Contribution to symposium on:
Networked Learning in Medical Education (Dr. Chris Roberts, Department of Medical Education, University of Sheffield)

Title of paper: Team Perspectives: Multiprofessional
                                    Learning on the Web
Authors: David Moore and Greg Brown
Institution: University of Sheffield
Name and address of contact person: Greg Brown
                                    90 Orchard Rd
                                    Sheffield
                                    S6 3TS
Telephone: (0114) 231 2656
Email: greg.brown@doctors.org.uk

Five key words: multiprofessional, student-led, e-learning,
                                    problem-based, peer tutoring

TEAM PERSPECTIVES:
MULTIPROFESSIONAL LEARNING ON THE WEB

David Moore and Greg Brown

Sheffield Medical Teaching Website
www.tomorrowsdoctors.org.uk

December 2001

Background

This paper will describe an innovative approach to undergraduate education where we as University of Sheffield medical students will implement and evaluate a web based teaching package within a student led collaborative learning environment. This approach draws on the strengths of four educational strategies, which are currently of interest to medical schools- multiprofessional learning, e-learning, problem based learning and peer tutoring.

1. Multiprofessional learning

There is currently a great deal of interest in the field of multiprofessional education. This can be defined as educating health care professionals from different backgrounds together. In the Government's drive to improve the National Health Service, one of the key strategies to improve the health care which patients receive is to improve the way in which the health care team functions. Patient care is largely delivered by multidisciplinary teams of health care professionals, both in community and hospital-based settings. Learning together, both at the undergraduate and postgraduate level is seen as a means of promoting better team work and patient care.

2. E-learning

Computer assisted learning is another are of current interest. Recent developments in information and communications technology have facilitated the delivery of teaching and learning packages over the World Wide Web. The potential of case based learning packages has been described as a means of delivering education.

3. Problem-based learning

Problem-based learning is widely used as an educational strategy in modern medical education. This approach involves focussing student learning around a problem (usually a clinical or patient problem in medicine), with the students taking responsibility for their learning, defining the learning objectives, devising strategies for fulfilling them and feeding that learning back to the group.

4. Peer tutoring

The role of students in teaching each other is also being developed in the medical arena. Teaching has long been acknowledged as an excellent way to learn.

Local Context

Medical Students at Sheffield University have been involved in developing medical education on the web through setting up a student-led website, the Sheffield Medical Teaching Website (www.tomorrowsdoctors.org.uk). This project aims to exploit the opportunities offered by computer assisted learning (e-learning) and draws on the students in designing and producing the learning materials (peer tutoring).

Why this approach?

An approach to multiprofessional learning is required which overcomes the barriers we have described and produces the desired results. We believe

that the combination of the four educational strategies could result in a new model which would provide added value compared to using the other strategies in isolation.

We would therefore like to involve students from different health care professionals in developing a case based e-learning package and investigate the impact of the project on the students involved and students using the learning package. This process would draw on the strengths of learning strategies I have described:

It is envisaged that the actual **process** would foster a greater understanding of the roles of each profession and give unique opportunities for the participants to develop skills in team work and information technology.

The **product** would allow students from disciplines to explore clinical cases without the boundaries of traditional roles.

Aims
The first aim of this paper is to describe the collaborative arrangements underpinning the student collaborative learning environment. The second aim is to describe the educational value of a multidisciplinary team of health care students working together to produce an e-learning package.

Objectives
1. To draw together a multidisciplinary team of health care students and design and create a functional case based e-learning package.
2. To evaluate the impact of this exercise on this team in terms of their own professional development.
3. To evaluate the impact of the e-learning package on a group of students looking at:
   - Positive aspects of using the learning package
   - Negative aspects of using the learning package including barriers to the use of e-learning
   - what they learned about:
     a. Medicine
     b. The roles of other professionals in the health care team

Research Design
Preparation
   - Recruitment of a student to be the project manager.
   - Ethical considerations for the project, paying particular attention to the use of real patients and the ethical aspects of making visual recordings and obtaining informed consent to publish them on the internet.
   - Appropriate authorisation and support would be obtained for the project and a clinical setting in which to operate would be identified.
   - Health care professionals would be recruited to provide support and expert advice to the team and provide access to patients.
   - Recruitment of a student in Computer Science to do the web and graphical design as a project.

> ➢ A team of students from nursing, medicine, physiotherapy and occupational therapy would be recruited.

Implementation
The students would be briefed at an introductory session and the task for the project would be set. Available resources would be identified such as computing facilities and equipment for taking photographs and video clips.

Students would then go through the following process:

> ➢ Identification of a clinical problem which illustrates the role of other professions well
> ➢ Students brainstorm learning objectives for that problem for each of the professions involved.
> ➢ Students learn about designing interactive cases and look at other examples on the Web or on CD ROM and also look for existing web-based resources.
> ➢ Students design the layout of the overall case or cases and then a student from each profession designs the particular part of the case for their profession and brings it back to the group.
> ➢ Visual material to illustrate the case or cases is obtained with the assistance of health care professionals e.g. photographs of patients are taken, video clips are filmed. These tasks can be divided up amongst the group.
> ➢ The draft paper layout of the case is completed, along with the pictures and video clips and students then take it to a health professional for review and advice.
> ➢ Final changes to the case are completed and it is then given to the Computer Science student for design and realisation.
> ➢ The students review the finished product and suggest changes. Health Care Professionals can also be consulted at this stage to review the final product.

Evaluation:
The package would then be tested on a fresh group of 50 students, chosen at random from across the professions and the evaluation would be done. This would then be fed back to the case designers for amendments to the case. The case designers would then take part in the evaluation process to see how the project affected them and what they learned from it.

Conclusion
This project aims to pilot a very innovative approach to multiprofessional learning by combining elements of other important education strategies, namely peer tutoring, e-learning and problem based learning. The impact of the process on the students involved and the finished product would be evaluated with a view to determining the educational benefits of the approach and the feasibility of extending the approach to larger numbers of students.

Managed Learning Environments for Medical Education

Roberts C, Lawson M, Newble D, Self A

Department of Medical Education, University of Sheffield

Correspondence to c.roberts1@sheffield.ac.uk
Senior Clinical Lecturer in Medical Education
Coleridge House
Northern General Hospital
Sheffield
S5 7AU
Tel No: 0114 266784

Background

The Sheffield Networked Learning Environment (NLE) has been developed with a consortium of Universities from the UK. Newcastle University has led the group who had the common goal of wishing to facilitate learning for medical students using a networked learning environment. The School of Medicine and Biomedical Sciences, University of Sheffield has joined the consortium as a non funded partner within the Teaching and Learning Technology Programme Phase 3 (TLTP3) Project Number 86 *Facilitated Network Learning in Medicine and Health Sciences.*

Sheffield have modified and developed a suite of communication and information technology (C&IT) approaches to facilitate, manage and support interactive teaching and learning for medical students and create the sense of a managed learning environment (MLE). In particular, a flexible Internet database solution has been developed which is capable of:

- Storing course management information and course content (curriculum database)
- Hosting interactive teaching materials- the Integrated Learning Activities (ILAs)
- Providing support and tutoring to students via e-mail
- The ability to select modules on-line and have access to course administration tools (under construction)
- The provision of on-line assessment (OLAS: a formative multiple choice question engine).
- Supporting quality assurance administration (under construction)

- Demonstrating the integration of the School's teaching and learning strategy within the revised curriculum due for implementation in 2003.

Aims

This paper will describe a case study where the School of Medicine and Biomedical Sciences, University of Sheffield is in the second year of implementation of a Managed Learning Environment. This has been

placed at the centre of the curriculum development process for undergraduate medicine

Objectives

A number of key challenges identified within the higher education literature are addressed. These include:

- **Development of cross institutional architectures for the delivery of materials and distributed and collaborative information.** The University of Sheffield supports WebCT. We will describe how the NLE integrates with the Management Information Systems without the central support provided for WebCT.
- **Delivery of learning materials.** We will describe the collaborative agreements for the development of web-based learning materials which support problem-based learning within the new outcome-based curriculum
- **Student access to services.** Collaboration with the NHS community has provided a mechanism for access to the NLE from both on campus and within clinical and community placements
- **Provision for "virtual cohorts".** The move to more community based teaching where students may access the NLE from widely dispersed sites provides a natural test bed for self-directed collaborative learning
- **The electronic student record**. There is a considerable interest within the medical establishment to move towards portfolio-based assessment . Clinical teachers are likely to be required to produce one for their own professional development and re-certification. Students will be required to produce them to evidence their own development of professional values and behaviours.
- **The impact of MLEs on institutional teaching and learning strategy.** In addition to promoting integration and interoperability at the technology level , we will describe how the affordances of the NLE can promote "joined up learning" within medical education.
- **Implications of MLEs for staff development.** This will include issues such as management of institutional change, strategic and operational planning, changing roles and responsibilities, re-training and awareness raising for all staff.

The way these issues are being approached in Sheffield will be described along with difficulties encountered and strategies developed to deal with them.

Keywords: medical education, undergraduates, networked learning consortia, managed learning environments