students had learned and understood specific to the resources, but suggests that the students valued them as supplemental to other forms of learning. This supports the original aim of the project which was to develop web-based resources to support problem-based learning.

Where students displayed some negativity were in areas where PBL was not routinely used. Thus there was probably a lack of understanding about the process. However, in one area PBL has now been introduced as a result of using these resources which is encouraging for student-centred learning.

Facilitator support is pivotal and where lecturers were unclear about their role, students were critical of the support provided. In areas where PBL is used, lecturers were much clearer about facilitation and the amount of support required by students. Students were very positive about the resources in these areas.

Students involved in the evaluations were studying at different levels (Level 1, 2, 3). One group of students felt the resources needed to be introduced at an earlier stage in their programme, as they would support their understanding of some aspects of physiology.

Pedagogical Evaluation of Students On-line in Nursing Integrated Curricula

Author: Maggi Savin-Baden, Coventry University

This report was invited by the Steering Group and Project Management Team in order to focus on the pedagogy underpinning the project. Taken from the report, an outline of the research is provided and the recommendations noted. Two publications from this work are currently in press. (NB The full version is available on request to the project manager).

The evaluation of the SONIC project was undertaken using rhetorical criticism to examine artefacts used within the project such as website, student and facilitator guides, and documentation that emerged as a result of the project, such as reports and qualitative data.

Findings:

- **Situating problem-based learning**
  A differentiation is made between problem based learning, where problems are used as prompts for learning in online environments, and problem-based learning, where students engage with real world situations. They work in groups to identify gaps in their learning and work on solutions. The impetus for this project came out of a desire to support students and whilst

it may be argued that problem based learning is taking place, in actual fact, problem-based learning is taking place because students continue to work in facilitated small groups.

- **The learning context**
Learning contexts are transient in nature and this was a feature of this project. Different programmes at different sites made for students learning in a wide range of different environments. This included virtual space (through the Internet); real space (buildings); and lived space (mixing functions within rooms e.g. the laptop on the kitchen work surface).

- **Modes and models of PBL**
Modes refer to curriculum practice and how PBL is in operation within a programme. A Funnel approach mode was seen to be generally in action across the project sites. This involves students being lead away from lecture-based learning towards problem-based learning. In terms of models of PBL there appeared to be two models in action – PBL for professional action and PBL for interdisciplinary understanding.

- **Pedagogical positioning for e-learning**
Following research by Mason (1998) who suggests 3 online course models to offer a way of understanding the differences in online communities and the ways in which PBL fit with some models and not others, a content and support model was regarded as being in action.

The dialogue is terrestrial and e-communication undertaken by email. There are no plans for conference facilities or for the facilitator to become an e- moderator.

- **Accessibility**
This is concerned firstly, with access to the site. Initial problems were concerned with speed of connection and equipment. The main advantage of SONIC noted by students was the open system. Secondly with students with disabilities and ensuring all students have access

- **Problem typology**
The project tends to focus on 'fact-finding problems', thus guiding the students towards descriptive knowledge.

Recommendations:

Develop the complexity of future scenarios by
- Including technology such as animations, on-line formative assessment strategies and video clips.
- Move towards Model IV PBL for Transdisciplinary learning
- Asking questions that prompt the use of procedural and personal knowledge.

Develop SONIC as a constructivist learning setting by
- tasks to engage and direct the learner
- supports for the online learner
- the learning resources (Oliver and Herrington 2003)

Develop the use of the SONIC materials towards Computer Mediated Collaborative PBL by
- a focus of problem scenarios and depth of understanding
- open knowledge building that focuses on collective knowledge so that inquiry is driven by a quest for understanding

- an inclusion of all participants in the broader knowledge community (Scardemalia and Bereiter 1994)

Response from the Partners

The Report was welcomed by the Project Team and the Steering Group. In terms of the recommendations, a number of changes were made to reflect these; altering some of the questions posed on the website, to try to encourage students to look wider than their own professional group, and to develop learning in relation to procedural and personal knowledge. Some of the recommendations, such as developing computer mediated collaborative PBL were outside the remit of the project, but have given the team a focus for future research. Since the Report was written, the resources have been reviewed critically by external reviewers and appropriate changes made. Audio has also been added to the animations, to much acclaim.

Further Evaluation work

An External Evaluator, Professor Ranald Macdonald from Sheffield Hallam University, evaluated the process of the project by working with the Project Team and reporting to the Steering Group.

An internal evaluator, Richard Currie (uclan) set up the questionnaires and the development of the subsequent Student Workbooks.

Evaluation of each scenario and their resources was carried out by independent subject experts. Their comments were invaluable in assisting in making appropriate changes to the resources.

- *'The animation on pharmacology is a useful method of introducing students to what for many is a difficult area of theory. The parallels between the problem-based learning approach and assessment are also useful in explicitly helping students to identify transferable skills' (Roger Gascoigne scenario)*

- *'The scenario is flexible but has also provided boundaries for student learning. I would suggest for more senior students this is left a little more flexible, with less direction, to encourage them to identify the problems and develop their problem solving strategies and skills to explore the wider concepts that are influencing health care provision today.' (Peter Murphy scenario)*

- *'Could easily be used within a multi/interdisciplinary group session.' (Peter Murphy scenario)*

- *'Use audio and photographic material e.g. patient/client talking, to enrich the learning experience and vary the sensory input.' (Janice Battersby scenario)*

- *'The scenario has potential to develop understanding of difficult and complex topics but probably needs a bit of expanding to do this, for example was Downs syndrome diagnosed prenataly? Moral and ethical issues could be explored both pre-registration and in a CPD context. This could be an excellent issue to start some interdisciplinary learning.' (Bobby Braithwaite scenario)*

Introduction

The blueprint to what and how we teach our students and what they learn is the essence of a curriculum. The development of these resources can impact on the curriculum and the team have been engaged in embedding the resources in their 'home' curricula, as well as disseminating information about the resources to other colleagues. This enables the resources to be embedded in curricula in a wider field.

Embedding SONIC

Adult: UCLan

SONIC is formally introduced in the first module of the Adult Branch. Therefore, the students are often aware of the principles of PBL prior to accessing the SONIC resources, having met it in CFP. It is introduced as part of a key note lecture alongside a demonstration of how to access and move around the website, as well as in the form of flyers given to the students.

SONIC enables students to develop their independent learning skills at their own pace in a way suited to their individual learning styles. In addition, it facilitates further development of their IT skills, contributing to their module learning outcomes.

Mental Health: Northumbria

The material is currently used in trimester one/year two of the BSc(Hons)/Diploma in Nursing Studies/Mental Health and located within one PBL module entitled Key Issues in Mental Health. This location will change once the programme is re-validated. The current scenario has changed from the original submission as the current author felt that a 'live case' scenario was more realistic for the students to work with than a contrived one, thus practitioners were sought in order to discuss with them current caseload issues from which the scenario was devised.

Child Health: Salford

PBL is regarded as the key learning mechanism for integrating skills development with academic content. The marriage of PBL and SONIC has presented an opportunity to enhance a paper package previously developed with clinical specialists. The trigger (scenario) is presented to students in the first module of Child Branch. The key skill of self-direction is evidenced by students accessing the materials whether on or off campus, in order to answer the questions posed by 'Bobby Braithwaite'.

Adult: Liverpool John Moores

The scenario was written based on a highly publicised television programme, with a view to learn about middle-aged women, pain management and surgical principles of care. It was developed to support students undertaking their first PBL module in the Adult branch. It is suitable for large numbers of students, encourages collaborative working, and promotes positive learning.

Learning Disabilities: Northumbria

SONIC is used in the first module of the branch programme. Normally, trigger materials for EBL are much briefer than that of the SONIC project and so the 'story' evolves over a period of five weeks. The EBL process is slightly different in the module in which SONIC is used. In the Common Foundation Programme SONIC has been introduced as part of the resource material to fulfil European Directives.

Dissemination

Networking is a crucial activity, and whilst it can take up a great deal of time and energy, the positive outcomes of face-to-face discussions are immeasurable.

The SONIC journey started with the inception of the PBL Special Interest Group. A group of nurse lecturers, with a common interest in developing problem-based learning, first met in Salford in July 2001 and one of the visions of the group was to develop collaborative projects with PBL as a focus. During the lifetime of the project it has grown to a national group supported by the Health Sciences and Practice Subject Centre. Meetings are held three times a year around the country and currently it has a membership of 85 from across the spectrum of health care professions and beyond.

The team have held workshops for colleagues, for example at UCLan, at the Department of Nursing 'Away Day'. The session involved demonstrating and discussing the use of SONIC. Although most people had heard of SONIC in the department, not all had taken the opportunity to access it. The workshop allowed them to see first hand the extent of the resources and how they could be used with different curricula.

Engaging in Evaluation
The Project Manager and the technologist visited institutions wishing to take part in the evaluations in order to discuss the project and the expectations. On two occasions the institutions decided not to proceed with the evaluations, but the visits had heightened awareness of the project and the resources which are available.

Conferences are an obvious opportunity for networking, but there is a need to be judicious in the choice of which conference to present at. Generally we have been overwhelmed by interest from people at conferences. At one (e-learning) conference, it was standing room only. The occasional international conference is a good opportunity as the information about tracking illustrates. The Thai connection (see tracking) came about directly as a result of giving a presentation in Calgary, Canada.

Subject Centres provide many networking opportunities through their conferences and workshops, and project team members have presented at the Festival of Learning on three occasions. Similarly the Teaching Quality Enhancement Fund provided opportunities specifically to support FDTL projects.

National Conference

We also chose to run a joint one day conference. 'Developing learning and teaching: implementing student-centred resources for problem-based learning and learning styles' was a one-day conference which reported the successful outcomes from two related FDTL4 projects - on PBL and learning styles - and their importance for students' learning. This took place at uclan on 24/11/05.

Other conference presentations can be seen at the end of this monograph.

Creative Thinking Fora

This was a series of three workshops designed to target a specific audience. The first was held for academics in October 2003, followed by one for individuals who support students in practice, such as practice educators, mentors. A third day was held for students in March 2005. The format was similar for each day, with a presentation of the resources, followed by discussion groups. The purpose was to introduce the resources and to ask groups to identify where and how they can support student learning, as well as where more work needed to be carried out.

Project Products

In addition to the free access to the website two other products are linked to the project, these are freely available on application to Project Manager.

Business card CD – a small CD which sits in the CD drive and takes the user straight to the website. The computer needs to be networked to use all the facilities.

A **CD** of the website. The computer does not need to be networked, in which case all the facilities can be used except the hyperlinks.

- 'some of the students had viewed the resources prior to coming to class. They found this helpful and appreciated the support from me to clarify certain points'

- 'students were very positive and enthusiastic'

- 'there was a mixed response from the students – some have accessed it, but some are unsure at the moment'

- 'Learning from a computer does not suit everyone's learning needs.'

- 'It links with the way students want to learn – it's the fast click that they seem to want.'

- 'It enables students to learn about other areas of nursing that they do not encounter within their own branch.'

- '...fortunately SONIC was self-explanatory.'

- 'I found the scenarios useful for adult students and would welcome more such scenarios.

- 'Students found it easy to relate theory to practice using these resources, especially when they worked in small groups so could discuss their findings amongst themselves.'

- 'Having the hyperlinks presented a good opportunity to discuss how to assess websites and their use.'

- 'There was a real buzz amongst the students. It was great to see and hear!'

Final thoughts and lessons learned:

These are a series of points for further discussion which in turn will help develop further research, particularly pedagogical research.

- A number of institutions showed an interest in resources put did not pursue engagement with the evaluations. It is not clear why, as no explanation was given. It is possible that time was a factor and/or the financial assistance was not great enough. However it is an area worth considering for further work, especially with the growing interest in interprofessional working.
- The project did not recruit other professions as part of the evaluation. This relates to the previous point. However, in hindsight, when developing the Project Team and Steering Group greater efforts could have been made to include them then.
- Some issues arose when recruiting an administrator. Redefining the post as an assistant (with better pay) may have improved the recruitment situation. It is unclear whether this was a local or national situation.
- Ensuring technical and academic staff fully understand each other and the expectations of the other party enables smooth working.
- A number of requests have been received for more scenarios. Whilst the SONIC website will continue to be maintained, extra funding will be sought to enable the website to take on more scenarios.
- The development of the scenarios and their resources are regarded only as a starting point. The team will be keen to pursue work in relation to developing more scenarios, working with students with regards to their learning needs and styles of learning, and working with facilitators and the types of support and development they would welcome.
- The students liked the flexibility and the accessibility of the resources. The growth in various technological support systems, such as laptops and mobile phones with internet facilities, illustrate this point. There are also students who only wish to engage with technology at a superficial level, and the SONIC resources support these different learning styles.
- E-learning has grown rapidly during the lifetime of the project. An issue which would receive further attention would be the developmental needs of the facilitators, particularly in the link between PBL and online learning.
- How PBL is situated would also receive greater attention, with the consideration of moving towards transdisciplinary learning, as advocated by Savin-Baden (2004).
- Consistency of the group is important, and whilst some members have left the group and been replaced by others, the desire to achieve the main outcome of the project has been strong. Regular contact through email, telephone and meetings has also been important. Meetings have always been held at UCLan, on a regular 2 monthly basis. This has helped team members to plan their work. Being involved in other activities such as FDTL meetings, conferences and networking opportunities has offered personal and professional development.
- Keeping the Steering Group engaged is a challenge, and one well worth rising to. This group invariably offers a wealth of experience and expertise from which the wider team, and those engaged in the evaluations, can benefit from.
- Moira McLoughlin and Angela Darvill (Salford) have been successful in their bid to the HS&P subject centre for funding a mini project which will look at evaluating the use of the SONIC resources across the Faculty of Health and Social Care at the University of Salford.

And finally, the last word from a student:

- 'It was very thought provoking as it felt that we were linking illness to people and relating one illness to another i.e. one illness being the consequence of another. Also made us start to think what should be available within the NHS and then find out what is actually available.'

References:

Biggs, J. (2003) 2nd ed. *Teaching for Quality Learning at University* The Society for Research into Higher Education and Open University Press, Buckingham.

Clark, R. C. & Mayer, R. E. (2003). *E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning.* Pfeiffer, San Francisco , California.

Department for Education and Skills (2003) *Widening Participation in Higher Education.* HMSO, London

Department of Health (1999) *Making a Difference: Strengthening the Nursing, Midwifery and Health Visiting Contribution to Health Care.* HMSO, London

Disability Discrimination Act (2005), HMSO, London.

Glen, S. & Wilkie, K. (2000) *Problem-based Learning in Nursing* Macmillan, Basingstoke

Littlejohn, A. (2003) Reusing Online Resources Kogan Page, London.

Lowe, R.K. (2004). Animation and learning: Value for money? In R. Atkinson, C.McBeath, D. Jonas-Dwyer & R. Phillips (Eds), *Beyond the comfort zone: Proceedings of the 21stASCILITE Conference* (pp. 558-561). Perth, 5-8 December.
http://www.ascilite.org.au/conferences/perth04/procs/lowe-r.html (accessed 18/12/05)

Mason, R. (1998) Models of Online Courses ALN Magazine 2(2) http:www.aln.org/alnweb/magazine/vol2_issue2/Masonfinal.htm (accessed 21/12/05)

National Health Service (2000) *Positively Diverse* Department of Health, London

Oliver, R. & Herrington,J. (2003) Exploring technology-mediated learning from a pedagogical perspective. *Journal of Interactive Learning Environments* 11 (2). 111-126.

Quality Assurance Agency (2001) *Benchmark Statement Healthcare Programmes: Nursing* HMSO, London.

Ritzer, G. (1996) McUniversity in the Postmodern Consumer Society. *Quality in Higher Education* 2 (3) 185-199

Savin-Baden,M. (2004) Pedagogical Evaluation of Students Online in Nursing Integrated Curricula (SONIC) (unpublished)

Scardemalia,M. & Bereiter, C. (1994) Computer Support for Knowledge-Building Communities. *The Journal of the Learning Sciences* 3(3) 256-283

Schmidt, H. (1983) cited in Glen and Wilkie (2000) *Problem-based Learning in Nursing* Macmillan. Basingstoke.

Special Educational Needs and Disability Act (2002) HMSO, London.

Thorne, K. (2003) *Blended Learning* Kogan Page, London

Wilkie, K. & Burns I. (2003) *Problem-Based Learning A Handbook for Nurses* Palgrave, Basingstoke.

Publications

Gibbon, C. (2003) 'From little acorns of collaboration...FDTL projects grow' *Bulletin* Spring Issue 10 p11 –12

Gibbon, C. (2003) FDTL 4 Health Related Project Updates *Centre for Health Sciences and Practice Newsletter* Summer 2003 Newsletter 9 p8

Gibbon, C. (2003) SONIC and problem-based learning. *Edlines* Summer 2003 p4

Gibbon, C. (2004) The SONIC Project. *Centre for Health Sciences and Practice Newsletter* Autumn 2004 p8

Gibbon, C & McLoughlin M. (2005) The Interface of Problem-Based Learning and Technology: The SONIC Experience. *Proceedings of the IASTED International Conference,* Calgary 2005 p242-246

Gibbon,C. (2005) Final Report for Students Online in Nursing Integrated Curricula (SONIC) project. Submitted to Higher Education Academy.

Gibbon, C. (2006) Enhancing clinical practice through the use of electronic resources. *Nursing Standard* 20, 22, 41-46.

Conferences

19-20/9/02	'Students on-line in Nursing Integrated Curricula' (SONIC) LTSN *Festival of Learning – Bristol*
5/11/02	'SONIC' *RCN NW Education Forum Conference, Leyland, Lancashire*
23/1/03	'SONIC' – poster presentation at *ILTHE Members Forum, Sheffield Hallam University*
19-20/3/03	'SONIC' *LTSN Festival of Learning - Edinburgh*
4/4/03	'SONIC' *Clinical Skills Network Conference, Bath*
12/5/03	'SONIC' *School of Health Studies, Edge Hill College*
3/9/03	Developing web-based materials to support problem-based learning. *Nurse Education Tomorrow conference, Durham*
20/10/03	SONIC *Creative Thinking Forum, Preston Marriott Hotel*
29/10/03	'If only I had known..' *North West Universities Association, UCLan*
3/11/03	Developing web-based materials to support problem-based learning. *TQEF conference, Nottingham*
25/3/04	The Development of Web-Based Resources to Support Students Undertaking Problem-based Learning. *5th European Regional Conference Commonwealth Nurses Federation, Malta*
18/5/04	Enhancing practice through greater understanding: the SONIC experience. *Making it Happen. Making it Better: Developing our Practice. UCLan*
11/6/04	SONIC: A Project to Develop Web-based Materials to Support Problem-based Learning. *Nursing Higher Education Teachers Training Conference. Shanghai, China*
6/7/04	Developing Web-based Materials to Support Problem-based Learning. *Teaching, Learning & Research Week. UCLan*
15/9/04	Problem-based Learning and Online Learning. *Problem-based Learning 2004: a Quality Experience? Conference. University of Salford*
15/10/04	Problem-based Learning: Developing Competencies and Skills for Global Nursing (Keynote). *5th International Conference of F.I.N.E. University of Sibiu, Romania.*
15/12/04	E-learning and problem-based learning: Complementary or colliding pedagogies? (Maggi Savin – Baden lead presenter). *Whose Higher Education – Society for Research into Higher Education Conference. University of Bristol.*
24/02/05	Technical Developments with Projects: The Joys and the Tears. *Launching FDTL5 – Higher Education Academy. Manchester*
18/3/05	The 'fast click' generation: web-based resources to support learning. *E-Learning in Health and Social Care Conference. North East Wales Institute, Wrexham*
12/5/05	The Interface of Problem-based learning and technology: the SONIC experience. *Inspiring Learning: Diversity and Excellance – SEDA conference. Wellington Park Hotel, Belfast*
15/6/05	The usefulness of SONIC to nursing students. Poster presentation. *Third Annual Developments in Nurse Education Conference. University of Salford.*
3-8/7/05	An Animation 'Construction Kit' for academics. *Seeing and Understanding: Guiding Visualisation Research in Science and Education: Gordon Conference, Queen's College, Oxford.*
5/7/05	The Interface of Problem-based Learning and Technology: The SONIC Experience. *IASTED Education and Technology Conference, Hyatt Hotel, Calgary, Canada.*
18/10/05	The development of web-based resources to support students undertaking problem-based learning (invited paper) *HEMES, Liege, Belgium*
24/11/05	*Developing learning and teaching: Implementing student-centred resources for problem-based learning and learning styles. (Project Conference) Harris Park, University of Central Lancashire.* Papers – • Pulling the Trigger • Key Skills, Collaboration and PBL. Does using SONIC enhance key skills in any way? • An interprofessional learning mountain! – one way of getting to the top • Intellectual Development through Animation • Embedding super-SONIC learning in the Nursing Curriculum • SONIC to SuperSONIC: Learning beyond a project.
12 -13/1/06 SONIC:	Blended Learning: a useful development for student learning? *Education in a Changing Environment Conference, University of Salford*

Carolyn Gibbon

Department of Nursing

University of Central Lancashire

Preston PR1 2HE

Tel: 01772 893639

Email: cjgibbon@uclan.ac.uk

Web: www.uclan.ac.uk/sonic