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THE eLEARNING PLACE: PROGRESS REPORT ON A COMPLETE SYSTEM FOR LEARNING AND ASSESSMENT

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The eLearning Place: progress report on a complete system for learning and assessment

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Abstract

This short paper outlines the main features of The eLearning Place and describes the development of TestMaker by The eLearning Place partnership. TestMaker is an assessment creation tool written in Java adhering to QTI standards. It separates item- and test-development, and pools items by Learning Provider in an Oracle database.

1. Scope of project

The eLearning Place (TeLP) is a partnership between the University of Liverpool, Connect Internet Solutions Ltd, Liverpool Education Authority, Knowsley Metropolitan Borough Council, Merseyside Colleges Association, and Telewest Broadband, funded primarily by the European Regional Development Fund. The project commenced in 2001 with a pilot phase to provide proof of concept. It is now part way through its second phase, due to complete in November 2004.

The eLearning Place was conceived as offering two particular attributes that would be innovative. Firstly, TeLP would have the capability of publishing simultaneously to the Internet and digital interactive television (DiTV). Secondly, the course construction and assessment tools would be template

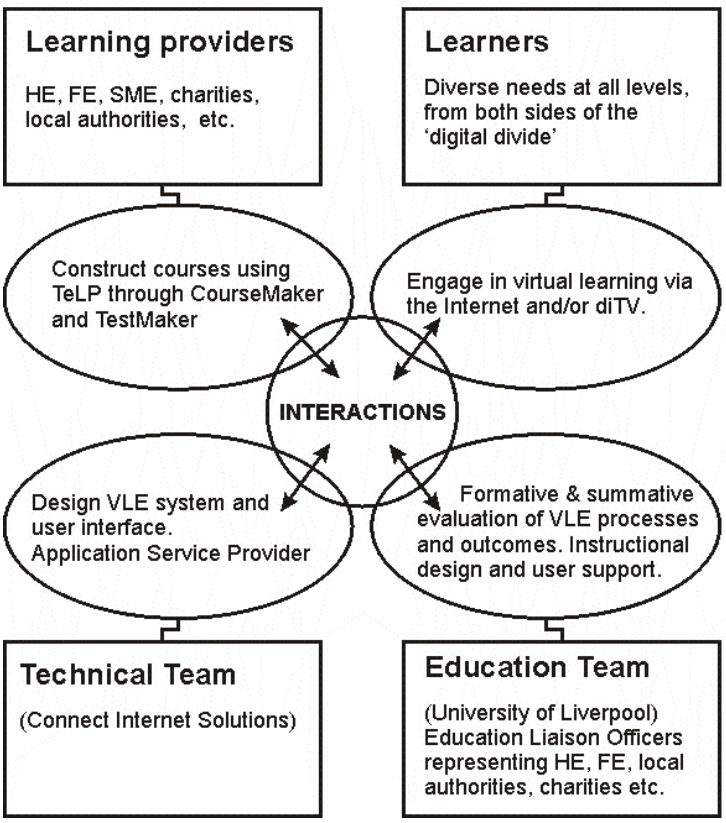


Figure 1 Schematic diagram illustrating The eLearning Place project structure in terms of agents (rectangles), activities (ellipses) and interactions (circle).

driven. Both of these innovations were considered to offer major advantages over existing construction tools, because the template system supporting course content and assessment construction is designed to be amenable to non-technical users wishing to use multimedia resources in a cut-and-paste manner. The use of DiTV was also judged to be a move towards widening participation since many potential learners, who could be otherwise disenfranchised by lack of Internet access, are very well represented in the

section of the population having access to cable television in the Merseyside region which the project serves.

The project operates at both the pedagogical and technical level. The former involves an education team of Educational Liaison Officers (ELO) who support Learning Providers in various sectors (HE, FE, SMEs, community groups, voluntary sector, police authorities, local authorities and education authorities) with the development of electronic courses. At the technical level, the project has developed a standards-based VLE infrastructure comprising an Oracle database back-end, which can deliver to either an Internet or a cable digital interactive TV front-end. Figure 1 provides a schematic of the overall project structure (see www.elearningplace.co.uk for further information).

Learning Providers utilise the infrastructure to produce e-learning content, which can then be published to the web and/or cable digital interactive TV using a tool called CourseMaker (www.coursemaker.co.uk). By engaging with a wide range of learning providers from various sectors; the project has been able to use their needs to shape the overall system itself, pushing it beyond pre-set boundaries. A good example of this has been the evolution of TeLP's assessment construction tool, TestMaker.

2. TestMaker: design issues

TestMaker has been designed with the following principles in mind:

a. Adherence to QTI standards.

b. XML-based.

c. Re-usability of items.

d. Ease of use for a range of Learning Providers

TestMaker adheres to QTI standards which means that tests and items created with this tool can be exported to other virtual learning environments as well as its own, The eLearning Place. Tests results are passed to the learner database of The eLearning Place where Learning Providers can manage their learners.

Items are developed using TestMaker, a Java Virtual Machine tool that enables easy production of QTI-compliant XML code. The tool also allows for other metadata to be associated with the item. Items can be created and added to the question bank (bottom left pane of Figure 2). Figure 3 shows a

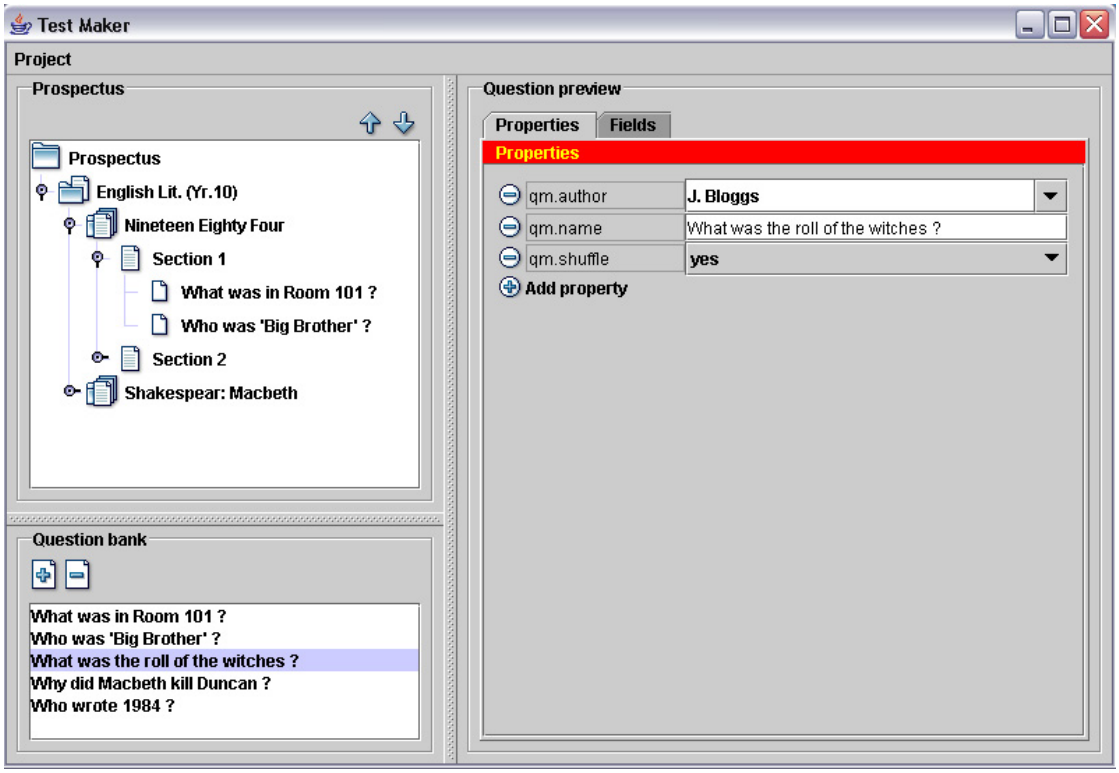


Figure 2 TestMaker Java Virtual Machine tool. Items are stored in banks under a Prospectus, which can contain a hierarchy of directories. QTI properties can be easily added to a test item

screen shot of a typical “Create a new question” form. Each item is stored in the underlying Oracle database and can be re-used accordingly. The prospectus provides containers for courses, assessments and assessment sections. Assessments are built by drag-and-drop of items from the question bank onto appropriate containers in the Prospectus (top left pane of Figure 2). At delivery, items are rendered using Macromedia Flash for the Internet and low level HTML for interactive digital TV.

One of the major departures from the original assessment tool is the ability to separate item- and test development. Thus, items are created and stored in the Oracle database. Tests can then be generated by selecting which items to use from the database. This means that staff in charge of assessment can re-use items easily as well as randomise test items.

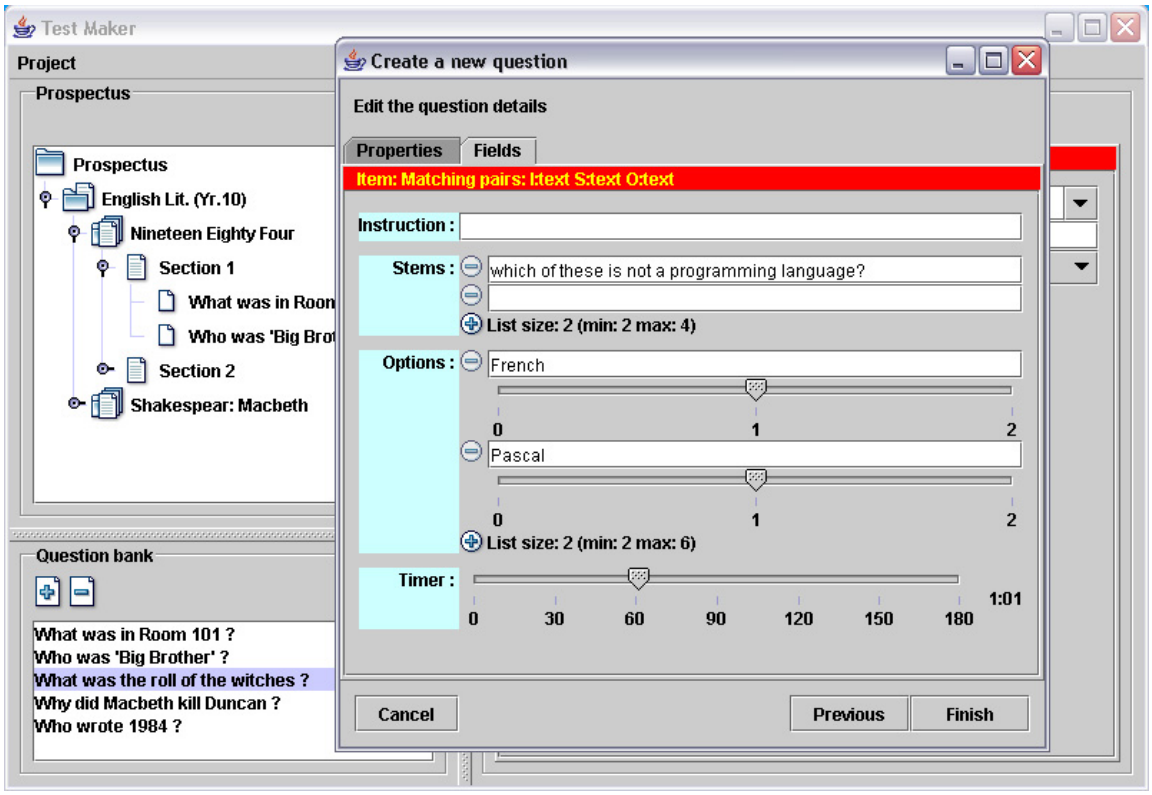


Figure 3 TestMaker Java Virtual Machine tool illustrating "Create a new question" dialogue for a Matching Pairs question.

Previous examples of QTI assessment tools, such as described by Bacon (2003) and Daly (2002) have been departmental initiatives. Given the partnership model of The eLearning Place, it was important to build in item-sharing facilities from the outset, such as in the recently launched TOIA (2004) assessment tool. TestMaker provides each Learning Provider with a separate folder area (called 'prospectus'). Learning Providers can specify whether an item is to be shared across the whole bank or just within their own organisation.

3. Evaluation

At the time of writing this progress report, there has not been evaluation of TestMaker by Learning Providers due to its stage of development, so no direct comment can be made now. However, evaluation of CourseMaker and The eLearning Place VLE has been an important part of the overall project so that technical developments were shaped by the needs and input of Learning Providers. These needs were collected in three ways:

- Learning Provider Questionnaires – Providers were asked to rate CourseMaker e.g. in terms of usability and whether its functions satisfied their needs.
- Learning Provider meetings – Comments were collected from joint Provider meetings at which they shared experiences of content creation and also commented on using the e-learning tools.
- Education Liaison Officer field notes – the Education team also observed first-hand how Providers used the system and noted down where improvements could be made.

Typical comments from Learning providers include:

> *"I must stay I am really impressed with this tool. I am not a techie. I have only used a BBC B in the classroom before and this tool was really accessible and what I am finding from other providers… …is you have to have a fair amount of expertise to make those things work. I am an idiot in ICT and I can't make those things work and put my course online so I really am most impressed with this tool [CourseMaker]." (Higher Education Learning Provider)*
>
> *"This [CourseMaker] is fantastic, I can't say enough about it, I think it's amazing. It is so easy to use it's so adaptable, I feel that it could go right across the board in any industry, you could adapt it in hairdressing, all…, for me the young people could use this right across any industry, any organisation, I really do." (SME Learning Provider)*
>
> *"… there are a number of difficulties when you are encountering new software and new skills and developing new skills yourself really, and I felt that CourseMaker was supportive in the face of those difficulties, in the face of my technical limitations." (Higher Education Learning Provider)*
>
> *"We are interested in becoming involved with this project. We are looking to expand using digital TV as a platform for e-learning. The project we decided to do is adapting an existing quiz about Liverpool. We are looking to develop it for digital TV so as to attract users that don't have conventional Internet access at home." (Public Sector Learning Provider using DiTV)*

The same evaluation methodology will be used with TestMaker.

Summary

The experience of The eLearning Project has been that close linking of pedagogical activity with technical developments leads to a better overall system attuned to the needs of Learning Providers and System Administrators. The overall system model of storing all learning and assessment materials as XML-based re-usable objects in an Oracle database,

which can then be rendered to Internet and/or cable digital interactive TV, is shown to be effective.

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