## THE ROLE OF A VIRTUAL LEARNING ENVIRONMENT (VLE) IN THE TEACHING OF AN ACCREDITED MODULE IN INFORMATION LITERACY SKILLS

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### Introduction

This chapter describes the design, delivery and evaluation of an accredited module in information literacy to part-time adult students on a BA degree in Local and Community Studies, offered by the Department of Adult and Community Education of the National University of Ireland at both its Maynooth and Kilkenny campuses. The chapter focuses on the role of a virtual learning environment (VLE) in the teaching of this module. Specifically, through evaluating the module according to recognised frameworks for evaluation in e-learning, we provide recommendations for the use of VLEs in the context of teaching information literacy.

The chapter begins with an overview of the degree programme and the decisions that led two of the authors to design an independent module in information literacy. We present the desired learning outcomes of the module and give some details of the content, modes of delivery, assessment systems and student feedback. We then present an overview of evaluation in e-learning, as well as two of the most commonly used evaluative frameworks. We then apply these to the information literacy module and show how the evaluative data was gathered. We discuss the outcomes of this evaluation process and provide suggestions for how other practitioners teaching in the relatively new area of information literacy could evaluate the roles of their own VLEs in the process.

### Context: Background to the Programme

The BA in Local and Community Studies is a part-time modular degree programme. Modules are delivered in the evening and occasionally as one-week summer schools. Modules come in two varieties: a 5-credit module involving 24 contact hours and a 10-credit module involving 48 contact hours. To attain BA honours degree, a student must obtain 180 credits, with a diploma being offered on obtaining 90 credits.

The degree offers two strands of study: a Local Studies strand and a Community Studies strand. On completion of four introductory modules, students decide whether to major in Local or Community Studies. This decision affects their subsequent choice of modules. There are some modules open to both strands throughout the programme.

### Why an Accredited Module in Information Literacy?

Chapter 12 of this volume discusses information literacy in detail, and notes that most definitions of information literacy recognise the need for students to develop the knowledge and skills to:

- recognise they have a need for information
- be aware of the range of resources available to address their information needs
- effectively find information using a variety of tools and sources
- effectively evaluate the information they find
- use the information effectively to support an argument or develop a thesis

- communicate information effectively, understanding ethical issues such as the need to avoid plagiarism.

The provision of information literacy training within this formal degree programme presented challenges not encountered in the traditional linear undergraduate degree programme, where there is a continuation from year to year, and information literacy can be embedded progressively into each year of the programme. The structure of this degree programme, where students select from over 40 modules across the social sciences, means that any attempt to embed information literacy into a particular module will disenfranchise students not taking that particular module. Following consultation with the Department of Adult and Community Education, it was agreed that a fully accredited stand-alone information literacy module was needed.

A further complication with this degree programme is that many of its students are in full-time employment and/or have other significant commitments. To be classed as mature students, they must be aged 23 or over by 1 January in the year of admission. They range in age from late-twenties to post-retirement age.

The programme's typical cohort is diverse not only in age, but also in life experience, as illustrated by student feedback:

> It was the first opening I got in my life back into education … I had left school at thirteen … if it hadn't been here in Kilkenny I wouldn't be part of it, it was that simple. And it all started from there … elected to the County Council, Chairperson … sure, if I had seen it on TV five years ago I would have said it was a daft script!
> (2002 BA Community Studies graduate, Chair of local council, mother of seven, grandmother)

> Having completed my degree, on an impulse I applied to the University to do a Masters in modern history and was later upgraded to a PhD … The experience is certainly one to be savoured but should come with a warning – it's addictive.
> (2002 BA Local Studies (part-time) Kilkenny graduate, farmer from county Tipperary, currently completing his doctorate with the Department of History at NUI Maynooth)

> The BA offered by the NUIM Kilkenny Campus offered me the opportunity to achieve a degree. For one who did not have the opportunity to go on to University this course opened a door that had seemed to be permanently closed … So for me the course was very successful and has offered me exciting, challenging and rewarding new career opportunities.
> (2002 BA Local Studies graduate, continued to the Higher Diploma in Education at NUI Maynooth, now teaches full-time in addition to his other interests)

Students participating in the BA Local and Community Studies come to either the Kilkenny or Maynooth campus to attend lectures. Outside lectures, they spend little time on campus because most live significant distances away from their place of study. Therefore, they need a way to use library resources without having physically to come to the library. In addition to this, many of the students have not been in formal education for some time or indeed may have had little access to formal education. Developments such as e-books and e-journals and the technologies to access these resources are generally unfamiliar to them.

Although students undertake a basic information technology (IT) module in their first semester (or get an exemption through passing a competency test), this module focuses on basic MS Word and Excel skills rather than on information literacy. Similarly, as part of the common study skills programme offered to new students, workshops giving a basic introduction to the library and its resources are provided. These are, however, at a very introductory level and focus on using the library catalogue and gaining familiarity with the physical layout of the library. Students, particularly those at more advanced stages in their courses, need a much higher level of information literacy skills. Following consultation with the Department of Adult and Community Education, a module was designed by colleagues in the Library and presented to Academic Council, where it was approved. The module would focus on electronic resources, addressing not only the information literacy skills deficit, but also the issue of students being unable to visit the library in person. It represented a further innovation in the involvement of Library colleagues in teaching as part of this degree programme, an issue to which we return later in this chapter.

*The Information Literacy Module*

The module aims to:

- teach students how to find and evaluate information sources via a range of electronic tools including library catalogues, electronic journals, electronic books, databases and the Internet
- teach students how to design effective search strategies
- provide training on the skill of compiling an annotated bibliography, including correct citation, writing a short abstract and structuring a bibliography
- provide an introduction to the Moodle virtual learning environment, which is used in other modules of the degree programme
- increase students' awareness of electronic information sources
- provide information skills for lifelong learning.

*Learning Method*

The module is delivered over 24 hours, 18 of which are in the evening. Classes are delivered in three-hour blocks, the first part being a lecture. This is followed by a practical session in which students have an opportunity to put into practice what they have just learned. Six of the module hours are carried out online, and students complete and submit assignments remotely via Moodle.

NUI Maynooth has Moodle as its institutional virtual learning environment (VLE) (see http://www.moodle.org and http://moodle.nuim.ie). In common with many similar environments at other institutions, Moodle is organised to provide course spaces for each taught module. These spaces are accessible only to tutors and students involved in the modules, and can contain course materials as well as online activities. The practical sessions for the information literacy module used several Moodle activities including quizzes and forums.

*Assignment*

As with all modules on this degree programme, there is no formal examination in the information literacy module. Instead, students compile an annotated bibliography on their thesis topic or another topic agreed with the librarian. This should:

- be on a specific rather than a general topic
- have some Irish context
- have a comprehensive introduction covering topics such as the reason for choice of subject, the scope of the bibliography and the range of electronic resources consulted
- have a minimum of 25 items listed
- follow the Harvard or the Irish Historical citation style
- have annotations (abstracts) of approximately four lines
- give some indication of the resources consulted to identify items included.

Marks are assigned as follows:

- 80 percent of marks to the bibliography
- 10 percent for quizzes carried out in Moodle
- 10 percent for a review of a database of the student's choice.

*Evaluation and e-Learning: An Overview*

We referred to our institutional VLE in the preceding section. Most institutions in Ireland have similar online environments to support face-to-face and distance learning. Our institutional VLE, Moodle, is an open source product and is freely available to download by anyone from its website at http://www.moodle.org/. Its functionality, but also its lack of costly licensing, has prompted its adoption beyond universities and the developed world, and in almost 200 countries (Moodle, 2007).

The mainstreaming of environments such as Moodle in higher education, as well as the growth in use of many other systems and software packages to support teaching and learning, has given rise to extensive discussion in e-learning research about the most effective ways to measure the impact of technologies on learning. People working in universities, and particularly those teaching, have invested considerable time and energy in adopting and implementing learning technology in their courses. Many wish to measure the effectiveness of this intervention, but very often lack the support and expertise needed in order to do this (Oliver *et al*, 2002). As a consequence, e-learning practitioners and researchers in the UK and Ireland have for some years been developing usable and practical evaluation tools suitable to the context of e-learning in higher education in these islands (Harvey *et al*, 2002).

This work has also served to highlight broader issues in the evaluation of e-learning. These include the often manifold purposes of evaluation, the methodological difficulties of measuring "impact" on student learning, and the political dimensions of evaluative studies and their recommendations (Oliver and Harvey, 2002). Evaluation as an area of research and development in e-learning has moved beyond consideration of pedagogical impact alone to the wider context in which technologies are introduced, implemented and used. Research in the 1990s, such as that conducted at the Open University, focused specifically on the impact of technology on students' learning (Scanlon *et al*, 2000; Scanlon *et al*, 1998). In the context of quality enhancement, however, and the significant political investment in e-learning in many countries at the end of the 1990s and beginning of the new century (Oliver, 2000), evaluation has taken on a more significant role in institutional approaches to e-learning.

Drawing on the research cited previously, we undertook a formative evaluation (Oliver, 2000) of the information literacy module described earlier in this chapter. The objective was to

refine and develop the module further for future cohorts of students. A further objective was to assess the suitability and effectiveness of Moodle for teaching this specific topic to this group of learners. The following section outlines our selected methods for this evaluation, and gives an overview of the data gathered.

**Method: Evaluation frameworks**

Evaluation research has shown that there is no one "right" way to evaluate learning with computers in a given course or module. In light of this, we have drawn on two evaluative frameworks to help us. These are:

- The CIAO Framework: Context, Interactions and Outcomes (Scanlon *et al,* 2000; Scanlon *et al,* 1998)
- *The Evaluation Cookbook* (Harvey (ed.), 1999).

Both frameworks were completed in the late 1990s and have been widely disseminated for several years. We considered that they therefore offered the potential benefits that come with widely used and trusted resources, but also gave us an opportunity to consider how effective these frameworks are in the context of new areas of teaching, such as information literacy and new VLEs.

*The CIAO Framework*

The CIAO framework (Scanlon *et al,* 1998), developed by educational technology researchers at the UK's Open University, offers evaluators three broad headings under which data can be organised in order to begin their analysis:

1. Context
2. Interactions
3. Outcomes

Under each, three further headings are proposed in order to frame evaluative activities. First, a rationale for each method should be given. Second, the types of data to be gathered should be identified. Finally, the methods by which the data will be gathered should be listed.

The researchers comment on what is meant by each of the headings:

> *By context, a wide interpretation of the rationale for use of the software including the aims of that use is meant. By interactions, documenting, in whatever way possible, the interaction of the students with computers and with each other to allow the focusing on the learning process is meant. By outcomes, a wide interpretation of the changes to students using the program is meant. Learning outcomes must be considered in order to assess the effectiveness of any program, but the importance of outcomes such as changes in learners' perceptions and attitudes is also argued for (Scanlon et al, 1998, p. 9).*

Although seeking to provide a clear tabular model for evaluation, Scanlon *et al* (1998) emphasise that evaluation should be as broad and comprehensive as the circumstances will allow.

*The Evaluation Cookbook*

*The Evaluation Cookbook* emerged from the Learning Technology Dissemination Initiative (LTDI) in the UK at the end of the 1990s (Harvey (ed.), 1999). It remains available in full online at http://www.icbl.hw.ac.uk/ltdi/cookbook/contents.html, or to download as a printable PDF document.

**Figure 1: Screenshot of The Evaluation Cookbook Homepage**
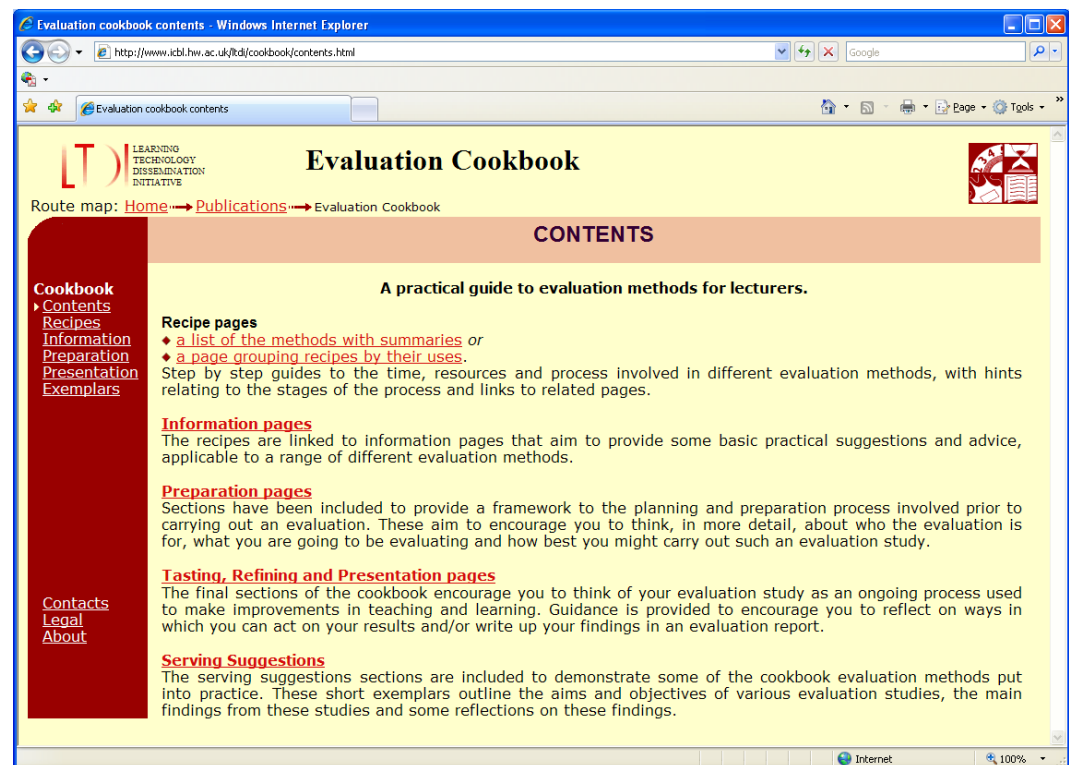


The *Cookbook* presents a series of methods for evaluation in the form of "recipes". The Information pages provide further information about each method, and the Preparation pages give guidance on how the methods can be combined. Further development and enhancement of the evaluation strategy is encouraged in the Testing, Refining and Presentation pages, and exemplar materials for various recipes are included in the Serving Suggestions. The user of the *Cookbook* is encouraged to read through the recipes and design an evaluation strategy based on the information given.

Although we have called both of these resources "frameworks" for evaluation in this chapter, it is important to be clear about what we mean. We have deliberately not called them methods. These are not discrete methods, or even very structured plans, for the analysis of particular sets of data. Rather, they are proposed as ways to organise other established qualitative and quantitative research methods, and contextualise them in order to conduct meaningful evaluation in e-learning. Just as the researchers proposing the CIAO Framework emphasise the breadth of the headings Context, Interactions and Outcomes, the researchers who were involved in authoring *The Evaluation Cookbook* maintain that:

> *Cookbooks ... represent an alternative approach to supporting practitioners.*
> *Instead of focusing on a structured process, the cookbook provides rich*

*descriptions of methods in an easy-to-use format.... the cookbook relies on the ability of readers to reflect on their needs, use descriptions of the scope and application of methods to develop an understanding of the options available, and then to select an appropriate method in a discriminating manner (Oliver et al, 2002).*

While drawing on these two frameworks to develop an evaluation plan, we were also keenly aware of the practical constraints of time and resources in gathering data from the students in this module. In the event, the following data was gathered:

- standard departmental evaluation forms completed by the students at the end of the module
- information about students' interaction with the module in the VLE, derived from the VLE "logs"
- comments from the external examiner for the module
- course tutors' reflections written after the module had been completed.

The following section will show how this data was derived from plans developed using the evaluation frameworks outlined here.

**Analysis**

*Evaluating Using the CIAO Framework*

Using the CIAO Framework, we planned a small-scale evaluation to provide data about:

- The context of the module
- nature of student interactions with each other and with the online version of the module
- outcomes for students learning in Moodle as well as in their face-to-face sessions.

Table 2 overleaf maps (in italics) the data we knew we could obtain for the evaluation, and the methods by which it could be gathered.

**Table 2: The CIAO Framework for our evaluation**

|  | Context | Interactions | Outcomes |
|---|---|---|---|
| Rationale | To evaluate computer-assisted learning (CAL), there is a need to know about its aims and the context of its use. | Observing students and obtaining process data helps understand why and how some element works in addition to whether it works. | Attributing learning outcomes to CAL when CAL is only one part of a multifaceted course is very difficult. It is important to assess both cognitive and affective learning outcomes – for example, changes in perceptions and attitudes. |
| Data | *Module aims*<br>*NUIM Strategic Plan*<br>*Teaching and Learning Strategy*<br>*Library Strategic Plan*<br>*Tutors' written reflections* | *Logs of student interactions in Moodle*<br>*Forum messages*<br>*Logs of interactions with the module content in Moodle* | *Module evaluation form*<br>*Assignment results* |
| Methods | *Tutors to write reflections*<br>*Policy documents to be analysed*<br>*External examiner comments to be considered* | *Automatic recording of interactions in Moodle environment*<br>*NUIM Forum analysis tool to provide visual representation of Forum messaging* | *Evaluation form*<br>*Assessment of module via assignment* |

*The Evaluation Cookbook*

We also used *The Evaluation Cookbook* to develop an alternative evaluation plan for this module. The *Cookbook* was used online rather than on paper. One of the authors of this chapter progressed through each section in sequence and documented the decisions taken at each stage. It is important to acknowledge at the outset that she had previous experience using this resource, but had not used it for some time.

The *Cookbook* encourages careful consideration of fundamental issues before suggesting methods and "recipes": the user is reminded that an evaluation "question" is essential if a good strategy is to be designed. An evaluation focusing on internal needs and requirements, or one focusing on the experience of a small group of students, will be necessarily different in scale from an external evaluation involving hundreds of participants. Working through the Preparation section (see http://www.icbl.hw.ac.uk/ltdi/cookbook/preparation.html#endhead ) helped us to focus on why the evaluation was being conducted and which methods might be appropriate.

The Information pages (see http://www.icbl.hw.ac.uk/ltdi/cookbook/info_pages.html#endhead ) detailing each method helped to identify the constraints in our evaluation. For example, reading the description of an interview reminded us of the costs of time and resources in conducting this kind of data-gathering, and that it would not be possible (although desirable) at this stage of our work. The Recipes (see http://www.icbl.hw.ac.uk/ltdi/cookbook/recipes.html#endhead ) themselves were clear and allowed quick identification of possible methods for our

evaluation, namely questionnaires (via the course evaluation form), and the use of system log data.

One area in which the Recipes appeared to have a gap, however, was in omitting tutors' input (including reflections, or feedback such as that of an external examiner) from the evaluation. Other methods (particularly Ethnography) would include this kind of data, but the roles of tutors and examiner, and indeed the context of institutional policy, are not immediately highlighted by the *Cookbook*. This is important in light of one of our concerns in this chapter: that information literacy is a new subject area, and that the people teaching in this area may not traditionally have taught in formally accredited courses in universities. Furthermore, many academic departments have not traditionally worked with Libraries in an interdisciplinary setting whereby modules such as this one are designed and taught.

These changes are significant and need to be included in evaluating new courses and modules. It has partly been through our engagement with these existing evaluation frameworks, however, that we have been shown this so clearly. Both frameworks have demonstrated flexibility and robustness in spite of the considerable length of time in which they have been in use. This is perhaps because both emphasise flexibility and breadth of scope on the part of the evaluator: a good evaluation strategy will be as broad as possible, and will seek to place the innovation in e-learning in the broadest possible context, with no set of data immediately ruled out for consideration.

Elements of both frameworks were therefore combined in finalising our methodology and data analysis for this module. Having described these frameworks and analysed our evaluation strategy, we now move on to discuss the evaluation findings themselves, both in relation to the module overall and the use of the Moodle environment as part of that module.

**Discussion**

*Students' Responses: Becoming Information Literate*

The course evaluation forms completed by students in both years indicated a high degree of satisfaction with the course overall:

> *This module opened up a whole world of information that I was not aware of.*

> *The sharing of views and the practical hands on experience was excellent.*

> *What I've learned about finding information will help me in my life outside college.*

> *The information gained was not so dense as to leave one's mind boggled.*

Specific resources people had enjoyed using or had found particularly relevant were highlighted in their comments. There was also very positive feedback about the course tutors, and specifically in relation to the support given by tutors. This is important to highlight as the students were keen to signal the value of interacting with tutors, and not only using resources in the classroom or independently online.

There were several comments relating to practical arrangements for the course, perhaps highlighting the difficulties sometimes experienced by part-time and distance students when

accessing university courses. Some suggested also that the course should be run in the first year of their degrees. Three referred to their IT skills as perhaps not being adequate to the course, and one person said that he/she would have liked more time to work on parts of the course.

*Interactions with Moodle, Interactions in Moodle*

Analysis of the Moodle usage logs indicates heavy use of the Moodle space throughout this module. The inclusion of Moodle quizzes as a component of course assessment undoubtedly contributed to this.

The quizzes in Moodle were referred to specifically by three participants, with two suggestions that these would be easier if downloadable for practice first before full completion:

> *The quizzes were great learning opportunities.*

> *I would like to have been able to download quizzes before submission.*

Interestingly, the comments in relation to Moodle tended to refer to it as part of other activities associated with students' learning, and not as an activity in itself. This would suggest to us that Moodle came to be regarded as an integral part of the course, but further data would be needed to support this interpretation.

> *Easy to understand.  Notes on Moodle very helpful.*

> *All lectures were presented on Moodle and were clear and concise.*

There was also a good degree of interaction within the Moodle Forums for the module. Students communicated with the lecturers to check on various points raised in their face-to-face meetings, and also to provide specific feedback self-assessing their skills levels at intervals during the course.

The week-by-week structure of the Moodle space has been shown in other courses to support students and help them to build a picture of how the course topics are related, and how each builds upon the last (National University of Ireland Maynooth, 2006). Usage data does not allow us to suggest this definitively, but consistent use of resources week by week indicates that students found this structure easy to use and consistent.

*Tutors' Reflections: Shifting Identities*

Both of the librarians involved in tutoring this course wrote reflections on their experiences (see the Appendix). They highlight the change in their roles towards designing and tutoring an accredited course, and away from their existing practices:

> *While both of us have had experience of delivering information literacy sessions, we found the experience of designing and delivering an accredited module presented challenges we had not encountered in situations where there is no formal accreditation.*

This in turn led them to reflect more broadly on the wider change afoot: a change of identity from librarian to lecturer, as well as the need to engage with the full range of university systems involved in designing and teaching an accredited course:

*Instead of being the helpful librarian at the end of the telephone/email or engaged in the reference query, we are lecturers and examiners imposing deadlines and standards. We ourselves have had to acquire new knowledge about how the academic system works including marking/grading systems, exam boards, external examiners, repeat submissions and so forth.*

Although some of this change is related to the practical aspects of running the module, there is also an ethnographic dimension. The librarians as tutors characterise this change as a "challenge (of) navigating new relationships":

*We both have had to deal with disappointed students who questioned the fairness of their marks.... In effect we moved from being librarians to becoming lecturers, examiners, mentors and advisors without the real knowledge of where to draw the line in each role.*

From the point of view of this evaluation, these comments are not concerned with e-learning or information literacy specifically, but we argue that it is vital nonetheless that evaluative work accommodates this kind of articulation of change. The emergence of new professional roles, including teaching roles outside academic departments, is a significant change for any institution. Institutional policy documents, which have also been reviewed in relation to this evaluation, define strategic goals related to support for students' learning (including information literacy) and more broadly access to the university to students from all backgrounds. Modules such as the one under consideration here are central to these strategic goals. Our evaluation findings would suggest, however, that more support is needed for staff making the transitions necessary to implement and run these courses most effectively.

With the librarians' shift in identities, and their new teaching responsibilities, come the day-to-day challenges faced by other lecturers. The librarians talk particularly about the need for assessment procedures to reflect more adequately the kinds of assessment undertaken in new courses that cannot be assessed using traditional methods such as essay or examination. In terms of e-learning too, the librarians' experience mirrors that of many lecturers:

*Students expect to have virtually 24-hour contact with us, anticipating instant feedback on their queries, which were submitted either via e-mail or through the Moodle forum. We have had to deal with and manage these expectations.*

The reflective writing of these librarian tutors includes only a short commentary on their experiences of using the VLE. What is important here is that the wider challenges and changes associated with running this course are clearly more significant to them. Although our evaluation was designed to examine the effectiveness of the VLE for this module, it has created a space in which these broader issues can be articulated and documented.

*Examiners' Comments: Innovation in the BA Course*

The external examiner for this module is an academic based in the UK. The external examiner's report included very positive feedback on this module. He commented that it was an exciting new development in this programme, and he also provided positive encouragement for the course tutors.

*Policy Documents: Enacting Change and Its Implications*

The use of the CIAO framework, in particular, encouraged us to consider data we had not initially thought about as part of the evaluation of this course: namely, the policy

documents of our institution. These include a *Strategic Plan* (National University of Ireland Maynooth, 2005), which has stated goals to open access to our courses for as broad a cross-section of people as possible. The Library's own *Strategic Plan* (National University of Ireland Maynooth Library, 2007) has specific objectives in relation to developing information literacy in our curriculum. Our institutional *Teaching and Learning Strategy* (National University of Ireland Maynooth, 2007) also seeks to broaden access to more students, and pledges to support students' development as autonomous learners. Set in the context of these mission statements, the importance of this module and of measuring its effectiveness is brought into clearer focus. As has been discussed earlier, the strategic goals proposed in such documents may also signify challenges and changes for staff involved in delivering them, and support for these staff is essential if the changes are to succeed.

### Conclusion

In this chapter, we have sought to examine the part played by a VLE in a relatively new area of teaching with a non-traditional group of students. This in turn has led us to consider the available e-learning evaluation frameworks, and how these fit with teaching newly accredited courses in new VLEs.

Our findings indicate that this module, which is now in its third year, has proved popular with students and received very positive feedback. It is important to note that some of the participants are in the final stages of their degree programmes when they come to this module, and are preparing their minor theses. Approximately 60 people have completed the module to date, and indeed it is now being offered to those at earlier stages of the BA programme. This is one response to the students' feedback that has been made in the short term.

The Moodle VLE has provided an important additional component to the module: it included the resources used on a week-by-week basis, as well as allowing interaction with the module content. Students discussed the module in the Moodle Forum, and also completed quizzes throughout the module. The resources made available through Moodle include lecture presentations, links to the library catalogue, databases and electronic content. These continue to expand: the acquisition of Irish Newspapers Online and the development of the Irish History Online website have meant that the range of electronic sources available to those who do Local Studies rather than Community Studies has increased significantly. The introduction and development of e-books – many of which are relevant to both strands of the programme – has necessitated new input into the module and will trigger further development of the Moodle space. The evaluation findings suggest that students will welcome these further developments of the online space, provided that their skills are adequate to access the space. We might also suggest on the basis of the evaluation that they will find support from their tutors invaluable, in tandem with whatever online resources are available to them.

Student feedback, the Moodle usage data, and the comments of the external examiner have therefore already begun to inform the further development of this module. This is true of both its online and "offline" components.

This formative evaluation has however also articulated wider issues associated with the introduction of new accredited modules such as this one, and institutional issues that need to be addressed in the longer term. The tutors' professional and personal development in the role of librarian/lecturer marks a change for the university, which may need further support or, at a minimum, needs to be shared with the institution as a learning organisation. It will

also no doubt inform the development of what we see as a very exciting and innovative module.

The evaluation frameworks we have drawn upon here have offered us the means to analyse and interpret the student and tutor experience in this module, both online and offline. It remains very difficult, however, to comment on the real impact of technology on students' learning (Oliver and Harvey, 2002) and a further outcome of this process for us has been the realisation that evaluation needs to continue. We need to continue to examine the student feedback year on year, and to design evaluation strategies for the longer term in order to draw more definitive and defensible conclusions about the impact the VLE has had on the teaching of this module. This remains a significant challenge to researchers in e-learning, and to all of us using technology as part of our teaching.

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**APPENDIX: LIBRARIANS' REFLECTIONS**

While both of us have had experience of delivering information literacy sessions, we found the experience of designing and delivering an accredited module presented challenges we had not encountered in situations where there is no formal accreditation. One challenge is to make academics and others aware of the difference between information and IT skills. The fact that one of us is a member of the course board for the programme helped in this.

Another challenge is navigating new relationships. Now instead of being the helpful librarian at the end of the telephone/e-mail or engaged in the reference query, we are lecturers and examiners imposing deadlines and standards. We ourselves have had to acquire new knowledge about how the academic system works including marking/grading systems, exam boards, external examiners, repeat submissions and so forth. Part of the process is providing individual feedback on results. We both have had to deal with disappointed students who questioned the fairness of their marks. We quickly became aware that marking systems need to be very explicit and the process completely transparent. While an external examiner reviews marks, we are ultimately responsible and accountable. In effect we moved from being librarians to becoming lecturers, examiners, mentors and advisors without the real knowledge of where to draw the line in each role.

Increasingly working in a Moodle environment, students expect to have virtually 24-hour contact with us, anticipating instant feedback on their queries, which were submitted either via e-mail or through the Moodle forum. We have had to deal with and manage these expectations.

The marking/grading system in place in the university is, in our opinion, somewhat vague and possibly open to interpretation. Perhaps it is designed for a more standard essay/examination type environment. For this particular module we feel that a more explicit marking structure allocating specific marks to each section of the bibliography with deductions for incorrect or absent elements of citations would provide a useful tool when correcting students' assignments. This would also provide the students with a clear indication of where they lost marks and why. We hope to have this marking structure in place before the module is next presented.