

The 5-03 SURF Metadata Publisher Project

Final Report

Abstract

This document summarises the development of a series of learning units based upon materials supplied by the academic publisher Nelson Thornes. Issues addressed include the authoring/repurposing process, location and creation of appropriate supplementary materials, creation of suitable formative assessments, the issues surrounding copyright and Intellectual Property Rights, generation and management of metadata and the management of the project with regard to liaison both within the team and with appropriate external agencies.

5-03 SURF Metadata Publisher Project

Final Report

List of Project Partners:

SURF (Staffordshire University as the active partner from the Federation)
Nelson Thornes Publishers
Stoke on Trent College

Purpose of the Project

Nelson Thornes Publishers to provide native format electronic content as source for the project and to investigate the feasibility and identify the issues relating to publishers undertaking this type of content re-purposing i.e. is there a viable business case for this

To identify the practical and technical issues related to the establishment of a functional classification and taxonomy across FE and HE sectors and programme levels (using as a vehicle for the project) a given Health and Social Care resource(s) as supplied by Nelson Thornes.

1. To identify the issue related to the preparation and re-purposing for use the native content with respect to metadata tagging and using the resource within an institution's VLE and as an e-book. This would include examination of the publisher's metadata, e-brary (as related to their e-books) and UKCMF's (IMS mapped) metadata schemes.

The University has e-brary e-books' systems and can publish their own books locally within it. This will facilitate the testing of resource discovery by providing the facility to search against metadata down to page level and to bookmark such references.

2. To publish the final content in SCORM 1.2, and e-book formats. To identify issues relating to seamless integration (from a metadata standpoint) of e-books and SCORM packages into a VLE.
3. To identify specific IPR and Copyright issues that relate to the project that would be typical barriers for publishers and institutions in developing this approach to content re-development.
4. To disseminate the projects work to via the SURF, West Midlands Regional Support Centre, X4L projects and JISC providers to input to the national effort.
5. To develop a broader understanding of metadata within the FE sector with respect to its role within the e-learner environment.
6. To provide demonstrable links to X4L Strand A projects and the ICE project (ICE is an internal Staffordshire University projects looking at linking VLEs to e-library and e-book systems in a way to allow the creation, packaging and reuse of reference objects within learning objects. This being down in partnership with major vendors)

Brief Description of Work:

To work with SURF (Staffordshire University as the active partner from the Federation) and Nelson Thornes Publishers to identify the practical issues that relate to preparing existing electronic (as prepared for print publishing) format resource for use within E-environments with respect to metadata for cross sector and cross-academic level usage,

Outputs including reports:

Final project report – this document

To include information regarding the repurposing and authoring procedures adopted, pedagogical design issues and technical issues including choices of software.

A Business Case feasibility report

Learning Resources in e-book and SCORM packaged content

Project Evaluation and Dissemination

The Workplan

These are as submitted in the original project bid.

The format of this report will follow closely the workplan grid.

Task	Title	Partners	Description	Week
1	Resource Identification	Nelson Thornes and Stoke on Trent College	Agreement of contract with Nelson Thornes. Decision on the actual materials to be used for the project, the format in which they exist currently and our commitments in terms of amount/type of conversion needed for the further aims of the project.	1
2	Technical Resolution	Stoke on Trent College	Identification of the target output types, (HTML, XML, E-Book etc.) and Identification/acquisition of the software tools to be used for the main re-purposing tasks.	1/2
3	Identification of Pedagogic Requirements	Stoke on Trent College	Identification of any complementary or supplementary materials to be located/created to support engagement and interactivity. Identification of interactivity types and amounts and identification of tools for creation of interactive components of the finished resources.	2 - 6
4	Resource Resolution	Stoke on Trent College	Identify and propose methods for searching and cataloguing the resulting resources in the content packaging environment and as E-Book. Conduct research into the current metadata schemas within the academic community that bear upon this curriculum area. Identify issues relating to the use of SCOs within delivery environments. In liaison with the University E-Books project, identify issues relating to legacy metadata schemas. Consider the need of metadata to address the horizontal and vertical integration of this resource into different levels of study and across potentially diverse curricula.	2 - 11
5	Authoring	Stoke on Trent College	Author the materials using the most appropriate software for each part.	3 - 11
6	Copyright and IPR	All Partners	Consider the joint issues of copyright and IPR and their bearing upon the authoring and dissemination process. Research current thinking on these issues. ?Parallels with paper copyright? Issues with third party resources.	Ongoing
7	Report Compilation	All Partners	Throughout the project, ongoing documentation of the processes of authoring and metadata development, with a view to gaining a realistic idea of how long the process takes and where bottlenecks occur; towards gaining insight into the viability/worthwhileness of this as a commercial venture	Ongoing
8	Evaluation and Dissemination	All Partners	Disseminate the finished authored works for evaluation by relevant staff on the appropriate delivery platforms.	8 - 17

9	The Business Case	Nelson Thornes	Repurposing: Time, Copyright Metadata: Integrating with standards/mapping to other schemas, Searching and Fragmentation possibilities VLE Delivery: SCORM Compliance, Tracking, Groupwork & Collaborative tasks.	Ongoing
10	Project Management	Project Management Team	One meeting per month, with sub groups reporting back on the four main areas of interest: E-Book creation and delivery VLE Edition Metadata sourcing and management Dissemination	Ongoing

Detailed Analysis of the Workplan Components and their Implementation

At Stoke on Trent College, the project was undertaken and managed by six key members of staff:

Team Member	Role
Glen Singleton, then Steve Blakemore (GS moved to new post)	Project management and Reporting, Skills training for other team members
Val Gannon	Library Staff – Metadata research and creation
David James	Subject Specialist – Motor Vehicle
Tracy Simms Patterson	Subject Specialist – Health and Social Care
Steve Cherry	Learning Materials Developer Content Author for the Motor Vehicle work
David Hopley	Learning Materials Developer Content Author for the HSC work

Timescale of the Project

Although the original workplan of the project was based upon a 17 week project timeline, a number of factors caused some significant revisions to this plan. These will be mentioned in the relevant place within this report

Resource Identification

By: Nelson Thornes and Stoke on Trent College

Agreement of contract with Nelson Thornes. Decision on the actual materials to be used for the project, the format in which they exist currently and our commitments in terms of amount/type of conversion needed for the further aims of the project.

This phase of the project was the source of the early delays. The initial proposal was for materials for one subject area to be the focus of the repurposing exercise. At an early phase of the project it was decided to author materials in two curriculum areas. In addition to Health and Social Care, Motor Vehicle materials were to be used. Nelson Thornes and Stoke on Trent College negotiated which materials were to be used in the authoring and repurposing process, with regard to commercial sensitivity, curriculum needs of the students at the time of materials evaluation, (necessity of the materials authored to be in synchronisation with the course in progress), the limited timescale of the project and the project components requiring research and study. It was agreed that the textual source files for the materials would be supplied by Nelson Thornes in digital form. This material was delivered to the College and authoring procedures were commenced on the morning of Thursday 24th July.

Technical Resolution

Identification of the target output types, (HTML, XML, E-Book etc.) and Identification/acquisition of the software tools to be used for the main re-purposing tasks.

PDF Authoring

For the PDF components of the project output, Microsoft Word 2000 was used as the design and compositing software. Reasons for this choice include the ready availability of the package and its increasingly widespread use as a low end desktop publishing application within the educational domain. Within the scope of a wider project, the ability to facilitate collaborative development of resources using the tracking and commenting facilities would also be useful.

It must be acknowledged that the typographical power of Word does not yet rival that of dedicated desktop publishing software in terms of fine control of tracking, kerning et al, but the PDF format itself is not strong in the rendition of fine aspects of type.

The PDF conversion was performed using Acrobat 5.5, with resolution of the output file suitable for screen as the primary delivery vehicle

Web Authoring

A rapid initial investigation was made to determine the most appropriate software for the web authoring software to be used. Initial contenders were Learnwise Publisher, and Dreamweaver, with a suitable aggregation tool. Given that the delivery platform for the finished web materials was to be Learnwise 1.3, it was initially considered likely that Learnwise Publisher would be the tool of preference. However, it was realised very early on that the metadata handling of this package was inadequate for the demands to be made of it. Learnwise Publisher has a very simple, proprietary metadata model, which could probably be mapped to more rigorous schemas, but it was felt that this added another stage to the authoring process, complicated by the fact that, although this product allows export of created resources to other packages, the filenaming protocol is rather elliptical and unsuited to rapid development. Therefore, it was decided that Dreamweaver would be the main HTML authoring component. Aggregation of materials into content packages suitable for upload into the delivery platforms required the use of a suitable metadata management system. Two candidates were considered suitable for evaluation: Microsoft's LRN3 Toolkit and ReLoad, produced by a parallel project within JISC. It was decided after cursory trials of both that it would be of interest to use both for purposes of comparison regarding metadata using and interoperability testing between them. In the final authoring task, the LRN3 Toolkit was used to aggregate some

components of the Motor Vehicle materials and ReLoad was used for the Health and Social Care packages. A slight problem arose during the authoring phase as ReLoad was upgraded from version 1.017 to 1.1. This upgrade proved somewhat problematical, so the author downgraded back to the older version to complete the work. This was rectified by the release of ReLoad 1.1.1 which was then used for the remainder of the web authoring component project. ReLoad 1.1.1 performed faultlessly throughout the project.

Graphics

Graphics creation and editing was all achieved in Jasc Paintshop Pro 7 and Adobe Photoshop 6 for raster images and CorelDraw 8 for all vector-based artwork.

The needs of this project are not particularly demanding of the image editing and management software. In the case of all raster art, two versions were created – one at 300dpi for use in the PDF component of the task and a 72dpi version for use in the web based components.

This will be discussed later in this document amongst notes on authoring procedures.

Identification of Pedagogic Requirements

Identification of any complementary or supplementary materials to be located/created to support engagement and interactivity.

Identification of interactivity types and amounts and identification of tools for creation of interactive components of the finished resources.

As identified in the workplan, this is an ongoing part of the development of materials.

The textual and graphic resources as provided for this project had several shortcomings as far as translation to onscreen. The original pedagogical intent of the paper version of these materials appears to have been in a supportive role within a taught environment. This model of use suggest that the lack of assessment materials is intended to be addressed in the taught sessions by a lecturer or facilitator. The original illustrations are at times a little involved and unclear, particularly in the case of cutaway and sectional drawings. This material does not lend itself well to screen, unsupported/unattended delivery/learning. The first materials enhancement addressed was the location of appropriate supporting graphics from existing resources. The internet provided the vast majority of graphical resources used supplementary to those drawn from the provided paper based images. The only exception to this was the vector art footer graphics, created by the content authors in CorelDraw. Issues of IPR and Copyright Management are addressed later in this document.

Assessment materials were developed by the associated subject specialist lecturers. Amongst the constraints on the nature and styles of assessment, paramount was the need to create the majority of assessments using the tools built into the authoring component of the delivery platform, Learnwise 1.3. No solution exists yet for the porting of assessment materials across VLEs and delivery platforms.

The basic types of assessments available in Learnwise are:

- Multiple Choice
- Cloze Procedure
- Model Answer
- Multiple Answer Multiple Choice
- Submitted Assessment

To supplement this limited palette, the authors also located and downloaded free software from the internet to create Wordsearch puzzles. These, of course, could not be truly trackable, in that results could not be fed up into the VLE tracking mechanism, but this was not felt to be a matter of sufficient importance to disbar their usage as a less formal part of the formative assessment process.

Although the authoring team members possess skills in Flash, the curtailed timescale of the project precluded any development being undertaken in the development of custom assessment types; this would have required extensive research into the feasibility of passing information back into the VLE delivery platform regarding the students' scores in any such assessments.

A further issue arose in the use of the Learnwise built in tool for creation of Cloze procedure assessments. This functionality worked sporadically and unreliably. This necessitated the use of the popular "Hot Potatoes" suite to generate those assessments. A solution using CDONTS and extraction of the appropriate variables into a system generated e-mail was developed to bypass the aforementioned problem of tracking student results in these tests.

In the case of the Health and Social Care materials, the subject specialist felt that a formal task of research and collation was the best method of summative assessment. This required students to undertake internet research and write up their findings, in addition to some summarisation of the learning content of the topic as viewed by them. The resulting materials were then used in the Submitted assessment type of activity in Learnwise 1.3

Resource Resolution

Identify and propose methods for searching and cataloguing the resulting resources in the content packaging environment and as E-Book.

Conduct research into the current metadata schemas within the academic community that bear upon this curriculum area. Identify issues relating to the use of SCOs within delivery environments. In liaison with the University E-Books project, identify issues relating to legacy metadata schemas. Consider the need of metadata to address the horizontal and vertical integration of this resource into different levels of study and across potentially diverse curricula.

Within JISC projects and in the wider academic community, Metadata is an area of key interest at the moment. There are many projects in progress; research into terminologies and vocabularies are taking place within many organisations and consortia. Research was initially undertaken within the scope of JISC's current activities. It is apparent that considerations of taxonomy and vocabularies are still in a rather formative state. Several projects have addressed and are addressing these issues. The schema in use across JISC projects in this area is UK-LOM; accordingly it was decided to concur with this schema to ensure maximum interoperability of the output resources with other work being undertaken by JISC projects. The ReLoad editor used within the current project has full UK-LOM metadata support, although the schema itself is still under discussion.

The extant specification at the outset of the current project was UK Learning Object Metadata Core Draft 0.1, published July 2003. This has a total of 28 mandatory terms, although some of these items are subject to future developments and involve access to not yet released information resources to allow for their completion. Where possible, in consultation with the [UK Metadata for Education Group](#) appropriate sample data has been entered.

E-Brary – the intended delivery platform for the PDF editions of the learning units – uses its own proprietary Metadata schema. Due to problems related to gaining permissions to upload and test the resources into the University's area of E-Brary, this metadata schema and its relationships/isomorphisms to any other cannot be commented on.

Authoring

Author the materials using the most appropriate software for each part.

Software choices have been discussed earlier in this report.

Issues of Note during the Authoring Process

Textual Material

All the textual material of both outcome resources was supplied by Nelson Thornes.

It arrived as a set of Rich Text files, containing all text of the source chapters. Although the nature of the process by which this text was created was not specified at the time of supply, it is reasonable to suggest that the text was recovered from the source pages using Optical Character Recognition software. This may be inferred from the nature and quantity of typographical errors present when compared with the original printed matter. The source files were essentially accurate; occasionally, a little proof reading of the created resources was needed as the common OCR errors appeared: 1 and lower case l being confused, lower case d being rendered as cl, due to misdetection of the open loop and similar solecisms. An initial proof reading of the text files was made against the paper source materials to confirm and correct where needed

The corrected files were passed through the Windows Notepad to remove all vagaries of styling and formatting. This is a common procedure and can save a lot of head scratching when pre-formatted text is placed into Word or Dreamweaver. Problems can manifest in terms of styles being misapplied or overwritten in Word documents, style sheets in Web pages give the appearance of not being properly functional if this step is omitted.

Images

These were line drawn images, created at a large scale for the original paper resource and photographically reduced to fit that use.

These were originally scanned in at from the source books supplied by Nelson Thornes at a resolution of 400 d.p.i. and rendered down to 2 colours in Paintshop Pro.

During this process, it was decided that the original captions were poorly rendered in the scanning process. Jagged edges and poor resolution of finer points of the typography necessitated a rethink. The text was deleted and replaced with anti-aliased text at a commensurate size. This is a rather time consuming task, especially in the case of complex diagrams and necessitated an increased colour depth, so 256 colours was used as the default. This has greatly aided the legibility of the captions in the finished illustrations. The final images for use in the PDF component were saved as Windows Bitmaps for optimum compatibility with Microsoft Word

Upon completion of the graphics for the PDF versions of the resources, a second set was created at 72 d.p.i. for exclusive use in the web based versions. Initially concerns were expressed about the effect this would have on the anti-aliased text; these were not founded. There seems to have been little or no degradation in clarity or legibility. The resulting files were saved as 256 colour GIF files, to minimize file size and retain sufficient colour depth for the anti-aliased text to render well. Due to the content of the images – large areas of flat colour with nominal colour variation in the other areas, very good compression has been achieved and the resulting images are delivered onscreen almost instantaneously.

PDF Authoring

As one of the major established document types used in online reference banks, PDF is an ideal medium for testing the authoring process. Given the platform independence of the format, it also allows issues relating to typography and font across these platforms to be addressed, albeit within the limited timescale and remit of the project.

For the PDF components of the project output, Microsoft Word 2000 was used as the design and compositing software. Reasons for this choice include the ready availability of the package and its increasingly widespread use as a low end desktop publishing application within the educational domain. Within the scope of a wider project, the ability to facilitate collaborative development of resources using the tracking and commenting facilities would also be useful.

It must be acknowledged that the typographical power of Word does not yet rival that of dedicated desktop publishing software in terms of fine control of tracking, kerning et al, but the PDF format itself is not strong in the rendition of fine aspects of type.

Orientation

All the PDF materials have been developed using a basic standard template.

Given that the materials are going to be primarily delivered via the screen, a landscape orientation suggested itself as the best way to deliver pages. This minimises the amount of scrolling that should be necessary to see the full content of the pages. Acrobat Viewer specifically allows an entire page to be viewed onscreen at once (View, Fit in Window). As far as it is possible, the resources have been designed to use this mode of viewing.

Typography

The primary body text of the resources is set as Verdana 16 point. On a standard 15 inch monitor, with Acrobat set to view one page at a time, this will cause the characters of the main body text to be rendered at a height of 12 pixels. The process of rendering to PDF for use as an ebook automatically enables the anti-aliasing algorithm in Distiller. This makes great improvements in the onscreen legibility of the text. Incidentally, on a 15 inch monitor viewed under reasonably normal conditions, i.e., users eyes at approximately 18 – 24 inches from the plane of the screen, the height of the characters is such that they subtend an angle of 0.39° - 0.53° at the cornea. This compares favourably with the equivalent figure for a text book set in the common 11 point size and held at a commensurate viewing distance, i.e. 0.36° . Three sizes of heading have been specified in appropriate increments of size. No more levels of heading are needed for a document of this type. Verdana is widely accepted as a good choice for onscreen delivery and is commonly available on all modern Windows based PCs. Leading was initially set a little tighter than the Word default, but early tests, particularly on smaller monitors indicated that this actually decreased onscreen legibility. All styles have default, single line leading. The heading styles have an extra 6pt leading above, to help differentiate sections within an individual page.

PDF Rendering

The PDF Files output by this phase of the project have all been output at a resolution of 72dpi. This is the best resolution, from the limited range available, for onscreen use. Fonts have been embedded throughout, minimizing the possibility of layout problems developing when the files are viewed on other operating systems. In addition, rendition at this resolution has reduced somewhat the file sizes created. This could be a factor of some importance when considering that these files are intended for delivery over an internet connection.

The Production Process

Authoring of the PDF outcomes was started first. This decision was predicated by the fact that the graphical image management would be best done at the highest resolutions for use in the PDF before the lower resolution versions of images were created for use in the primarily onscreen based web outcomes used in the VLE.

Location of supplementary images was undertaken on an ad hoc basis during the authoring process. This process of resource location, download and manipulation of files in synchronisation

with the actual authoring of the pages where these images would be seen places quite a burden on the resources of the computer system used. It was not infrequent to have two copies of Microsoft Word, three or four copies of Internet Explorer and a copy of Adobe Photoshop all running at once. This allowed design decisions to be taken very rapidly with regard to page balance, appropriacy of the located images and the amount of work needed to make any supplementary image for for use at any given location on a page.

At the point of resource location, it was also necessary to annotate and record the sources and filenames of all supplementary resources. In keeping with the project's focus and interest in the issues of Copyright and Intellectual Property Rights, a full record was made of each object. This was then interpolated into a standard request e-mail to the webmaster or other responsible figure for permission to use this resource. This is discussed more fully later in the report.

Web Authoring

As already mentioned, the team settled on Macromedia Dreamweaver as the software for page generation and style sheet management. This offered the optimum flexibility in layout as well as a comprehensive style sheeting facility. Sequencing information and Metadata were created using ReLoad, a freeware tool distributed by JISC designed specifically for this purpose. Metadata schemas are discussed elsewhere in this document. Assessments were created partially using the built in tools in Learnwise and partially using the popular tool Hot Potatoes (see the section on "Identification of Pedagogic Requirements" for some more information on these issues). This mixture was predicated by technical considerations at the time of design, but has had the beneficial spin-off of allowing the integration of mixed modes of assessment creation to be tested.

Styles used in the onscreen pages

Verdana, as in the PDF version was the preferred font choice. Being widely accepted as a good choice for this purpose, it has the benefit that it is readily available on all recent installations of Windows and is free to download for older versions. Headings were set in Trebuchet MS, chosen because it is a rather condensed typeface, suitable for longer headings across the full screen width.

Styles have been applied rigorously throughout the authoring process, as this has great bearing on the suitability of the resulting pages for accessibility solutions based on style sheet redefinition.

Templates

There are two basic templates for pages used throughout the authoring procedure. They are both based on a simple table layout, with either one or two cells beneath a single cell running the width of the screen. The two column version is designed to optimise the line lengths of text blocks at between 45 and 65 characters. Although by default the two columns in the lower part of the table are of equal width, design considerations in individual cases, depending on the width of the corresponding images, mean that the columns may be of unequal widths. This has the collateral benefit of helping to maintain visual variety across the longer topics.

Clearly the web based materials have very different limitations and constraints to their PDF counterparts. The inherent flexibility of presentation and inability to control tightly the user experience means that page layout can only be rudimentary. Among the factors beyond control of the content creator are:

- Screen dimensions at time of delivery
- Colour depth of screen
- User selected choices of font, background colour etc.
- Disabling of image download
- Access to appropriate plugins for media types employed

All these factors predicate a very simple page layout

Copyright and IPR

Consider the joint issues of copyright and IPR and their bearing upon the authoring and dissemination process. Research current thinking on these issues. ?Parallels with paper copyright? Issues with third party resources.

It was realised very early on in the project that the materials supplied by project partners would need enhancement and clarification to render it suitable for delivery via screen. Although the text appeared to be complete and sufficient, it was felt necessary by the designers and specialist subject staff to modernise the appearance of the resulting resources through use of image resources, both as supplements and, in cases, replacements for the original black and white artwork of the source documents. These illustrations were largely sourced from internet sites.

Within the scope of such a time limited project as this, it is not possible to make any major contribution to the literature discussing the areas of copyright and Intellectual Property Rights. JISC has itself recently initiated the existence of the JISC-LIS – Legal Information Service- which is examining models for the management of copyright, IPR and dissemination.

In consultation with members of parallel JISC projects and other academic organisations, it was decided that the only viable approach, within our timescale, was to locate and use resources in the authoring process, requesting permission from the copyrights holders, as far as they could be ascertained and removing content where the copyright owner explicitly denied permission for re-use.

In all cases, the request for usage was made via e-mail to the identified owner of the site. The exact wording of this request may be found as Appendix 1 of this report.

During conversation at a JISC conference, ¹opinion was passed that a phrasing suggesting that consent would be assumed after a specified length of time had passed, would be sufficient for the project and not cause any complications.

To ensure that this process was adhered to appropriately, it was decided that these mails would be originated at the time of selection of the resources, to ease the identification of filenames and relevant pages. Once requests had been made, the mails were removed from “sent items” to be kept in a folder allowing us to gauge the amount of material we were actually sourcing from these searches.

Outcome of the Request Based System Adopted

From a total of 34 requests for usage of materials, we got a total of 16 replies at the end of the project. It is not easy to conjecture as to how accurately this would represent a general picture of the level and type of response to be expected.

¹ In private conversation with Susan Eales, JISC Cluster Group Meeting

Breakdown of requests and responses:

Health and Social Care

Requests made: 30

Replies: 14

Bounced Mails: 6

Replies Permitting Usage: 4

Replies Denying Usage: 5

Replies requesting further Information etc.: 5

Motor Vehicle

Requests made: 4

Replies: 2

Bounced Mails: 0

Replies Permitting Usage: 1

Replies Denying Usage: 0

Replies requesting further Information etc.: 1

As can be seen, the rate of reply of any kind was very low. Reasons for this may include:

- General organisational inertia within the relevant companies, colleges etc.
- Delays in the relevant organisations locating the owner of images etc
- Delays in the relevant organisations locating the who has responsibility for the decision on re-use
- Lack of knowledge regarding ownership of resources within organisations
- Indifference within organisations
- Apathy within organisations
- The short timescale of the project precluding the making of any decision within organisations
- Organisations only addressing the e-mail after the planned end of the project and therefore not responding at all.

Issues arising from Requests:

There are a number of areas of concern expressed in some of the replies to our requests.

There are summarised here:

Denial of Usage

7 respondents expressed concerns about re-use of the images on the grounds that the current ownership of the images was not clear or did not reside with themselves wholly.

Reasons for this lack of clarity:

- The owners of the site hosting one image had no idea where it had come from (!)
- The image was “out of date”
- The image was sourced from a commercial library on royalty free licence,
- Ownership of the image rested elsewhere; the site merely hosted it for another organisation
- Ownership of the image was shared by the hosting site and other agencies
- The image was subject to specific terms of usage preventing its replication elsewhere

Other Replies

- Request for clarification of the exact nature of reuse planned
- Acknowledgement of request, notifying us of internal procedures needed before consent can be given

- “Blanket” style replies, quoting general opinions on copyright and corporate policy regarding usage of the resource
- Replies expressing interest and concern regarding the wording of the request for clearance. Two replies suggested that failure to contact within the specified time limit should not cause the team to infer consent. These respondents were contacted and clarification was offered regarding our decision to phrase our request in this way; time constraints necessitated a somewhat pro active approach to use of materials within the limited domain of the project.

Report Compilation

Throughout the project, ongoing documentation of the processes of authoring and metadata development, with a view to gaining a realistic idea of how long the process takes and where bottlenecks occur; towards gaining insight into the viability/worthwhileness of this as a commercial venture

Throughout the authoring process, the two materials developers were in constant contact with the project leader at Stoke on Trent College. They kept their own reports as to the issues raised during the authoring task. Some of the issues they identified have been mentioned here. The full text of their reports is appended to this document as appendices 2 and 3

The current document was compiled as an integral part of the authoring and evaluation procedures. It consolidates and summarises the ongoing opinions and experience of all the team members.

As can be gleaned from the forgoing materials, the authoring process took about 4 weeks in total. Bottlenecks centred mainly on establishing rights to use Internet sourced materials and in maintaining ongoing communications between team members when clarifications/expansions/explanations were sought from the subject specialists by the materials developers. This was in part predicated by the relatively minor amount of their work time was actually devoted to the project by the subject specialists. In one case, the member of staff is actually a part time lecturer; this led to inevitable delays due to her irregular presence at the college and the need to integrate her commitments to this project with her teaching commitments; however, this also made it a relatively easy matter to locate subject groups of tutors and students to actually use and evaluate the materials in a real Learning Resource Centre based situation.

A bottleneck that could not have been foreseen in the process of authoring and evaluation was due to a major technical problem with the intended delivery platform. Learnwise 1.3 suffered a catastrophic failure immediately prior to the instigation of the evaluation phase of the project. This necessitated a period of re-installation and testing before the system was considered suitable stable for use with the student corpus. The learning units created by this project were amongst the first to be installed onto the newly restored VLE system. As mentioned earlier, there appeared to be some issues surrounding the management of assessments by the newly restored VLE. This necessitated some development of assessment to be conducted in software that did not integrate fully with the tracking functionality of Learnwise. This may, however, be perceived as having the beneficial side effect of allowing integration of resources originating in another authoring system to be tested.

Evaluation and Dissemination

Disseminate the finished authored works for evaluation by relevant staff on the appropriate delivery platforms.

The evaluation phase of the project took place in the final two weeks of the truncated timeline.

Given the point in the academic year in which the project was undertaken, it became necessary to seek permission from JISC to extend the project termination to the end of October 2003. This made it possible to use the created materials in real classroom situations with real student groups. This permission was duly granted.

Methods of Evaluation

As always, the prime determinant of the evaluation process is: what precisely do we intend to evaluate?

The classroom situation offered an opportunity to evaluate perhaps the most important aspects of materials creation under this or any other paradigm, namely, the student experience and the tutor experience. Addressing the needs, aspirations, perceptions and concerns of the student body and the tutoring staff are a key factors in increasing acceptance of this model of learning.

Questions we would wish to address with students include:

- Are students happy using the materials?
- Do they consider them worthwhile as learning tools or adjuncts?
- Do the materials engage and stimulate interest?
- Do the materials deliver appropriately and fully the curriculum specified aims?
- Do the students perceive this to be the case?
- Do the students recognise any collateral benefits and value added to their learning experience by this mode of delivery?
- Do the materials address different requirements of/for accessibility by the widest range of student abilities, both in terms of academic range and disability range?
- To what extent does the individual student's attitude towards and aptitude with computers affect their perception of the materials and the delivery platform?
- How much of the students' perceptions are formed by the delivery platform rather than the design and content of the materials?
- How effective are assessments?
- Do students perceive this style of assessment as valid?

Questions we would wish to investigate with tutors include:

- Are tutors sufficiently skilled in the technology substrate, both hardware and software, to feel confident in delivery of materials using this model?
- To what extent do tutors wish to be involved in the design, maintenance and ongoing evaluation of materials delivered using this model?
- Do tutors perceive the materials to be complete and sufficient to deliver their stated aims?
- What effect does the answer to the last two questions have on the tutors' perceived ownership and worth of the materials?
- Do tutors perceive the materials as primary sources of information or as underpinning and supplementary to the classroom experience?
- Are tutors able to make full use of the captured results and integrate them with current practice in classroom delivery? (this may, again, be predicated by functionality of the delivery platform).

A number of methods were discussed towards obtaining the information we required.

It was decided that an informal approach was probably best suited to the needs of the groups who would be using and evaluating the materials.

Setting of the Evaluations

All the evaluation sessions took place in the College's Learning Resource Centres. There are large, open plan rooms where students can turn up ad hoc and book access to computers. In one case, the LRC is also a library. The Health and Social Care learning units were evaluated here. The students evaluating these materials were already familiar with the LRC, having accessed paper resources here. The other LRC is not used in this way. The Motor Vehicle learning units were evaluated here. Other differences in the students' familiarity with their surroundings during the evaluations spring from the fact that, by coincidence, all the Health and Social Care students were full time at the College, whereas the Motor Vehicle students were all on day release programmes of study. It is not felt that this difference will unduly affect the conclusions drawn.

Tutor Evaluations

Tutors were interviewed at the same time as the students were assessing the materials. It was felt that a formal questionnaire would probably be or appear too prescriptive, although before the sessions a number of areas for discussion were outlined to the team who actually participated in the evaluation process as observers. These were:

How familiar/adept were the tutors with computer usage?

To what extent did tutors' aptitude and attitude towards computers affect the perceptions they have of the experience of materials delivery in this way?

What was the tutors' assessment of the quality of the materials as a teaching tool?

Were the materials perceived as fully and adequately covering curriculum materials to such extent that they could be considered for use in unsupervised settings?

Were the styles of assessment appropriate to the nature of the teaching material?

Student Evaluations

Two approaches were used simultaneously during the appraisal of student experiences. A questionnaire was given to the student groups. This is attached to this report as Appendix 4. While the actual evaluation sessions were in progress, team members were observing the students, with some specific objectives and areas of interest:

- How familiar/adept were the review groups with computer usage?
- To what extent were the students working co-operatively and supporting each other at times when one of them "got stuck"?
- How varied was the rate at which groups and individuals worked through the materials?
- How much collusion was taking place during the assessments?
- Was there any discrepancy between the students' assessments of their aptitude with the computer systems and the actuality of their usage?
- How much intervention was needed by the tutor of the groups? What form did this take? – technical/usability support, disciplinary intervention to keep the students on task, clarification of onscreen materials, supporting explanations of vocabulary or content?
- To what extent did use of multimedia add to the students' perceptions of value of the materials?
- To what extent were minor issues of usability et al disproportionately represented when the students formed their overall impressions of the quality of their learning experience?
- How effective was the questionnaire in eliciting useful information? How much explanation and discussion was needed to help students supply us with meaningful data

Immediately after the evaluation sessions, the team recorded and compared their impressions of the student experience during the evaluation. To ensure consistency of observation criteria across the various evaluation sessions, all were manned by at least pairs drawn from the main authoring team of three SB, DH and SC, using common observation guidance notes.

Results of the Evaluations

The Tutor Experience

Key Points

It was felt best to conduct the tutor interviews during the testing with students. This was planned to ensure that the tutors' comments were fresh and linked to the most direct experience of working with the students and materials

- Generally all tutors were positive about the materials, both with regard to their own appreciation of the potential of this style of delivery for themselves and the suitability of the particular instances demonstrated for use with their students.
- The capacity of the delivery platform to remove a tier of routine marking and record keeping was perceived as a strong asset.
- The ability to generate evidence of activity suitable for dissemination to employers of students on day or block release programmes was recognised as a benefit.
- It was widely felt that this style of delivery was best viewed as a supporting mechanism and a reinforcement tool, rather than a primary source of information and tuition.
- Tutors expressed concern about the possibility of this style of delivery alienating some of the less computer literate students.
- Concern was also expressed about access to the materials from home or other unsupported environment requiring from students a certain degree of confidence, familiarity and positive perception about using a computer as a learning tool.
- Particularly with the less computer literate users, it was felt by several of the tutors that this style of delivery will actively disengage and demotivate, especially when technical difficulties are encountered.

Another area of concern with several tutors was ownership of the materials and the ability to customise them for use with different ability levels and courses. This would be a very prevalent concern in the wider environment of further education. It is a common experience of tutors that a patchwork approach is used to assemble the materials for an entire course. Commonly, small amounts of differing source materials are at present assembled into a folder of materials, with the tutor contributing the relevant summative and supplementary documents authored by themselves. The ability to disaggregate and use parts of any learning unit is seen as an asset when assembling resources with regard to future usability across a range of horizontal and vertical axes.

The Student Experience

Key Points

Some remarks must be made before proceeding to the evaluation of the student experience.

The groups used throughout the evaluation phase were chosen to represent, as far as possible, the range of diversity of educational experience, computer literacy and cultural expectation that the courses in question encounter. As could be expected, there was an enormous range within the evaluating groups. This has, we hope, rendered the spread of opinions encountered during evaluation a fair sample of what could be expected across a wider study.

In both curriculum areas addressed by this project, the use of ILT has not made any great penetration into the student experience.

Being workshop based, the Motor Vehicle courses have immediate and easily understood difficulties integrating ILT into the noisy and potentially dangerous workshop areas. Computer systems are generally unhappy around oil, grease and heavy machinery, electrical noise can render computers unreliable and prone to crashes. Thus ILT has to be delivered away from the practical sessions in planned use of the LRCs or other computer facilities.

The Health and Social Care courses are delivered in classrooms that have very minimal ILT provision. Once again, this necessitates the forward planning of access to computer based learning, making for something of a "special occasion" mentality amongst the students when ILT is used.

These are issues that are probably common to all colleges delivering curricula in these subject areas.

In all cases, the evaluation sessions were in public areas, with students from other faculties and course areas in close proximity. This was felt to be a realistic way of conducting the evaluations, as it enabled some observational assessments to be made of the factors that could be introduced by interaction with relatively informal surroundings.

The sessions were of average duration 45 minutes. This was felt to be the best compromise between exhaustive testing, to the point of frustration on the part of the students, and a too cursory examination. 45 minutes is the average basic taught period in both curriculum areas without a break or change of style of activity.

The sessions commenced with introductions to the students of the team and a brief explanation of the purpose of the session. Students were asked to be forthright in their comments and not to "spare our feelings" when discussing the materials with us and in completing the evaluation questionnaires. A number of the students in both curriculum areas expressed concerns as to whether their marks on the assessments included in the materials would form part of their actual final assessments and course gradings. The reassurance that this was not the case, and that they were purely helping us in a research project, was added to the prefatory comments made in the later evaluation sessions.

To further assure the students that the session was purely a research exercise, seeking their opinions and help, we created a set of new user logons for Learnwise to be used during the sessions. To maintain momentum in the sessions and to prevent difficulties in logon procedures affecting the students' perceptions, the machines used for the sessions were logged on prior to their arrival and the topics of interest in each case were pre-loaded into the PIM screen of Learnwise.

Students were then "let loose" on the topics. As far as was possible, the tutors and the development team observed passively, intervening only on student request and offering unsought

support only when it was apparent that the student in question was lost or incapable of proceeding. At these times, an informal note was made of the reasons given by the student, as well as a record of the apparent cause of the problems, if these differed from the student's perceptions.

After a few minutes, the questionnaire was handed out to the students. This was done to prevent any hasty or ill formed data being put onto the sheets before the students had any real experience of the materials. At the time of distribution, students were assured that their comments were fully confidential, that they could write anything whatsoever on the sheets and that we would also welcome incomplete sheets, so that they had only to record what actually mattered to them. If an individual had no feelings either way on any area of the questions, then there was no need to write or tick anything. This in itself was felt to be an interesting area; it was felt that it might throw light into the real level of student engagement.

At the end of the 45 minutes, the sheets were collected, the tutor and students were thanked for their help in the project and any last comments or feedback from the group was sought. Immediately after the sessions, the development team got together to record their impressions derived from observation, for comparison with the students' recorded data from the sheets.

Results of the evaluations

The evaluation results of the two curriculum areas are summarised below:

Health and Social Care

First, the graded questions:

How useful did you find the topic?

Not at all useful	0	6	11	5	0	Extremely useful
-------------------	---	---	----	---	---	------------------

Did you enjoy using the materials in this module?

Not enjoyable	1	2	15	7	0	Very enjoyable
---------------	---	---	----	---	---	----------------

Was the module aimed at the right level for you?

Not at all	0	3	11	4	3	Completely
------------	---	---	----	---	---	------------

How complete is the information in the topic for your needs?

Not at all	1	6	3	10	2	Complete
------------	---	---	---	----	---	----------

Would the content of the topic be useful and relevant to other students?

Yes	4	8	9	2	0	No
			Maybe			

How familiar were you with the ideas covered before you started work on it?

7	I was familiar with the content of the topic	13	I was partly familiar with some of the content	1	I was unfamiliar with most of the content
---	--	----	--	---	---

Did you find the style and approach of the topic useful?

Not at all	1	3	12	7	1	Very useful
------------	---	---	----	---	---	-------------

Did you find the design and presentation of the topic clear and easy to use?

Easy to use	9	10	0	5	0	Hard to use
			Not really			

Were the instructions built into the topic clear and easy to understand?

6	Always	17	Sometimes	0	Never
---	--------	----	-----------	---	-------

The remainder of the questions were free text entry boxes. While the questionnaires were being completed the team spoke to the students in each session to get an informal impression to supplement the written answers we were being given.

A summary of the responses:

Were any parts of the topic particularly good or bad?

Of the respondents who completed this section, the overwhelming majority made comments indicating that the textual material was too long or there was too much of it. The quizzes and tests were the most popular parts of the topics. This is probably due to the increased need for interaction with the computer, rather than passive “page turning”.

Two respondents draw attention to a particular graphic image that they felt was unclear or blurred and difficult to interpret

One respondent identified the vocabulary level as “hard” and suggested shorter words. This is an artefact of the re-use of written materials not intended for screen-based delivery.

Approximately how much time did you spend completing the module?

As stated, the review sessions were fixed at a nominal 45 minutes. Respondents were given a free text box to enable them to tell us how much of the learning unit they had used. Responses ranged from “3 – 5” minutes up to “45 minutes to an hour”. The lower figures indicate users who had skipped reading the textual material; they discovered that interactive components were available and skimmed through the pages looking for them. This indicates clearly a mode of usage that had not been anticipated by the designers.

It was observed during the sessions that all users engaged with the materials at some level virtually throughout. The perceptions of very low usage times do not seem to reflect the students’ real experience in some cases.

Response rates to this question were very low; only a few of the students completed this box.

Would you like to make any comment on the design here?

Again, a very low response rate.

Two users suggested that we make the materials more eye catching.

One suggested a different colour scheme

A “v good” and an “OK” were balanced by one student who professed the materials were “good but not as good as we thought”. This is a hard comment to answer!.

Were the tests and assessments useful?

General feedback was positive. Very good, good or OK were by far the commonest responses. Only one student responded “not really”, but could not articulate why she felt this.

Did the assessments really test you on the important areas of the topic?

It was felt this question would enable the students to pass a more considered opinion on the actual assessment content and its relevance to the textual material.

Reactions were generally positive. Almost every respondent who completed this box felt that the assessments were germane. Those who had not perceived the assessments as relevant were unable to articulate the reasons for their belief.

Once again, a very low response rate.

How computer literate are you?

How computer literate do you need to be to get the most out of this way of learning?

This question was designed to elicit some information about the students' experience of computing and to try to shed light on the extent to which the features and limitations of the delivery platform, rather than the materials themselves coloured the students' perceptions of their experience.

The most valuable information in this case came from the informal discussions that took place while the students were at work. The responses written onto the sheets generally indicated, with one notable exception, the perception that nominal computer skills were sufficient to use the materials. With few exceptions, this was the level at which the respondents identified their own skills. The exceptions were spread above and below this median level of self-assessment. The observational data from the team during the sessions was that, generally, the skills level of the students was actually rather above their own assessments. Those whose skills were towards the lower level were readily and willingly supported by the others.

Another, less obvious, observation was made by several team members; It became apparent during the evaluation sessions that very small factors in the presentation and delivery of the materials can form a major part of the students' opinions.

An example: One student felt that a cloze procedure test was not sufficiently flexible in its marking schema – it did not recognise the term she had used, despite the fact that it was a legitimate synonym, capable of being added to the terms permitted as correct. The student, as can be imagined, phrased her opinion somewhat more robustly. This tiny facet of the learning unit then coloured her approach to all the other materials. She professed a lack of faith in the accuracy of the whole on the basis of this small error.

This highlights the cruciality of accuracy and completeness in the materials. The capacity of students to assess the value of materials based upon relatively small, (and easily corrected), shortcomings has implications for the acceptance of these materials embedded in a wider curriculum.

Do you have any further comments?

This box was omitted by the vast majority of users. One used it to reiterate concern about a question she felt to be poorly worded. Another student asked for the reading to be made "more fun". No overly adverse opinion was offered.

Motor Vehicle

Again, first, the graded questions:

How useful did you find the topic?

Not at all useful	0	0	7	14	2	Extremely useful
-------------------	---	---	---	----	---	------------------

Did you enjoy using the materials in this module?

Not enjoyable	0	0	8	14	0	Very enjoyable
---------------	---	---	---	----	---	----------------

Was the module aimed at the right level for you?

Not at all	1	0	5	14	3	Completely
------------	---	---	---	----	---	------------

How complete is the information in the topic for your needs?

Not at all	0	3	6	10	3	Complete
------------	---	---	---	----	---	----------

Would the content of the topic be useful and relevant to other students?

Yes	5	3	8	5	2	No
			Maybe			

How familiar were you with the ideas covered before you started work on it?

7	I was familiar with the content of the topic	14	I was partly familiar with some of the content	2	I was unfamiliar with most of the content
---	--	----	--	---	---

Did you find the style and approach of the topic useful?

Not at all	0	0	0	16	2	Very useful
------------	---	---	---	----	---	-------------

Did you find the design and presentation of the topic clear and easy to use?

Easy to use	9	5	1	6	2	Hard to use
			Not really			

Were the instructions built into the topic clear and easy to understand?

10	Always	13	Sometimes	0	Never
----	--------	----	-----------	---	-------

A summary of the written responses:

Were any parts of the topic particularly good or bad?

The videos and pictures were identified as being particularly useful by several respondents.

One respondent identified that some of the material referred to older models; this is, of course, perfectly congruent with the source materials, which are currently undergoing revision for a new edition of the book.

Two of the respondents had problems with the materials due to the relevant plugins misbehaving; some video content was unable to run. Unlike the respondents in the Health and Social Care trials, this did not seem to overly colour their perceptions of the materials as a whole. It was suggested informally by some respondents that headphones were a good idea when using the materials in an open area, to prevent audio spillage becoming an issue.

Approximately how much time did you spend completing the module?

The vast majority of respondents assessed that they had spent 45 minutes using the materials. This was accurate. The majority of students did indeed spend the whole session engaged actively with the materials. The phenomenon observed in the other group, of "skimming" to find the

interactive tests was not observed to any great degree. One respondent assessed his usage time as 15-20 minutes, correctly. Another respondent believed himself to have spend 2 hours(!).

From the participant observations, it was quite apparent that the level of engagement was much higher than that observed in the Health and Social Care group. This may be due to the higher level of multimedia usage in the materials.

Would you like to make any comment on the design here?

Generally the feedback was very positive. The design was considered generally clear and easy to navigate, with the exception of one student who found the section headings a little long and too detailed. One student highlighted the difficulties he had experienced with the video clips on his machine.

Were the tests and assessments useful?

Again, these were well received by most of the group members. During the sessions, it was observed that the degree of cooperation and collusion between the group members was much lower than the Health and Social Care groups. There was a degree of competitiveness – one student asked if he could see a league table of the results!

In discussion with the subject specialist, it had been decided to deliver some of the assessments in the form of cloze procedure tests. This was designed specifically to increase the amount of typing undertaken as part of the experience and to prepare the students for submitting other assessments in the course word processed. These were less positively received. Two respondents stated that they would have preferred multiple choice tests. There were also small issues, as with the other curriculum area, where the appropriate number of synonyms was not entered during test creation; this occasionally led to protests that the answer supplied by the student was correct had had been marked wrong. This can easily be addressed in the revision phase of a longer term project.

Did the assessments really test you on the important areas of the topic?

The assessments in the curriculum area were received generally less favourably than in the HSC area. Students felt that the tasks did not fully test the knowledge delivered in the topic.

During the participant observations, it was observed that the decision to deliver some tests as cloze procedure, as notes above, may have been ill considered. The prescriptive and limited ability of the authoring tool used meant that many synonymous terms and colloquialisms which would have been accepted as correct by a tutor were actually marked poorly.

How computer literate are you?

How computer literate do you need to be to get the most out of this way of learning?

As before, the informal observations made during the evaluation sessions demonstrated that, on the whole, students were reasonably accurate in their assessment of their own levels of familiarity with computers. One student commented, "I haven't got much about me, but I can use it".

Do you have any further comments?

Generally fairly positive statements appeared here, although the response level was disappointingly low. Students who had experienced problems with the materials due to technical shortcomings of the computers in use tended to reiterate them here.

Again a reminder that relatively small factors in usability can form the basis, rightly or wrongly, of students' perceptions of the topic and indeed online learning as a whole.

The Business Case

Repurposing: Time, Copyright

Metadata: Integrating with standards/mapping to other schemas, Searching and Fragmentation possibilities

VLE Delivery: SCORM Compliance, Tracking, Groupwork & Collaborative tasks.

This is perhaps the hardest area of the project upon which to comment. Given the limited scope of the present project, in terms of the scale of the authoring tasks undertaken, the timescales in which to progress from authoring to evaluation, the limited ability to implement the indicated modifications in the materials before ongoing further testing and the condensed timescale in which to contact external copyright holders to clarify the issues surrounding re-use of their materials, any observations made here will be, of necessity, limited in their applicability to any subsequent larger scale endeavour of this type.

This caveat being accepted, some useful inferences and conclusions can be drawn.

As will be apparent from the materials in appendices 2 and 3, the authoring process can become prone to bottlenecks due to a number of causes

- Shortcomings and omissions in the source files
- Work needed to render graphics suitable for delivery on the intended platform
- Time needed to locate appropriate supporting/enhancement materials and to have them assessed by subject specialists
- Location of copyright holders and obtaining of appropriate permissions for the intended type and level of re-use
- Necessity of redesign and layout changes when rights to external resources are clarified – removal of placeholder graphics and updating of accessibility information etc.
- Availability of subject experts to provide ongoing formative evaluation during the authoring process
- Timescales for generation of appropriate differentiated assessment source materials

All these were encountered at different phases of the authoring process.

Addressing solutions to the issues

Basically, good communications are at the heart of solutions to all of these issues. A philosophy of flexibility, with content authors organising their workload around the critical availability of the subject specialists has shown to be the easiest way of clarifying and maintaining good understanding amongst team members.

As early as possible in the authoring process, it is a good idea to start getting feedback from subject specialists and accessibility advisers on the content. In the present case, this meant initially visits to the authors' desktop machines to review early drafts of designs. As soon as practicable, i.e., a meaningful amount of authoring had been done, the materials were made available to the subject specialists, via limited access rights in the delivery platform, so that any perceived difficulties could be addressed before any significant "back tracking" became necessary.

Issues relating to externally sources materials were the major causes of delay; it was decided, as can be reasonably deduced from the wording of the request for copyright clearance, that the best approach in this instance was to use the materials in preliminary design and to remove them when the copyright owner specifically requested that this be done, or when copyright was found to be unclear or not available. As mentioned earlier, two respondents to the copyright clearance request expressed their concerns about our decision to make opt-out of re-use a pro-active decision on the part of the copyright holder. Our reply to them clarifying the grounds on which we felt it necessary to proceed with the project this way did not receive any further communications.

A longer term, larger scale project would be better served by a different work sequence. Resource location on an ad-hoc basis, finding images et al as needed seemed appropriate; it is now evident that a distinct part of planning should be to determine the amount and nature of external resources to be used then dedicate specific work plan components to the location and IPR/Copyright issues associated with them. This would greatly accelerate the actual page creation phase of the task.

Project Management

One meeting per month, with sub groups reporting back on the four main areas of interest:

E-Book creation and delivery

VLE Edition

Metadata sourcing and management

Dissemination

The project's truncated timescale necessitated a less formal approach to meetings. Although regular meetings of the full team were used to guide overall direction and monitor progress, the four areas of interest were best served by informal communications fitted around the teaching commitments of the subject specialists. This was also intended to help engender a sense of ownership of the materials, as the creation process was under constant observation by the subject specialists. They were also invited to drop in at any time they were free to offer informal commentary and user testing. The outputs of both PDF and web based materials were definitely shaped by this ongoing interaction of designers and subject specialists.

Metadata was created primarily by the subject specialists, in association with the Library staff member. The schemas used were primarily predicated by the software used for compilation of the resources into SCORM/PDF and the delivery platforms.

The generation of key words for the relevant fields was undertaken by a process of formal examination of the supplied materials by the above named team members, in conjunction with the body of informal knowledge amassed by the subject specialists throughout their teaching experience. It will be apparent that codification of this informal knowledge is probably one of the keys to successful metadata creation. Successful in this context should contain such ideas as;

The suitability of created vocabularies for use by a student body who are possibly not yet familiar with the subject area in sufficient depth to make search queries in appropriate technical terminology

- The suitability of created vocabularies for usage in an integrational way, recognising the vertical and horizontal spread of uses to which a given learning object may be put
- The necessity for balancing the requirements of brevity and conciseness, with the attendant benefits for search speeds, with the need for technical precision and integration into the wider vocabulary of a subject area, allowing easy access to materials for use in reinforcement activities or supplementary tasks for the revising student or the able and talented student.

Metadata for the Web Based Learning Units

The metadata adopted for this phase of the project was OK-LOM. This decision was in effect made for us by the functionality of the package used for compositing the individual pages into a package. This metadata schema has a very wide range of fields, many of which are not mandatory or as yet of indeterminate usage. It was decided amongst the team that the mandatory terms only would be completed, where the guidance notes then extant for the schema were sufficiently clear for meaningful data to be input. This meant that the subject specialists and library staff member were generating data for, on average, 8 fields, with the remainder of the mandatory fields for which data could be meaningfully created being created and managed by the content designers.

It was immediately apparent that this task would not be simple or rapid; generation of terms meaningful to both students and staff, with appropriate multiple provision of synonyms, alternative phrasings and abstractional terms allowing broader integration and accessibility/usability across vertical and horizontal frames of learning meant that it rapidly became necessary to set limits on the time that could viably be spent within the framework of such a limited project as the present one. It is becoming a given within the e-learning community that metadata can easily reach levels where it exceeds the source materials it describes in size and complexity. To create meaningful, broadly applicable and concise metadata for even simple learning objects is something of a specialist pursuit. The multiplicity of mutually accepted terms amongst practitioners within even

small areas of academic knowledge could conceivably place limits on the universality of any generate metadata.

These concerns notwithstanding, the teams worked together and generated a viable and reasonably comprehensive set of metadata that was felt to adequate for usage within the remit of the existing project.

Metadata for the PDF Based Learning Units

The metadata adopted for this phase of the project was to be predicated by the delivery platform used. This was to have been E-Brary .The metadata was to be added at the time of upload. The schema used at time of upload does not appear to be publicly available from the EBrary web site. Some of the functionality may, however, be deduced from the listed description of the types of searches, analyses and aggregations that may be performed. The underlying metadata structure to support these types of activities may, to some degree, be inferred.

The following information is quoted from the Ebrary site, specifically this URL:

<http://corp.ebrary.com/technology/server.jsp>

ebrary's application servers are designed around four important capabilities:

- Rapid and accurate document search and navigation
- High performance content management.
- Secure protection of copyrighted materials
- Fast and accurate transaction and accounting services

The application server software is designed to run in a variety of server environments. It is currently built on Sun Solaris servers. The ebrary Application Server comprises the following modules:

Document Repository

Metadata indices are built to categorize and manage the ebrary digital library. The metadata is stored in an Oracle industry-standard Relational Database Management System (RDBMS). For each document, PDF source files are maintained on a secure server and access is permitted only through the secure layers of the application server. Pages are pre-rasterized and cached in order to provide rapid page display.

Collections Support

The metadata database is partitioned to include or exclude content by publisher or by defined categories, e.g., subject areas like technology, history, philosophy, etc.

Advanced Document Query and Search Capabilities

Users can order, examine, and isolate information and query results by subject, keywords, author, title, date and publisher. Users can also reorder search results to better examine the available content, and limit searches to certain document types.

Purchase Engine

Manages the options that users have for purchasing entire documents by directing them to online vendor affiliates where they can purchase hard-copy titles.

Transaction Manager

Handles payment and records the transaction when users pay to print, copy or compile information.

Payment Manager

Accounts for all user payments and pre-payments and tracks royalties owed to publishers and other content providers.

Data Mining and Reporting

ebrary software generates web-based usage reports that provide detailed information, while protecting end user privacy. Reports include transaction summaries; activity by author, title, subject, and date of publication; and the title and page number of documents that have been viewed, printed, and copied. End-user privacy is protected.

As noted elsewhere in this document, at the time of writing it has not been possible to test the upload and metadata creation facilities offered by ebrary.

Appendices

Appendix 1

Text of the Request for Permission to Re-Use Content

Dear XXXXX

As part of a project jointly sponsored by the Joint Information Systems Council and Nelson Thornes Publishing, a small team based at Stoke on Trent College is authoring a range of electronic learning materials for test delivery within a virtual learning environment. Purposes of this project include evaluation of authoring methods for new media and examination of various legal, ethical and technological issues arising from this process.

Two curriculum areas are being examined:

- Health and Social Care
- Principles of Motor Vehicle Mechanics

Part of the project involves an interest in Copyright and the application of Intellectual Property Rights in re-use of web based resources.

We are contacting you to request your permission to use, for the purposes of this project only, the following image(s)/textual material

FILENAMES HERE

which we found located at:

URL of relevant page

The materials will be used purely for purposes of academic research, and solely within the confines of the project, called the 5-03 Metadata Project. This will complete at the end of October 2003 and all the materials that have been created for the purposes of our research will then be withdrawn from usage on any computer system whatsoever.

We hope that you are willing to allow us this limited re-use of your copyrighted material within the narrow limits defined above.

Please reply to this e-mail to grant your consent, if you do not wish these resources to be used as part of our research, or if you require further information.

Given the very tight deadlines and short duration of this project, we will assume your consent if we do not hear from you within 2 weeks of despatch of this communication.

NAME OF CONTENT AUTHOR

PP Steve Blakemore
Project Manager
5-03 Metadata Project
Stoke on Trent College
UK

Appendix 2
Materials Developer Report 1

Health and Social Care Learning Unit

HEALTH & SOCIAL CARE



2nd Edition for Foundation GNVQ, authored by Liam Clarke

A **JISC** project in association with **Nelson Thornes**.



Introduction

This report outlines the creation process of Health & Social Care materials for the 5-03 project. The materials are taken from Stanley Thornes textbook: Health and Social Care for foundation GNVQ 2nd Edition, authored by Liam Clarke (see photograph right). The report includes any observations, findings, and problems incurred during the implementation.



Paper-based Resources

Overview

The first task was to produce paper-based resources using a Word Processing package; the chosen package was Microsoft Word. The material for these resources was available in OCR scanned ASCII text files. The chosen materials from the Health and Social Care textbook were units one, two and three.

Implementation Tasks

1. Create word document style sheet for application to the units
2. Copy ASCII versions of the units to Word Document and layout using styles i.e. headings etc.
3. Scan images from units, and edit as appropriate
4. Design boxes for activity's, quick fire questions etc., as appropriate
5. Proof read units
6. Document evaluative report

Evaluative Report

Creating the style sheet (1) was achieved successfully; I found that I updated the style sheet as I worked through creating the first unit, as I came across text formatting I used often i.e. list styles, so to save time I updated these on the style sheet for future use.

Copying the ASCII versions of the units (2) to word document was successful.

The laying out of the units became time consuming, leaving approximated space for graphics, activity boxes and so on.

It was also observed that some OCR mistakes had occurred when scanning in the ASCII text with word recognition and paragraph formatting.

Problems came when dealing with tabular data; it was time consuming adding the ORC text in to tables in the document.

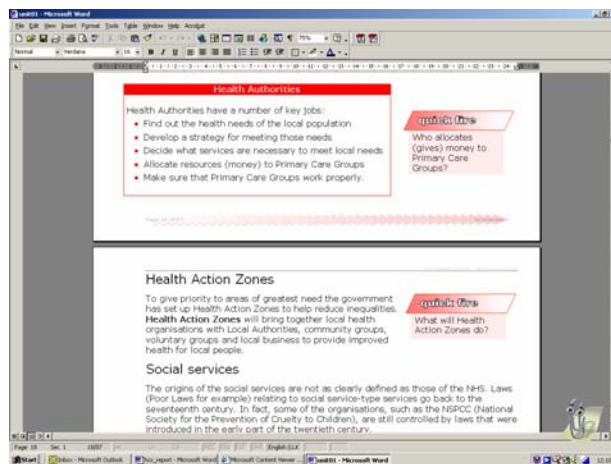
Scanning in of images (3) was also time consuming as it was necessary to replace the scanned graphics text with anti-aliased text in chosen graphic package Adobe Photoshop. All images for the paper-based version were saved in the bitmap format.

When adding images in to the document the layout had to be adjusted to accommodate the size of the graphic.

It was also noted that when the document contained graphics copying and pasting between documents often caused explorer crashes (presumed low memory problem)

Designing the boxes for activity's, quick fire questions etc. (4), was achieved quickly, problems came as boxes needed to be resized dependant on the amount of text in each box throughout the units (see screenshot below).

Another problem was that the quick-fire boxes were not included in the ASCII text, nor were the Key Skills boxes and some information boxes e.g. Health Authorities – Page 9. This slowed the implementation down as it involved manually typing in this information.



The screenshot left, shows the inconsistency in the amount of text inside quick-fire boxes, causing time consumption in resizing each box to fit the contents or visa-versa.

Proof reading (5) was completed, it was difficult to spot mistakes made.

NB: When taking information from the paper-based version to the web-based version further proof reading took place, and typographical and other errors missed in the proof reading were corrected.

Overview

The second task was to create a web-based version of the materials for our chosen Virtual Learning Environment (VLE) Learnwise. Materials would be prepared in terms of meta-data using Microsoft's Learning Resource iNterchange (LRN) this is part of an interoperability study on the compatibility of LRN and Reload as a meta-data creation tool for VLE's.

NB: The Reload software is to be tested by a colleague (Steve) working on Motor Vehicle Resources for the 5-03 project. The two will be evaluated together later in the report.

Implementation Tasks

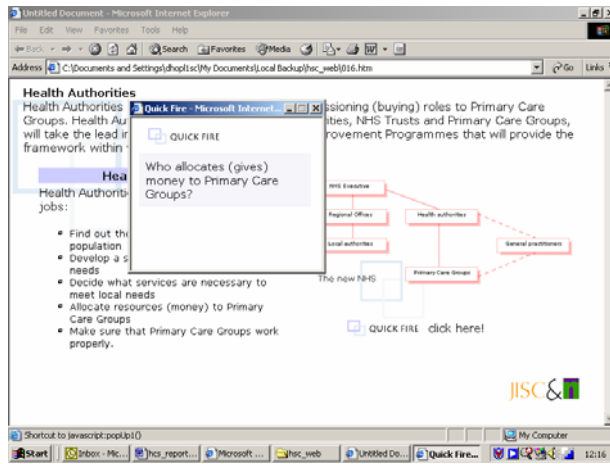
1. Convert Bitmap images to Graphical Interchange Format (GIF)
2. Prepare style sheet(s) for use with web resources
3. Copy text from paper resources, adjust layout for 800x600 resolution screens, download additional graphics as appropriate (Document these, for copyright permission distribution mailing list)
4. Proof read resources
5. Document evaluative report

Evaluative Report

Used chosen package JASC's Paint Shop Pro to batch convert all Bitmap scanned images to GIF's (1). This was completed quickly and successfully.

Created style sheet for web-based resources (2), again as with paper-based resources I found I updated the style sheet as I came across formatting which I commonly used, this saved me time, and ensured page consistency.

NB: I created a background image for the pages, which I added to the style sheet, so each page was identical. For activity, quick-fire boxes etc., I decided to use pop-ups, for these I did not need a background image so I created a different style sheet for use with pop-ups, which contained no background image (see screenshot over the page).



The screenshot left, shows the different style sheet applied to pages, and pop-ups. As you can see the pages have a background image, and the pop-ups have a blank background.

Copying text from paper-based resources (3) was temperamental as it often caused explorer crashes, presumably (as mentioned previously) due to an insufficient amount of memory. Adjusting the layout so each page fitted an 800x600 screen was time consuming and involved resizing or trimming graphics.

I used Google and AltaVista's image searching facilities to find appropriate images to add to the resources, and fully documented where each image had come from, to allow us to distribute copyright permission e-mails to the owners of the graphic to use the images for the duration of this project.

Proof reading of resources (5) was completed but as mentioned previously it is difficult to spot errors, particularly typographical.

IMS Content Packaging & Meta-data Specifications

Overview

The next part of the project involves preparing the web-based resources for input in to a VLE. Before we can do this we need to create an IMS Content Package for the resources. I will be using Microsoft's LRN Toolkit (as previously discussed) to create the content package and add meta-data specifications.

On completion I shall test the Motor Vehicle materials in LRN and submit a report on my findings to Steve, and he will submit a report to me on his testing of the Health and Social Care materials in Reload to assess their compatibility.

When this is completed the resources will be ready for implementation in our chosen VLE Learnwise.

Implementation Tasks

1. Create a new content package for the Health and Social Care web resources
2. Design an organisational structure of pages for the manifest
3. Import all resources to the manifest and organise the pages following the organisational structure design created in (2), and title all pages descriptively.
4. Preview the finished structure in LRN's viewer, and test to ensure all pages work as they should.
5. Test reload generated Motor Vehicle content package in LRN and submit report to Steve
6. Add meta-data specifications to all pages
7. Preview the finished web resources and test to ensure all pages work, as they should, and meta-data is present and correct.
8. Test reload generated Motor Vehicle meta-data in LRN and submit report to Steve

Evaluative Report

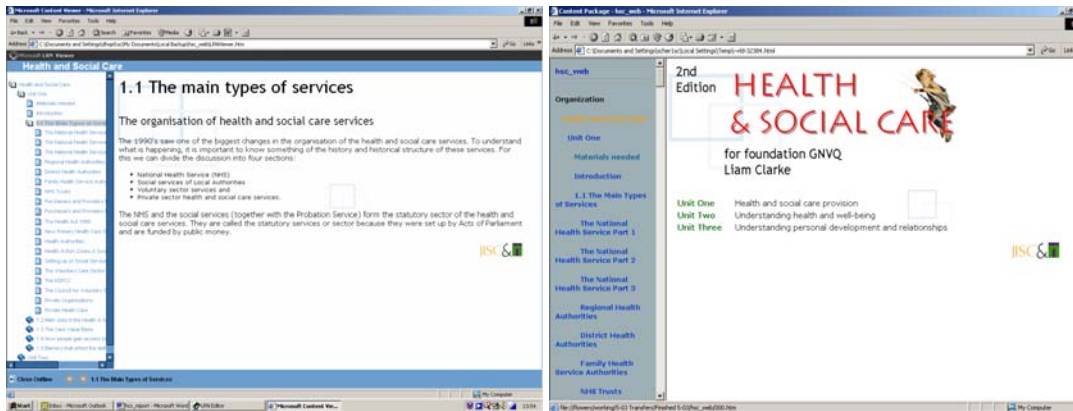
Created new content package successfully (1) named the package as Health & Social Care.

Designed on paper an organisational structure of the pages for the manifest (2).

Imported all resources successfully (3) whilst creating an organisational structure, whilst importing in to the organization automatically imported the appropriate page (resource) this process was slow as you had to import page by page, there was no feature for multiple import. Renamed each page in the manifest successfully, this too was time consuming.

NB: According to Steve the Reload software has the ability to import multiple resources, but you have to manually drag and drop them into the manifest organisational structure. Nevertheless this is a quicker and more user-friendly process than LRN. Aesthetically the Reload software is better; containing skins and a drag and drop user-friendly interface. In terms of viewers however, LRN's is user-friendlier and more aesthetically pleasing than the Reload viewer, this is because time was spent designing the implementation of the manifest organisational structure in LRN's viewer subsequently it is better presented, and easier to navigate (see screenshot over the page).





The screenshots above show the resources opened in LRN's preview facility (left) and Reload preview facility (right). As you can see in terms of the more aesthetically pleasing viewer, Microsoft's LRN is the greater.

I previewed the finished structure in the LRN Viewer successfully (4), with no problems.

To test compatibility cross IMS Content Package software (5) I tested Steve's Motor Vehicle resources generated through Reload. The IMS manifest for the resources opened successfully, and I was able to view the resources in the LRN viewer with no problems. No compatibility issues are apparent.

Report from Steve on opening LRN generated content package in Reload and previewing in Reload viewer:

"After I had completed the implementation process it was decided to test the manifest file in another IMS Content Package. Dave who had been working on Health & Social care content had been using LRN, and his material opened and viewed successfully in Reload. We expected cross application complications, which occasionally happen between applications that carryout similar tasks but in different ways, however we discovered none. I noticed that the viewer of the LRN was much more clearer and more appealing to use. According to Dave the importing process is longer due to the fact that you can't highlight several files to import".

Running resources in our VLE

Overview

To take the project to its conclusion, the resources needed to be able to be accessed by the students themselves to evaluate the materials we had created. For this we wanted our materials to be uploaded onto our colleges Virtual Learning Environment (Learnwise).

Implementation Tasks

1. Zip up content to be imported, and import the zip file to Learnwise. Check topic structure and content has been imported correctly.
2. Create sample assessments in Learnwise for subject specialists, and look at other pieces of software to create more and varied assessments.
3. Create and upload assessments created by subject specialist

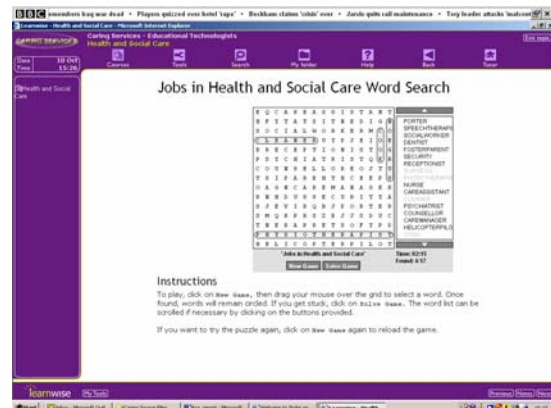
Evaluative Report

(1) Zipping of the content was successful and importing in to Learnwise was equally so. Time constraints were an issue here due to the Learnwise server running slow. Checked content, this was sorted all sorted correctly, noticed that Learnwise did not support ampersands whereas LRN does, so had to replace them with 'and' words.

Created sample assessments for subject specialists (2). Had problems with the fill in the gaps question set on Learnwise so downloaded an alternative piece of software for this exercise called Hot Potatoes. This had a few other possible test types i.e. crossword, match the word etc. Also looked at a java application that created word search puzzles.

Uploaded assessments as requested by specialist tutor successfully (3).

The screenshot left, shows an assessment (word search) uploaded with Health and Social Care resources in the colleges Learnwise VLE.



Adding Meta-data

Overview

The next task of the project was to add UK LOM Core Element Meta-Data to the resources.

Implementation Tasks

1. Collect meta-data from subject specialist and resource cataloguer, who have compiled meta-data according to UK LOM guidelines.
2. Add meta-data information to the resource manifest.

Evaluative Report

Meta-data was received from the subject specialist and cataloguer (1), some meta-data however e.g. version, were compiled by me as the developer.

I added the meta-data successfully (2) to the manifest using the Reload software, (Which now had to be used as the LRN software has no Meta-Data creation support – see Reload vs. LRN notes over the page).

Evaluating 5-03 Health and Social Care Resources

Overview

The next part of the project was to have students evaluate the resources by means of a questionnaire, and interviews. We would also sit in and observe students using the resources.

Implementation Tasks

1. Steve Blakemore to create questionnaire for evaluation
2. Subject specialist to book sessions with students to evaluate resources
3. Observation and Interviews, and collect questionnaire feedback for evaluation.

Evaluative Report

Evaluation of session Monday 20th October 2003 – Dave Hopley

Summary

We had two sessions booked for evaluation, a morning and an afternoon. We can only comment on the morning session, as the afternoon class disappointingly did not turn up for the evaluation.

Overview

We had a group of sixteen students reviewing the resources, this meant they had to double up on computers which I felt had its advantages in that the students were not all very computer literate. However it also led to students becoming frustrated, as they were not kept busy.

The computer literacy of the group in comparison to the engineering students was poorer; this had an affect on the student's navigation of the resources and led in parts to some frustration.

Student's responses to the materials were as varied as their computer skills, some groups worked through fast to the assessments, others worked through very slowly. Where people had rushed, they struggled with the assessments. Some students working slowly had trouble understanding the work being presented to them, but in trying to they were better equipped for the assessments. One observation of one group was that, in becoming frustrated with one aspect they lost enthusiasm for the whole thing.

Points highlighted

See learning_results_20_10_03.doc (Dave Hopley)

Evaluation of session Monday 20th October 2003 – Steve Cherry

I was asked to participate in the observing of the H & S care students using the Learnwise material Dave Hopley had developed. I had not previously seen the material so it did help my experience of testing the material.

Summary

Overall the I.T literacy of the students was much lower than that of the Engineering students I had observed the week before.

Most students found the material useful and were able to work their way through the chapter.

Overview

The group that tested the materials worked in pairs due to class size vs. booked machines. The group was much more vocal to each other during the testing about the material but not always about the material. I noticed 2 or 3 pairs of students proceeding at the same rate and not continuing until everyone of them had reached the same point, this was not to helpful when coming to the quizzes as the answers came from 1 or 2 people of the 6 instead of everyone answering their own questions in their own time, this prevented us from seeing if they had actually learned from the material.

The group was much more willing to ask for help and in seeking guidance in what to do with regards the chapter materials and tests. I did overhear that one student thought there were too many quizzes for just one chapters worth of material.

Dave had created pop-up windows that contained short quizzes in, the user is supposed to click on the 'Activity' text to bring up the window but in practice the students read that they had to click for an Activity but the place to click was not clear. It was for this reason that in the content I authored for the engineering pages I used an image of a TV to clearly stand out and let users see that there was something extra to look at as well as the text and images already on screen.

Points highlighted

See learning_results_20_10_03.doc (Dave Hopley)

Evaluation of session Monday 24th October 2003 – Dave Hopley

Summary

This session was booked for 11 foundation GNVQ students. This meant that 3 students had to double up on computers. The materials are aimed at foundation GNVQ level so should have proved to be at their level, this provided a varied feedback

Overview

Again today we have a varied level of computer literacy, this affected the speed at which students tackled resources, we had feedback to suggest there was too much material before being assessed, and that the quick fire questions were good, but provided no feedback. The materials not being broken up in such a way I felt led students to find the materials tedious, and skip to the assessments, which some then struggled with as they had not gained the knowledge from the materials to adequately tackle the assessments.

Students seemed to enjoy tackling the word search puzzle, many re-attempting the test, the tutor also commented on liking this very much, and expressed how he'd like to use materials like this in a classroom environment. However he too commented he'd like to see more assessments and the materials more broken up.

Points highlighted

See learning_results_24_10_03 (Dave Hopley)

EXTRA – How students tackled the questionnaire

- Many blank spaces were left, or one-word (irrelevant) answers left, suggesting they either didn't have any feedback to give, or they did not understand the questions.
- Many students tended to stick to the "sitting on the fence" option and not provide positive or negative feedback.
- Students feedback on how much time they spent tackling the module differed from their actual time i.e. most put they spent 10-30mins on the module, but most actually spent 45-50mins, and then 10mins writing up their questionnaire.
- Students generally seemed uncertain of their level of computer literacy.

Copyright and Intellectual Property Rights

Overview

When creating the paper based and web based materials for this project, there were photographs and images that needed to be obtained. This involved searching the Internet for images and contacting the websites for permission to use the images.

This turned up many problems:

1. Webmasters failing to respond to their e-mail requests at all, or in time for the project deadline.
2. Websites unable to give permission for the image to be reused as they had obtained the image from another source, be it graphics company, or gained permission from author/other site.
3. Websites refusing permission, with no stated reasons.
4. E-mails to webmasters bouncing, and having to copy e-mail information in to websites onsite feedback forms.

Evaluative Report

There seems to be a lack of understanding, not just concerning the Internet, but also in general about ownership of copyright and intellectual property rights. With regards to this project, many images are available to be found on image search engines for example. However the reuse of these images is a grey area, and different webmasters we contacted had different ideas about this. This issue not only applies to the reuse of images but the reuse of any materials e.g. text, etc.

A case example would be a company giving us permission to use an image on their site, which is a charities logo, they granted permission but added that "we might like to contact" the charity in question. Where does the ownership of this image reside, and who has the right to decide on where and how it is reused?

Supplementary notes on Microsoft's LRN package

Documentation

Comprehensive and up-to-date documentation is available for the LRN Toolkit, with good tutorials on how to use the packages. It is missing a basic manual to get people started; there is plenty of advanced documentation however.

The Toolkit

I have used both the editor and the viewer. Aesthetically the editor is quite standard, and un-customisable, it lacks drag and drop features, and the ability to import multiple files. The viewer on the other hand is very well designed and maximises the manifest structure, creating drop down menus, and has a pleasing well-designed appearance.



Compatibility

The manifest files created by LRN have been tested with another IMS Content Package editor called Reload. There are no apparent compatibility problems, as manifest files produced by LRN can be opened and viewed successfully by Reload and visa-versa.

Reload Vs LRN

Reloads editor is more customisable and more pleasing to the eye, its interface is also much better designed with drag and drop, and the ability to import multiple resources. However LRN's viewer is far superior to Reloads, as the Reload viewer lacks good design, and spills the structure out in to one page frame, unlike LRN's good drop down structuring.

In terms of performance LRN is much quicker at processing, as Reload is built on a JAVA engine. This JAVA engine also can cause incompatibility cross machine despite its inbuilt engine. The Reload software will not run on my machine (see separate report).

Reload not working on my machine was part of a wider problem, and a new version of the software was released, this was fortunate as the Reload software has a superb facility for adding meta-data, whereas Microsoft's LRN package has no facility for adding Meta-Data. For this project we need to add UK LOM specification Meta-Data; for this I needed to use Reload.

In conclusion there is a lot the two software packages could learn from each other in order to deliver a better package, however in terms of making a compatible IMS Content Package they seem to have succeeded.

Appendix 3

Materials Developer Report 2

Motor Vehicle Learning Unit

5-03 Project Report (Motor Vehicle)

Implementation

The implementation of these chapters has been straightforward with only a few minor problems causing delays.

Images

The images I were given were in bitmap format which needed converting into GIF format for delivery, as well as replacing the image text with 'web safe' text. Occasionally the replacement of picture text was fiddly but I managed to get it all done.

The images had to be resized to fit onto the screen to be included with the text. Finding the most appropriate size was simply case of making an educated guess at the size, saving the re-sized image and inserting into the web page to see if it looked good, if not then I had to modify the size. As not all the images were the same size before editing each image needed experimenting on with re-sizing.

Delivery Design

I had to design the pages for delivery at a resolution of 800 x 600. As I don't have local admin rights on my computer at the moment, the default resolution of 1024 x 768 loads up when windows restarts or boots up. I designed 20 pages one day and only realised at the end of the day I had been in the default resolution all day so I had to go back over my work the next morning and edit the pages to allow an 800 x 600 view.

Designing for 800 x 600 cuts down on the page space you can use for images and text and so if you have a lot of text you cant break up over several pages the layout looks cramped.

Web Content inclusion

As well as using the images scanned for these chapters I have searched on the Internet for suitable images to include. I was unfortunately only able to find one image that added to the usefulness of the size, as some of the hits I found displayed poorly named pictures that had nothing to do with engines or even anything remotely similar!

People have uploaded poor quality images of their car engines without labels or any helpful content.

Chapters 4 & 24-26 Video

I was given a CD from the CDX[®] company to look through, even though it is Australian in look and narration it contained some very detailed and helpful video files that I was able to adapt and fit into the authored chapter content as a sideline resource for students to look at in conjunction with the text and images.

I looked through each clip that was originally named in number format and I renamed them to what I thought was an appropriate title to describe the clip.

After viewing the clips I was able to decide where the appropriate clips could go in the chapter content. There was a clip that I thought would be better in 2 parts so I asked John Lees if he could have a go at splitting the file, due to copyright we have to wait to hear back from the company before we carry out that task.

I searched the Internet for a small image of a TV that I could insert into the finished web pages; that the students could click on to open the video in a new window so that I would not have to modify the already uploaded file structure and numbering. I created a separate HTML page for each video with the size of the image pre-set. On my PC the default player of MPG videos was Real One Player, which would play the audio of the MPG file but not the actual image. I set the default player to Windows[®] Media Player and tried again to view the clip through a web page and it worked fine so I went into one of the college class rooms to see what the default player there was. If the default player was set to Real One Player then I would have had a problem but fortunately the computers were set to Windows[®] Media Player.

I copied the files to the Learnwise directory using admin rights to add to all ready existing topics and so I didn't need to delete the topic and start again. When I tested the successful copy of the files by viewing the material through Learnwise the speed of the clips to load was very quick.

Testing of Motor Vehicle Resources

Date – Monday 13th October 2003 (*final year Engineering students*)

Summary

The feeling from the students that tested the resources was positive, they felt that the images were useful, the students that could see the video's liked them even though the computers were not equipped with sound cards.

Overview

The testing of the materials on the students was very straightforward once they were logged into Learn Wise; they were all I.T literate and didn't have any I.T difficulties.

The computers they were using varied between each student, some had Windows Media Player as their default player and the videos worked fine. Other computers had QuickTime as their default player and it was very temperamental, some videos would play and others wouldn't and some that played originally then would not play again. This error is down to the settings on the individual computers and not the material or its delivery system.

Observation of the students noted that they spent more time on pages containing pictures than on pages of just text. I also noticed they looked at the content of the chapter and in some cases jumped straight to the questions and got them correct. I also noticed that some pages even though they were authored at 800x600 still had significant scrolling both vertically and horizontally. This is caused by the extra screen space Learnwise takes up.

Points highlighted

- Some videos wouldn't load (QuickTime issues)
- The next & previous buttons used to navigate need to be more prominent
- Time limit on questions was too short.
- Not enough questions to cover all the topic subject
- Hot potato quiz's too word sensitive
- Images and videos helpful

Modifications made after initial testing

Following the feedback I have made all the necessary changes that I could. Some areas that were highlighted such as videos not loading and the next and previous buttons visibility are not changeable by me. The program used to display the video is set on each individual PC by the technicians and is an unforeseeable problem. The size and location of the navigation buttons is part of the Learnwise software and not controllable by the Admins or the tutors. Later versions of Learnwise are said to address this issue.

I have modified the pages with significant scrolling needed by splitting the content into more rows.

Date – Friday 17th October 2003 (*first year Engineering students*)

Summary

Overall the 1st year students found the material easy to use and thought that it had potential and that others would benefit.

Problem of some video player differences from machine to machine and no sound were still present.

Overview

All the students were I.T literate, which helped us, get the testing of to a quick start. I noticed that they hardly spoke to each other whilst going through the topic; they actually read all the pages through instead of skipping whole pages like the final year students did.

As with the previous group the player used to view the videos varied and as their feedback forms showed this annoyed them. Those with videos wanted to hear them, which was to be expected. The students liked the layout and delivery method of the material, and one actually said they preferred that to sitting in a classroom, which is probably, the general feeling of most, it just goes unsaid.

The hot potato designed quizzes didn't go down too well because the answers need to be too specific. After a while of trying to get the right answer and number of students just simply used the hint method for every question and as it was not part of their course assessment they were happy to receive a score of 0% for each section as long as they got the correct answer in the end.

The time taken to complete the testing was over 50% longer than the final years (the final years did skip entire pages but covered all 4 chapters where as the 1st years just read chapter 25)

Points highlighted

- Video loading error
- No Sound equipment
- Very little I.T literacy needed
- Answers needed to quiz questions were too specific and not the same terminology they have been taught. (E.g. if the answer was **dirt** they inputted **contamination** and the quiz counted that as an incorrect answer).
- Students want multiple-choice questions.

Modifications that could be made

It is worth considering either trying to make the answers to the 'fill in the blanks' more in line with the students vocabulary, or using Learnwise's own fill in the blank quiz, latter having the disadvantage of no navigation between questions, so they can't go back and forth through the questions, if they change pages all entered data is lost. Further study maybe required.

Summary

The group found the material very easy to use, and were able to watch the videos through the tutor computer hooked up to a video projector.

Very positive feedback all round. The general comments indicating that the students felt that others who were not as knowledgeable as them would benefit from the material.

Overview

The students that participated in the testing were day-release engineering students. This means that they have a job in the engineering trade and come to college once a week, the course takes longer to complete but they end up with the same qualification as full time students.

I had checked the machines we wanted to use a few hours beforehand and discovered that although they had sound capacity, there was no software set-up to play the videos. I spoke to the technicians and asked them to get me a few machines working, however when the testing time around I couldn't find any computers that had been 'fixed'. This caused me great concern as it seemed another group would miss out on seeing (and vetting) the videos that were available. The room contained a tutor PC with speakers, which also fortunately had Windows Media Player. I logged in as myself and was able to show the videos to the whole class.

The time taken to complete the chapters was about 40 minutes, which is quicker than the first year students but not as quick as the final years.

Points highlighted

- Videos were helpful.
- Good content.
- After selecting a chapter, the sub-categories seemed cluttered.
- Helped find areas of self-improvement.
- High level of computer literacy is not needed.
- More multi-choice questions.
- Content useful to other less knowledgeable students.

Modifications that could be made

Students have commented on several occasions that they would like more multiple choice questions, although this stops the wording error the fill in the blanks has, it does reduce the amount of knowledge the students seem to need as they can 'guess' the answers which is not the desired outcome of the material.

24 Mandatory Meta Data fields

General 'Learning Objects' Information

1. **Identifier** - IMS Global Learning Consortium approach

Recommendation is that the IETF Uniform Resource Name (URN) is proposed as a candidate for the IMS Unique Identifier scheme.

Uniform Resource Names (URNs) are intended to serve as persistent, location-independent, resource identifiers and are designed to make it easy to map other namespaces (which share the properties of URNs) into URN-space.

2. **Catalog**

Recommended that if the originating organisation has a cataloguing system in place then it should be used; otherwise use the notation of the repository the learning object resides in. Publishers are advised to register with DOI.

3. **Entry** - IMS Global Learning Consortium approach

Part of the URN proposal. The URN syntax is: URN:<nid>:<nss> where <nid> is the *Namespace Identifier* and <nss> is the *Namespace Specific String*. A URN NID is used to ensure global uniqueness of URNs.

4. **Title (Max. 1000 Char.)**

Transcribe the title from original document preserving the original wording, order and spelling.

5. **Language**

This element is mandatory as the UK is multi-lingual (ethnic, Welsh, Gaelic, etc.) and as we are part of European Union. The appropriate two character ISO 3639-1 country code should also be used. The default entry for this element is 'en-GB'.

6. **Description**

The description should be a concise, keyword-intensive description of the object. If the learning object has an abstract or table of contents, that information can be included here. The general description should not be confused with the educational description of the object.

History and current state of this learning object

7. Life Cycle

No guideline currently published, may still be in research stage. If the expiry date of subject is known for example you know a more definitive study of your subject will be released on a certain date, make this know.

8. Contribute

No guideline currently published. Treat as copyright and acknowledge all sources.

9. Role

For commercially sourced learning objects or those created by institutions or projects the minimum mandatory requirement is 'publisher'. For objects created by teachers or lecturers 'author' should be used to denote the person who created the object and/or 'publisher' for their institution/employer. Multiple authors may be recorded

10. Entity - <http://www.ietf.org/rfc/rfc2426.txt>

Mandatory minimum set of vCard elements are "name" and "organisation name". Use this element to provide information about the author and/or publisher of the learning object by setting 'role' to 'author' or 'publisher' as appropriate. The value must begin with the 'begin' type of V-Card.

11. Date

Date of creation or publication for the learning object. The preferred method for recording a date is the YYYY-MM-DD format. In most instances it is sufficient to record year and month, in which case use the first day of the month.

Metadata record

12. Meta-Metadata

The meta-metadata elements describe the creation of the metadata record, *not* the creation of the learning object itself.

13. Identifier

The metadata identifier is in the domain of the system in which the metadata record is created. For example a digital repository system would be responsible for populating the meta-metadata values.

14. Catalog

As previously covered, if the originating organisation has a cataloguing system in place then it should be used, otherwise use the notation of the repository the metadata record resides in.

15. Entry

If the originating organisation has a unique identification system in place then it should be used, otherwise use a GUID following IMS guidelines.

16. Contribute

No set parameters but usually people or organizations that have affected the state of this metadata instance during its life cycle (e.g., creation, validation).

17. Role

The creator of the record is mandatory as it aids validity.

18. Entity

The identification of and information about the people or organizations contributing to the metadata. The mandatory minimum set of vCard elements is "name" and "organisation name". It would be preferable for this information to be generated automatically by the system.

19. Date

The date of the contribution. The date should be generated automatically by the repository system and recorded in the YYYY-MM-DD format.

20. Metadata Schema

The name and version of the authoritative specification used to create this metadata instance. This element can refer either to a formal standard metadata scheme e.g.LOMv1.0, or an application profile of a scheme e.g. UK LOM Core.

21. Language

Language of this metadata instance. The default value for this element is "en". This value should be generated automatically by the system. If the language requires an additional country identifier ISO 3166-1:1997 should be used.

The technical requirements and characteristics of the learning object.

22. Technical

No published guidelines.

23. Format

Use MIME types only. LOM stipulates that the technical data types of all components are recorded. For example for a Flash animation in an HTML Web page, repeat this element to encode both 'text/html' and 'application/x-shockwave-flash'.

24. Location

This refers to the location of the object rather than the location of the metadata record. The value must resolve to a location where the learning object can be found e.g. a URL.

Sites Visited

http://www.imsglobal.org/implementationhandbook/imsrid_handv1p0.html

<http://www.ietf.org/rfc/rfc2426.txt>

Web Implementation through ReLoad



Once I had completed implanting the web page designs for chapters 24 – 26 the next step was to use a 'IMS Content Packaging' tool to create the hierarchical structure that the pages would follow when used in a learning environment. The tool can add Meta data to the pages that have been created when importing them into the package.

There are two programs that we currently have use of; one is Learning Resource iNterchange (LRN), which Dave Hopley is using to implement his page structures and ReLoad, which I have used.

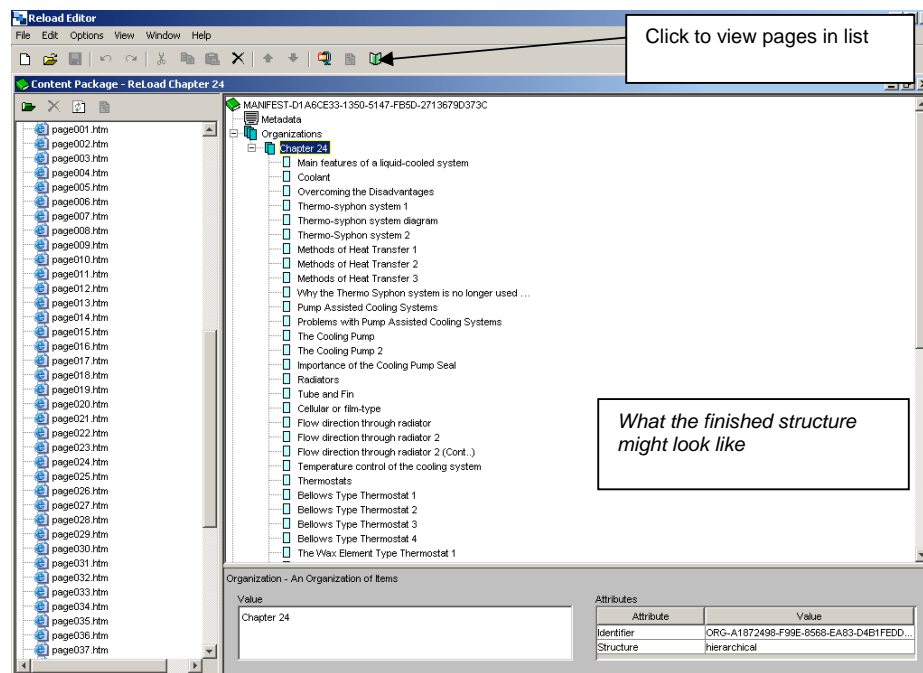
ReLoad



ReLoad is a piece of software still in the development stage, but still has the main features we want to use.

At first I installed ReLoad 1.1 the latest version but when I tried to create a new content package it would not allow it for some unknown reason. I uninstalled 1.1 and installed an earlier version of 1.0.17 and tried to carryout the same task, this time with no problems.

Once you have created a location for the ReLoad files and web pages to go, a 'manifest' file is created which will control how the pages are structured etc. Next you import the web pages you have created making sure that the 'include dependent files' is selected. All the files to be used will be listed down the left side column.



In the main window you will see a closed green book icon, you need right click on that and select 'Add Metadata' (under the profile drop down menu select 'UKCMF') then click OK/ Right click 'Organisations' and click add, then with the new organisation highlighted click in 'Value' at the bottom of the page and type a helpful name that will appear at the top of the navigation bar when finished.

When you drag a HTML file over from the left column you need to place it in the newly created 'Organisation Folder' which you have named, it is best to drag them over in the order you want

them, you can move them up or down a place by right clicking on them and selecting the direction you want.

If you click on the open green book icon, you will see that all the pages that you have dragged over will be listed in a column; if you click on them the page will load in the main window of the Internet page. Back in the ReLoad screen, if you click on a page to highlight it, you can change the name of the page via the 'Value' box at the bottom of the page. If you click the save icon the changes will be saved to the manifest file created when creating the content package. To load a previously created package, select 'Open' from the file menu and select 'Content Package' and then find the manifest file.

ReLoad Difficulties

The main problem I found with ReLoad was that, although you can highlight multiple web pages to import to use in ReLoad, when you want to drag the pages into the structure you have created you cant drag multiple files so if you have lots of pages it is a very long and tedious process.

When you view the page structure through ReLoad the viewer does the job but the navigational menu screen that you use to load each page doesn't look very interesting or professional which is a bit of a let down I thought.

ReLoad takes a noticeable amount of time to open files that are not located on the hard drive, such as the flowers network drive.

Testing LRN manifest file in ReLoad

After I had completed the implementation process it was decided to test the manifest file in another IMS Content Package. Dave who had been working on Health & Social care content had been using LRN due to ReLoad installation issues.

We expected cross application complications, which occasionally happen between applications that carryout similar tasks but in different ways, however we discovered none.

I noticed that the viewer of the LRN was much more clearer and more appealing to use. According to Dave the importing process is longer due to the fact that you cant highlight several files to import.

ReLoad authored Manifest file opened in LRN

A screen shot of a ReLoad manifest file open and displayed using LRN.

The screenshot shows a Microsoft Internet Explorer browser window displaying the LRN Viewer Course page. The browser's address bar shows the file path: W:\S-03 Transfers\Finished S-03\ReLoad Chapter 2\LRNViewer.htm. The page title is "LRN Viewer Course" and the main heading is "Fundamentals of Motor Vehicle Technology".

The page content includes a welcome message and a list of topics to be covered:

Welcome to this short learning unit on Practical Applications of the Cycle of Operations.

- ❖ You will cover:
- ❖ History and development of the 2 stroke and the 4 stroke engine
- ❖ Principles of operation of these two types of engine
- ❖ Comparison of efficiency

The page also features a JISC logo on the right side. The browser's status bar at the bottom shows "Close Outline" and "Fundamentals of Motor Vehicle Technology".

Learnwise to Olympus

Summary

A remote test server has been set up to allow us to make ourselves familiar with the new features and interface. We were to export from Learnwise and import into Olympus.

Overview

There was no problems exporting from Learnwise, the content and manifest files were zipped up and saved to my hard drive.

In Olympus I selected the import from the options and selected the zip file on my local hard drive. Olympus imports the zip file and runs all the content from the zip file.

The next part of the import procedure was to rename the chapter name Olympus had automatically created. It took me quite a while to figure out how to change the name. Even though I am an administrator I had to assign myself as a tutor to the chapter before I could edit the content etc.

Problems Encountered

- Currently the test server is remote and run by Granada, this means we can only have one category and so all the topics no matter what the subject are in the same group so you cant select them from the drop down menu by group.
- I found that exporting my materials from Learnwise causes an error. The manifest file is deleted and replaced by two other files that takes away all the navigation and makes the content inaccessible. I have had to manually delete the 2 files from the zip file and add the manifest file I have backed up on my hard drive, then when I upload the topics work. The quizzes are not transferred due to the manifest file error.

Exporting my content from Olympus doesn't really work. The first attempt just produced an error page saying that the manifest file had failed, after several retries I managed to get a zip file downloaded but when I extracted and viewed the manifest through ReLoad all of the navigation was missing and all I could view were the assessments. I believe this error is due to Learnwise 1.x.

Copyright & Permission issues

Throughout the project, extra materials not part of the textbooks being used was acquired and used to enhance the learning experience of the target students.

As part of copyright compliance, e-mails were sent out to all the webmasters of the websites material was taken from. The e-mail briefly described; what material we wanted to use (its original location on their site), the projects aims and what and how long the materials would be used for. The e-mail also relayed the tight deadline for material permissions and stated that if no replies were received automatic consent would be assumed.

Project Observation

I have noticed over the weeks that I have been involved in this project, how useful the goal of the project is. Students too feel that allowing online delivery of materials will enhance their learning experience not hinder or take away from it. The materials are not designed to remove the tutor aspect of the learning and the students seem to know this.

The area of learning delivery has a great room for expansion and the organisation that develops the strongest delivery platform will clearly make a great deal of money.

Appendix 4

The Student Questionnaire

This is the questionnaire given to students during the evaluation sessions

It is reproduced on the following two pages

Learning Online:

Some questions to answer ...

How useful did you find the topic?

Not at all useful Extremely useful

Were any parts of the topic particularly good or bad?

Did you enjoy using the materials in this module?

Not enjoyable Very enjoyable

Was the module aimed at the right level for you?

Not at all Completely

How complete is the information in the topic for your needs?

Not at all Complete

Would the content of the topic be useful and relevant to other students?

Yes No
Maybe

How familiar were you with the ideas covered before you started work on it?

I was familiar with the content of the topic I was partly familiar with some of the content I was unfamiliar with most of the content

Approximately how much time did you spend completing the module?

Did you find the style and approach of the topic useful?

Not at all Very useful

Did you find the design and presentation of the topic clear and easy to use?

Easy to use Hard to use
Not really

Would you like to make any comment on the design here?

Were the instructions built into the topic clear and easy to understand?

Always Sometimes Never

Were the tests and assessments useful?

Did the assessments really test you on the important areas of the topic?

How computer literate are you?

How computer literate do you need to be to get the most out of this way of learning?

Do you have any further comments?

