

The EASiHE (E-Assessment in Higher Education) Project

Case Study Details

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Abstract

The EASiHE project has developed a solution for formative e-Assessment, using services currently available within the JISC eFramework. Examples of these services include QTI Engine, Peer Pigeon, LexDis, QTI Migration Tool and Edshare. A joint School of Electronics and Computer Science and iSolutions project, we have worked with five schools across the University. These are the:

- School of Medicine,
- School of Health Sciences,
- School of Civil Engineering and the Environment,
- School of Humanities and
- School of Electronics and Computer Science.

In addition, we have conducted a benefits realisation project to extend our work to Bournemouth and Poole College. The five schools and Bournemouth and Poole College have been our six EASiHE case studies.

The work has received positive feedback from lecturer and student evaluations, University senior management via our advisory panel, and from the wider community as we disseminate our results. Our aim is to ensure that these results are of both immediate and long-term benefit to the University of Southampton, as well as the national and international HE community.

Part 1 of this document gives an overview of the technical work on EASiHE that resulted from the six case studies. This includes a screenshot-based walk-through of the implementation. Part 2 of this document gives more details on the six EASiHE case studies. A link to further information on our website is included in part 3, including a large archive of screencasts, links to download the software, run the eAssessments, read technical papers, read our wiki and blog, see slides from our presentations and workshops and read our guide to producing high quality eAssessments.

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- Lester Gilbert
- Bart Nagel
- Onjira Sitthisak
- Sue Walters
- Bill Warburton
- Gary Wills
- Pei Zhang

Bournemouth and Poole College Team

- Chris Frost
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Part 1: Technical Work Overview

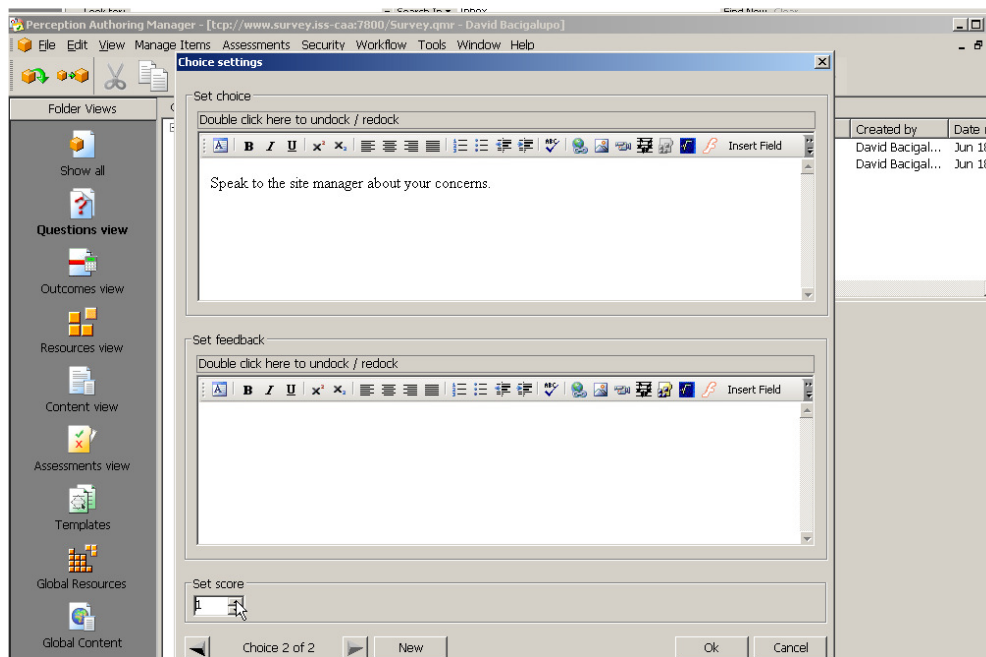
1. Introduction

Figure 1 gives an overview of our software co-design for formative eAssessment for our case studies. The implementation of this is described throughout the rest of part 1: the “short walk-through example” in section 2; the EASiHE repository and QTI editor work in section 3; and the remainder of the functionality in section 4. To reduce repetition, for each item of functionality one of the six case studies is used as an example for the screenshot. However, many of the case studies may include the item of functionality. The details of each case study are then presented in part 2 of this document.

2. Short Walk-Through Example

This section describes the short-walk through example from figure 1.

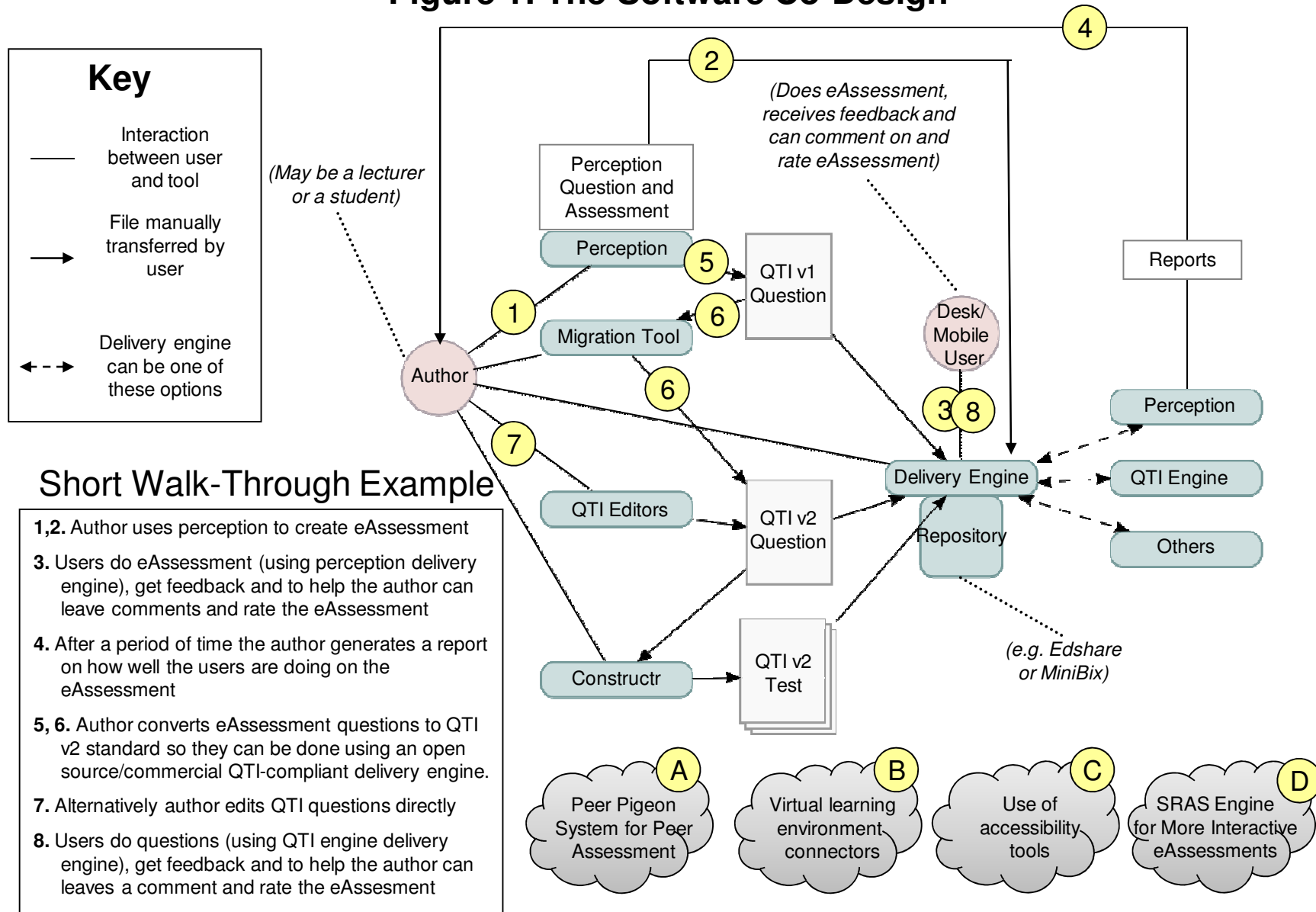
2.1. Steps 1 and 2: Author Uses Perception to Create eAssessment



The author uses Questionmark Perception to create an eAssessment in the normal manner. For example using Perception Authoring Manager:

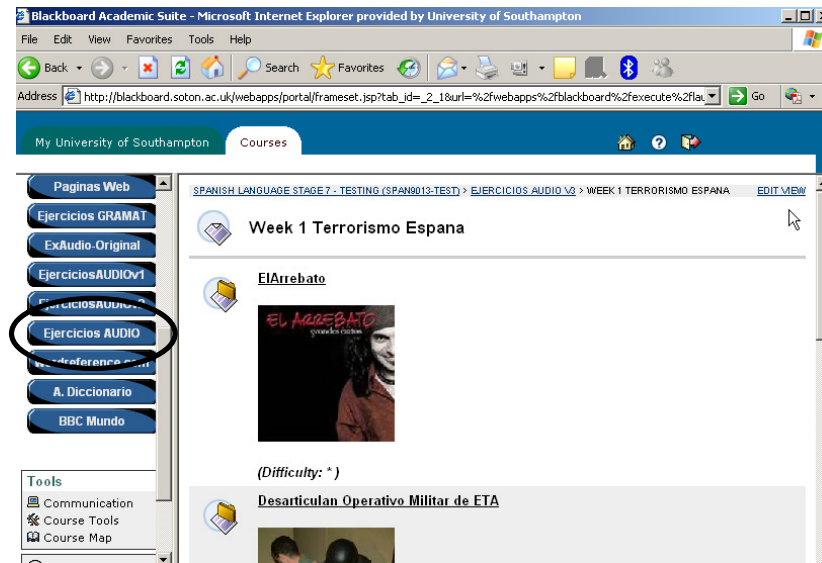
1. In Questions View create questions using question wizard
2. In Assessments View create “Quiz” assessment type using assessment wizard
3. In the assessment wizard set the “display feedback” and “record answers in the answer database” options on screen 3 of the wizard.
4. In the assessment wizard the assessment is made more accessible by selecting the appropriate accessibility template on screen 3 of the wizard

Figure 1: The Software Co-Design

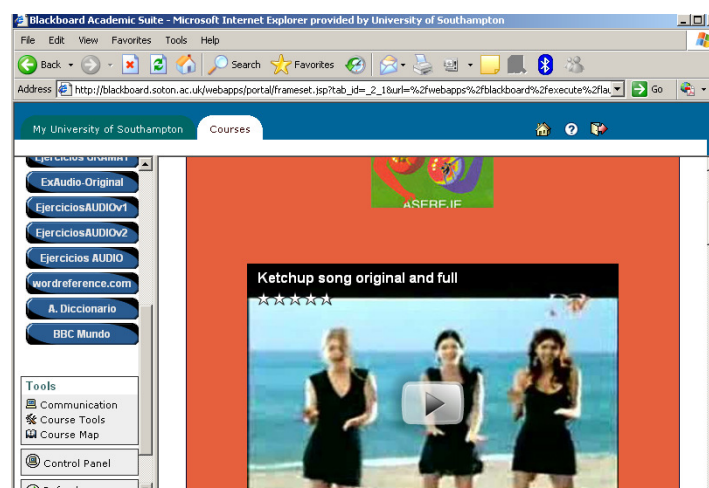


2.2. Step 3: Users do eAssessment (using Perception Delivery Engine), Get Feedback and as “Web 2.0” can help the Author by Leaving Comments and Rating the eAssessment

This sub-section describes this process using an example from Modern Language (Spanish), School of Humanities, using a web browser on a PC. The majority of this process can also be done on a modern mobile phone web browser.



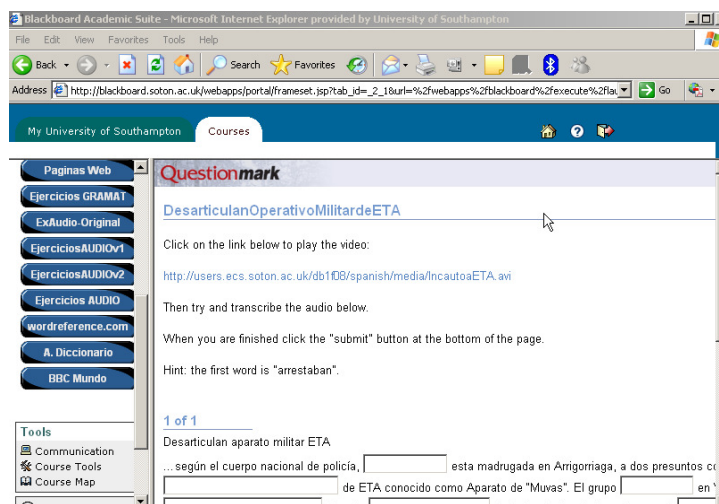
- The students access the eAssessment from the course virtual learning environment (Blackboard) by clicking on the link on the menu bar (shown in a black circle above).
- We recommend using images in the Blackboard pages to help encourage the students to do the eAssessment.
- The eAssessments are inserted into Blackboard as external web links



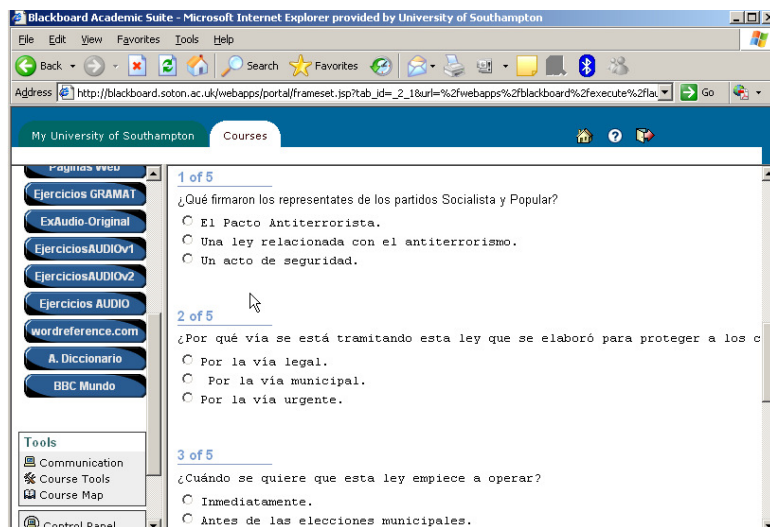
- An example of doing an eAssessment involving viewing externally hosted media files e.g. watching a video clip in Spanish from YouTube first, as in the above example



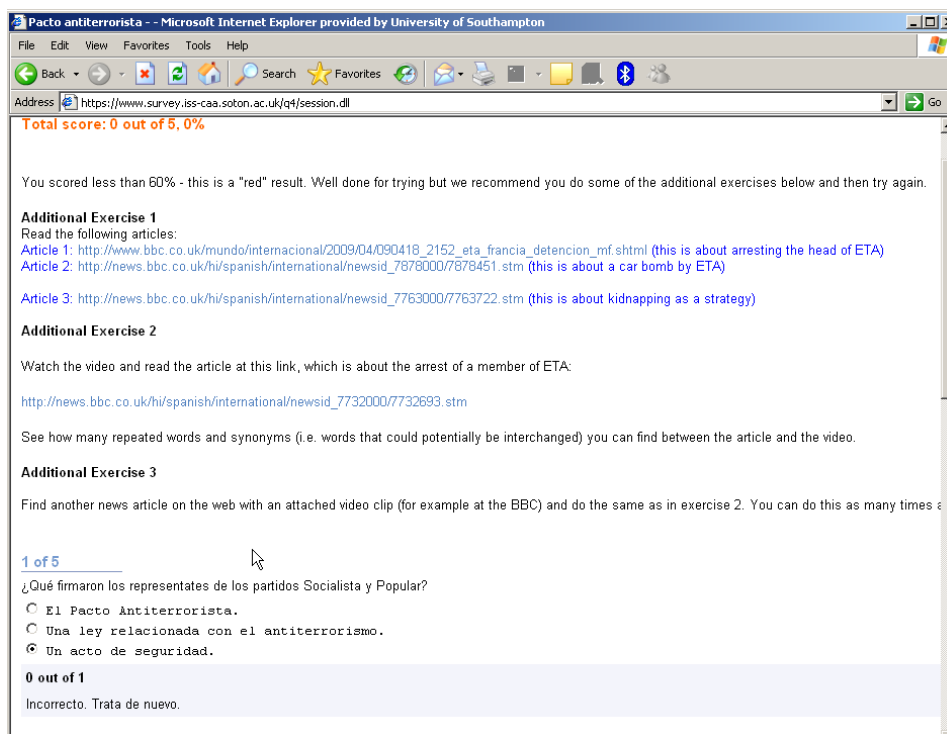
- An example of doing an eAssessment which requires viewing media hosted at Southampton, for example watching a short news clip first as in the above Spanish screenshot.
- Note: we have found that care must be taken to make sure that a video file is in a format that can be played on most web browsers.



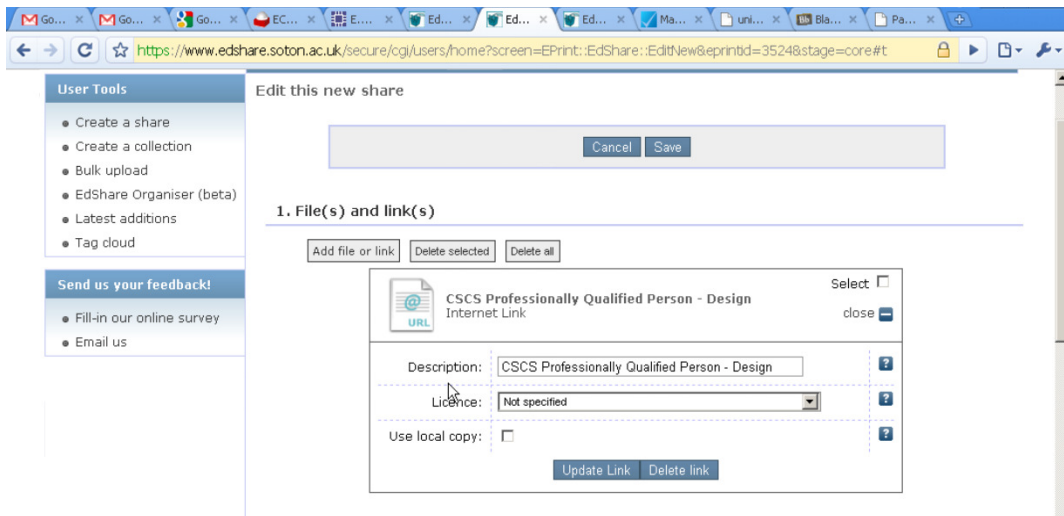
- An example of doing an eAssessment that involves fill in gap questions, in which the student has to transcribe the Spanish video clip he/she has just watched.
- Note: we have found that the Perception fill-in-the-gap functionality is not as rich as that from other products e.g. hot potatoes.



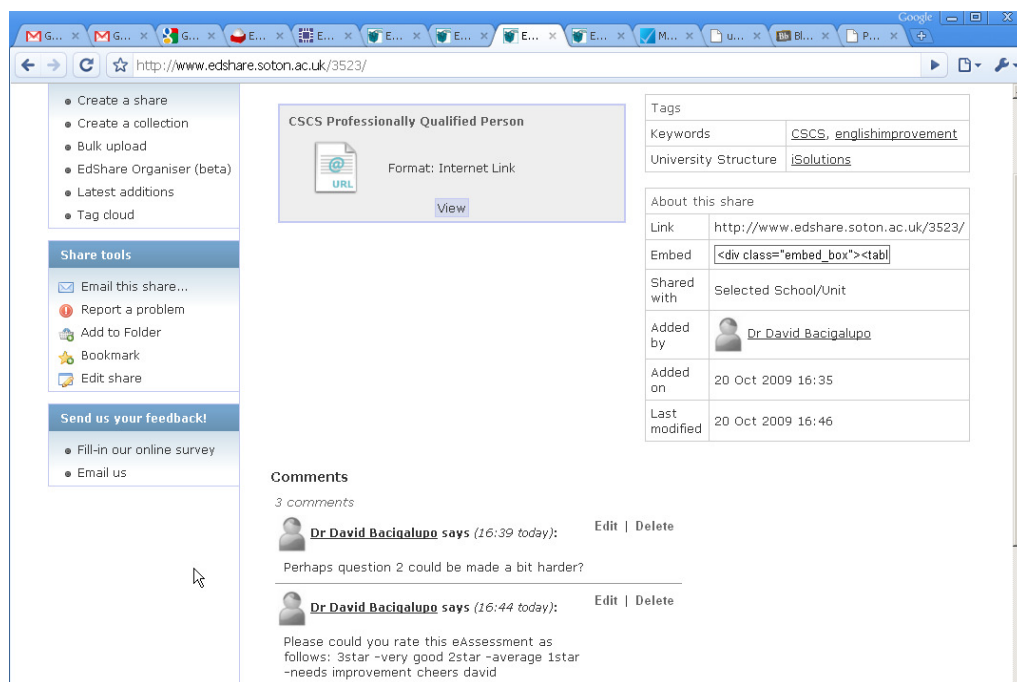
- An example of doing an eAssessment and answering multiple choice questions, in which the student has to answer questions about the Spanish news clip he/she has just watched.



- After the student has finished the eAssessment he/she gets immediate feedback.
- As in the above example, this can be both per-question and per-eAssessment and vary depending on how well the student did on the question/eAssessment respectively.
- The feedback helps guide the students' learning, as illustrated above.
- The feedback can include new exercises for the student to do, as in the above example.
- The feedback can encourage the student to create their own exercises to help them learn, as in the above example.

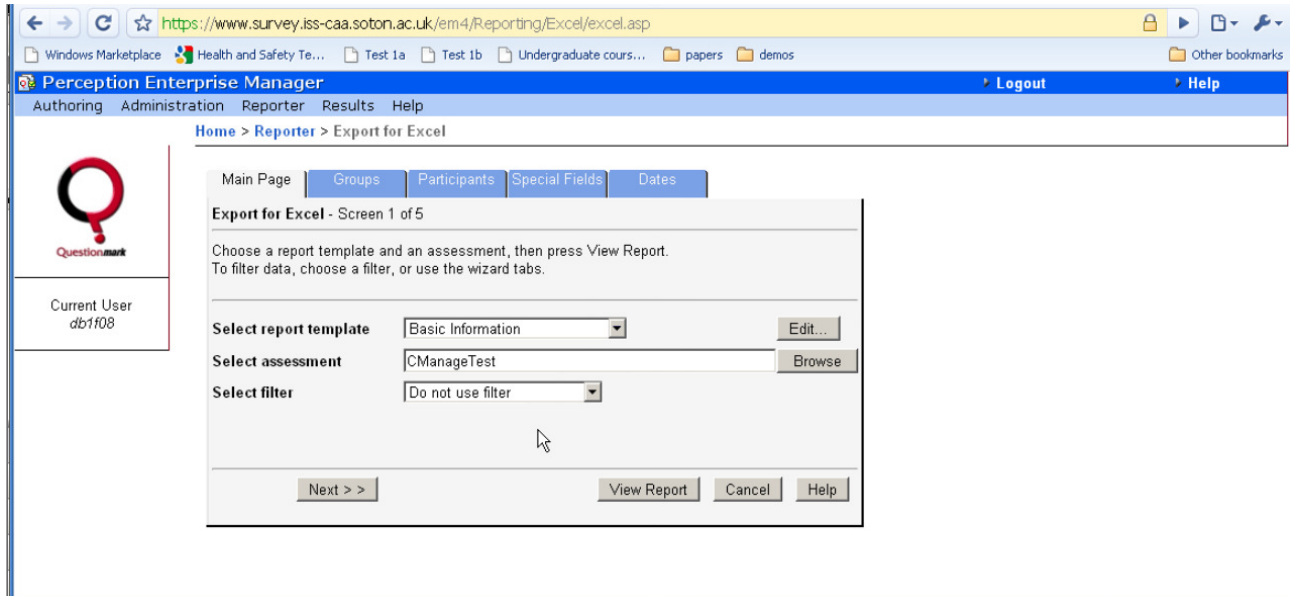


- A “web 2.0” EdShare page can be created for each eAssessment (e.g. linked to from the VLE);



- The example above shows an EdShare page with a web link to a Perception eAssessment.
- Students can use this page to add text on how good a question was and to rate it

2.3. Step 4 Author Generates Report on How Well the Users are Doing on the eAssessment



- The author generates a report on how students have done using the standard Perception functionality

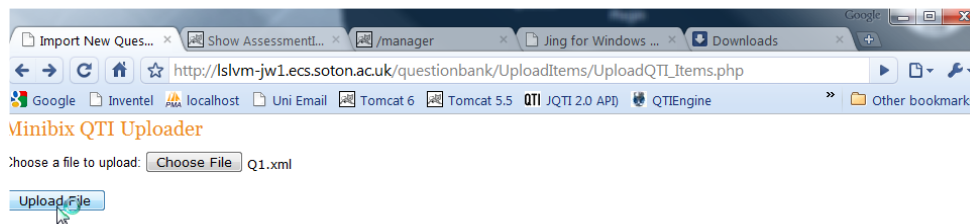
Participant	Participant group	Status	Date time finished	Total score	Maximum score	Percentage score	Assessment outcome label	Answer
anon	db1f08-CivEng	Recently started		0	0	0%		
anon	db1f08-CivEng	Recently started		0	0	0%		
anon	db1f08-CivEng	Finished normally	26/06/2009 13:20	1	1	100%	Feedback	specifying the PPE
anon	db1f08-CivEng	Finished normally	26/06/2009 13:20	0	1	0%	Feedback	off site prefabricatic
anon	db1f08-CivEng	Finished normally	26/06/2009 13:19	1	1	100%	Feedback	specifying the PPE
anon	db1f08-CivEng	Finished normally	26/06/2009 16:13	5	6	83%	Feedback	specifying the PPE
db1f08	db1f08-CivEng	Finished normally	26/06/2009 16:16	1	6	17%	Feedback	off site prefabricatic
testuser	db1f08-CivEng	Finished normally	19/06/2009 15:30	1	1	100%	Feedback	
testuser	db1f08-CivEng	Finished normally	19/06/2009 15:30	1	1	100%	Feedback	
wiw	db1f08-CivEng	Finished normally	26/06/2009 16:16	0	6	0%	Feedback	off site prefabricatic

- The above is an example (from Civil Engineering) of the report on how well the students are doing, which the author can use to help guide the teaching.

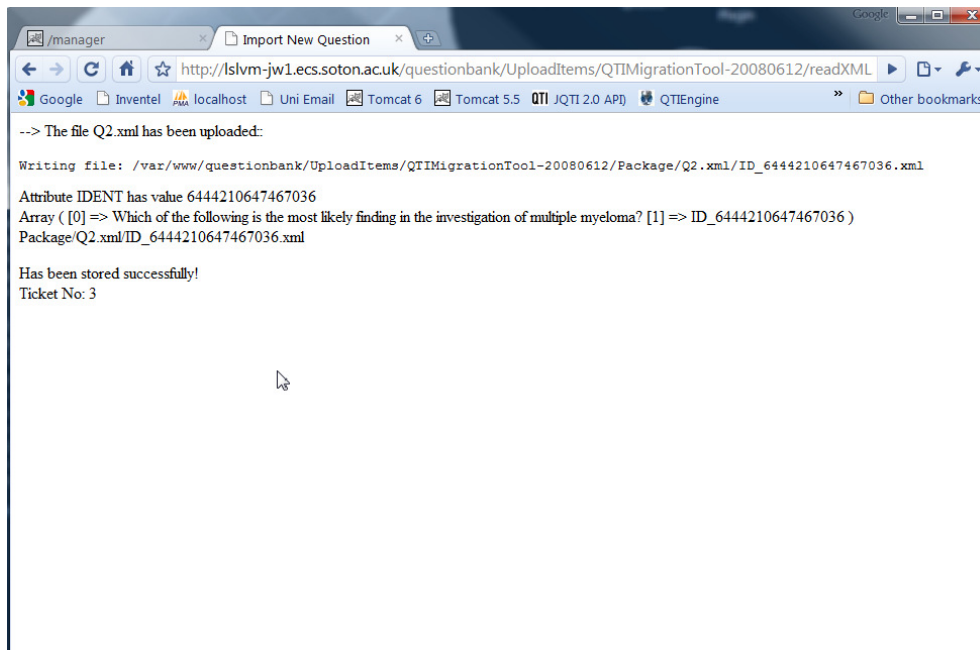
2.4. Steps 5 and 6 Author converts eAssessment Questions to QTI v2 standard

This is done so the eAssessment questions can be done using an open source/commercial QTI (Question Test Interoperability) delivery engine, and so it can be done on (currently just Android using a subset of QTI) mobile phones without a network connection. (Whereas Perception eAssessments require commercial software to run and although they can be done on a mobile phone, require a network connection to do this.)

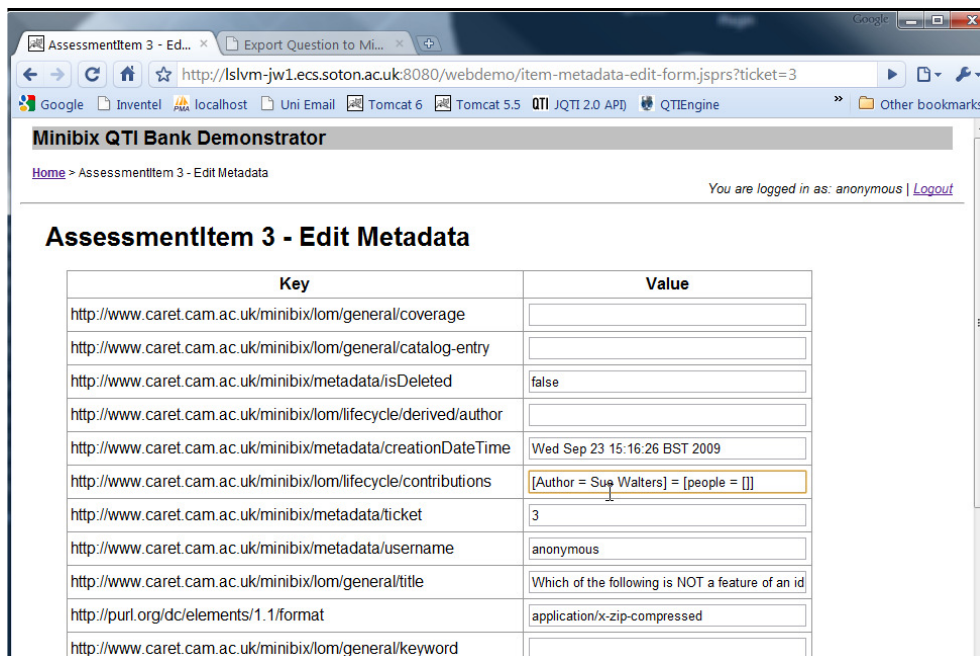
- In Perception click on “Manage Items” then “Export” then “Export QTI XML”, type in a filename and click save. This is a QTI v1 file (the old version).



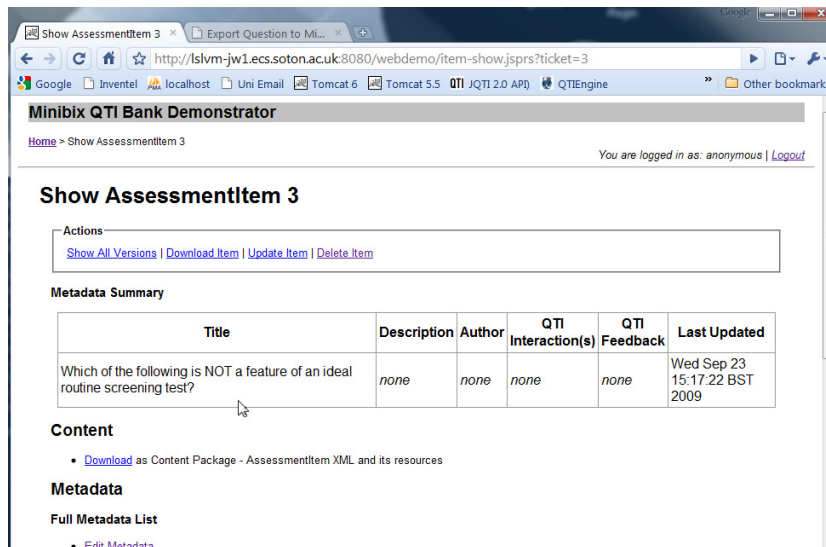
- On the MiniBix QTI Uploader page click on “Choose File” and select the QTI file exported from Perception. Click on “Upload file”.
- This converts the file to QTI 2.0 format and uploads it to the MiniBix repository in a 1-step process. (We note that as with many multi-stage editing and conversion processes creating the QTI in this indirect way is likely to lead to more verbose QTI than could be created directly. This can create a problem for tools that use this QTI, especially for question types other than multiple choice and multiple response)



- The QTI v2 file is now in the MiniBix repository as indicated by the above screen
- Note: this process has not yet been tested e.g. there is a bug with this process that has not yet been fixed - sometimes the metadata file can overwrite the QTI file. However if there are problems this conversion and upload process can be done manually using the QTI v1 to v2 migration tool and a repository GUI in a relatively straightforward manner.

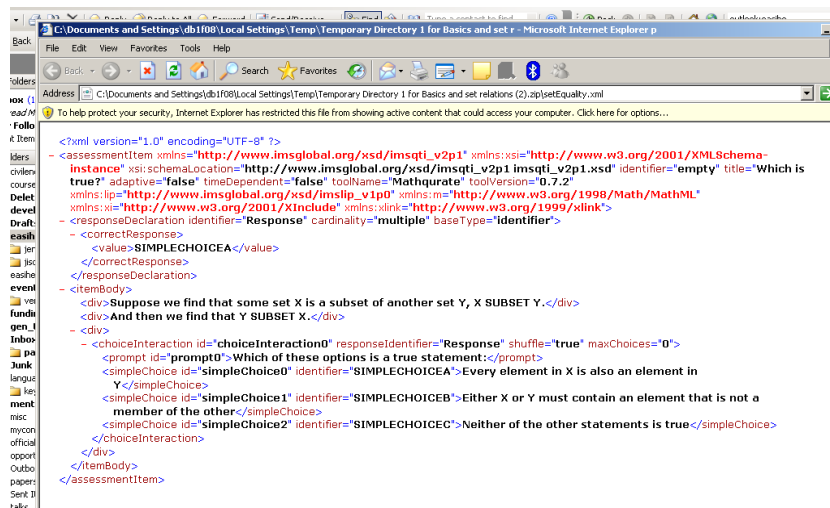


- The author edits the metadata in the MiniBix repository to make the QTI file easier to find again. (Currently the system creates a set of dummy metadata by default)



- The above screenshot shows the eAssessment meta data in the repository

2.5. Step 7 Alternatively Author Edits QTI eAssessment Directly



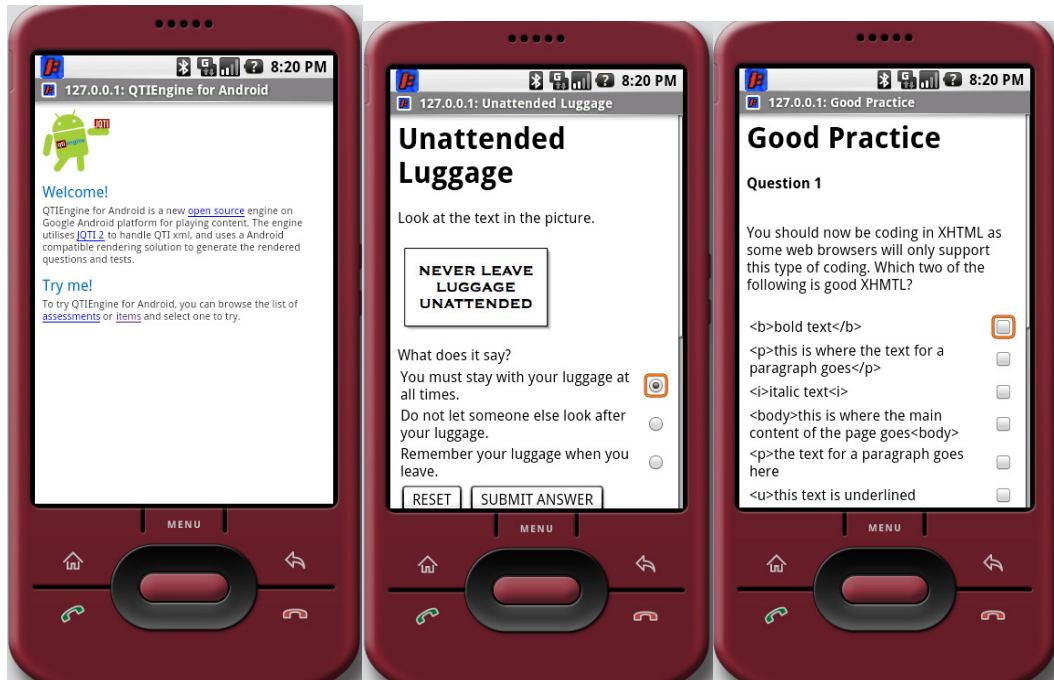
- We have gained experience of editing QTI files directly (e.g. for the ECS Discrete Maths Course)



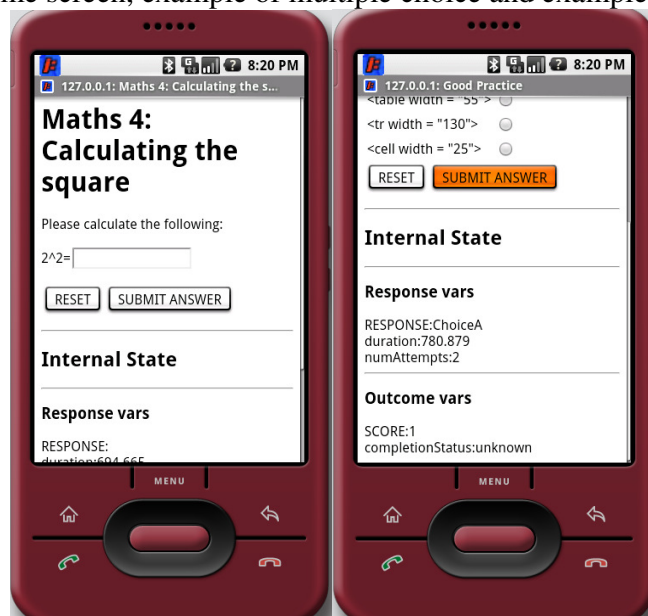
- And using this we have developed a new QTI editor –called Eqiat – see section 3

2.6. Step 8 Users do eAssessment (using QTI engine delivery engine)

- This example shows eAssessments in QTI v2 format being done by a user using the QTI Engine delivery engine. This example shows the mobile version of the QTI Engine on the Android mobile phone emulator (in debug mode) which *does not require a network connection*



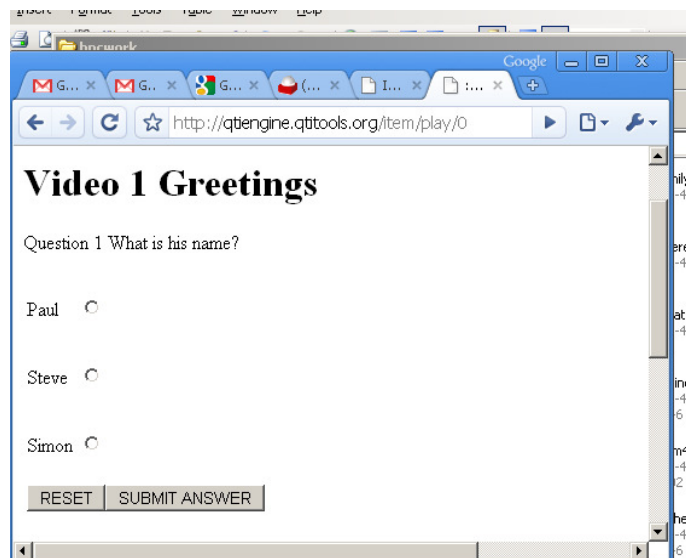
- Top row: welcome screen, example of multiple choice and example of multiple response



- Bottom row: example of text response box, example of debug information from tool
- We have also developed a mobile-focused QTI Editor to support this.
- We currently support a subset of QTI that in our experience authors are likely to use, and are focusing on the Android mobile phone platform.

3. The EASiHE Repository and QTI Editors

- We have been awarded funding to work with Bournemouth and Poole College (BPC) to extend our eAssessment system to help teach sign language. The BPC case study is used as the primary example in this section.

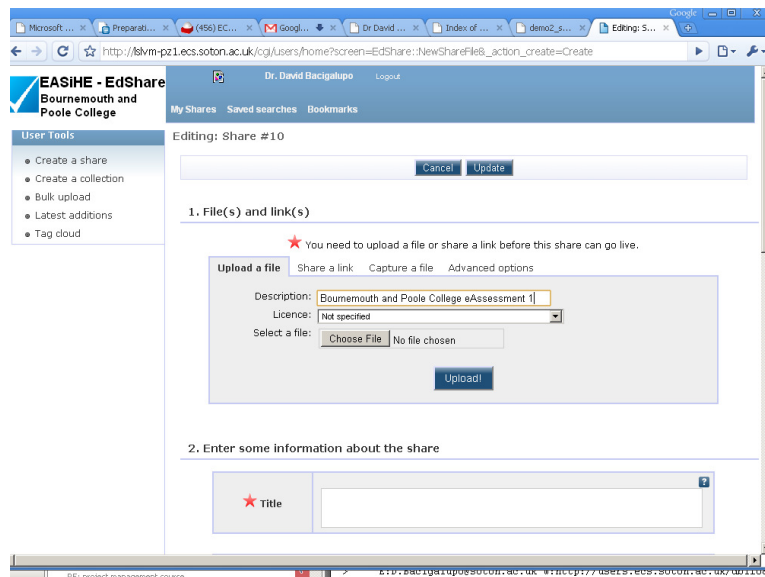


- These eAssessment questions are being created directly in QTI which has a number of advantages including:
 - It is not necessary to buy a commercial delivery engine such as Questionmark Perception
 - We have shown that the questions can be done on an Android mobile emulator without any kind of network connection

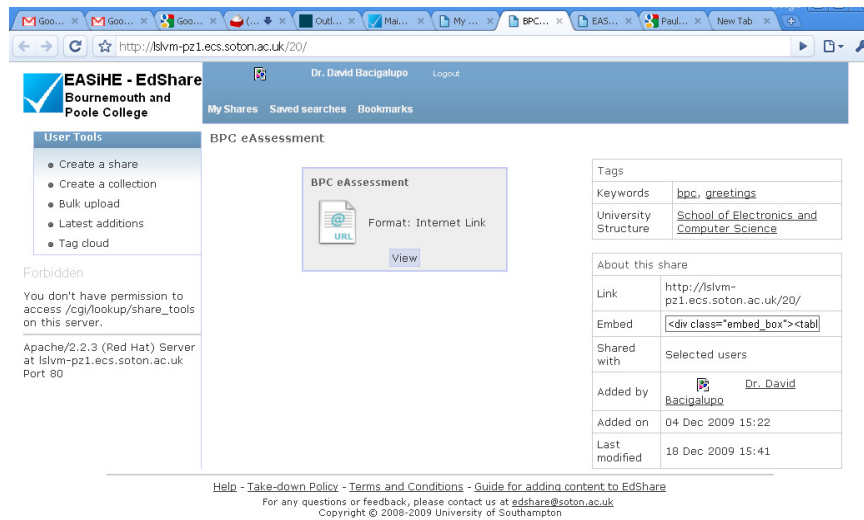
- Creating the eAssessment questions directly in QTI (as opposed to converting from Perception format) makes them easier to edit and use in the future.

3.1. The Repository

- As part of this we have replaced the MiniBix repository with a customized version of the EdShare repository.
- This is located at <http://slvm-pz1.ecs.soton.ac.uk/>
- EdShare is a free, user-generated, education and curriculum resource that allows you to:
 - post eAssessments, other exercises, video and audio files, notes, worksheets etc
 - download high quality lesson plans, worksheets and materials that match the specific objectives you are teaching
 - help new lecturers survive through their first few years of teaching by allowing them to use your outstanding lesson plans and materials
- This is where we are storing both the BPC eAssessment questions and also the video files associated with them.



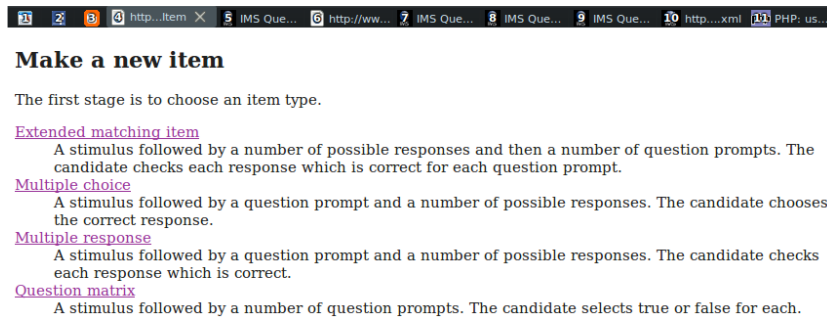
- Create a share



- View the share

3.2. Editing the eAssessment Questions

- The following screenshots show our web-based QTI question editor we are developing to make it straightforward for anyone to create and edit QTI eAssessments questions.



- Opening page

Edit a multiple choice or multiple response item

Item type
 Multiple choice (choose one answer)
 Multiple response (choose all appropriate answers)

Title

Stimulus

Question prompt

Options
 Shuffle the options

Option text	Correct Fixed Actions
<input type="text" value="GNU's Not Unix"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="button" value="Remove"/>
<input type="text" value="Government of Nunavut"/>	<input checked="" type="checkbox"/> <input type="checkbox"/> <input type="button" value="Remove"/>
<input type="text" value="Good News Unlimited"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="button" value="Remove"/>
<input type="text" value="Guangxi Normal University"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="button" value="Remove"/>
<input type="text" value="none of the above"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="button" value="Remove"/>

http://lslvm-bjnl/authoringtool/?page=editAssessmentItem&qtid=new [+] [4/11] ALL

- Multiple choice or multiple response item authoring page

Edit question matrix item

Title

Stimulus

Questions

Question prompt	Correct response Actions
<input type="text"/>	<input checked="" type="radio"/> true <input type="radio"/> false <input type="button" value="Remove"/>
<input type="text"/>	<input checked="" type="radio"/> true <input type="radio"/> false <input type="button" value="Remove"/>

http://lslvm-bjnl/authoringtool/?page=editAssessmentItem&qtid=new [+] [4/11] ALL

- Question matrix item authoring page

New QTI item complete

The new item has been successfully validated

QTIEngine preview

Guangxi Normal University

Government of Nunavut

none of the above

Internal State

Response vars

duration : 31.077
RESPONSE : option_4
numAttempts : 2

Outcome vars

completionStatus : unknown
SCORE : 0

Download the item

You can [download the QTI item as an XML file](#).

Make a content package

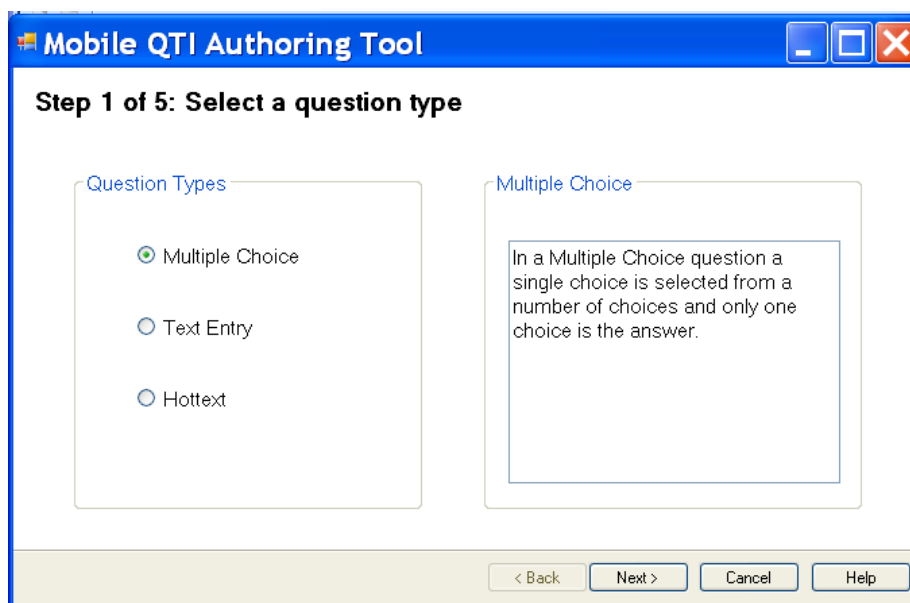
You can [package this item](#) to include metadata.

<http://lslvm-bjnl/authoringtool/?page=editAssessmentItem> [4/11] Bot

- Example of preview/download/create content package page

- Our web-based QTI authoring tool supports the following items:
 - multiple choice
 - multiple response
 - extended matching item (multiple multiple response with a common stimulus and list of options)
 - question matrix (multiple true or false) items.
- The items can be:
 - downloaded as XML files or
 - content packages.
- The following screenshots show our mobile-optimised QTI editor we are developing to make it straightforward for anyone to create and edit QTI eAssessments to run on a mobile.

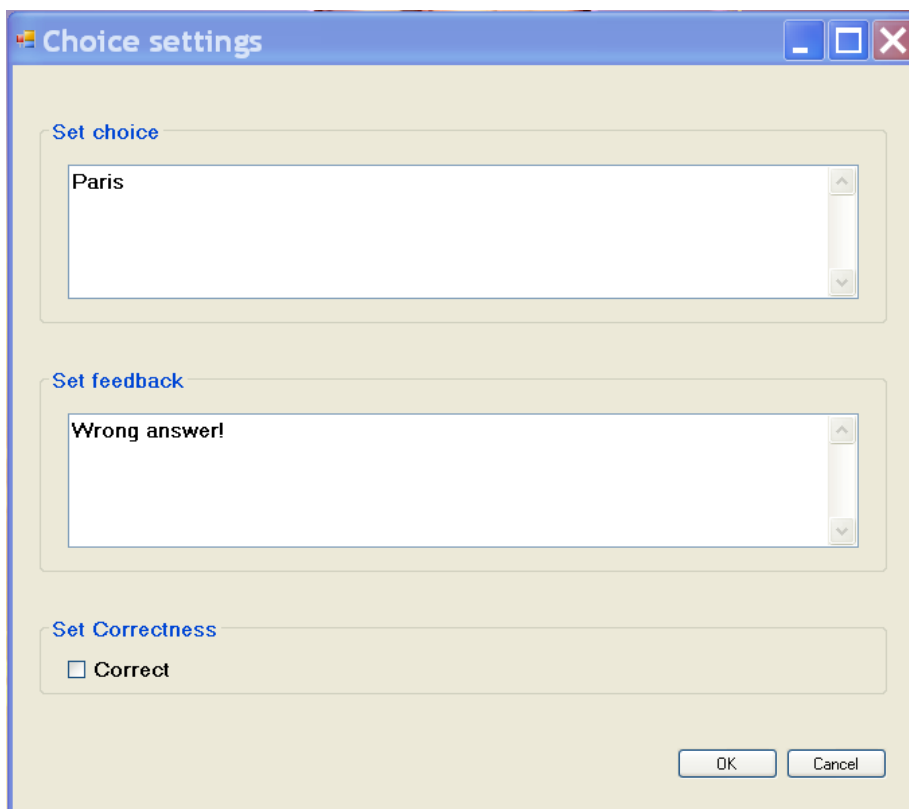
3.3. Mobile-Optimised eAssessment Question Editing



- This screenshot shows the select eAssessment question type screen



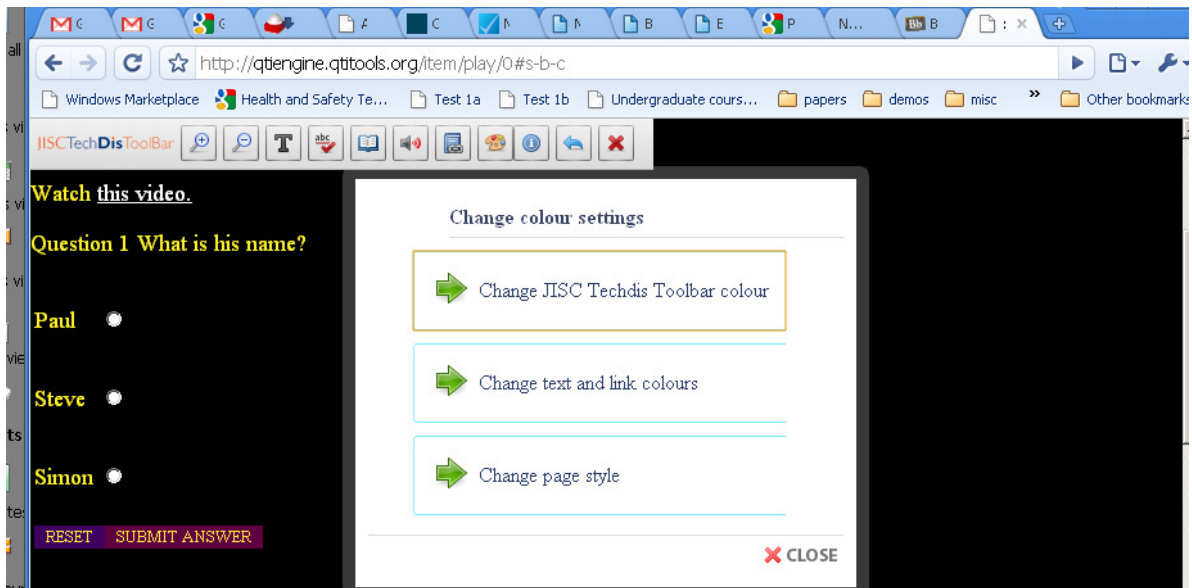
- This screenshot shows the screen for creating choices for the eAssessment question



This screenshot shows the screen for editing a choice

3.4. Making eAssessments More Accessible

- Students can use the ECS study bar (also known as the JISC TechDis ToolBar) to change how eAssessments look e.g. to make it more accessible for students with AER. (The JISC TechDis Toolbar is under development).



Browser Support

Below is a list of the browsers that JISC Techdis Toolbar is compatible with. An installer is provided for Windows, and manual instructions are available for Windows, OSX and Linux.

Browser	Windows	OSX	Linux
Mozilla Firefox 3	✓	✓	✓
Internet Explorer 6, 7, 8	✓	N/A	N/A
Opera 9, 10	✓	✓	✓
Google Chrome 3, 4	✓	✓	N/A
Apple Safari 3, 4	✓	✓	N/A

- See <http://access.ecs.soton.ac.uk/ToolBar/>
- Lite version available that doesn't require installation

Go... x (... x Auth... x Out... x Main... x My S... x BPC ... x EASI... x Paul ... x New Tab x

s.ecs.soton.ac.uk/ToolBar/functions

Log

Contact

Start date: 01/07/2009
End date: 30/11/2009

Funded by:
JISC TechDis


With help from:
OSS Watch
open source software advisory service

Project [URI](#), [RDF](#).


JISC Techdis Toolbar is available under the [BSD](#) open-source Licence.

JISC Techdis Toolbar Functions


The JISC Techdis Toolbar logo can be selected to receive updates for the toolbar. We suggest you check for updates regularly, and press the refresh button to complete the update. The features on the toolbar will not work with all websites, as their functionality may be dependent on the design elements within individual pages. It is important to realise it may not be possible to change certain colours, fonts, or even to check spelling in some forms.




Select the Magnifiers button to increase or decrease the size of text. If text resizing makes the site unreadable you may wish to use your browser zoom feature to increase both the image and the text sizes.




Select the Font button to choose a different type of font for the text and increase line spacing.




Select the Spell Checker button while writing in a plain text form. Suggestions are shown below the text-area after a pause. Disable the checker by selecting the button once more. Note that this may not work with rich-text editors that already have spell checkers.




Select the Dictionary button after highlighting a word in the web page and a definition from Wiktionary will appear.




Select the text-to-speech button and choose whether you want the whole page read out loud, or just the highlighted text. And yes, you can highlight a portion of text before selecting the Text-to-Speech button to have only that text read out. Wait for that section to finish before highlighting a new section of text. Note that large pages, such as Facebook pages, may require you to select smaller portions of text at a time.




Select the References button and JISC Techdis Toolbar will scan the page for referencing information - it will collect as much as it can linked to authorship, dates, title of the page, name of the website and the URL. Once you have selected the green tick you can highlight the text and copy it into any notepad or word processor.




Select the Styles button to alter the colour of the JISC Techdis Toolbar toolbar, change the web page colours - background, text and links or choose pre-made page styles. Some web page colour changes also impact on the toolbar.



Select help to gain access to instructions for use.



Select the return menu if you wish to restore the webpage to its original style.



Select close to exit JISC Techdis Toolbar.

[Site Map](#) | [Contact Us](#) | [Business Consultancy](#) | © 2009 [University of Southampton](#) | [Firefox](#) icons © plivoke

Te... | Sent It... | Network... | Percepti... | qtied2 | public_h... | Untitled ... | EASIHE_... | easihepo... | Date out... | M...

- Screenshot of documentation

UNIVERSITY OF
Southampton

EASiHE
E-Assessment in Higher Education

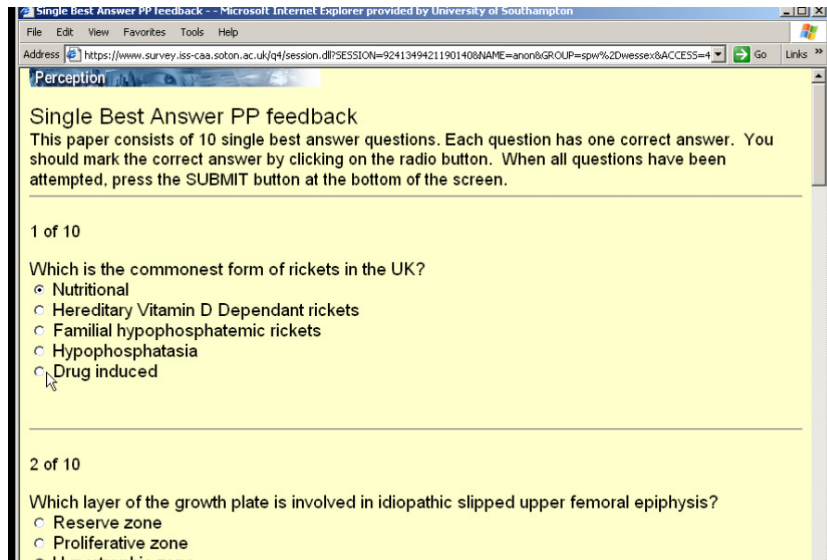
JISC

22/42

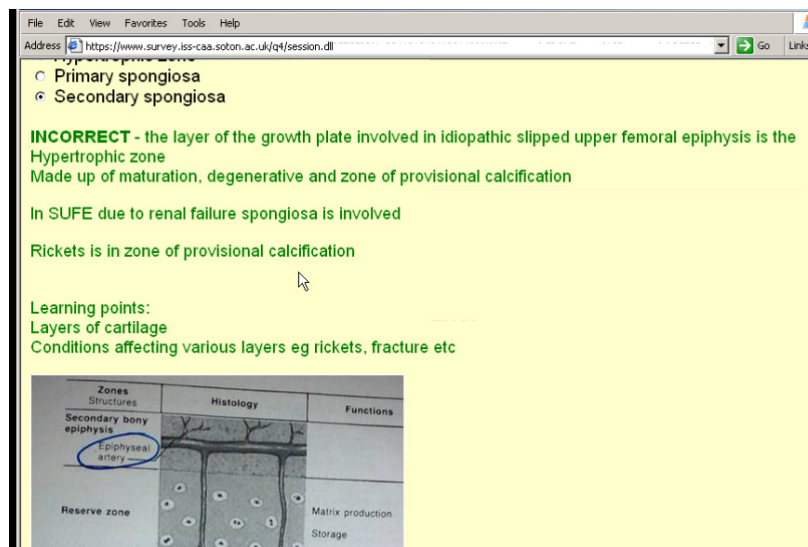
4. Remaining Functionality

This section describes the full functionality of the system design, minus the functionality described in sections 2 and 3.

4.1 Students Writing Their Own Questions and Feedback (“Web 2.0”)



- Students can create their own questions. The example above shows questions a Wessex Deanery consultant student wrote (in this example typed into Perception by Sue Walters although one of the available editors could have been used instead.)



- Students can be very good at writing detailed feedback for their own questions, as in the above example also from the Wessex Deanery. (In this case typed into Perception by Sue Walters although one of the available editors could have been used instead.)

4.2 Peer Assessment Using Peer Pigeon



PEER PIGEON


REST Services for Resource Submission and Distribution to Peer Review Groups

Peer Review is an important learning activity where students produce feedback, or grades, for each others' work.

Use [Peer Pigeon](#) to run your own peer review exercises

[Log in](#) - [Sign up](#) - [FAQs](#) - [Blog](#)

- Peer pigeon can be used for peer assessment so students can mark (review) each others work



PEER PIGEON

REST Services for Resource Submission and Distribution to Peer Review Groups

[pass](#)
[Log out](#)
[Help](#)

New review


Review Pattern:

Name:

Start:

[Back](#)

- The author creates a new review



PEER PIGEON

REST Services for Resource Submission and Distribution to Peer Review Groups

[My Participations](#)
[Log out](#)
[Help](#)

My review

Simple

Schedule

Cycle Name	Start Date	End Date	Tolerance
Paper	00:00 07/06/2007	00:02 07/06/2007	00:03 07/06/2007
Review	00:02 07/06/2007	00:04 07/06/2007	00:05 07/06/2007
Mark	00:04 07/06/2007	00:06 07/06/2007	00:07 07/06/2007
Final	00:06 07/06/2007	00:08 07/06/2007	00:09 07/06/2007

Participants

- [students:](#)
- [tutors:](#)

Artefacts

0 artefacts have been created. [Save as zip](#)

[Edit](#) | [Back](#)

Editing review

Details

Name:

Description:

Schedule

Name	Start	End	Tolerance
Paper	<input type="text" value="00:00"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:02"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:03"/> <input type="text" value="07/06/2007"/>
Review	<input type="text" value="00:02"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:04"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:05"/> <input type="text" value="07/06/2007"/>
Mark	<input type="text" value="00:04"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:06"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:07"/> <input type="text" value="07/06/2007"/>
Final	<input type="text" value="00:06"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:08"/> <input type="text" value="07/06/2007"/>	<input type="text" value="00:09"/> <input type="text" value="07/06/2007"/>

Participants

Copy/paste your participants' ECS user names or advertise the URL for each role:

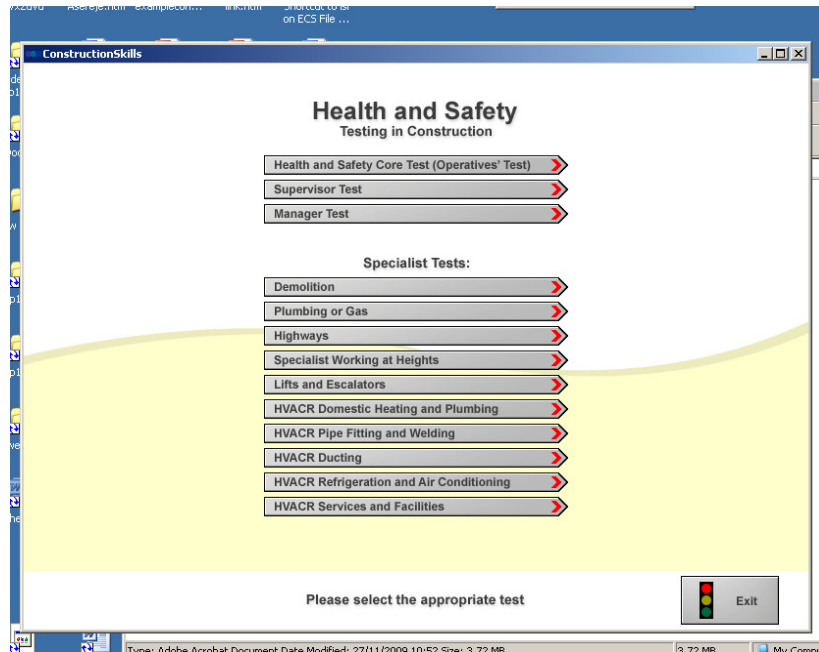
- [students \[how do I advertise the url?\]](#)
- [tutors \[how do I advertise the url?\]](#)

[Show](#) | [Back](#)

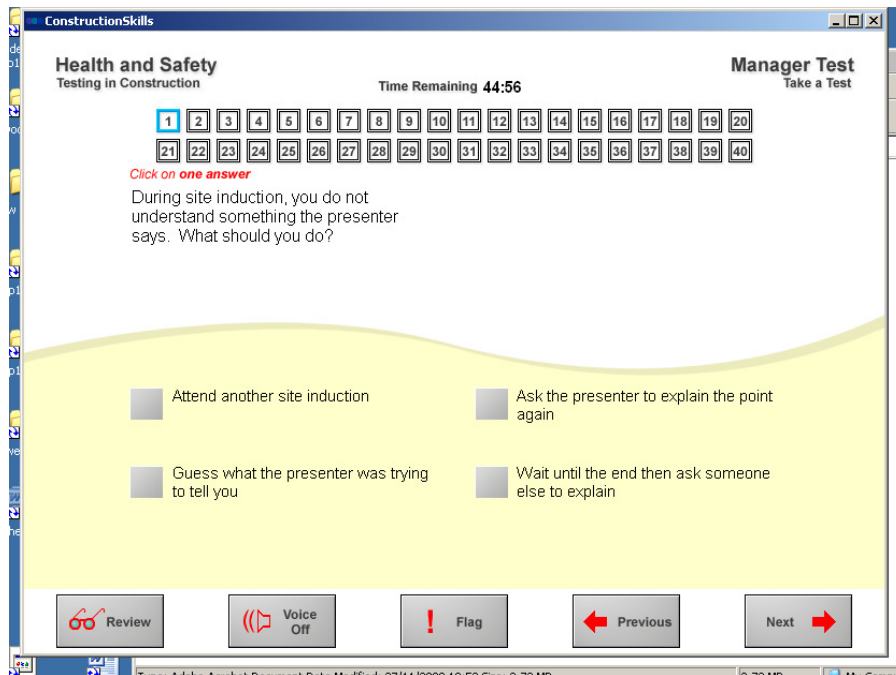
- The review can then be viewed and edited

4.3 Creating Improved Versions of Industry Standard eAssessments to Help Save Lives

- This is an example of an existing industry standard eAssessment system.
- All persons working on a construction site must pass this test first (many fail first time!).

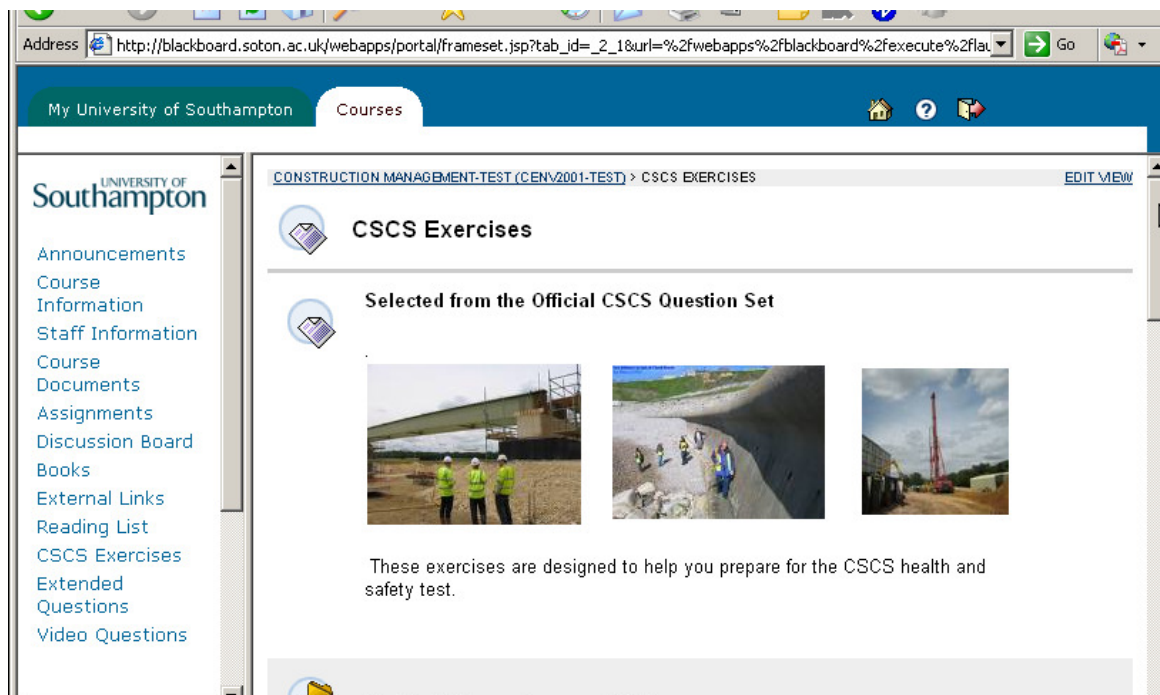


- Select type of eAssessment

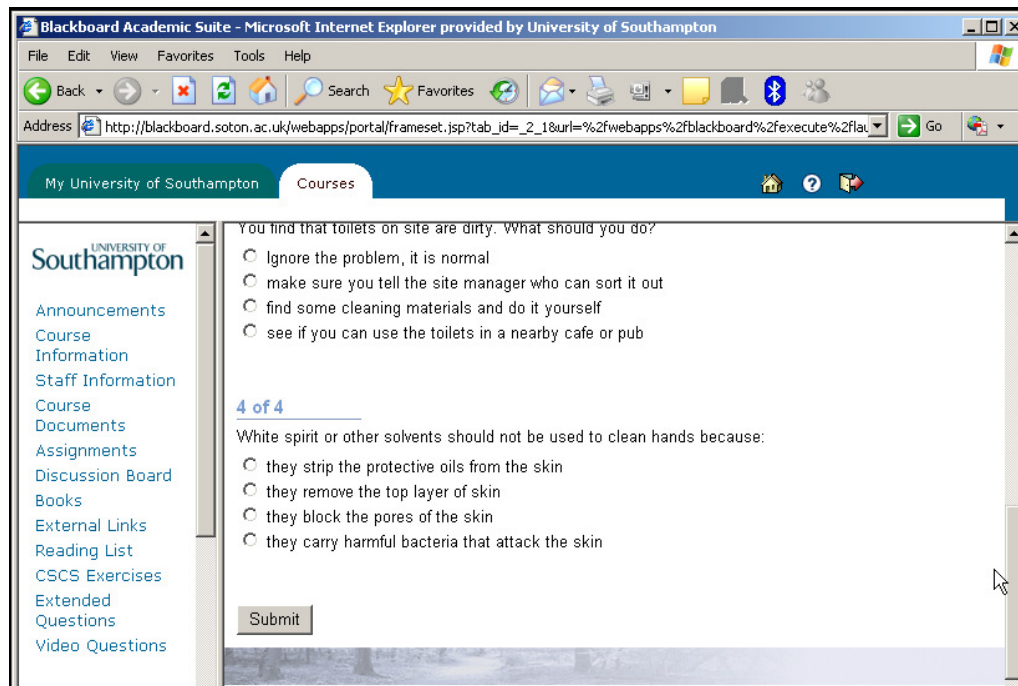


- Do the eAssessment

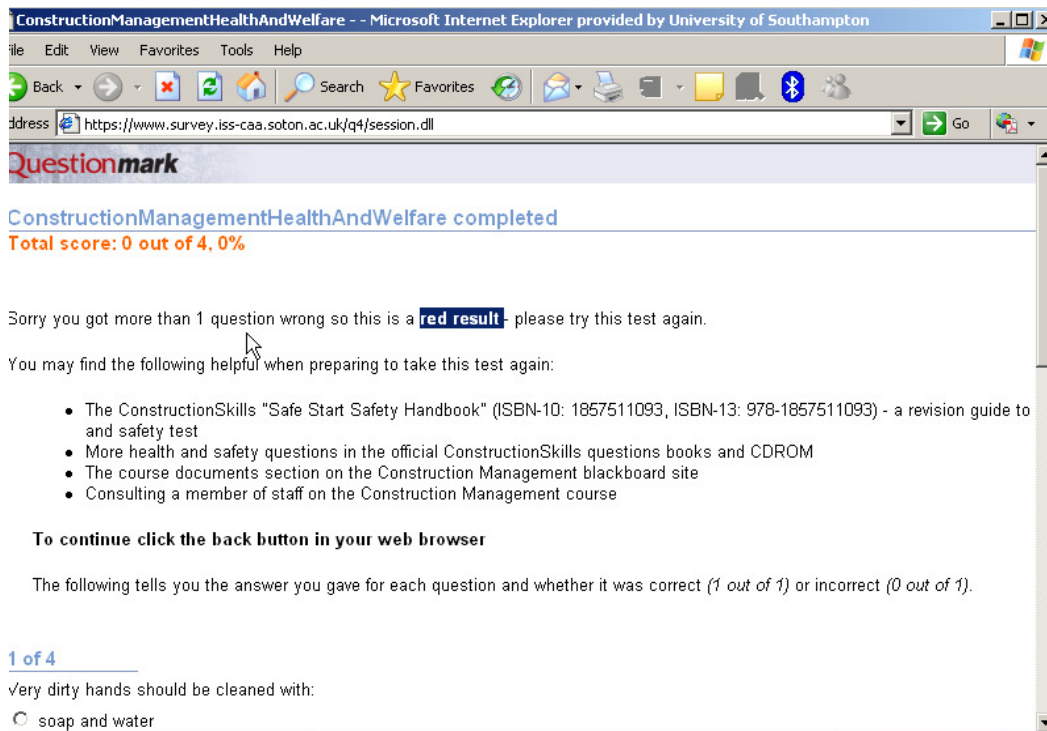
- We have created an improved version of this industry standard test based on the approach in this document, which can hopefully help save lives by helping students (such as those from the University of Southampton) and professionals learn about health and safety.



- This is inserted into a University of Southampton Blackboard VLE



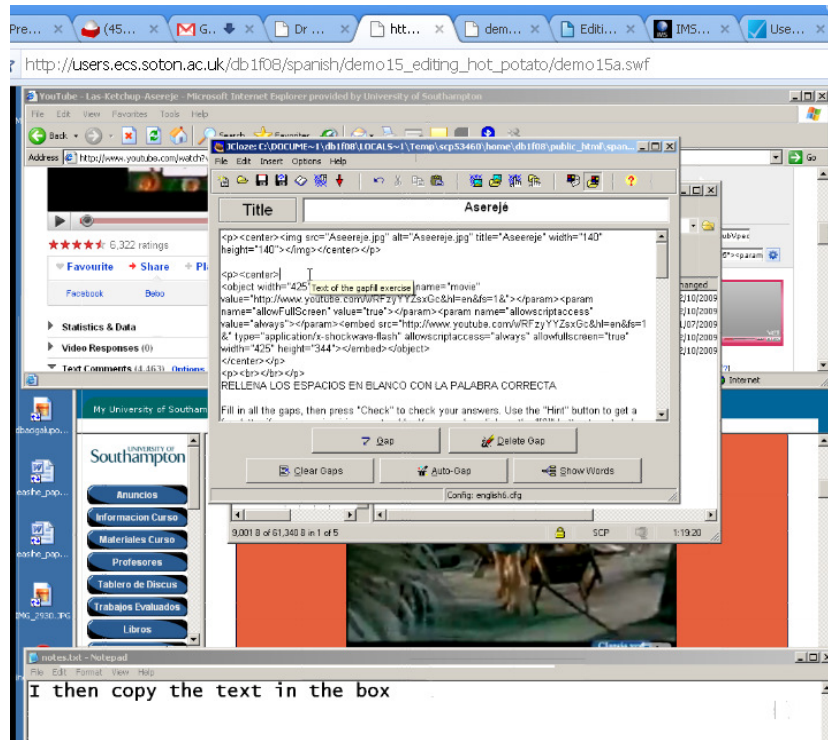
- Example of questions



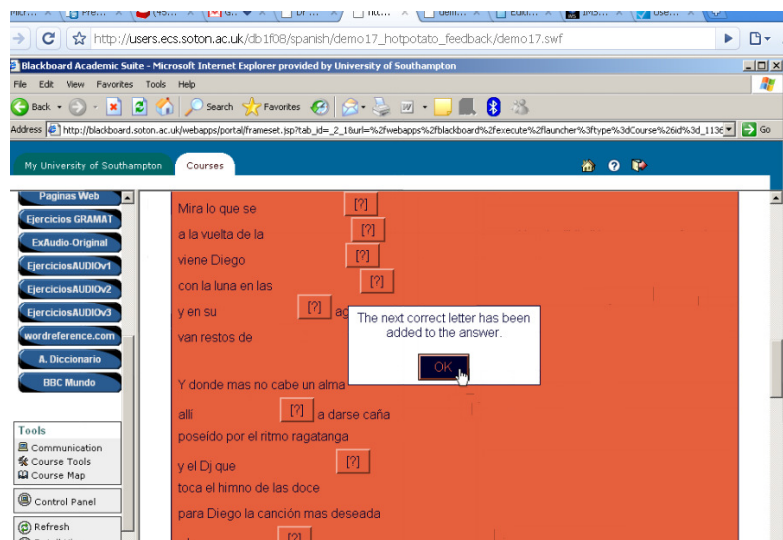
- Example of feedback

4.4. Examining Alternative eAssessment Systems

- We have also examined alternative eAssessment systems e.g. Hot Potatoes as in the below Modern Languages example.



- Hot potatoes: editing eAssessment



- Hot potatoes: doing the eAssessment

Part 2: EASiHE Case Studies Details

1. School of Humanities

1.1. Overview

Spanish Language Stage 7 (SPAN9013) is an advanced-level Spanish module for final year students. In this case study we went through a process of co-design with the course leader. As a result of this, we produced a set of eAssessments using our eAssessment tools. The focus in this case study was on: the use of video and audio clips; making eAssessments accessible based on the advice of the LexDis project; techniques for motivating students to use the eAssessments; making the use of eAssessments over multiple academic years more sustainable; tools for creating and delivering mobile eAssessments; techniques for creating short but effective student progress reports; how to use the virtual learning environment (VLE) and eAssessment delivery engine in a more coordinated fashion via connectors; student-generated feedback exercises; and comparing different eAssessment toolsets. The eAssessment toolsets we compared were: the Perception commercial toolset; our tools (which support the IMS Question Test Interoperability QTI 2.1 specification); and the Hot Potatoes toolset, which is freeware but does not support QTI. The highest level of Bloom's taxonomy reached by the eAssessments was "evaluation". We tested the eAssessments, made changes as requested and documented the resulting system. In total we took part in over seven hours of face to face meetings.

- Lessons learnt: a big challenge is how to manage the risk associated with introducing new types of eAssessment onto a module.
- How the university was influenced: colleagues and students seem to have been impressed by the quality and effectiveness of these formative eAssessments. At a higher level, favourable feedback from the School has led to the leader of a University-wide Assessment Review panel seeking input from members of the EASiHE management team on a long-term basis.
- Changes to practice: It seems likely that, because they have worked well, the School will continue using formative eAssessments and there appears to be a strong possibility that their use will be extended into other curriculum areas. This is something that the EASiHE management team will monitor during Phase 3 of the project (April 2010- April 2011).

The SPAN9013 module lasts for two semesters, with three classes each week. Typically there are around 20-30 students on the module. Prior to the EASiHE involvement the optional independent study web-based formative eAssessments were as follows, with typically one or more eAssessment per study week. They were implemented using Hot Potatoes and accessed via Blackboard, the module virtual learning environment (VLE). They required the students to first play an audio/video media file (in Spanish) before undertaking the assessed questions. Categories of eAssessment that could be automatically marked included: i.) assessing understanding of the media file (typically multiple choice questions); ii.) transcribing the media file using close procedure (fill in the gap) questions; and iii.) a vocabulary test (also multiple choice). During the last ~10 years, this kind of eAssessment solution has been found to be something motivated students can use independently to practice their language skills.

The following is a summary of the stage 7 "listening" language skills learning outcomes and questions as received from Irina Nelson 25th June 2009. We note that these do not appear to be in a standard format from the literature.

“Understand with relative ease in most situations and registers, including the media and specialist areas within the aims of the course.

Understand most of the implications and intentions, including humour and irony, of spoken language delivered in a range of accents and registers and at any speed.

Understand with ease virtually everything that is heard. Engage with the subtleties of meaning and nuance in spoken language.

Ability to assess critically the impact of the key social and political issues that take place in the society where **the target language is spoken**

This requires acquisition of specific vocabulary, correct grammar and syntax as well as pragmatic issues of the target language.

More information is available from the Language Stages Descriptors:

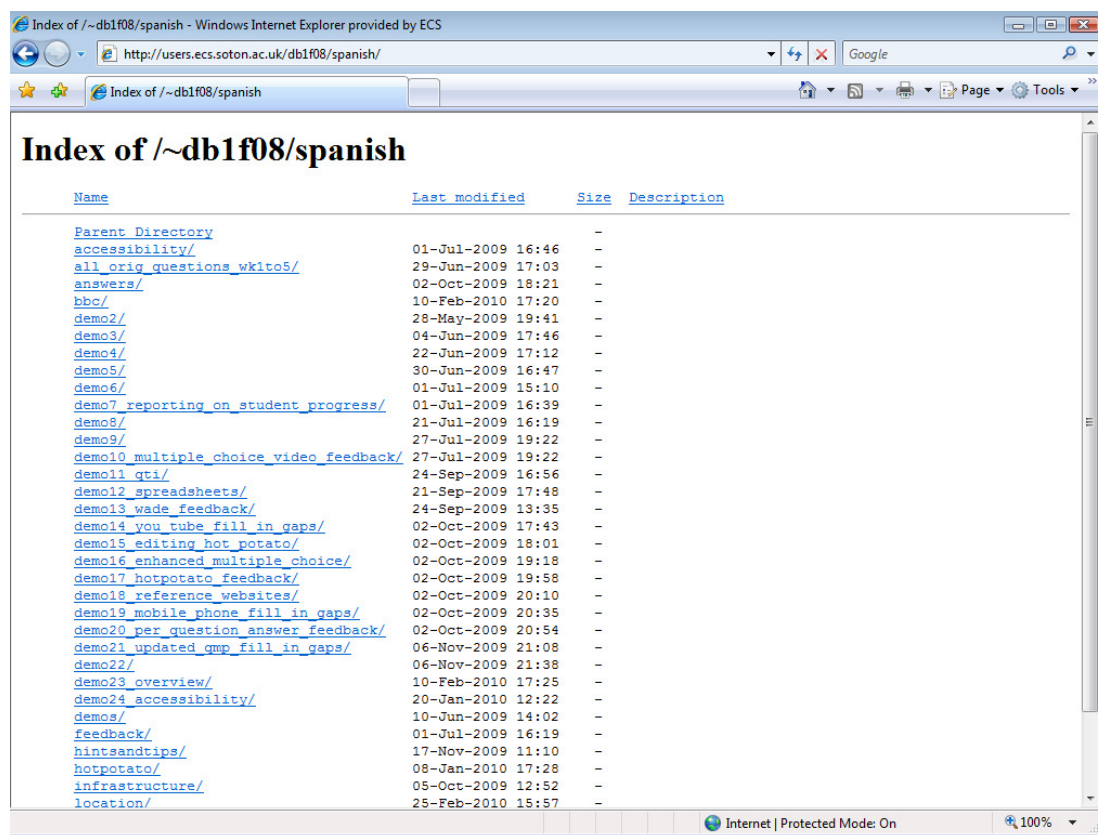
5 http://www.soton.ac.uk/cls/courses/cls_5.pdf

6 http://www.soton.ac.uk/cls/courses/cls_6.pdf

7 http://www.soton.ac.uk/cls/courses/cls_7.pdf”

1.2. More Information

For more information and many screencasts please refer to the following webpage.



To get started using this archive we suggest you look at some of the following material.

Material	Webpage Folder/s	Reference from Figure 1 if Appropriate
Co-design personas and scenarios	personas_scenarios	
Overview screencast	demo23	3
Accessibility screencast	demo24	C
Reporting	Demo7	4
QTI migration	demo11	5,6
Feedback to students	feedback	
eAssessment video and audio files	media	
Links to the eAssessments	location	3

The majority of the remaining folders document chronologically how the final system was created.

For more information on the School of Humanities Case Study please also see the following paper:

D. Bacigalupo, W. I. Warburton, E.A. Draffan, P. Zhang, L. Gilbert, G. Wills, A Formative eAssessment Co-Design Case Study, in proc The 10th IEEE International Conference on Advanced Learning Technologies, 2010

And for more information on the underlying mobile technology for this case study please see:

P Zhang, GB Wills, L Gilbert, B Warburton, D Bacigalupo, IMS QTI Engine on Android to Support Offline Mobile Learning, International Conference on e-Commerce, e-Administration, e-Society, e-Education, and e-Technology, Macau, China, 2010

2. School of Civil Engineering and the Environment

2.1. Overview

Construction Management (CENV2001) is a second-year Civil Engineering module. In this case study we went through a process of co-design with the course leaders. The focus was on: taking an industry standard health and safety test (and the associated software) and showing the advantages of delivering it through our software to “help save lives”; and the web 2.0 approach. The highest level of Bloom’s taxonomy reached by the eAssessments was “comprehension”. We produced a set of eAssessments using our eAssessment tools. We tested the eAssessments, made changes as requested and documented the resulting system. In total we took part in over seven hours of face to face meetings.

- Lessons learnt: a big challenge is how to manage the risk associated with introducing new types of eAssessment onto a module
- How the university was influenced: academic colleagues of the original tutor saw the potential of this approach to formative assessment and became involved themselves.
- Student feedback was positive and this is leading to an expectation that formative eAssessment will be provided as the ‘norm’ in such courses. At the University level, the School’s interest

has led to the leader of a University-wide Assessment Review panel seeking input from members of the EASiHE management team on a long-term basis.

- Changes to practice: The School will continue using formative eAssessments and will probably extend their use into other curriculum areas. This is something that the EASiHE management team will monitor during Phase 3 of the project(April 2010- April 2011).

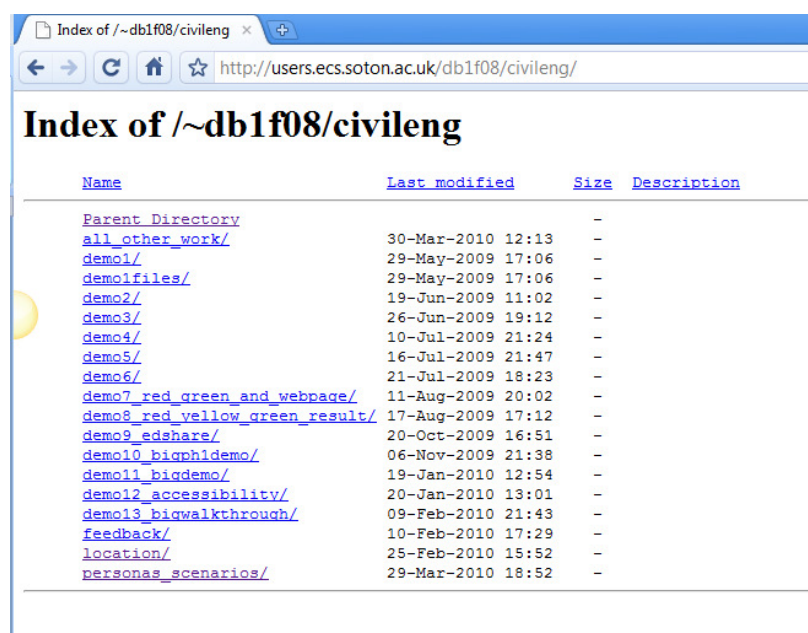
The intended learning outcomes for the module are provided at the following link. We note that these do not appear to be in a standard format from the literature.

<http://www.civil.soton.ac.uk/prospectivestudents/undergraduatecee/moduledetails/modprofile.asp?ModuleID=1570>

We note that there are approximately 85-90 students on CENV2001.

2.2. More Information

For more information and many screencasts please refer to the following webpage.



To get started using this archive we suggest you look at some of the following material.

Material	Webpage Folder/s	Reference from Figure 1 if Appropriate
Co-design personas and scenarios	personas_scenarios	
Overview screencast	Demo10, demo11, demo13	3
Accessibility screencast	Demo12	C
Repository and web 2.0 demo	Demo9	3
Example student improvement walk-through	Demo8	3
Feedback to students	feedback	
Links to the eAssessments	location	3

The majority of the remaining folders document chronologically how the final system was created.

3. School of Medicine

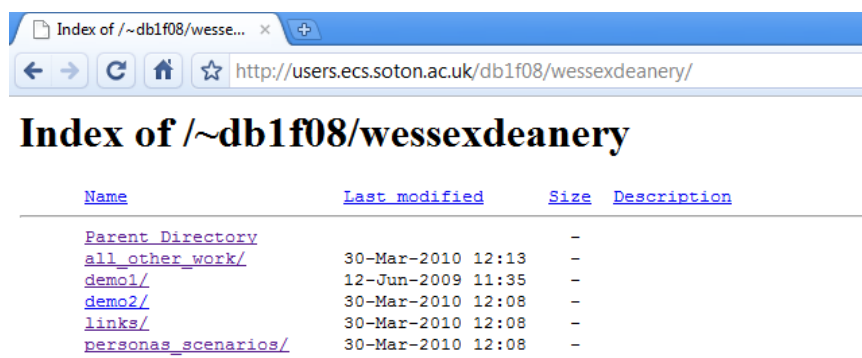
3.1. Overview

In this case study in the Wessex Deanery we engaged primarily with the students. These were Orthopaedic Registrars training to be Consultants. In this case study the focus was on: the web 2.0 approach (i.e. the students generating their own questions with detailed feedback); and creating a QTI question editor (called Egiat) for the students to use. We went through a process of co-design, with the “lead” student being our main point of contact. Together we produced a set of eAssessments using our eAssessment tools. The highest level of Bloom’s taxonomy reached by the eAssessments was “synthesis”. We tested the eAssessments, made changes as requested and documented the resulting system. We note that we also investigated the use of the Minibix QTI repository, although in the end we standardised on the EdShare repository with our QTIBox plug-in as documented elsewhere.

- Lessons learnt: a big challenge is how to manage the risk associated with introducing new types of eAssessment onto a module
- How the university was influenced: colleagues of the original user have come to see the potential of this ‘web 2.0’ approach to improving academic performance and have become enthusiastic contributors themselves. At the University level, interest in the rich media used in these formative eAssessments has led to the leader of a University-wide Assessment Review panel seeking input from members of the EASiHE management team on a long-term basis.
- Changes to practice: These formative eAssessments are judged by their users to work well, and it seems certain that their use will be continued and extended. Due to the high status of the users (NHS surgeons/consultants/teachers), other clinical departments could be expected to follow this lead. This is something that the EASiHE management team will monitor during Phase 3 of the project (April 2010- April 2011).

3.2. More Information

For more information and screencasts please refer to the following webpage.



To get started using this archive we suggest you look at some of the following material.

Material	Webpage Folder/s	Reference from Figure 1 if Appropriate
Co-design personas and scenarios	personas_scenarios	
Overview screencast	Demo1, demo2	3
Links to the eAssessments	links	3

4. School of Electronics and Computer Science

4.1. Overview

Discrete Mathematics and Multimedia Systems are two Computer Science modules in the School of Electronics and Computer Science. We went through a process of co-design with the course leaders. The focus in this case study was on peer assessment via our PeerPigeon tool (for Multimedia Systems); and on using our web service interface to our “QTIEngine” QTI eAssessment engine, to create a customised eAssessment website (for Discrete Mathematics). We produced a set of eAssessments using our eAssessment tools. The highest level of Bloom’s taxonomy reached by the eAssessments was “evaluation”. We tested the eAssessments, made changes as requested and documented the resulting system.

- Lessons learnt on Multimedia Systems. It was necessary to update PeerPigeon due to the passage of time. Also, it required more time than was expected from the lecturer to describe how they wanted the peer review to take place. And it required more time than was expected from the technical member of staff and the lecturer combined, to execute the first peer review process.
- Lessons learnt on Discrete Mathematics. Timing is extremely important. Because of staff illness we missed the window during which students could comfortably be given the eAssessments

whilst staff promoted and monitored their use. Instead we gave the eAssessments to the students slightly later (after Christmas 2009) at which point the students were expected to do the eAssessments at their own pace.

- How the university was influenced. We have learnt that peer review is a very good form of formative eAssessment, especially at higher levels of Bloom's taxonomy.
- Changes to practice. Traditional assessments can be planned, written and given to the students during the semester the module is running. In contrast eAssessments should be planned and prepared the term before the module runs.

4.2. More Information

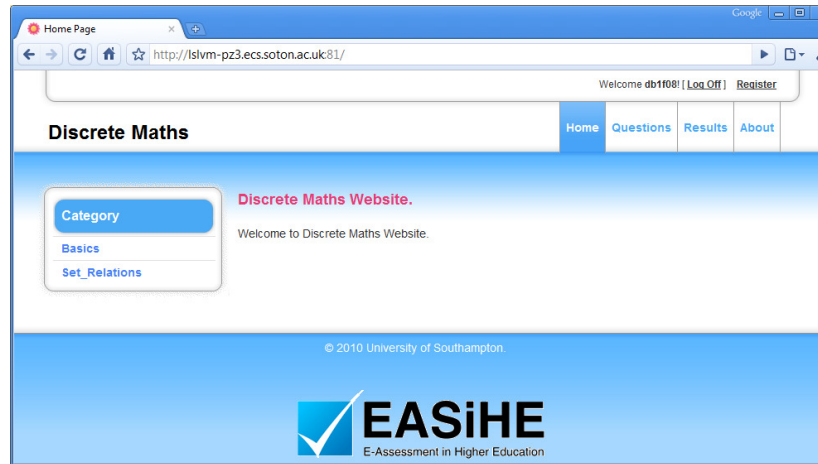
For more information please refer to the following webpages.

1. The homepage of the Peer Pigeon software

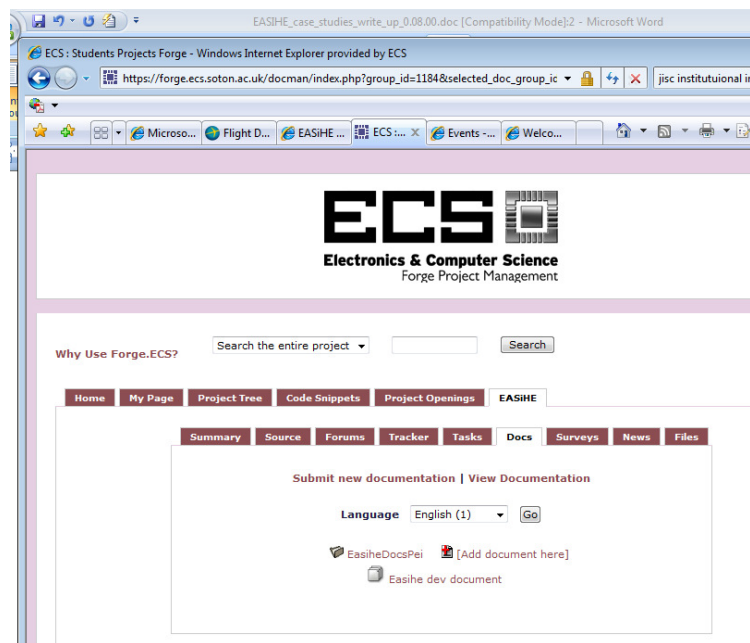


2. The ECS Discrete Maths eAssessment Webpage

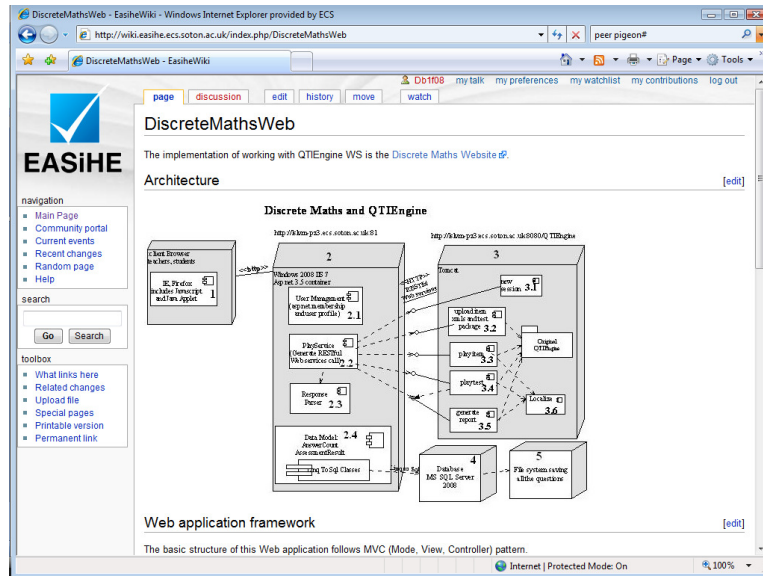
(Anyone can sign up for a login using the online form.)



3. Documentation about the ECS Discrete Maths Website



4. Further documentation about the ECS Discrete Maths Website

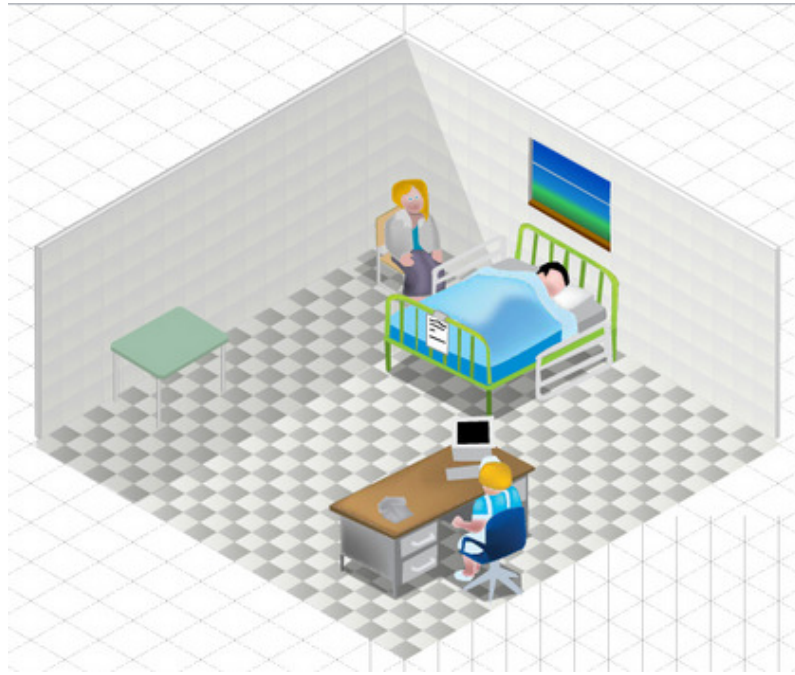


5. School of Health Sciences

5.1. Overview

In this case study the focus was on the training of nurses in the School of Health Sciences. We went through process of co-design with the course leaders and a graphic designer. In this case study the focus was on user interface design. We produced a prototype system for presenting eAssessments in a visually engaging fashion. We also created a prototype engine for interactive “serious game” simulation-based eAssessments. The highest level of Bloom’s taxonomy reached by the eAssessments was “analysis”. We tested the eAssessments, made changes as requested and documented the resulting system.

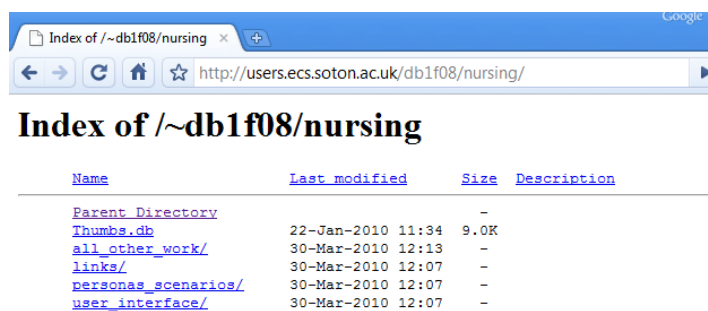
The following is the image created by the graphic designer to be the basis for the user interface.



- Lessons learnt: a big challenge is how to manage the risk associated with introducing new types of eAssessment onto a module
- How the university was influenced: Serious Games of the kind being developed for this School are regarded with considerable interest by many academics within the University. Word of these innovative developments has spread widely throughout the institution, which has in turn attracted the attention of the central IT department, which is now being asked to consider providing similar kinds of Serious Game for other departments.
- Changes to practice: Academics and learning technologists throughout the University have heard about the Serious Game and are now looking into ways of extending their own formative assessment practice into more innovative channels. This is something that the EASiHE management team will monitor during Phase 3 of the project (April 2010- April 2011). It should also be noted that the University Assessment Panel's Chair has expressed interest in developing this.

5.2. More Information

For more information please refer to the following webpage.



To get started using this archive we suggest you look at some of the following material.

Material	Webpage Folder/s	Reference from Figure 1 if Appropriate
Co-design personas and scenarios	personas_scenarios	
User interface graphics	user_interface	3
Links to the eAssessments	links	3

6. Bournemouth and Poole College

6.1. Overview

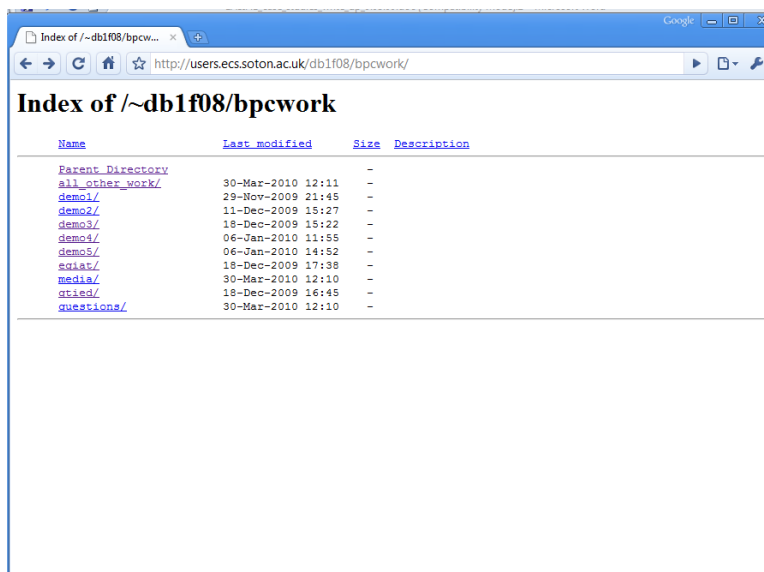
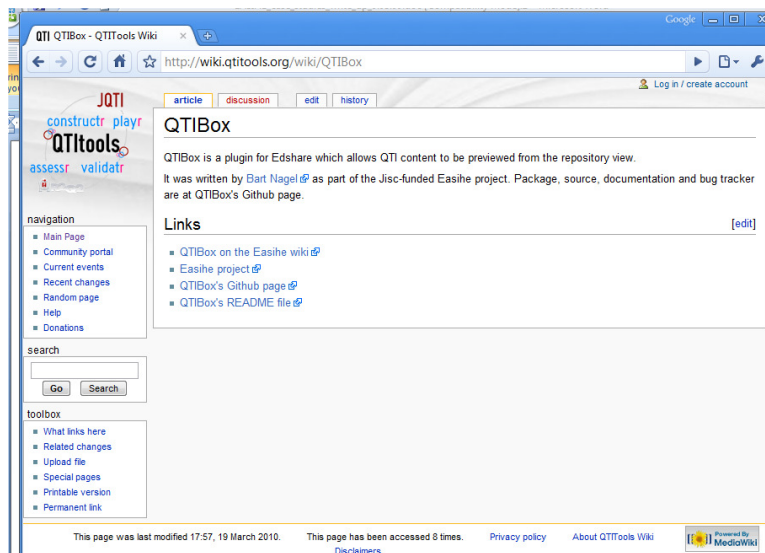
This case study involved a Bournemouth and Poole College (BPC) module teaching sign language. We went through a process of co-design with the BPC ILT Development Centre Manager and the course leader. The focus in this case study was on adapting our eAssessment system so it functioned correctly outside of the University of Southampton; and also on creating a QTI editor (Eqiat). We produced a set of eAssessments using our eAssessment tools. The highest level of Bloom’s taxonomy reached by the eAssessments was “analysis”. We tested the eAssessments, made changes as requested and documented the resulting system.

- **Lessons learnt:** We have learnt how to create a set of open source tools for lecturers to create, deposit and update eAssessments that include more than just textual information. Also, we have learnt how to overcome the challenges of applying our eAssessment tools and techniques in the context of an external institution.
- **How the university was influenced:** Since this is an ‘outreach’ activity the emphasis here is on the University itself influencing assessment practice in other institutions. This will be monitored by the EASiHE Management Team and where possible developed during Phase 3 of the project (April 2010 – April 2011).
- **Changes to practice:** It seems likely that, because they have worked well, the College will continue using these tools and expects to extend their use into other curriculum areas. The

EASiHE management team will monitor this during Phase 3 of the project (April 2010- April 2011).

6.2. More Information

For more information please refer to the following webpages.



To get started using this archive we suggest you look at some of the following material.

Material	Webpage Folder/s	Reference from Figure 1 if Appropriate
Eqiat QTI editor screencasts	eqiat	7
Mobile QTI editor screencasts	qtied	7
Movie files	media	
Miscellaneous screencasts generated during development	Demo1 - demo5	3
Links to the eAssessments and other material	all_other_work	3

Part 3: Further Information and Summary

1. Further Information

For further information please refer to the EASiHE website:

- <http://easihe.ecs.soton.ac.uk/>

2. Summary

Part 1 of this document gives an overview of the technical work on EASiHE that resulted from the six case studies. This includes a screenshot-based walk-through of the implementation. Part 2 of this document gives more details on the six EASiHE case studies. A link to further information on our website is included in part 3, including a large archive of screencasts, links to download the software, run the eAssessments, read technical papers, read our wiki and blog, see slides from our presentations and workshops and read our guide to producing high quality eAssessments.

The work has received positive feedback from lecturer and student evaluations, University senior management via our advisory panel, and from the wider community as we disseminate our results.

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