Introduction

We are pleased to announce a successful bid by the Maths, Stats & OR Network (MSOR Network) for £250,000 from the Higher Education Academy (HEA) and the Joint Information and Systems Committee (JISC) under the Open Education Resources Programme funding call (as described briefly in the February 2009 edition of this newsletter) [1-2]. The project is entitled “Finding Electronic Teaching, Learning and Assessment Resources” or FETLAR for short.

According to [3], “Open Educational Resources (OER) initiatives aspire to provide open access to high-quality education resources on a global scale”. This Programme is a one year pilot which aims to “support institutions, consortia and individuals to release open educational resources for use and repurposing worldwide, by assisting the development of appropriate processes and policies to make this process an integral part of the learning material creation workflow”. The rationale behind this programme is the rapidly increasing number of both large scale and small scale OER programmes across the world and the need for JISC and the HEA to provide leadership in this area on behalf of the UK higher education sector.

The resources provided by the successful projects must be made available in perpetuity via the JorumOpen [4] repository and via at least one additional release mechanism, such as a web2.0 service, an open repository, or a website. The MSOR Network bid falls under the subject centre stream of this programme, which requires a consortium to provide at least 360 credits of electronic learning resources for use and repurposing.

Partners and resources

The FETLAR consortium partners and their roles are given in Table 1. In addition, four consultants have been recruited to work on the project.

The potential open educational resources identified in the FETLAR funding proposal are shown in Table 2. Other resources may be added to this – see the Further Information section below.

Background

A priority of FETLAR is the provision of open e-learning and e-assessment resources. A forerunner of FETLAR was the Serving Mathematics project [13-14] – a collaborative JISC project in 2004-2005 between different mathematics e-learning and e-assessment systems. A major issue faced by this project was the need for a standard for e-assessment resources which allowed for the additional flexibility needed in mathematics and other
The recognised global standard, known as QTI (standing for “Question and Test Interoperability”), was at that time on version 2.0. The more comprehensive and flexible version 2.1 which was released in 2006 [15].

Following the release of version 2.1 of the QTI standard, a variety of software applications were developed by the FETLAR partners at Cambridge, Kingston and Southampton, alongside Graham Smith’s JAssess software to enable the creation, viewing and evaluation of e-assessment items and tests. These applications were utilized recently in another JISC project called MathAssess [16-17] which developed applications for a mathematics version of QTI, containing additional features such as the display of mathematical symbols, randomized questions and the evaluation of mathematical functions. Table 3 describes the main components making up the MathAssess tools and their predecessors. The MathAssess tools also interface with the mathematical typesetting language LaTeX, the virtual learning environment Moodle and the computer algebra system Maxima.

The MathAssess project has been quite successful and its development is being continued through the FETLAR project. It is hoped that a trial version of the MathAssess software will be available via the two project websites by the time this article is published.

**Aims**

The main aims of FETLAR are:

- to collect resources from the identified source (as shown in Table 2) and elsewhere;
- technical work to make these resources able to be assembled into learning experiences; and,
- to try to connect these resources to the real curriculum.

The main risks identified by the project are:

- the availability of stable, usable version of the MathAssess tools;
- gaining the intellectual property rights for the resources; and,
- the availability and usability of JorumOpen for the upload of a large volume e-learning resources, although the project is not dependent upon this. The project is planning to use the version of Moodle associated with its project website as a repository.

**Further information**

The main project website is [18]. This site will evolve as the project develops.

If you have any queries or if you would like to offer other open education resources to the project, please contact the Project Manager, Leslie Fletcher, or the Assistant Project Manager, Peter Samuels at the email addresses given above.

**References**


15. IMS Question and Test Interoperability Assessment Test, Section, and Item Information Model, Version 2.1, Public Draft revision 2 Specification. Available via:


<table>
<thead>
<tr>
<th>Institution</th>
<th>Resource</th>
<th>Description</th>
<th>Equivalent No. Credits</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anglia Ruskin University</td>
<td>NuMBeR$^5$</td>
<td>A series of resources for numerical methods for the biosciences</td>
<td>20</td>
<td>[5]</td>
</tr>
<tr>
<td>Coventry University</td>
<td>Just the Maths</td>
<td>A collection of modularised resources intended to service foundation level and first year degree level courses in higher education</td>
<td>80</td>
<td>[6]</td>
</tr>
<tr>
<td>Glasgows Caledonian University*</td>
<td>CALMAT</td>
<td>A software suite that containing expository material, tutorial activities, some measure of assessment and a comprehensive management information system for mathematics, ranging from GCSE through to A-level and first year university.</td>
<td>60</td>
<td>[7]</td>
</tr>
<tr>
<td>Leeds University</td>
<td>Maths Solutions</td>
<td>A series of short video clips of solutions to a series of maths problems that are known to challenge students</td>
<td>100</td>
<td>[8]</td>
</tr>
<tr>
<td>Loughborough University</td>
<td>mathcentre and mathtutor</td>
<td>Around 900 individual learning objects designed to offer resources to help students who have difficulty at the transition to higher education</td>
<td>120</td>
<td>[9-10]</td>
</tr>
<tr>
<td>Nottingham Trent University</td>
<td>METAL</td>
<td>A variety of resources to support mathematics for economics</td>
<td>40</td>
<td>[11]</td>
</tr>
<tr>
<td>Newcastle University</td>
<td>DIAGNOSYS</td>
<td>A knowledge-based system primarily for testing background knowledge of basic mathematics or other technical subjects</td>
<td>20</td>
<td>[12]</td>
</tr>
</tbody>
</table>

* Note: The curriculum and evaluation work package may be passed on to another institution

Table 1 – Consortium Partners

<table>
<thead>
<tr>
<th>Function</th>
<th>Pre MathAssess version</th>
<th>Developer</th>
<th>MathAssess version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item authoring</td>
<td>AQuRate</td>
<td>Kingston</td>
<td>MathQuRate</td>
</tr>
<tr>
<td>Item and test storage</td>
<td>Minibix</td>
<td>Cambridge</td>
<td>Minibix+</td>
</tr>
<tr>
<td>Assessment delivery</td>
<td>ASDEL</td>
<td>Southampton</td>
<td>ASDEL+ / QTI Playr</td>
</tr>
<tr>
<td>Question previewing</td>
<td>JAssess</td>
<td>Graham Smith</td>
<td>JAssess</td>
</tr>
<tr>
<td>Construct tests</td>
<td>Constructr</td>
<td>Southampton</td>
<td>Constructr+</td>
</tr>
<tr>
<td>Question rendering</td>
<td>R2Q2</td>
<td>Southampton</td>
<td>QTIEngine</td>
</tr>
</tbody>
</table>

Table 2 - Institutions potentially providing open educational resources to FETLAR. *Note: Informal permission not yet received

Table 3 - QTI application components developed in MathAssess and their precedents