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Experiencing Technology: Integrating Learning Technology Within The Experiential Learning Cycle of a PG Certificate in Third Level Learning and Teaching.

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Experiencing Technology:

Integrating Learning Technology within the Experiential Learning Cycle of a

PG Certificate in Third Level Learning and Teaching

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Abstract

This paper will discuss how a PG Certificate Course in Third Level Learning and Teaching for lecturers in higher education has adopted a particular approach in teacher education. In light of the findings put forth by Collis (1999), the paper will explain the practical aspects of how Learning Technology (LT) is *fully* integrated into both core Learning and Teaching modules of a PG Certificate Course for academic staff. As an important aspect of the successful integration and use of learning technology is the way in which it effectively reflects and articulates a given learning model, this PG Certificate Course has its theoretical basis on the Kolb Experiential Learning (EL) Cycle (Kolb, 1983).

CONCRETE
EXPERIENCE

ACTIVE
EXPERIMENTATION

REFLECTION

ABSTRACTION
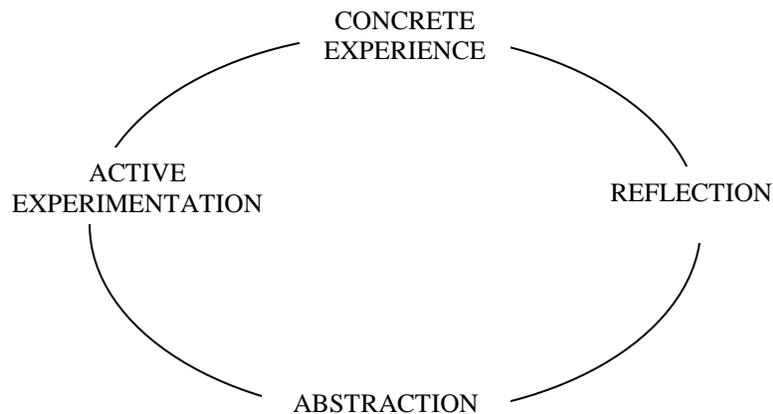
Experiential Model of Learning (Kolb)

Full details will be given on the relationship between the integration of Learning Technology (LT) to the Course and the Experiential Learning Cycle on which the design of the course is modelled.

This newly designed PG Certificate is aimed at academic staff at higher education institutions in Ireland. In higher education, it is important to encourage teaching that develops critical and independent thinking in its students and research that informs the teaching process. This course is an important step toward these goals. It is anticipated that over time those who complete this course will have a positive impact in higher education in Ireland by modelling good practices in teaching that enhance learning, and by generating increased interest in teaching and learning in their own departments in their institutes. All this is to be achieved by aiding the course participants to better manage the media mix and range of learning technologies available in higher education today. From the outset, it was recognised by the course team that LT would not be fully integrated into the institutes unless the academics on the course came to believe in it. An overall goal of this course is that it will act as a catalyst within the institutions, encouraging the lecturers to reflect on all aspects of the learning and teaching provision, including the integration of LT; by spreading this on-the-ground enthusiasm, the goal is that the management of the institutes will support the full scale implementation of learning technology in teaching practice.

Initially, the course was designed with two core modules in mind, Learning and Teaching in Higher Education and Designing Curricula and Assessment Strategies; a third Learning Technology (LT) Module had been designed to fit around this core. Comprehensive data on the educational use of computers as instructional tools within teacher education internationally is very limited, but it has shown that the

opportunity for pre-service teachers to experience models of computer supported instruction before they try to manage it themselves is seldom available (Collis, 1999). On reviewing the initial course design, and best national and international practice in the area, it was decided to integrate the LT Module into the two core modules, instead of having the technology as an incremental add-on. Practical details of the course being that each module is of 15 weeks duration, and the course participants meet for a face to face class session for 3 hours of each of these weeks. Independent learning is fully encouraged outside of this schedule.

The design focus was on the importance of fully integrating the use of LT within the experiential model of learning on which the programme was moulded, taking full account of the programme aims and objectives, assessment strategy and issues of student motivation.

No one technology can support all types of teaching and learning – an effective approach is to combine a range of technologies. While mixtures of new media can offer significant opportunities for participants, they can also be a daunting hurdle for newcomers, such as the cohorts who become the course participants. The challenge presented by this course, and the Learning and Teaching Centre in which it was located, was to enable the course participants to feel comfortable with using a range of LT and replicate that in their own teaching practice in their subject disciplines.

Introduction

During the last decade of the millennium, in countries throughout the world, a considerable amount of effort and expense has been spent on teacher education relative to computer related technologies. Courses and training relative to teaching and computers have involved large numbers of teachers in Europe, North America, Australia, and throughout the rest of the world including developing countries (Collis, 1999). Collis has argued that there has been little substantial symbiosis between the educational technology and the teacher education communities.

The design and implementation of this course has been contrary to this. This Postgraduate Certificate Course on Third Level Learning and Teaching for academic staff has fully integrated a range of learning technologies to teacher education and the LT education has been stimulated and delivered by tutors with an academic background in teacher education themselves.

The emergence of new learning technologies – multimedia and telecommunications – are presenting new challenges and opportunities to teacher education, and it was a strong wish of the course team to make use of them. Just as the teacher may no longer be able to be considered the primary source and organiser of his or her students' learning in the information society of the 21st century, neither may the traditional teacher education courses be able to adequately provide or control teacher education.

Course Design

The course was modelled on Kolb's Experiential Model of Learning which encompasses learning methods based on the experience of the learner. Relevance and application of learning are important features.
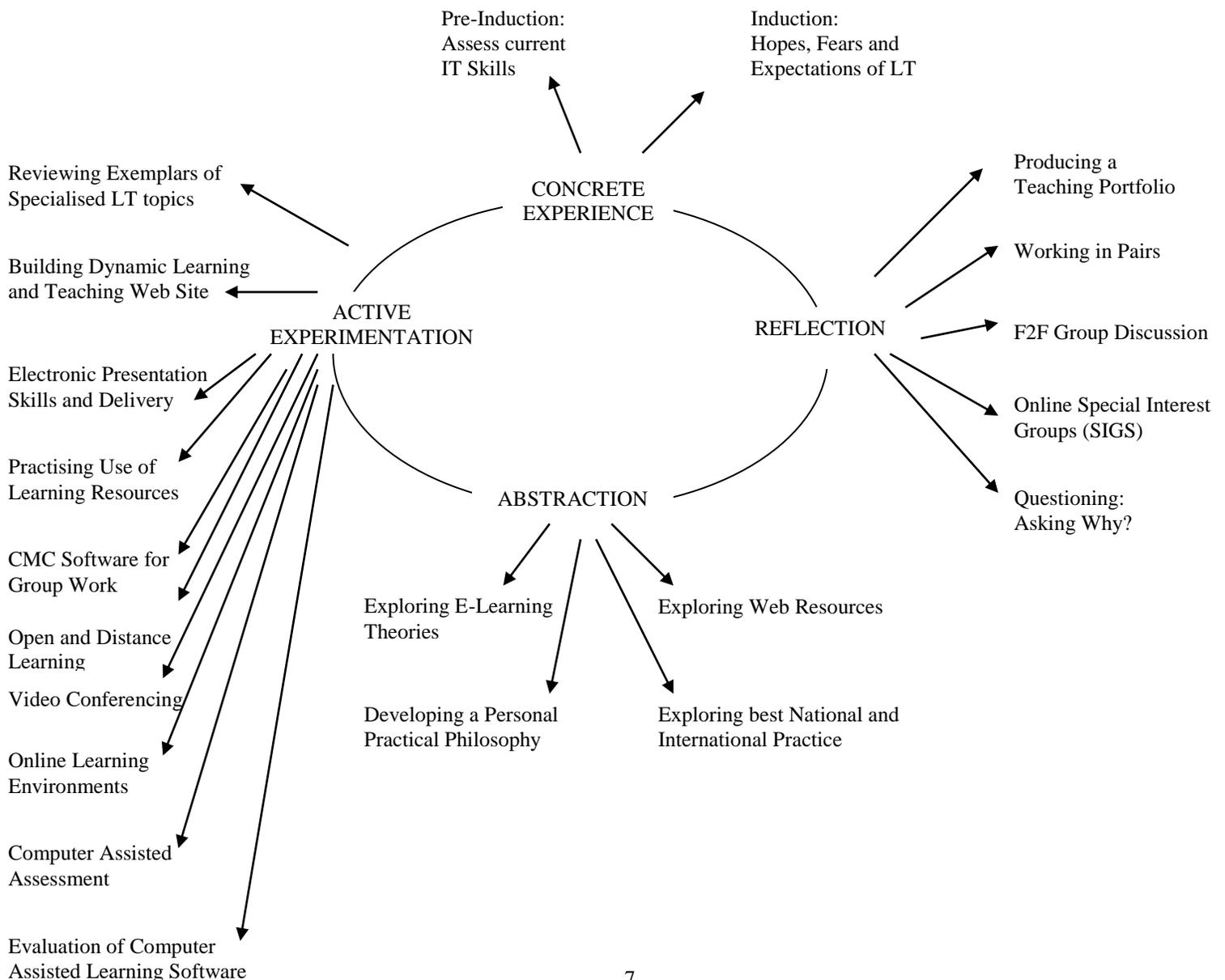
The course objectives regarding technology were for the participants to be able to select and use a variety of learning technologies that may be used to enhance student learning and to be able to integrate and evaluate learning technologies in the context of their own subject area.

As the course was designed to apply LT to support the learning and teaching process, some considerable time was spent looking at the best national and international practice in the area. By doing this, it was considered important to introduce to the course creative approaches to using the LT; comparing different media, discussing pedagogical and interface design, accessibility, participant attitudes and experience of learning technology, interactivity, assessment and evaluation.

Opportunities for co-operation in the course design and delivery were explored. The course team took the initiative to make connections with other departments within the institute and elsewhere in the higher education community in Ireland. Research results in the field were accumulated by attending international conferences and consulting with peers in other HE institutions who were already

using learning technology. The course team consulted closely with the Computer

Services Support Unit at the institution, as there was a strong wish for the course

to have the flexibility to move forward with technological change. Visiting experts in

LT were invited into the course to discuss their views with the course participants

and tutors.

Integrating Technology into the Experiential Learning (EL) Cycle

Pre-Induction:
Assess current
IT Skills

Induction:
Hopes, Fears and
Expectations of LT

CONCRETE
EXPERIENCE

Reviewing Exemplars of
Specialised LT topics

Producing a
Teaching Portfolio

Building Dynamic Learning
and Teaching Web Site

Working in Pairs

ACTIVE
EXPERIMENTATION

REFLECTION

F2F Group Discussion

Electronic Presentation
Skills and Delivery

Online Special Interest
Groups (SIGS)

Practising Use of
Learning Resources

ABSTRACTION

Questioning:
Asking Why?

CMC Software for
Group Work

Open and Distance
Learning

Exploring E-Learning
Theories

Exploring Web Resources

Video Conferencing

Online Learning
Environments

Developing a Personal
Practical Philosophy

Exploring best National and
International Practice

Computer Assisted
Assessment

Evaluation of Computer
Assisted Learning Software

Concrete Experience

The learning in this PG Certificate begins with the real experience of the lecturers in their role as teachers and facilitators of learning in their institutions. The participants' concrete experience of using LT needed to be taken into account, and the technology then restructured around the participants. We were aware of the participants current knowledge of LT through the introduction of a pre-induction session on basic IT skills.

Early on in the course, there was time given for discussion of issues relating to the structure, objectives, content and delivery of teacher education concerned with LT, and also issues relating to the appropriate background for teachers delivering instruction in this area.

In the induction session for the course, the participants were asked want they themselves wanted out of the course (Hopes, Fears and Expectations) and these responses were used as the basis of the subsequent teaching and learning sessions and for integrating LT. They felt strongly that the appropriate use of LT should release them from the high contact hours that they were currently having with their students, to enable more time to be spent in small group teaching, materials development, and research into their own subject disciplines.

At this stage, it was appropriate to consider and discuss the use of LT in terms of the way it would affect the conventional teaching situations that many of the course participants would find themselves facing. These areas were:

- How the LT would enable the learners to manage their own learning?

- How it could supplement or complement the existing lecture programme that may of them still used?

- How it would support working with large groups? (some of the course participants taught classes of up to 80 students)

- How it would support disparate ability levels?

- How it would enable small group teaching? (some of the participants had moved towards using problem-based learning tutorials in their sessions)

- How it would assist in acquiring key skills?

Reflection

The participants were facilitated to reflect on their experiences of teaching and learning to date, including technology, in order to make links between their reflections on practice and the theories and principles of learning and teaching. The idea was for them to be able to confirm their strengths, raise questions, improve their practice and innovate. This reflection took many forms including, in the main, teaching portfolio work, which was the form of assessment for the module on Learning and Teaching in Higher Education; but the reflection step of the Kolb Cycle also concentrated on the participants working in pairs, taking part in

group discussions, and the setting up and maintaining of online special interest groups. They were actively encouraged to reflect on any innovations in LT they were attempting for the first time, especially if it did not go according to plan; if problems arose, they reflected on what went wrong and why, in order to try again.

Abstraction

The generalisation and abstraction took many forms including exploring web resources, investigating best national and international practice in order to benchmark their work, resource reviews and developing a personal practical philosophy. The participants were encouraged to ask questions about the theories of learning and teaching using technology from the viewpoint of their current practice. They also theorised from reflections on their own teaching practice.

As part of the abstraction step to the Kolb Cycle, in addition to Integrating LT, several other key themes in learning and teaching were integrated to the core modules. A file of research papers on the themes of Equal Opportunities in Higher Education, and the Philosophy and Psychology of Higher Education, were produced by both the course tutors and the course participants contributing and sharing papers that they found interesting and relevant. Electronic copies were included on the Learning and Teaching Centre Web Site for the Course.

A Learning and Teaching web site was built up as the course progressed, with an emphasis on including the contributions from the participants themselves.

Throughout the duration of the course, the participants themselves were called upon to present case studies unique to their subject area. Several of these directly related to the use of a learning technology. A slot was reserved on each face to face session for a case study presented by a course participant on an aspect of their practice that was innovatory for them. There was a outlook on the course that much that could be learned about learning and teaching would come from fellow participants rather than solely through the conduit of the tutors; and this outlook was endorsed by the tutors themselves. Dissemination of all course materials, including the case studies was encouraged at all times; the newly formed web site would be used for this. It was to be a dynamic resource and the participants were strongly encouraged to submit their own work for inclusion on the site.

The participants were made aware of a number of learning theories from the area of educational technology. One that found favour was the 4 E-Model (Collis, 1996); the four areas explored where Educational Effectiveness, Ease of Use, Engagement (student self-confidence in using LT) and Environmental (the need to choose an appropriate system for the educational context).

The participants also discussed Laurillard's work (1993): under the areas of Pedagogy, Technology, Culture, Organisation (the need to be aware of organisational implications for one's institution) and Methodology.

As the Active Experimentation step of the Kolb Learning Cycle was where the main implementation of integrating LT to the course took place, this paper will discuss the step under the two modules of the course.

Active Experimentation in 'Learning and Teaching in Higher Education'

Active experimentation was a major key to the learning in this module. Participants were invited to try out different ideas and methods in their own teaching practice. In this first module, Lesson Planning, Group Project Work and Interactive Teaching were among the areas where the technology was integrated to facilitate the participants to test out the application of their learning. Hereafter, is a description of the areas of learning technology that were integrated to the module syllabus, and which formed the bulk of the active experimentation step of the Kolb Cycle, and thus closed the learning loop for the participants.

The first session was held on the use of the lecture method, but in a non-traditional format. The importance of varying the format of delivery, using electronic presentation media for structure and clarity, but also introducing interactivity in the form of brainstorming and buzz group sessions were all discussed.

In a second session, the theme centred on lesson planning. It included an activity for participants to use the World Wide Web (WWW) to search for resources such as exemplars in higher education on lesson planning and share their results with the group. They had previously discussed several different models of lesson

planning and the importance of setting learning objectives and showing these to their students at each class.

The web sites they reviewed varied in detail, and the combined objective of the exercise was to make the participants aware that having access to the Internet can provide vast resources for conducting research and the usefulness of the individual sites for reviewing a specific topic. At the end of the session in the computer laboratory, a list of sites that were considered to contain useful information on future lesson planning were compiled and distributed to the group.

A session on the use and integration of Learning Resources looked at a number of key Audio Visual and IT resources that were available in the Learning and Teaching Centre. The onus in this session was to give the participants an opportunity to gain hands-on experience of using a variety of different media, and managing the media mix that is available to teachers in higher education today. The participants were asked to pick A/V media which they would like to gain more experience of using effectively; they could choose from a digital camera, a video camera, OHPs or audio equipment; they were given a short demonstration of how to operate the media, and then were divided into small groups and picking one media in particular, were required to produce a short clip demonstrating the best use of the media. They were given feedback from the entire group of peers on the results. To supplement the emphasis on practical skills, the participants were given

guidelines on choosing and using appropriate A/V Media and how to improve their presentation skills.

The use of electronic presentations were a popular element of the new learning technologies amongst the course participants; the theory of learning how to design and deliver lectures effectively using software such as Microsoft Powerpoint, was not enough in itself. The participants needed to obtain feedback on the results of their efforts using the media, and this took place in a series of three microteaching sessions. The participants were divided into small groups, (3-4) and encouraged to give a five minute presentation to the remainder of the group (including two course tutors) on any aspect of their teaching using this new media. The presentations were videotaped. Afterwards they were able to review their presentation and obtain constructive feedback from their peers. The feedback included positive as well as developmental feedback from all in the group. This enabled the participants to experiment and take risks with technology that previously may not have been familiar to them in a friendly and supportive environment; the way was then more open for them to use the technology in real classes in their departments.

Other Audio Visual Media was available for the participants to experiment with in the Microteaching Sessions; electronic whiteboards for group work, flip charts, and overhead projectors were all sampled.

Real-time or time-independent communication can take place among learners and staff within and between institutions. In a session on Effective Group Work, Computer Mediated Communication (CMC) software was discussed and demonstrated. In the area of interactivity, three aspects were explored and discussed: the student to student interactions, the student to instructor interactions and the student to resources interactions.

There were also a series of classes in the first module that were dedicated to looking at flexible learning technologies and how they can be used effectively in teaching in higher education. A session was given entirely to Open and Distance Learning. The group discussed the institutional relevance of the area, along with potential drivers and barriers to implementing Distance Learning to their own institutions. A number of sample Online Learning Exemplar Web Sites were viewed and evaluated by the group for their effectiveness in design and delivery of course material.

This was important as the Web is now causing educators to re-think the very nature of teaching and learning. Claims have been made that the Web can free teaching and learning from the physical boundaries of classrooms and time restraints of class schedules. Traditional lectures and demonstrations can become Web based multimedia learning experiences for students. Learning resources of the college and university can be augmented by learning resources of the world via

the Web. Overall, web-based instruction enables greater individualisation and flexibility, creating an increased demand for self-directed learning.

Researching Teaching and Learning was an important session which completed this module. On reflection following a module review with the participants, it was agreed that, in the future, this subject would best be covered in the induction day before the first module began. Effective electronic and paper searching through the institution's library was the main focus of the session.

Active Experimentation in 'Designing Curricula and Assessment Strategies'

The second module on the course focused on designing of curricula and assessment strategies. As the main assessment of the module was in the form of a group project, there were several opportunities to seemlessly integrate various learning technologies. The participants were introduced to Online Group Discussion Software, 'WebBoard'. They were encouraged to set up Discussion Boards to be used as a forum to discuss their module group project proposals and full group projects at each project milestone. The participants in the groups were all located at different campuses and the Group Discussion Software gave them an opportunity to continue their group work at times when it was not convenient to meet up face to face. As an alternative technology to this, they were also encouraged to set up an email distribution list through another web-based technology, 'SmartGroups.Com' and discuss the pros and cons associated with each.

Integrating Key Skills to the curriculum was a session which was divided into theory and practice. For a practical session, the participants went to the Computer Laboratory and looked at some pre-selected Web Sites on Key Skills to evaluate whether there was any content on the area that would be of use to them for designing their group projects.

A full session was devoted to integrating technology into the curriculum and discussing different modes of delivery and it drew together many of the learning technologies that were alluded to in previous sessions to allow the participants to have hands-on experience of them. Two ISDN Video Conferencing (VC) sessions were set up for the group with two universities, the Clyde Virtual University (CVU) and the Telematics Centre in Queens University Belfast (QUB). For the first VC session, the participants were asked to work in their small groups and come up with a set of questions about online learning that they wished to put to the guest lecturer from CVU. Designing, Developing and Supporting an Online Learning Course was the main focus of this session. In a Computer Laboratory, the participants were able to view a number of sample courses developed in an Online Learning Environment, 'WebCT', and discuss web design guidelines.

Clearly, one of the areas on which the discussion focused was that providers of online educational courses must ensure that ample technical support is available for participants, particularly in the early stages of the course when participants are most likely to encounter the greatest number of problems. At the same time, the

course can run the risk of disaster if the institution's computing infrastructure (e.g., capacity of servers, and bandwidth of internal networks) is not adequate for the anticipated load.

For the second VC session, a guest lecturer from QUB facilitated a discussion with the participants on the merits of using video conferencing technology in teaching and discussing how students could get the most out of it.

Finally, a group discussion took place with the Distance Learning Manager of the Institute about the merits of using this mode of delivery. The group discussed how the acceleration of new technological developments have improved the communication and interactive aspects of distance delivery. The flexibility of access that the use of LT can have was the main focus of the discussion – the potential to be learner-centred: the new technologies can make materials and support available in formats and at times and places which suit learners' own needs, enabling them to exert a higher level of control over their own learning process.

Another full session was devoted to Supporting Assessment with technology, and specific software was used as the basis of that. A range of current software available within the institution and elsewhere in the marketplace were demonstrated to show that the technology can provide the potential for learners to receive immediate feedback and for course tutors to carry out rapid and continuous

assessment. QuestionMark's 'Perception' was a specific software package that was purchased for the course. Computer Assisted Assessment had been previously identified within the institute as an area of interest and a Special Interest Group (SIG) had been established, and which kept in regular contact through an email distribution list and a Discussion Board. The participants on this course were also members of this SIG.

Evaluation was a session which included a first step evaluation of more 'traditional' CD-ROM based Computer Assisted Learning (CAL) software, as well as what is currently being delivered via the WWW. For all web sites that the participants' attention was drawn to in all the sessions, a number of review criteria were set for evaluating the sites:

- A learning outcome of the exercise was to consider what type of learning the site is trying to support.

- The Teaching/Learning approach used in the site is reviewed.

- The strengths of the site are reviewed from the added value of the approach

- The weaknesses of the site are reviewed from the aspect of there being any drawbacks to using it.

- The participants are asked if anything on the site interested them and if so, why?

- The participants are asked if there was anything on the site they can see themselves trying out.

- The participants are asked if there are any obstacles to them trying some of the things they viewed. Further to this, they are asked what skills and/or resources they would need.

Concerns: Pedagogy and Practice

From the outset, the course design team were concerned with these issues: pedagogy and practice. Pedagogically, design issues centred on whether the integration of the learning technology would make the participants' learning more accessible and whether it would promote improved learning.

It was vital to promote best practice in the design, integration and use of LT to the course, so that the participants (academic staff) in turn could apply what they had learned to their own teaching situation for their own students.

The LT aspects of the course had been designed with Constructivism as a focus. Times have changed and students now need to be able to think flexibly and creatively, solve problems and make decisions within complex multidisciplinary environments. The participants were made aware of this through the course and the need for integrating different instructional methods, techniques and strategies. They in turn, discussed the areas of student responsibility and initiative, generative learning activities, authentic learning contexts and assessment strategies, and co-operative support. 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.

A strategic view of the integration of ICTs to one's institution was not overlooked. According to Squires et al, (2000), if LT is to realise its potential, it must be integrated into the daily practice of higher education. For this course, how LT developments could be aligned to wider institutional strategies was an area of consequence: the institution's own policy regarding LT was important. In an 'Action 2000' Institutional document, the use of novel pedagogies such as group work, online and problem based learning were encouraged. From this, it was felt that the LT developments in the PG Certificate would be aligned to the wider institutional strategies. However, the institutional constraints had to be borne in mind of working within the quality and quantity of hardware and software available, and the level of technical and other support which would be available.

The course then aimed to make the participants aware that introducing a new LT can be an exciting and rewarding project, but it also can be complex and time consuming. Not only does it involve them developing a range of new technical skills, it also requires that they become "expert" in a new way of teaching and their students become proficient in and enthusiastic about a new way of learning. At the same time, they may have to enthuse their colleagues in their departments about the benefits of adopting a particular technology.

The Future

The Experiential Learning Cycle will continue to be the model under which the course is implemented. The course will keep on using LT opportunities to enable the participants to move from examining their concrete experience of learning and teaching, supported by a range of learning technologies, through the steps of abstraction, reflection and active experimentation.

This will be achieved through the participant's developing their lifelong learning skills and strategies, such as setting learning objectives, action planning, learning-strategy selection and assessment, information handling skills, developing understanding, linking theory to practice, practising discussion, argument, and articulation of ideas, practising teamwork, resource selection and evaluation, reflective learning and time management.

The ultimate aim regarding LT and the course is to introduce an Online Learning Environment, but as recommended to course participants, taking small steps initially in the area will benefit in the design and implementation of the bigger system in the future.

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