

2002

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Recommended Citation

Donnelly, R. (2002) Delving Deeper with Online Learning? *EDINEB 9th Annual Conference, Mexico, June 19-21, 2002.*

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Delving Deeper with Online Learning?

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Biography

Roisin Donnelly received the Postgraduate Certificate in Teaching in Higher Education from the University of Ulster at Jordanstown, which led on to her completing the M.Ed. in Professional Development in Higher Education. She has an M.Sc. in Computing and Information Systems and brings 8 years of experience in higher education as a lecturer and researcher in Northern Ireland and Sydney, Australia. She has worked on a number of EU funded projects in Germany and Portugal during her time with the Northern Ireland Knowledge Engineering Laboratory. She is treasurer and assistant co-ordinator of the Northern Ireland Expert Systems Group. This is the NI region of the British Computer Society Specialist Group on Expert Systems. It brings together for discussion academics and manufacturing industry people in Ireland who are interested in developing Expert (KBS) Computing Systems.

Her teaching and research interests include Computer Assisted Learning and Assessment, Integrating ICTs in to Teaching, Presentation Skills, Active Learning Methods, Online Learning Environments, and Research Methods in HE. She is continuing her research in higher education through the Doctor of Education Degree (EdD) from Queen's University Belfast.

She has been working for the last two years in the Learning and Teaching Centre in the Dublin Institute of Technology, primarily in the area of researching and developing online learning environments for higher education.

Abstract

This paper describes a study being undertaken to explore whether course material delivered using a combination of online and problem-based learning approaches will lead to a deeper understanding of the learning issues by the students. The process of delivering an Online Learning (OL) Module using a Problem-based Learning (PBL) approach in a Postgraduate Diploma in Third Level Learning and Teaching at a higher education institute in Ireland. The students who undertake this Module are a cohort of academic staff (Faculty Members) in Higher Education who are taking this module part-time. They are hitherto referred to as participants. This module is one of eight offered on a Postgraduate Diploma in Third Level Learning and Teaching. The entire PG Diploma is entirely voluntary and only Faculty who are keen to implement novel pedagogical approaches in their own subject disciplines apply for a place on the modules.

The aim of this module is to enable the participants to become aware of the practicalities of developing, co-ordinating, supporting and evaluating a short online course in their own subject discipline; but the key to their success is by using the principles of PBL to share valuable information with their colleagues in a variety of other disciplines.

The crux of this Module is providing the participants with the opportunity to develop a range of online materials. Their beginning point is to justify a decision to deliver a course online rather than by conventional face-to-face methods and conducting a training needs analysis in support of it. They then explore the selection of an

appropriate structure and mode of supporting the module for a specific target group and producing a plan for its design, development and evaluation.

Thereafter, they examine how to design appropriate teaching, learning and assessment strategies and develop online learning materials for delivery within the proposed online module. Finally, developing a cost analysis for the production of the specific online module is included. It is felt that throughout, developing the participants' ability to reflect on their own and their students' learning through the maintenance of a reflective log is important for their individual development and for the collaborative process that they are undertaking online.

This collaborative process is supported with appropriate online and face-to face tutor sessions. The opportunity is being given to enhance group learning in a real life multi-disciplinary learning environment.

The question can be asked why use an online approach for this, rather than continue allowing participants to work in a face-to-face learning environment? Quite simply, the main idea is to provide these participants with a taste of what is possible in an online learning environment, and the problem-based learning aspect played an important, albeit, secondary role. Therefore, the role of PBL is for its motivational benefits - for the participants to learn new online skills, and new skills online, all collaboratively. They are involved in active learning throughout, working with real-life problems in their teaching situations and what they have to learn in their independent and collaborative study is seen as relevant and important to enhance this.

Arguably, all these factors are important in today's global learning marketplace, but this study seeks to take this further by exploring the depth of learning that is actually taking place.

Module Design

A top-down design is used for the module and icons are developed in the software to reflect this design (Figure 1).

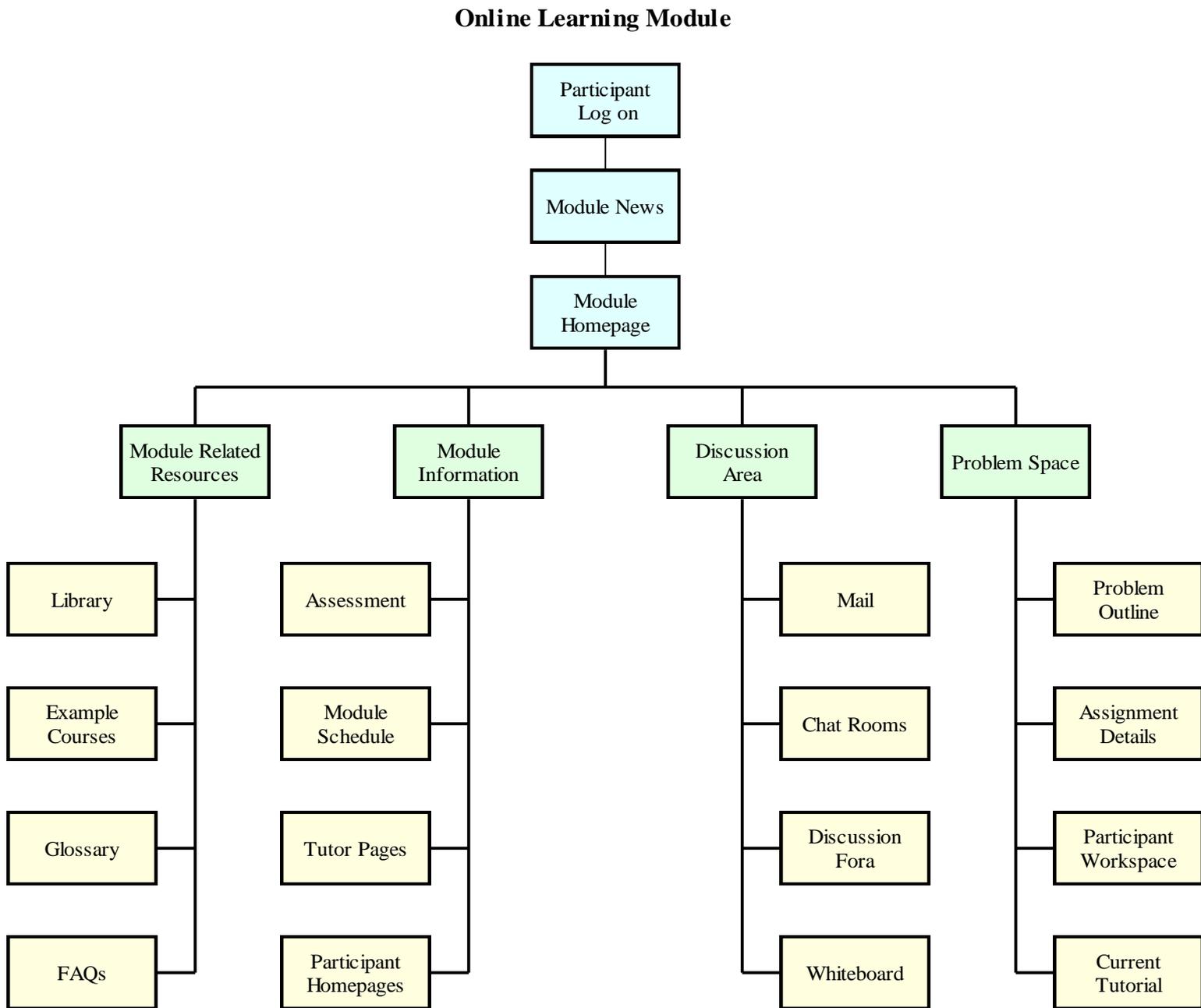


Figure 1

The OL/PBL Module

Attendance and online participation for the module is normally for three hours per week for ten weeks. The main focus is on the Communication facilities in the OLE, namely the Discussion Fora and the Chat Room. For each of the two problems which were set for the participants to operate as a PBL group to solve, the bulk of the group's deliberations were posted to the Discussion Fora. Relevant information which individual members of the group unearthed on their various information retrieval jaunts were uploaded to the Discussion Fora for sharing with the whole group (Figures 2 & 3). The PBL Group then organised a number of Synchronous Chat Sessions, both with and without tutor support, to discuss pertinent issues about the problems.

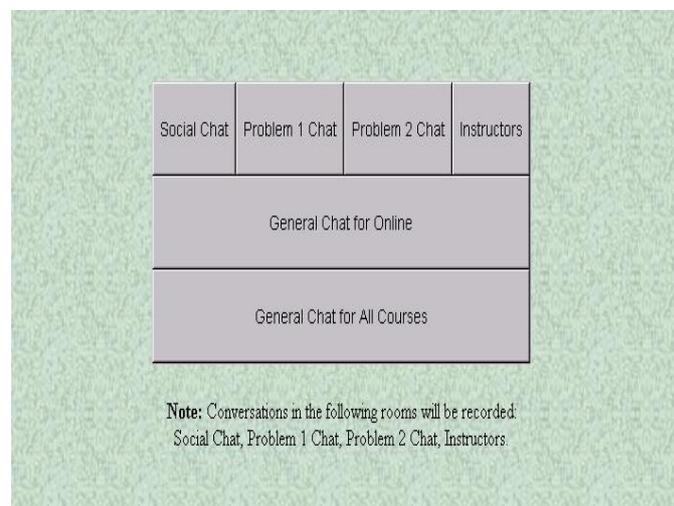


Figure 2

The screenshot shows an online forum interface. At the top, there is a 'Compose Message' button. Below it are buttons for 'Select all', 'Search', 'Mark all as read', and 'Update listing'. The current page is 'Problem2 / Select topic' with a dropdown menu. Below this are buttons for 'All Messages', 'Show Unread', 'Threaded', and 'Unthreaded'. There is a 'Select none' button and a text input field 'Apply to selected message(s) below:' with a 'Compile' dropdown and a 'Go' button. A paperclip icon is next to the text 'See Attached'. Below this is a link 'Strategy procedures Problem 2' and a list of messages: '124. Una Coleman (UNACOLEMAN) Tue, Mar 27, 2001, 19:29' and '126. Kathleen Kennedy (KATHLEENKENNEDY) Wed, Mar 28, 2001, 14:37'. At the bottom is a link 'An ongoing Query about saving files to your PCs'.

Figure 3

The three tutors for the Module were based in Learning and Teaching Centres at two separate institutions, and had between them, a wide experience of designing and delivering courses with online learning environments. They had themselves taken a number of online courses to experience this learning as a student, and were practised in providing online and face-to-face tutor support.

The participants had all completed a traditional problem-based learning Module prior to starting this online learning Module. They were aware that Problem-based Learning is centred on a problem which has to engage students' interest, compel them to take it on as their responsibility, support the development and application of problem-solving and conceptual skills and stimulate self-directed learning into areas of study relevant to the curriculum (Barrows, 1999).

Prior to the Module being designed, I conducted a full international literature review on the relationship between Online Learning and Problem-based Learning, with the intent to review current research in the two areas. The research has shown that there are a number of instructional strategies that can be well supported through modern interactive learning environments. Whether it be an individual problem presented on

CD-ROM or Web-based collaboration, there are many advocates for problem-based learning as a framework for motivating learners and generating high quality learning outcomes:

“Problem-based learning is thus particularly suited to assist students towards mastery in a range of generalisable competencies and to support effective adult learning in the cognitive and affective aspects of a course in higher education.” (Engel in Boud & Feletti, 1991).

The research asserted that technology-mediated learning can play an important role in the problem-solving process (Hedberg, 2000). This paper examines this role through the design and implementation of the module.

PBL and Collaboration in the Module

Interaction is a critical component of constructivist learning environments, whether via the web or in person, because learning occurs in a social context through collaboration, negotiation, debate, and peer review (Grabinger and Dunlap, 2000).

This module also follows a constructivist perspective, showing that there are three critical components to the online interaction taking place in the module. First, an academic (learner-to-content) component occurs when the participants access online materials and receive task-oriented feedback from the facilitators.

Second, a collaborative (learner-to-learner) component occurs when the participants are engaged in discourse, problem-solving, and product-building using the facilities in

the online learning environment. This integration component helps the participants validate their learning experiences, and requires a level of reflective articulation that promotes collective knowledge-building and a deeper personal understanding of what is being studied.

Finally, an interpersonal/social component occurs when the participants receive feedback from the facilitators or their peers in the form of personal encouragement and motivational assistance. Social interaction can contribute to learner satisfaction and frequency of interaction in an online learning environment. Without the opportunity actively to interact and exchange ideas with each other and the facilitator, the participant's social as well as cognitive involvement in the learning environment will be diminished.

Pre Induction to Module

In order to ensure that the module participants are comfortable with using the necessary technology and are not experiencing access problems, a pre-induction questionnaire is emailed to them at their email address in their institutes (Figure 4). This is used to ascertain whether the participants have access to their own PCs at work or at home, in order for technical support issues to be dealt with. Some basic Internet skills are determined by asking them if they know how to attach a file to an email message. All these are pre-requisites for starting the online module.

In addition to this questionnaire, it was requested that all candidates send an email message to one of the Course Tutors with an attached Microsoft Word Document (with a maximum of 500 words) stating:

1. Why they want to do this online course
2. How completing this course will benefit their department

Module Induction

The Module begins with an Induction Week for the participants to become familiar with the online learning environment and be introduced to the merits of using a Problem-based Learning approach for the module. At the beginning of the Induction Week, the participants are provided with a hard copy of an induction pack that provides practical details for logging onto the learning environment. They are asked to complete an Introductory Exercise online (Figure 5), the aim of which is to encourage the module participants to log on to and ask them to introduce themselves to their fellow participants in the Participant Homepages section.

For the purposes of this exercise you are asked to introduce yourself online to your fellow participants by entering text into the text boxes under these headings:

Name: _____

Current Job Description: _____

Previous Experience with
Online Technology: _____

Current Academic Interests: _____

Figure 5

They are then required to complete an Internet Detective Online Tutorial so that they will be in a position to discuss how to search the web effectively for learning resources (Figure 6). This is a Web resource based at the University of Newcastle which provides online tutorials.

Welcome to Internet Detective

What is Internet Detective?

Internet Detective is an interactive, online tutorial which provides an introduction to the issues of information quality on the Internet and teaches the skills required to evaluate critically the quality of an Internet resource.

Why do the tutorial?

The Internet offers access to many resources but some of them can be of questionable quality.

As things stand, the Internet has no system of quality control - all of human life is there - the good, the bad and the ugly: academic journals sit next to comics; presidential speeches next to idle gossip; today's news next to yesterday's news ...

It is often left up to you, the end user, to distinguish which is which!

- **don't degrade your work by using poor quality information**
- **don't get caught out by citing mis-information**
- **learn how to recognise high quality information quickly and effectively**
- **improve your Internet information skills**

Hire the help of the Internet Detective!

Figure 6

The full induction session then is conducted face-to-face. It is important for the group to meet each other in this way to assist with the group bonding process that will be so vital when they will be online at a later date. As Problem-based Learning is the learning that results from a group of people working towards the resolution of a real-life problem, it is important for the group to be fully inducted to the PBL tutorial process. They are given a web site on PBL as a reference to start. (<http://www.lgu.ac.uk/deliberations/pbl/index.cgi>) The information provided on this

web site is then reinforced with a presentation and question and answer session at the face-to-face Induction Session.

For the induction to the online learning environment, the tutors facilitate the participants to go through the relevant aspects course environment in order for them to get logged on to the module and use the facilities in the four main areas of the module, namely the Module Related Resources, Course Information, Discussion Area and Problem Space (Figure 7).

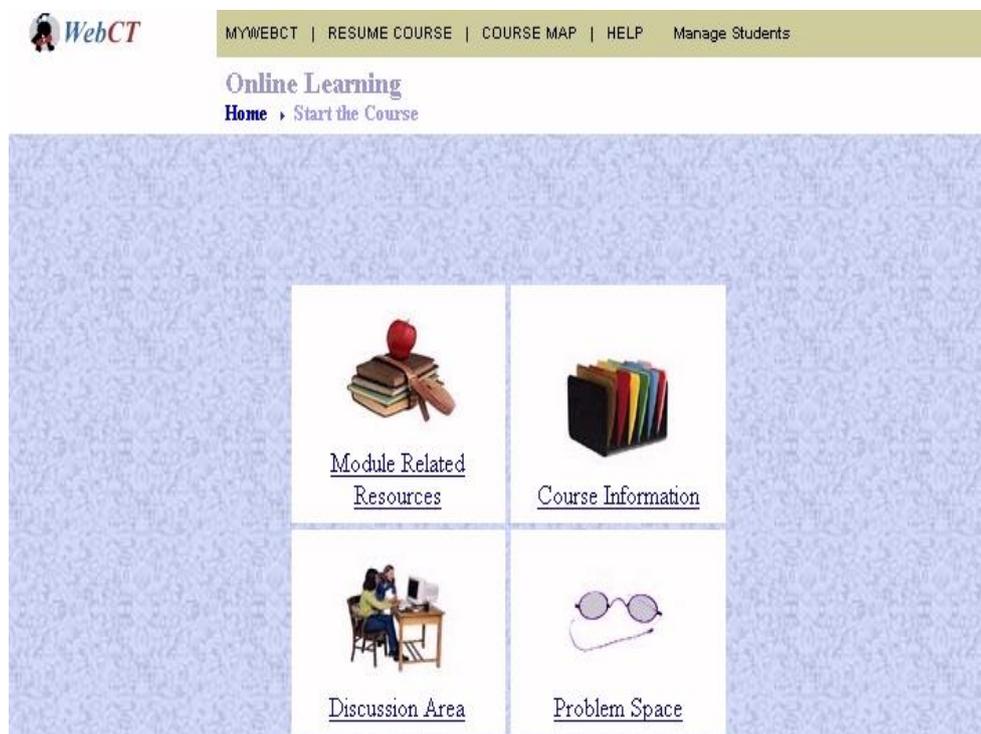


Figure 7

The Module Related Resources had four sections: a Library containing Online Articles, Books, Resources, Journals; Example Courses; Glossary; and FAQ (Figure 8).



Figure 8

Course Information similarly had four sections: Assessment (Figure 11), Course Schedule, Tutor Pages and Participant Pages.

The Module

The remaining nine weeks of the module consist of synchronous and asynchronous chat sessions. One session uses NetMeeting Desktop Video Conferencing Software, (<http://www.microsoft.com/windows/netmeeting/>) another uses full ISDN 6 Video Conferencing sessions, and two further sessions use fixed resources (Online Learning Consultants) to give online and face-to-face assistance to the participants on a number of areas relating to the real life problems they have been set. These “experts” were called upon to deliver instruction to the participants on Effective Use of Video Conferencing, a guide to using the facilities of online learning environments and online course prototyping.

Throughout these remaining weeks, the participants work as a PBL group with two real life problems which deal with a number of additional issues. The first problem

asks the participants to submit a written proposal to a company that provides online training courses, detailing a short training course they, as a group, have identified as suitable for online delivery, with reasons for their choice. The second, related problem asks the participants to deliver a prototype version of their course and provide justification for delivering it in this way. (Figure 9 & 10)

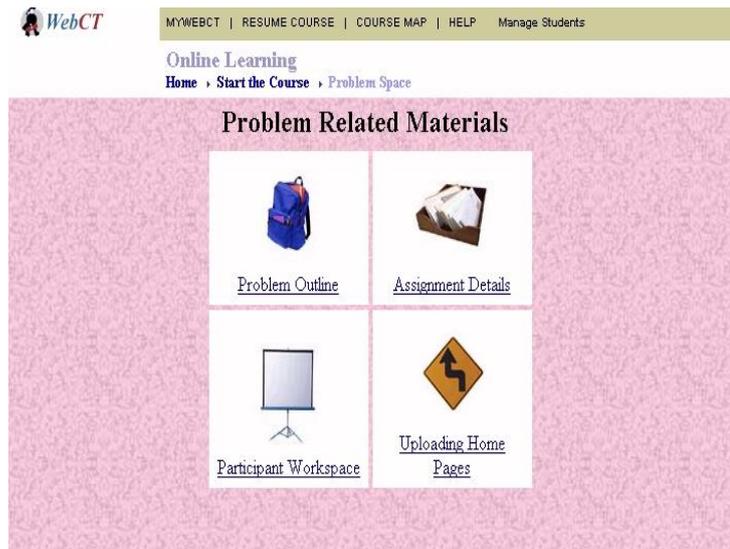


Figure 9

Problem 1

Proposals Invited

Theme
Developing Training Modules

Background
Ireland.Com are trying to attract well qualified Irish nationals back to the Republic by offering training modules which would be taught partly online and partly by short residential courses in Dublin. The company is prepared to provide all the required computing equipment and technical support but they are asking for assistance in the design of the online materials in a specific subject area.

Deliverable
What we would like from you is your expertise. For the first meeting we want you to propose a course module which you feel could be delivered online. We also want an outline plan of the proposed content of the course and why we should resource a pilot study of your project.

An outline of your proposal is to be presented to the company via Video Conferencing on 27th March - time to be decided.

Place of Presentation
Telematics Room,
DIT Aungier Street,
Dublin 2.

Closing Date for Applications
The closing date to express interest is 13.00 hrs on 16th March 2001 to LTS@qub.ac.uk.

Problem 2

Software Exchange

Background
Ireland.com has agreed to sponsor the development of part of your proposed course by supplying and supporting the learning environment (WebCT) free of charge. They will also provide £1000 of a WWW developer's time for the production of some of the online materials.

In exchange, they would like you to develop some prototype materials and an accompanying background report related to these materials by **22 May 2001**. They suggest that you focus on a topic e.g. team building as you proposed in your presentation or perhaps a sub-topic of this, if this is deemed to be too large.

Ireland.com is keen to promote quality in learning through their courses and so would encourage you to take this opportunity to demonstrate a creative but exemplary approach to the use of a range of ICTs available where appropriate within materials.

More information about the required content of the report is included in the assignment section.

Figure 10

From the PBL group perspective, undertaking a range of group roles within an online discussion forum are explored, along with designing online materials which will teach the key skills of developing effective teamwork skills and developing effective and efficient self-directed study skills. The participants are in effect designing the materials they are working with in this module.

The Assessment for the module is three-fold: a Group Presentation, a Group and an Individual Report. They are designed to demonstrate higher order thinking and problem-solving skills. Memorising facts is not sufficient as this module is designed to achieve deeper approach to learning for the participants: they are following the active learning principle of learning by doing. In order to promote the spirit of the group working together to achieve solutions to the problems, they are not allocated grades. They set their own assessment criteria for assessing the group process and a number of Pass/Fail criteria are set by the main tutor for assessing the end product, namely the prototype course designed and delivered by the participants (Figure 11).

Assessment Criteria

These criteria are used for all Diploma Modules.

	Team Work
PASS	contribute constructively to the maintenance of a group and the attainment of the group's collective goals
FAIL	little evidence of support for group activities or contribution towards group tasks

	Self-Directed Study Skills
PASS	evidence of taking responsibility for the self-evaluation and development of personal study skills
FAIL	little evidence of self-evaluation or development of personal study skills

	Higher Level Cognitive Skills
PASS	demonstrate originality of approach and evidence of creative and critical thinking
FAIL	Little evidence of an innovative approach and level of critical thought and analysis inappropriate for postgraduate work

	Practice Relevance
PASS	application of an appropriate theoretical framework within their own teaching practice
FAIL	Little evidence of links made between theory and practice

	Personal and Career Progression
PASS	evidence for taking responsibility for, reflecting upon and management of their own personal and career development
FAIL	Little evidence demonstrated for forward planning and progression in own personal and career progression

Figure 11

Challenges

From the outset, it was felt by the course team that the design and delivery of a problem-based learning module online was going to demand a high level of online tutoring skills. As current research indicates (Higgison, 2000), and it became clear to the course tutors themselves, there is no single 'correct' way to tutor online; we had to understand our role in terms of the specific PBL/OL context, the constraints of the learning environment, and the status of the learners. Our continuing role now is to share our experiences and reflect on our practice.

Conclusion

For this module, the exciting features offered by the Online Learning Environment provide a rich environment for learning for the participants. It also provides the infrastructure and communication facilities for them to work collaboratively online in a Problem-based Learning Group, giving them a new experience in higher education in this new millennium.

This module has just completed its first cohort of participants and the assessments have been reviewed by the tutors. We have received mixed evaluations. Some of the participants felt that the Problem-based Learning approach detracted from them concentrating on learning about online learning. Others felt that the group bonding which took place through using a PBL approach, and the subsequent working together on the two problems online, enabled them to have increased knowledge about the area.

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