A SIMPLE, LOW COST ENVIRONMENT FOR THE SUPPORT OF ON-LINE TEACHER PROFESSIONAL DEVELOPMENT

PHIL RIDING AND DAVE ALLINGTON

Interactive Technologies in Assessment and Learning Unit

University of Cambridge Local Examinations Syndicate, 1 Hills Road, Cambridge CB1 2EU, UK
E-mail: p.riding@ucles-red.cam.ac.uk

In this article we describe the development of a low-cost, easy to maintain web-based environment that allows the creation of on-line teacher communities and supports those communities by enabling members to share artefacts (documents, URLs). It also provides a repository for Frequently Asked Questions that arise during the discussions among members. We describe the initial practical and pedagogical requirements for the software, and how we fulfilled these using open source software, and open source methods.

1 Introduction

The University of Cambridge Local Examinations Syndicate (UCLES) is a major provider of school and vocational examinations in the UK and overseas. UCLES is committed to providing high quality support and training to teachers of its syllabuses, and has an extensive programme of in-service training and other activities.

The Interactive Technologies in Assessment and Learning (ITAL) unit's role is to research the impact and potential of new technologies on UCLES' business. As part of this work, ITAL has been working with various groups within UCLES to investigate the use of internet-based technologies to support teachers.

Traditionally UCLES has run on-site face-to-face training events for the teachers of its examinations. Effective as they are, these types of training sessions do have drawbacks - they require teachers to leave the classroom and attend sessions usually some way from their place of work. This can be difficult and expensive and leads to many teachers not being able to attend.

ITAL has therefore been investigating novel ways of facilitating professional development using Internet-based technologies. These technologies offer the possibility of allowing UCLES to offer on-line training that is accessible from anywhere, and at any time, by anyone with the appropriate technology.

In this article we describe our development of a low-cost, easy to maintain environment that allows the creation of on-line communities and enables community members to share artefacts (documents, images, sound files) and also acts as a repository for Frequently Asked Questions (FAQs) that arise during the discussions among members.

2 What we needed

In defining the technology that we needed to support our on-line training plans, we took the following requirements into account. These requirements stemmed from various practical constraints, and from our view of what effective professional development entailed.

2.1 It needed to be able to support the creation of on-line 'communities'

Many strands of recent thought about effective learning and professional development stress the primacy of peer interaction, continuing reflection and the importance of experience and the grounding of theory in practice (see, for example Schön, 1990, Kolb, 1984 and Wenger, 1998). We therefore needed to provide the technology and the structures that would encourage the creation of a learning and professional community, and also to promote reflection on experiences, and discussion and idea sharing between peers.

2.2   It needed to have the facility for these communities to share and archive documents and other artefacts

Wenger (1998) describes one of the defining characteristics of a 'community of practice' as a community that 'has a shared repertoire of communal resources that members have developed over time'. Our technology would need to support the sharing and collection of such resources. In the case of teacher communities we see these as consisting of concrete artefacts such as lesson plans, work schemes, useful URLs, etc. but also more ephemeral things such as ideas expressed in discussion list messages. We would need a facility to archive such messages and allow them to be subsequently read by community members.

2.3   It needed to be as 'generic' as possible and not impose a particular way of working on users

Since we were taking an experiential approach to this development we did not want to constrain the users of the technology (i.e. the tutors - the designers and delivers of the training) as to how it could be used. We knew that there was a need for a platform that would support formal as well as informal on-line training, and that our potential tutors would bring with them a variety of experiences and teaching styles with them that would need to be accommodated. We wanted to provide the tutors with tools that they could adapt and use in the way that suited their particular style and philosophy. As Raymond (2000) points out 'Any tool should be useful in the expected way, but a truly great tool lends itself to uses you never expected'.

2.4   It needed to be easy to use and accessible to inexperienced users

We wanted to 'start where the tutors were at' with regard to technology as far as possible. Since all the prospective tutors were familiar with e-mail, and most were happy with using browser technology on the web, we decided that the basic requirements were that the technology be e-mail and web-based as much as possible. We also needed technology that was easy-to-use and 'transparent' to tutors who were mainly used to delivering their training in face-to-face situations.

2.5   It needed to be low in its demands of users' computing resources and not need the download or distribution of special software to the end user

This was an important consideration since UCLES works in a wide variety of countries and with a wide variety of schools. In order to accommodate teachers with older equipment or slow Internet connections, we needed a technology that used standard Internet software, would be parsimonious in its demands of bandwidth and computing power, and would not need the distribution of client software to users' machines.

2.6   It needed to be relatively cheap

We were aware of an ever-increasing number of commercial products that were designed to support the type of training we had in mind. However, we felt that they were often too large, too complex, too inflexible and too costly for us as new entrants into the e-learning world. We felt that we needed something that was less costly, and could be quickly adapted to our specific needs. Using the experience gained from using our own software we hoped to be in a better position to make informed decisions about the purchase of more sophisticated products.

2.7   It needed to be as integrated as possible

We wanted the users' experience to be one of a seamless application.

2.8   It needed to be scalable

We needed a technology that would not impose unreasonable demands on either our hardware or us should the number of communities or their membership grow.

3   What we produced, and how

After defining what we needed, it was decided to use free, open source[1] tools, to keep any development work in-house, and to adopt an open source philosophy in the development.

To provide communication facilities we used the open source product *Mailman* (http://www.list.org/). *Mailman* is software to help manage electronic mail discussion lists. It gives each mailing list a unique web page and allows users (in our case, teachers) to subscribe, unsubscribe, and change their account options over the web. It allows list managers to administer their lists entirely via the web, and it supports built-in archiving, mail-to-news gateways, spam filters, bounce detection, and digest delivery. The ITAL unit had already successfully used this technology to support the creation of on-line communities of teachers (Riding, 2001) and our experience of using this system with technically unsophisticated staff convinced us that it would be an ideal tool to use.

In order to build a web-based document sharing facility we used *Zope* ([http://www.zope.org/)](http://www.zope.org/), an open source web development platform, coupled with *PostgreSQL,* a database application. In using this combination of *Zope* as a presentation tool, and *PostgreSQL* as an information repository, we created a distinction between the information that a community builds up and the means by which they view that information. *Zope* enables us to create web pages dynamically, so that each time a web page is requested it is created by the server, as opposed to static pages that need to be manually updated at great time and expense.

In addition to using open source software, we employed an open source philosophy in the development. The tenets of this philosophy include 'Release early. Release often. And listen to your customers', and 'Treat your users as co-developers' (Raymond, 2000). By keeping the development in-house we could follow a tight iterative process where tutors could see and get hands on experience of early prototypes and suggest improvements, which could be then incorporated 'on-the-fly'. We felt that a formal process of writing specifications would have been inappropriate in this situation, where the tutors were unsure of what it was they wanted from the technology. This also helped keep development costs low.

This web-based facility was tightly integrated with the web-based elements of our chosen mailing list solution. This created a 'one-stop shop' for both tutors and community members. From the Home Page (Figure 1) members can directly access their list archives, their own personal list options page (to change their password etc.), and a list user guide. They can also access Frequently Asked Questions (FAQs) and a Resources section. A keyword search facility, using the open source tool, *ht://dig* (http://www.htdig.org/) allowed users to search the site for specific information.

The site could be managed by the tutor through a password protected web form (Figure 2). From here the tutor had control over much of the text on the Home Page, and could add, edit and remove FAQs and resources (documents and URLs). In addition they had the facility to create and edit categories for the FAQs.

---

[1] The term open-source refers to a method of developing software where the underlying program code is freely available. It also refers to a philosophy for developing software whereby volunteers are encouraged to use and improve the code.

Figure 1 The Home page
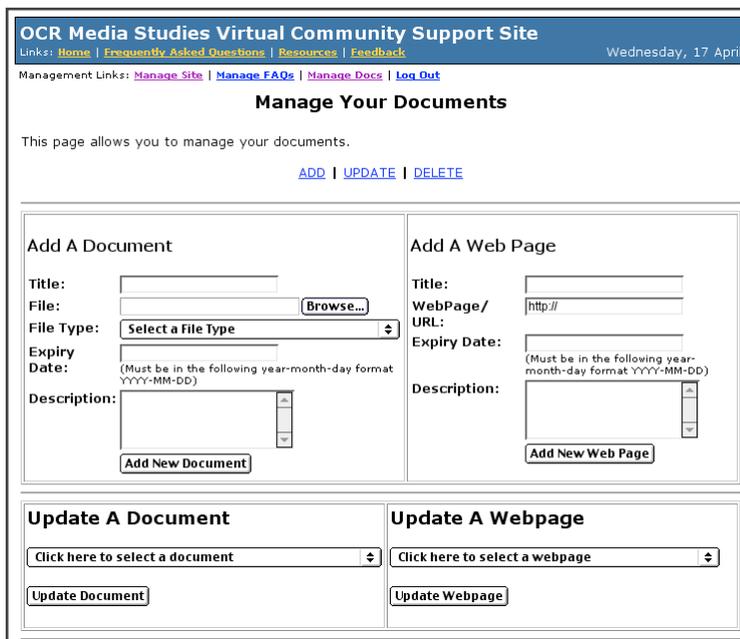
Figure 2 The Administration interface

4 How it's been used

The system's flexibility has allowed it to be used in a wide range of teacher training situations by various parts of the organisation, from the informal, curriculum-less, and open-ended to the formal, structured and time constrained (Riding, 2001; Daw and Riding, 2002). The development of the software, both in terms of functionality and usability, was subject to continual improvement, made possible by the close working relationship between the developer, the tutors and end users.

5 Future developments

A number of issues have been identified that need addressing in the near future. These include giving the tutor the facility to group the resources in a similar way to which they can group FAQs. This would make finding particular resources much easier. We will also be revisiting the search functionality – at present there are difficulties in returning meaningful results due to the dynamic nature of the web pages.

6 Conclusion

The introduction of Distance Training into an organisation is not a straightforward process (Kim Cho and Berge, 2002). By creating a flexible, low-cost tool using a development process that is responsive to its users we feel that we are facilitating effective institutional learning about the new skills and processes needed to deliver effective on-line training.

References

1. Daw, C. and Riding, P. (2002) *Preparing and Supporting E-tutors in the Running of an International On-line Teacher Training Course: An Experiential Approach.* Proceedings of the 2002 European Distance Education Network (EDEN) Annual Conference, Granada, Spain, June 2002. Wagner, E. and Szücs, A. (eds.)

2. Kim Cho, S. and Berge, Z.L. (2002) Overcoming Barriers to Distance Training and Education. *USDLA Journal*, 16 (1) (Available on-line at http://www.usdla.org/html/journal/JAN_02Issue/article01.html)

3. Kolb, D. (1984) *Experiential Learning. Experience as the Source of Learning and Development.* Englewood Cliffs: Prentice-Hall, New Jersey USA.

4. Riding, P. (2001) On-Line Teacher Communities and Continuing Professional Development. *Teacher Development* 5 (3) pp. 283 - 295

5. Raymond, E.S. (2001) *The Cathedral and the Bazaar: Musings on Linux and Open Source by an Accidental Revolutionary*. O'Reilly, Sebastopol USA. Available on-line at http://www.tuxedo.org/~esr/writings/cathedral-bazaar/cathedral-bazaar/index.html

6. Schön, D. (1990) *Educating the Reflective Practitioner*. Jossey-Bass Wiley, San Francisco, USA.

7. Wenger, E. (1998) *Communities of Practice: Learning, Meaning and Identity.* Cambridge University Press: Cambridge.