



**JISC Regional Distributed e-learning SE Region Pilot
Project:**

Final Report

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Executive Summary

Aims

- To share and disseminate good practice in the development of e-learning pedagogies and processes
- To share and re-use electronic learning resources across institutions and across sectors
- To move towards a culture of sharing and re-use of electronic resources within a regionally-based, cross-sector community of practice

Objectives

- To collect language skills tasks devised by colleagues in HE, FE, Adult Education and other sectors;
- To repurpose these tasks into Reusable Learning Objects (RLOs) using templates, guidelines and checklists devised and tested by the eLanguages Project, package using RELOAD (TELCERT) and store in the eLanguages Learning Object Repository (CLARe) prior to storage in JORUM.
- To assign appropriate contextual metadata to these tasks so that they correspond to the language and skills assessed at all levels using an appropriate framework that is recognised across sectors (e.g. the National Languages Ladder being developed by the DfES as part of the national Languages Strategy), and meets technical standards of interoperability for Learning Objects (LOM).
- To engage learners in activities to develop them as both more aware and more independent learners which are key attributes for making progress in a subject area that relies on independent learning and practice.
- To develop tasks that are aimed at supporting learners outside the classroom and at all stages of their language learning, both informal and formal.
- To compare and contrast the cascade model of hubs and satellites with one that uses existing regional networks to develop a regionally-based community of practice which would move towards a share culture of use, reuse and re-purposing of online resources, and sustain itself beyond the life of the project.

Overall approach

L₂O collected learner-centred tasks from consortium partners and applied development processes based on those used to create e-learning language modules for the UK eUniversities.

Customised templates and style guides were used to create re-usable learning objects (RLOs) which were tagged with contextual metadata agreed by the project team, and stored in a shared electronic repository (CLARe). All partners contributed learning materials and the RLOs were processed according to standards that were agreed by the consortium. This collaboration and sharing of materials and expertise is resulting in the provision of access to quality assured learning materials.

Findings

A fledgling community of practice which has a wide regional base but also has members from throughout the UK, has developed organically as a result of the dissemination activities of the project. The core community of 4 HE institutions has successfully negotiated collective outcomes which have influenced the design of the description templates (both in terms of re-usable learning objects and pedagogic assets) and the 'process model of re-use and re-purposing'. Members of the wider L₂O research community that has come about through the project have met through workshops and our flagship event, the eLearning Conference at the University of Southampton (1-2 Feb, 2007) to hear project dissemination and to share ideas and experiences of best practice in sharing and re-using learning objects in digital repositories. Their feedback has informed the development of CLARe and has influenced the direction of future and continuing research projects. They remain actively engaged in all of the projects which L₂O has given rise to.

Achievements

- A prototype repository (CLARe – Contextualised Learning Activity Repository) of quality assured re-usable learning objects (RLOs) and pedagogic assets which are tagged with contextual

- metadata, as well as catalogued with general RLLOMAP metadata, for ease of retrieval by language teachers and learners, which has been evaluated within our community of practice
- A pedagogically-led 'process model' for the re-purposing and re-use of existing teaching and learning resources
 - A regionally-based but UK-wide, cross-sector community of practice which focuses on moving towards a shared culture of use, re-use and re-purposing of online resources. This community is expanded and sustained via the L₂O research community website:
www.elanguages.ac.uk/researchcommunity
 - Creation of a bespoke application profile to incorporate contextual metadata in the educational fields of LOM metadata and create IMS compliant content packages using EU and JISC-funded tools – TELCERT, RELOAD and Schemaprof
 - Sustainability via projects which have directly arisen from the L₂O Project – Eduserv-funded MURLLO (Management, Use and Re-purposing of Language Learning Objects), JISC-funded CLAReT (CLARe Tools) and JISC/HE Academy DeL2-funded DeTCOLM (Designing Tools for the Creation of Online Learning Materials) and JISC-funded FAROES (Repositories for Sharing Resources in Distributed Social Spaces).

Conclusions

The project has identified a clear desire within the community to share, re-use and re-purpose existing materials through access to a digital repository. This desire has taken shape in the newly-arisen L₂O research community which can claim nearly 100 members UK-wide. It is evident that a community of practice is more successful when it arises organically using existing networks, rather than in a more structured, prescribed way.

Project outcomes have highlighted that the critical success factor for re-use and re-purposing is the need for the materials to be 'attractive' to the end-user (teacher and/or learner) in terms of:

- Their context (the need to add context-rich metadata)
- The presentation of metadata so that it assists in resource discovery and material selection
- Their ease of re-use or ability to be re-purposed

The project has also highlighted various technical issues which affect success in re-use and re-purposing:

- There is a need for user-friendly, quick-to-use tools to use in the editing, selection and creation of content packages and the attaching of metadata
- There is a need for pro-active support mechanisms to assist practitioners in the creation of RLOs, in order to ensure quality and accessibility
- The sharing of materials through JORUM is currently problematic due to the additional contextual metadata fields in L₂O content packages. This needs to be resolved as online materials proliferate
- Intellectual Property Rights are currently a significant barrier to sharing materials. This is expressed on an individual level in the unwitting use of copyright material by practitioners, but most seriously at institutional level, where copyright can be owned by an institution unwilling to share with potential competitors

Background

Background to the project and how it builds on previous work

'Languages are a lifelong skill – to be used in business and for pleasure, to open up avenues of communication and exploration, and to promote, encourage and instil a broader cultural understanding.'

(Languages for All: Languages for Life, A strategy for England, DFES 2002)

The *National Language Strategy* (2002) sets out to highlight the importance of a multilingual and culturally aware society to a modern economy whilst recognising that languages also have an important role to play in the development of personal skills. A recent update¹ on the implementation of the *Strategy* recognises the need to “develop strong regional and local networks in support of languages”. It is against this background of regional and national need that L₂O is building on existing experience and networks and piloting models of materials development and re-use.

Languages provide a particularly useful focus for a project which is seeking to test models of collaboration and re-usability since providers across sectors often have similar needs in terms of materials for different languages and levels. Too often the language practitioner creates materials in isolation and is unable to share them or to draw upon the experience of others, and the nature of language teaching is such that one item of authentic language-learning material could be put to multiple uses across levels. It was to overcome this issue that the HE Academy Subject Centre for Languages, Linguistics & Area Studies (LLAS) was funded to create a Materials Bank² for the HE sector. All consortium materials developed will be added to the Bank as well as to the JORUM repository. They are initially being stored and tested in the University of Southampton's repository CLARe (Contextualised Learning Activity Repository).

Additionally, language learning is both a challenge and a perfect subject for an e-learning project given the need to provide for a range of skills including speaking and the need to use a range of media including sound and video.

The University of Southampton has a strong interest in e-learning and co-hosted the HEFCE-funded eLearning Research Centre with the University of Manchester. L₂O has worked closely with the Centre and also with the Learning Societies Lab, the Distributed Learning Advisor at the University, Information Systems Services and the Learning and Teaching Enhancement Unit. The partner HE institutions also have strong links with others involved in e-learning in their institutions as can be seen from their CVs in the original bid document.

L₂O is being guided by the Comenius SE Region and the Outreach partnership team at the University of Southampton on potential collaboration with the both other regional languages networks and local fledgling Lifelong Learning Networks.

L₂O builds on the work carried out by the eLanguages Project at the University of Southampton (www.elanguages.ac.uk). Recently funded by the *UK eUniversities* to develop English for Academic Purposes modules, *eLanguages* has developed a Reusable Learning Object Repository containing over 1500 learning objects in English Language and study skills. It coordinated the work of six UK HE institutions and provided pedagogical and technological support through guidelines, checklists and templates. *eLanguages* uses a version of *RELOAD - TELCERT* for content packaging.

L₂O has worked closely with the LLAS Subject Centre and is building on the work of the Materials Bank Project which was developed with *HE Academy* funding to promote the sharing of learning materials. It has also benefited from the experience of the *Collaboration Programme in Modern Languages in Higher Education*³, a HEFCE-funded project managed by the LLAS Subject Centre. This programme has tested different models of inter-institutional collaboration and has produced a report drawing out the lessons which can be learned from such activity. The LLAS Subject Centre has completed Phase 1 of the JISC/HE Academy component of the Distributed E-learning Programme

¹ <http://www.dfes.gov.uk/languages/uploads/Languages%20Booklet.pdf>

² (see <http://www.lang.ltsn.ac.uk/resources/bankcontents.aspx>)

³ <http://www.lang.ltsn.ac.uk/collaboration.aspx>

where the focus was to develop RLOs for the Humanities and to look at the challenges and solutions of sharing learning resources. The outcomes of this project informed L₂O in the early stages, and this in turn has fed back into the JISC/HE Academy project. The LLAS Subject Centre is also a member of an HE Academy-coordinated consortium preparing materials for the AimHigher initiative and was engaged in several EU Lingua projects, *Opening the Door*⁴ and *Join the Club*⁵ which have focussed on supporting language learning in the community.

Research into metadata for learning activities from the JISC/NSF *DialogPlus* Project at the University of Southampton will be used to inform the development of appropriate metadata for L₂O.

The prototype L₂O repository (CLARe) is an adapted version of ePrints⁶, an open-source research repository developed by the School of Electronics and Computer Science at the University of Southampton.

The original need for the project and why it was seen to be important

The project aimed to produce materials which would have wide applicability to learners across the consortium institutions and would increase the pool of quality assured e-learning resources available online to each student in the region.

The student experience would be improved through flexible access to visually appealing online learning materials which would embody good pedagogic practice. The materials provided by the partners were enhanced through an iterative design and evaluation process (c.f. Laurillard and McAndrew, 2003: 81⁷) carried out using templates and guidelines provided by the L₂O coordination team. The project aimed to cascade good practice in the development and creation of online materials, as well as in their storage, discovery and delivery, so that learners, who might not otherwise have access at their institution, would benefit from leading edge developments in interactive materials design, audio and video capture and digital delivery. Since many of the RLOs developed focused on language learning skills, it was felt that they would be useful to students of all languages and would lead to skills and strategies which would provide a sound base for future language learning.

'Exchanging learning objects within the context of communities seems a potential step towards an affordable e-learning future. Because of the ... quality and cost impact upon education, it is extremely important to continue further research, development and implementation in this area.'

Koper⁸ (2004)

This project addresses two key needs; the first is to share and disseminate good practice in the development of e-learning pedagogies and processes, while the second is to share and re-use electronic learning resources across institutions and across sectors. L₂O is focusing on language providers in the university and post-16 education sector and is piloting a model of regional collaborative partnerships. The consortium consists of four HE Institutions in the South-East region, each of which acts as a local hub for dissemination and testing. These are the Universities of Portsmouth, Reading and Surrey. Southampton leads the partnership of institutions within the L₂O research community. The HE Academy Subject Centre for Languages, Linguistics and Area Studies is acting as a mentor to the project and provide dissemination and the South-East Region Comenius Centre, based at the University of Southampton provides further links with the secondary sector.

The project used a sample of existing learning multiple media resources provided by each of the core partners to create re-usable learning objects (RLOs). These were generated using processes (e.g. style guides, templates, metadata tagging) based on those developed by the University of Southampton / UK eUniversities *eLanguages* project⁹ and were then tagged, stored and made available to be retrieved from the Project's customised learning object repository, CLARe

⁴ <http://www.opendoor2languages.net/>

⁵ <http://www.jointheclub.net/index1.asp>

⁶ <http://www.eprints.org>

⁷ Laurillard, D. and McAndrew, P., 2003: 'Reusable Educational Software'. In Littlejohn A. (ed), 2003, *Reusing Online Resources*.

⁸ <http://dspace.learningnetworks.org/retrieve/280/21-35+Koper.pdf>

⁹ <http://www.elanguages.ac.uk>

(Contextualised Learning Activity Repository) by learners and teachers for independent learning, classroom-based learning or blended learning according to their particular need. In broad terms, L₂O has aimed to evaluate the feasibility of re-using learning resources across the regional community and in different educational and teaching contexts, and for different purposes.

The project has had considerable impact within the fledgling L₂O Research Community, since it is facilitating collaboration and the sharing of expertise to develop quality assured online materials. It will present a model of collaboration together with a number of scenarios which can be adopted by other subject areas, by other institutions within the region, or by partnerships of employers and institutions. It will also provide a scaleable model which will be of use across regions.

Aims and Objectives

Aims

1. to share and disseminate good practice in the development of e-learning pedagogies and processes
2. to share and re-use electronic learning resources across institutions and across sectors
3. to raise awareness of issues surrounding the sharing and re-use of electronic resources

Objectives

In terms of contributing to the aims of the regional E-learning pilot project around distributed learning, L₂O mainly addressed *Theme 2: Collaborative teaching and sharing of resources across institutions*:

- I. To collect language skills tasks devised by colleagues in HE, FE, Adult Education and other sectors;
- II. To repurpose these tasks into Reusable Learning Objects (RLOs) using templates, guidelines and checklists devised and tested by the eLanguages Project, package using TELCERT and store in the eLanguages Learning Object Repository (CLARe) prior to storage in JORUM.
- III. To compare and contrast the cascade model of hubs and satellites with one that uses existing regional networks to develop a regionally-based community of practice which would move towards a shared culture of use, reuse and re-purposing of online resources, and sustain itself beyond the life of the project.

However, it also addressed *Theme 1: Facilitating progression*:

- IV. To assign appropriate contextual metadata to these tasks so that they correspond to the language and skills assessed at all levels using an appropriate framework that is recognised across sectors (e.g. the National Languages Ladder being developed by the DfES as part of the national Languages Strategy); and meets technical standards of interoperability for Learning Objects (LOM)
- V. To engage learners in activities to develop them as both more aware and more independent learners which are key attributes for making progress in a subject area that relies on independent learning and practice.

The project is also relevant to *Theme 3: Supporting the independent lifelong learner*:

- VI. To develop tasks that are aimed at supporting learners outside the classroom and at all stages of their language learning, both informal and formal.

Methodology

Summary of Methodology

L₂O collected existing online learner-centred tasks from consortium partners and applied development processes based on those used to create e-learning language modules for the UK eUniversities.

Customised templates and style guides were used to create re-usable learning objects (RLOs) which were tagged with agreed contextual metadata and stored in a shared electronic repository. All partners contributed learning materials and the RLOs were processed according to standards that were agreed by the consortium. This collaboration and sharing of materials and expertise is resulting in the provision of access to quality assured learning materials.

Experiences of re-use and sharing online resources which were gained through the project were shared with the growing L₂O research community at two major events (The Subject Centre for Languages, Linguistics and Area Studies e-Learning Symposium in December 2006 and the eLearning Conference, February 2007, which was co-hosted by the Subject Centre for LLAS and eLanguages); and in workshops held in Portsmouth, Reading and Sheffield.

Actual methodology

1. L₂O co-ordinated the collection of resources from hubs and FE partners

L₂O prioritised three types of learning materials ranging from the generic to the more specific:

- I. *Generic “learning to learn” tasks and activities which promote lifelong learning.* These will be particularly useful for independent language learners and will include items such as assessing language level; needs analysis, action planning; monitoring progress or using the Internet for language learning;
- II. *Materials which focus on specific language skills but which are common to all languages.* These will again contribute to the development of lifelong skills and will include items such as the development of listening, reading, speaking or writing skills and vocabulary development;
- III. *Materials which are specific to a particular language and which exemplify a common need or learning point for that language.* This could include a grammar point, pronunciation tips or a guide to writing in non-Roman script.

The first two material types contribute directly to the development of skills and strategies which are key to lifelong language learning. The third type is of direct use to learners and teachers seeking materials for common areas of language learning.

2. Resources were disaggregated into pedagogical assets
3. The hubs agreed on an appropriate set of metadata which is used to describe both 'learning objects' and 'pedagogical assets'. Examples of learning resources description forms and pedagogical asset description forms can be found at www.elanguages.ac.uk/researchcommunity/projects/l2o/projdocs.html

The increasing emphasis on effective resource discovery to facilitate progression encouraged the integration of the teacher/learner's context into the metadata.

4. The hubs used authoring tools to create new learning objects based on the disaggregated existing resources. Templates were modified to simplify and to facilitate the process. This helped address accessibility issues and re-inforced to the hubs the need to create materials which comply with W3C accessibility standards.

5. A resultant pedagogically-led 'process model' was developed (see **Figure 1** and the case study by J. Watson for detailed information, Appendix D)
6. These learning objects and collections of pedagogic assets were tagged with metadata and content-packaged ready for uploading to a repository
7. A resultant technologically-led 'process model' was developed (see **Figure 2**)
8. The repository was piloted by members of the community group of teachers and learning technologists and feedback informed further development of aspects of the repository.
9. Outcomes and learning from the project were shared through conferences and workshops.

Technical design and development and standards

The technical processes and tools either used and/or developed for the project are shown in **Figure 2**.

A key area underpinning project development was to ensure that the technical framework was in place to enable outcomes to be achieved. The XML data structure of the metadata was an early focus. This formed the skeletal structure that the project metadata is wrapped in. To allow the project metadata to be fully machine readable the XML needed to be validated by an XSD schema, which was custom-created for the in-house requirement (see above). TELCERT software tools were extensively used to enable this.

As the project matured, the pedagogic metadata requirement shifted focus. These changes reflected the growing comprehension of the impact of data collection by project staff, and ways of ensuring that only relevant metadata is collected and is offered to the cataloguer/teacher in a comprehensible format.

Good practice guidelines and dialogue with industry practitioners and software/tool developers has ensured that the development project metadata complies to existing standards and frameworks e.g. Dublin Core, RLLOMAP and LOM and should be fully interoperable when the industry is mature enough.

CRT, which is a customised (by the EU-funded TELCERT project) version of RELOAD is being used to content package learning objects and pedagogic assets for uploading to the CLARe and other repositories.

The following documents/files are available for download/viewing from www.elanguages.ac.uk/researchcommunity/projects/l2o/projdocs.html:

- Graphical representation of the L₂O metadata structure including standard RLLOMAP compliant metadata and contextual (pedagogical) metadata
- An example content package XML manifest (includes standard and contextual metadata)
- An example content package including a sample LO object and related pedagogic assets and the XML manifest
- A full description of the L₂O Project metadata schema
- Screenshots of CRT and CLARe

A Use Case of a 'walk through' of the technological and pedagogical 'process models' can be found at:

www.elanguages.ac.uk/researchcommunity/projects/l2o/demonstration.html

Scalability issues were addressed early in the consideration of appropriate tools to apply metadata and to content package. They have also been addressed in the customisation of the CLARe repository.

Figure 1 – Pedagogically-led ‘Process Model’ for L₂O

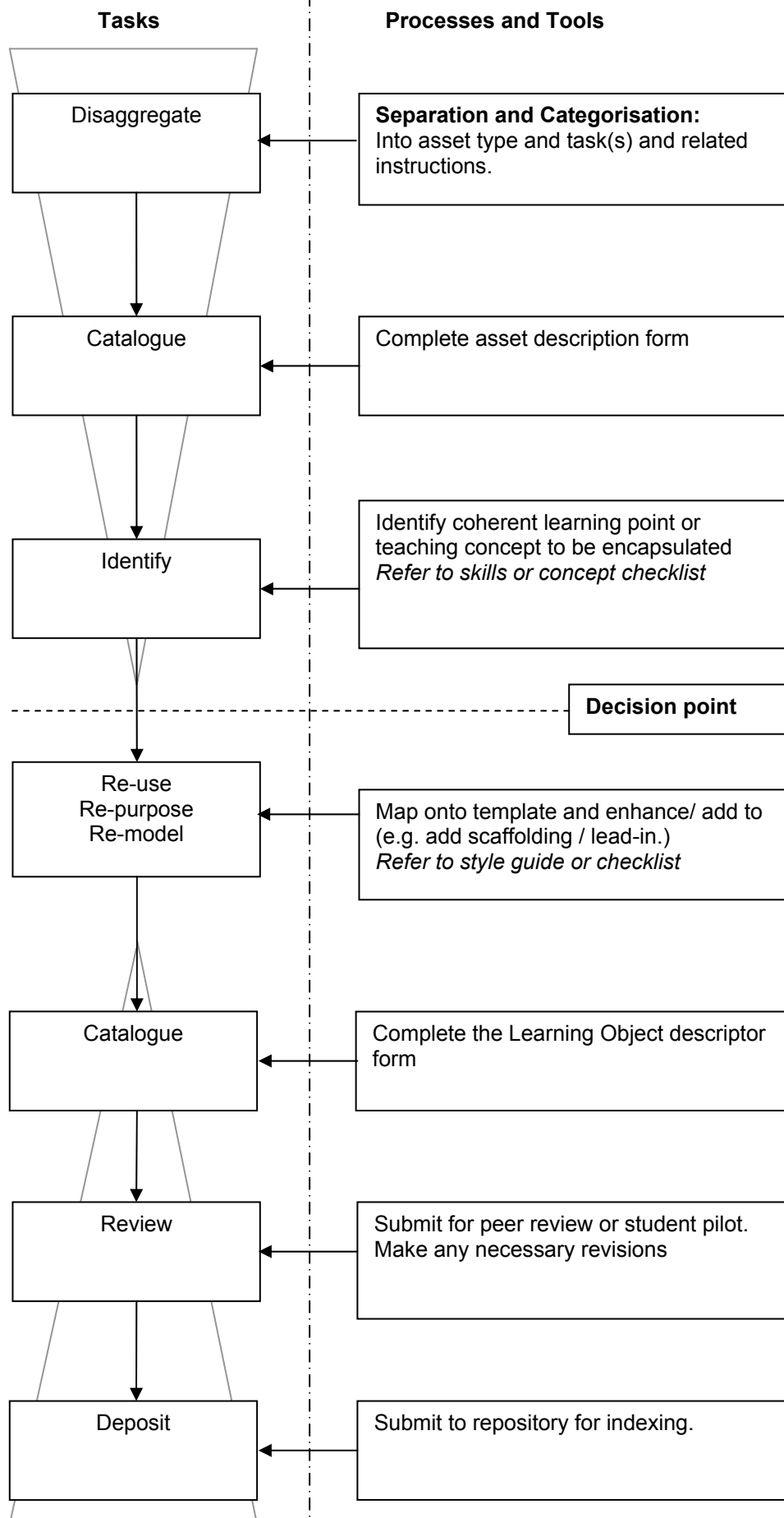
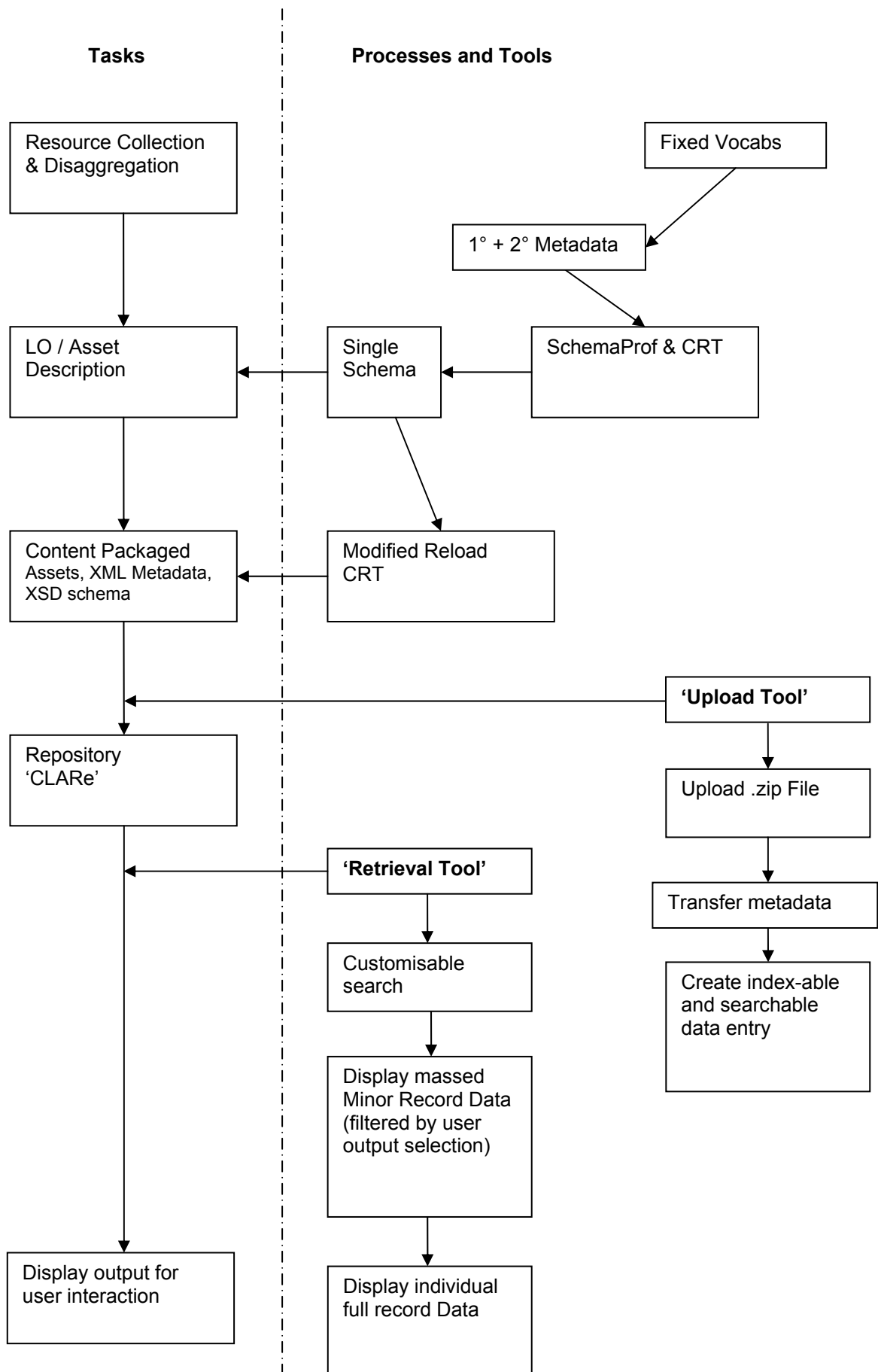


Figure 2 - Technical Processes and Tools outline for L₂O



Implementation

The Subject Centre for Languages, Linguistics and Area Studies e-Learning Symposium in December 2006, was the first opportunity for project partners to engage with their community. As part of the JISC/HE Academy DeL 1 project, a questionnaire on 'Sharing and Re-using Electronic Resources' was distributed (see Appendix B). There was a return of about 80 questionnaires and the results are still being analysed but will continue to inform this project. Delegates were also split into three focus groups which were facilitated by L₂O project partners. A summary of the group discussions can be found from:

<http://www.llas.ac.uk/events/llaseventarchiveitem.aspx?resourceid=2432>

The hubs successfully negotiated collective outcomes which have influenced the design of the metadata description templates (both in terms of re-usable learning objects and pedagogic assets) and the 'process model of re-use and re-purposing'. All four hub co-ordinators and Julie Watson from the L₂O Co-ordination team have a teaching background and their experience of teaching drove the discussion relating to the definitions of learning objects, pedagogic assets and technical assets as relating to the L₂O Project. These definitions can be found in **Appendix A**.

The most effective discussions were carried out face-to-face either as a team or in subject pairings (Southampton and Reading mostly worked with English language resources and Portsmouth and Surrey mostly worked on Spanish language resources). Although, a discussion area was set up in the VLE moodle, it was found that it was awkward to read postings as the site needed to be quite complex to map onto the different parts of the project. Subsequently, a Blog¹⁰ was set up. The blog was used for a short period of time during the initial testing phase of CLARe, for partners to comment on their impressions of the repository and the materials contained within it. It was found that contributions to the blog lapsed unless a particular topic needed to be discussed.

As the project drew to a close, the project team began a series of dissemination events, beginning with the L₂O flagship event, an eLearning Conference held in conjunction with the Subject Centre for Languages, Linguistics and Area Studies, on Feb 1-2, 2007¹¹. The first day of this conference consisted of presentations on topics related to eLearning, and the second day was devoted to workshops on the issues raised by the L₂O Project. This second day was entitled 'Finding, sharing and re-using online resources: Personalising the experience for the teacher and the learner' and featured two workshops testing the project repository and exploring the concepts of sharing and the importance of contextual metadata in resource discovery. A third workshop dealt with tools related to the MURLLO project¹², an Eduserv-funded project which has arisen directly from L₂O findings. This second day of hands-on workshops was attended by approximately 50 teachers, learning technologists and eLearning practitioners, and received overwhelmingly positive feedback. It was clear from participants' comments that they greatly appreciated the practical, hands-on focus, which was much more helpful and interesting to them than simple exposition of theory. A summary of workshop comments can be found at:

<http://www.llas.ac.uk/events/llaseventarchiveitem.aspx?resourceid=2654#report>

As a result of the success of this event, eLanguages was invited to the University of Sheffield to repeat the workshops with local attendees. This took place on 10 May, 2007, at the CILASS CETL in Sheffield. The workshops were also run at the University of Portsmouth on the 25th April, 2007, and the University of Reading, on 13th June, 2007. eLanguages is pleased to note that about 100 different individuals have now benefited from our project dissemination/testing workshops.

¹⁰ <http://www.languagelearningobjects.typepad.com/>

¹¹ <http://www.llas.ac.uk/events/llaseventarchiveitem.aspx?resourceid=2654>

¹² <http://www.elanguages.ac.uk/researchcommunity/projects/murlo.html>

Outputs and Results

Project outcomes so far have highlighted that the critical success factor for re-use and re-purposing is the need for the materials to be 'attractive' to the end-user (teacher and/or learner) in terms of:

- Their context (the need to add context-rich metadata)
- The presentation of metadata so that it assists in resource discovery and material selection
- Their ease of re-use or ability to be re-purposed

To support this, the project has developed description templates for teachers/learners/cataloguers which allow the addition of context. A pedagogically-led 'process model' has been developed (see **Figure 1**) which covers the processes involved from selection of existing resources through to resource discovery and, ultimately, support in re-use and re-purposing.

A Use Case of a 'walk through' of the technological and pedagogical 'process models' can be found at:

<http://www.elanguages.ac.uk/researchcommunity/projects/l2o/demonstration.html>

and supporting documents/files can be found at:

<http://www.elanguages.ac.uk/researchcommunity/projects/l2o/projdocs.html>

A fledgling community of practice has developed as a result of the project. The core community has successfully negotiated collective outcomes which have influenced the design of the description templates (both in terms of re-usable learning objects and pedagogical assets) and the 'process model of re-use and re-purposing.' On the back of our successful dissemination workshops, we have been able to build an L₂O research community, which comprises nearly 100 HE/FE teachers, learning technologists and other educationalists within the region and across the UK, who have stated an interest in maintaining contact with us through our research projects and taking part in future dissemination and testing. They maintain contact and updates through the recently created L₂O community website: www.elanguages.ac.uk/researchcommunity

Outcomes – Project Outcomes

<i>What did we set out to achieve?</i>	<i>What did we achieve?</i>	<i>How and why what we have achieved has differed from what we set out to achieve?</i>	<i>Challenges encountered</i>
<p>Theme 2: Collaborative teaching and sharing of resources across institutions:</p> <p>I. To collect language skills tasks devised by colleagues in HE, FE, Adult Education and other sectors</p>	<p>(i) A collection of learning materials which include generic 'learning to learn' tasks and activities, materials focusing on specific language skills but which are common to all languages and materials which are specific to a particular language.</p>	<p>The core skills of the hubs focused naturally around EAP/EFL and Spanish which encouraged the hubs to work in pairs EAP/EFL (Reading and Southampton) and Spanish (Portsmouth and Surrey) so learning materials are predominately in English for non-native speakers or Spanish</p>	<p>(i) Choosing appropriate resources – used SC LLAS RLO planner to aid process (ii) Copyright/IPR – either provenance unknown or issues around institutional consent (iii) Resources related too closely to specific text books</p>
<p>II. To repurpose these tasks into Reusable Learning Objects (RLOs) using templates, guidelines and checklists devised and tested by the eLanguages Project, package using RELOAD and store in eLanguages Learning Object Repository prior to storage in JORUM</p>	<p>(i) A repository of quality assured RLOs and pedagogic assets which have been content-packaged using RELOAD (TELCERT) (ii) a pedagogically-led 'process model' for the re-purposing and re-use of existing teaching and learning resources</p>	<p>The collected learning materials have been re-purposed using a simpler method than was originally envisaged which has led to a new 'process model' of re-purposing and re-use of existing teaching and learning resources and a simpler set of templates and guidelines with a strong focus on accessibility issues</p>	<p>(i) Initially underestimated the steep learning curve involved with engaging with the 'process model'. (ii) The importance of laying down the groundwork was magnified and early attempts at supporting a community of practice using technology suffered from usability problems (iii) Compliance with accessibility rules</p>
<p>III. To compare and contrast the cascade model of hubs and satellites with one that uses existing regional networks to develop a regionally-based community of practice which would move towards a shared culture of use, reuse and re-purposing of online resources and sustain itself beyond the life of the project.</p>	<p>(i) A UK-wide community of well over 75 language teachers, learning technologists and other educationalists, who have taken part in dissemination workshops and have expressed a wish to remain engaged with project activities</p>	<p>We set out to achieve a structured community of 4 regional HE institutions, each of which would act as a hub and liaise with 2 colleges. However, our community - of many more individuals and organisations - came together in an organic way through our dissemination events and using existing networks.</p>	<p>(i) A structured scenario did not fit in with schedules and ways of operation in FE/Adult Education institutions, and this meant that they could not engage at times when the project required it (ii) A structured approach relied heavily on personal relationships and frequent contact between hub coordinator and college champion</p>
<p>Theme 1: Facilitating progression</p> <p>III. To assign</p>	<p>(i) Tagging of RLOs and pedagogical assets with general</p>	<p>The increasing emphasis on effective resource discovery to</p>	<p>(i) Negotiating collective task description templates</p>

appropriate metadata to these tasks so that they correspond to the language and skills assessed at all levels using an appropriate framework that is recognised across sectors (e.g. the National Languages Ladder being developed by the DfES as part of the national Languages Strategy)	RLLOMAP metadata which includes information about language level using the appropriate and relevant frameworks eg NLL/IELTS etc (ii) A bespoke application profile has been derived to incorporate contextual metadata and has been added to the content package using RELOAD etc	facilitate progression has encouraged the integration of the teacher/learner's context into the metadata in order to enhance the information relating to different levels of the national frameworks and put it in a language appropriate to the end-user	due to cross-sector and institutional cultural differences (ii) Technical difficulties due to newness of technology involved in integrating SchemaProf with RELOAD in order to create an application profile which would store the contextual metadata
IV. To engage learners in activities to develop them as both more aware and more independent learners which are key attributes for making progress in a subject area that relies on independent learning and practice	(i) A simplified template has been created to foster good practice in the design of interactive RLOs which encourage active, experiential learning. (ii) Integration of study skills into RLOs	Early re-purposing by the hubs relied too heavily on simply adding activities to pedagogic assets so the modified template not only encourages this, but also the addition of pedagogical scaffolding/appropriate feedback and the creation of LOs designed to be re-used	(i) Understanding the implications and approach need to create materials from the start with re-use in mind
Theme 3: Supporting the independent lifelong learner V. To develop tasks that are aimed at supporting learners outside the classroom and at all stages of their language learning, both informal and formal	(i) RLOs are supplied with hints, tips, feedback etc to support independent learning outside the classroom (ii) Video and audios are all supplied with transcripts (iii) RLOs may be delivered via the web or a range of VLEs	As well as supporting the independent lifelong learner outside the classroom, independent learning is often carried out in language labs and available resources should be in a format which assist this	(i) The need to disaggregate resources so they can be used more flexibly as either individual assets that can be easily re-used or as collections of assets that can be integrated into systems such as Melissi in a language lab

Summary of Project outcomes

- A prototype repository (CLARe – Contextualised Learning Activity Repository) of quality assured re-usable learning objects (RLOs) and pedagogic assets which are tagged with contextual metadata, as well as catalogued with general RLLOMAP metadata, for ease of retrieval by language teachers and learners, which has been piloted within our community of practice
- A pedagogically-led 'process model' of re-purposing and re-use of existing teaching and learning resources
- A regionally-based but UK-wide, cross-sector community of practice which focuses on moving towards a shared culture of use, re-use and re-purposing of online resources. This community is expanded and sustained via the L₂O research community website: www.elanguages.ac.uk/researchcommunity
- Creation of a bespoke application profile to incorporate contextual metadata in the educational fields of LOM metadata and create IMS compliant content packages using EU and JISC-funded tools – TELCERT, RELOAD and Schemaprof.
- Sustainability via projects which have directly arisen from the L₂O Project – Eduserv-funded MURLLO, JISC-funded CLAReT (CLARe Tools) and FAEROES (Repositories for Sharing

Resources in Distributed Social Spaces), and JISC/HE Academy Del2-funded DeTCOLM
(Designing Tools for the Creation of Online Learning Material)

Conclusions

The project has identified a clear desire within the community to share, re-use and re-purpose existing materials through access to a digital repository. This desire has taken shape in the newly-arisen L₂O research community which can claim over 75 members UK-wide. It is evident that a community of practice is more successful when it arises organically using existing networks, rather than in a more structured, proscribed way.

Project outcomes so far have highlighted that the critical success factor for re-use and re-purposing is the need for the materials to be 'attractive' to the end-user (teacher and/or learner) in terms of:

- Their context (the need to add context-rich metadata)
- The presentation of metadata so that it assists in resource discovery and material selection
- Their ease of re-use or ability to be re-purposed

Implications

1. Eduserv Foundation MURLLO (Management, Use and Re-purposing of Language Learning Objects) Project

The University of Southampton was funded by Eduserv to begin the MURLLO Project in April 2006, again led by eLanguages, Modern Languages who were joined by the Learning Societies Lab, the Intelligence, Agents and Multimedia Research Group, the Library and the HE Academy Subject Centre for Languages, Linguistics & Area Studies.

The MURLLO project addresses some key issues that have been identified by the L₂O project as critical success factors for effectively managing, using and re-purposing re-usable learning objects (RLOs). These involve:

- The need to add context-rich metadata to assist teachers and learners in resource discovery and material selection
- The need for improving on and streamlining the processes involved in the selection, export and licensing of resources
- The ease by which resources can be re-used or their ability to be re-purposed

MURLLO will initially look at different ways of collecting context-rich metadata; and test models for Intellectual Property Rights management of online resources, and for identifying suitable business models for licensing content. An analysis of the results will inform the development and testing of 'open source' tools.

These tools aim to enable users to easily add their own learning materials, along with metadata and IPR information to a digital repository. Innovative development by our programmers will allow users to use a Wiki-type tool for editing online learning material for their own purposes and then storing the revised content for others to view or use. The project also plans the creation of an 'online shopping trolley'-type tool to simplify the selection of learning activities from the repository, and the export of collections of such activities to a user's own computer.

2. JISC/HE Academy Del 1 and DeL 2 (DeTCOLM) Projects

A prime focus of the Subject Centre's Del 1 project has been the exploration of barriers surrounding the potential re-use of online learning material.

An emergent critical success factor for encouraging individual academics to produce accessible, effective online activities with potential for re-use is (and this has also been highlighted in the L₂O Project) in the provision of appropriate support mechanisms.

These projects have all identified a clear need for implementing sustainable support processes, which not only make available design templates and pedagogical and technological guidance, but also provide pro-active assistance for academics wishing to either re-use existing online teaching and learning materials or develop new materials with an eye to future re-use.

The ICS Subject Centre is also proposing a project on the development of RLOs. From their bid it is clear that their community tend to already have the technical skills required and would not need as much technical advice and support as other SC communities such as LLAS. However, there are many other aspects of both projects which will be relevant to each other and, if funded, LLAS, ICS and the RLO-CETL have already agreed to meet at the earliest opportunity in order to exploit the maximum benefit from these projects across the community.

JISC/HEA DeL II Project Description

As a key aim of the project will be to develop the means to facilitate the production of learning objects by teaching practitioners, this project will focus on developing and delivering training in the development of learning objects to both SC staff (in order to act as enablers with an emphasis on promoting instructional design) and to practitioners in the first instance.

All materials produced, including the training pack, will be added to the Subject Centre Materials Bank (a repository for shared teaching materials). The project will aim to add materials to JORUM using Reload for adding metadata and content packaging and to exploit existing tools/expertise for the production of learning objects and will include the creation of a bespoke tool for creating learning objects (LOC tool) which builds upon the simplified templates of the L₂O Project and the knowledge and experience of eLanguages team members.

A development fund for the creation of learning objects (through mini-projects) in LLAS subject areas will be provided. [Other Subject Centres who join the project will be expected to provide their own development funds, e.g. in the form of mini-projects or funding academic buy-out.]

Specifically this will involve:

The development of an online support pack for academics wishing to develop learning activities (learning objects)

Training of at least one member of Subject Centre staff (and providing them with a support pack) to provide ongoing pro-active support to practitioners in the use of this package

The development (through mini-projects) of learning objects in collaboration with the project team (pedagogic and technical). Subject areas favoured will be: Less widely used less taught languages (LWULT), literature in the foreign language, area studies (politics, history etc. of a region of the world) Face-to-face training sessions to support the mini-projects that will cover both pedagogic and technical issues. These workshops will be facilitated by Julie Watson of eLanguages, at the University of Southampton who has significant experience in training and supporting academics, in both UK HEIs and overseas, in the development of RLOs/GLOs.

Provision of online support, FAQs and fostering of an online community of practice

Subject Centres who choose to participate in this project will benefit from all of the above. The focus will be on providing specialised knowledge of appropriate instructional design techniques with which to support practitioners in any specialist subject area to produce effective online learning materials in the form of RLOs/LOs. The emphasis, from the start, will be on testing a model for sustainability.

3. The JISC-funded CLAReT (CLARe Tools) Project¹³

The CLAReT project began in October 2006, with funding from JISC to eLanguages and the Learning Societies Lab at the University of Southampton in another joint venture, to explore how we can use teachers' knowledge and experience to create innovative and easy to use interfaces for learning technology.

Potential benefits to the teaching community are:

- Customising and sharing teaching resources
- Customising how searches are delivered
- Using semantic technologies to enable easier resource discovery
- Using social networks to share ideas and good practice

¹³ <http://www.elanguages.ac.uk/researchcommunity/projects/claret.html>

So far, the project has explored the domains of both languages and teaching and learning, to develop a domain ontology and concept maps. These have been created from the shared understanding of the members within our research community.

This map will form the basis of a new interface to CLARe, the prototype Learning Object Repository based on EPrints and developed for the L₂O Project. CLAReT will integrate social networking services with the repository to allow both browsing for resources using terms provided by the creator, but also to add personal terms to be shared with other teachers. The L₂O Research Community will be involved in evaluating the CLAReT tools throughout the project.

4. Community of Practice based around sharing, re-use and re-purposing

The L₂O research community that has come about due to a desire to foster a regionally-based cross-sector community of practice which focuses on moving towards a shared culture of use, re-use and re-purposing of online resources, is sustained by the project website:

www.elanguages.ac.uk/researchcommunity

The community remains engaged and keen to participate in future research projects which will build upon and develop further the concepts, processes and tools identified by L₂O.

Appendix A – L₂O Project Terminology

Learning Object:

The L₂O project defines a learning object as an interactive resource which allows a learner to learn and/or practise a learning point connected with a skill, or a subject area. The project believes that an activity with a pedagogic aim needs to be integrated with information regarding the learning point for the item in question to be classified as a learning object.

It is essential that the learning object should 'stand-alone'. In other words it must be completely deliverable as an independent item and not rely on a host server to provide links to required content. This is to ensure the learning object can be packaged in its entirety and deposited into a learning object repository.

Pedagogic Asset:

A pedagogic asset is defined as a resource that has its own value for pedagogic purposes. The item will have an implicit value for learning (already recognised). Any reduction in size of the asset would render it of no pedagogic value.

The asset can be a collection of very small resources (for example a collection of 3 x 1 minute lecture introductions). The individual resources do not have pedagogic value because they do not have enough content or sufficient length to be of use as a single pedagogic asset. But collectively they might, for example, share a context as examples of lecture introductions.

A further example of a collection appropriately assigned as a single asset is where a complete lecture has been recorded, but for ease of technical presentation and delivery the audio has been stored as a number of individual audio files that can be played sequentially to recreate the full lecture. Each audio file has no individual pedagogic value, but as a collection they provide the full coherence of the original lecture) and therefore form the complete asset.

When considering assets with alternative versions (e.g. a video file and the transcript of the video content) each element should be regarded as a pedagogic asset in its own right. A version of a pedagogic asset can be categorised and linked through the metadata and the database to other related element(s). For example a transcript of a lecture would be classified as a free-standing asset rather than categorised as an asset together with the original audio file of the lecture. (i.e. not as a collection of two items). Each element has its own pedagogic value, and as such it should be possible to retrieve it individually. For this reason it requires describing as an individual asset.

There is a final caveat to both rules as outlined above. If the pedagogic asset in question is a multimedia resource of very short length – e.g. a 30 second video file with associated transcript and translation, it is reasonable to catalogue all three versions of the material together as a single collection resource. This is because individually each resource is so tied to the learning point in question it can be deemed that there is little possibility of individual reuse.

This indicates that there is no 'hard and fast rule' to establish the perfect size of assets / collections. The cataloguer must decide appropriately during the cataloguing process.

It is also important to note that the project does not define any task as an individual resource. This is because without the tasks there is no learning object, and as such tasks make up the defining feature of a learning object and should not be treated as separate entities.

Technical Assets:

A technical asset is any asset that is required for a learning object to function correctly. At a simple level this could consist of images used only to offer some visual styling to the learning object. A technical asset could also be a Flash video player included in the learning object, or a media player used to replay any associated audio content.

These files have no pedagogic value but are required in order for the learning object to be used correctly.

Re-factoring:

As the project uses material from partner institutions it was often required to rework the content in some way. To appreciate the internal semantics of what kind of work required undertaking, the following definitions were coined to allow accurate description of various actions:

Reuse:

The project defines this as the converting of existing learning material (e.g. paper based) into a learning object for online delivery.

Repurposing:

The project defines this as the taking of an existing Learning Object or generic template and producing a different version of the same material.

Remodelling:

The project defines this as the taking of existing online learning material and modifying aspects of it to suit a particular purpose or learning environment (e.g. to constrain the size of some material).

Appendix B – HE Academy Subject Centre for Languages, Linguistics e-learning Survey: Sharing and Re-using Electronic Resources

This short survey concerns e-learning resources you use in your teaching. These may include resources that you have printed out from electronic sources as well as online learning materials. Please answer all questions.

1. Please supply your details (these will be kept confidential)

Name:		Role:	
Institution:		Email:	
Subjects taught:		Level(s):	

2. Do you produce materials that could be shared electronically (e.g. via the web)? Please give an example

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3. Do you use other people's teaching materials that are available electronically? If yes please indicate which types of resource are most useful to you. 1 = most useful - 5 = least useful

Resource	1	2	3	4	5
Courses					
Exercises/Quizzes					
Question banks					
Corpora					
Images/Sounds/Animations					
Explanations (theory, concepts, processes)					
Case studies					
Diagnostic tests					
Reflective/Discussion Questions or Activities					
Articles and other supplementary resources					
Role-plays/scenarios					
Problems					
Simulations					
Research projects					

4. What factors might you have to consider in order for electronic materials to be made more shareable?

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5. What factors inhibit the sharing of electronic materials?

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6. Which of the following qualities of a learning resource do you consider most important as far as shareability is concerned?

1 = high priority, 5 = low priority

	1	2	3	4	5
Size (how much material)					
Interactivity (the learner interacts with the resource)					
Duration (how long will a learner need to spend)					
Self-contained (nothing needs to be added)					
Inclusion of learning activities (e.g. tasks, exercises, reflections)					
Adaptability (how reusable in different contexts)					
Format (is it platform dependent/independent)					
Contains explicit learning objectives					
Can be built upon (can contribute to a larger resource)					
Is clearly described (prior learning is needed, level of student)					
Retrievability (has been catalogued/tagged for retrieval from a database)					
Offers feedback to learners (probably more than stock, right/wrong)					
Contains references to other resources (e.g. bibliographies, weblinks)					
Independent (not reliant on other resources)					
Includes assessment					

7. Which support would be most helpful to you in developing shareable e-learning resources?

1 = most useful - 5 = least useful

	1	2	3	4	5
A prescribed structure (e.g. introduction, content, activity, feedback)					
A learning technologist					
More commitment to e-learning from senior managers/colleagues					
Collaborating with others (developing resources as part of a team)					
Funding (for teaching relief)					
Research data on the effectiveness of e-learning					
Copyright advice					
Training in e-learning development					
A designated design (e.g. a common format, style, layout etc.)					
Central storage area (i.e. repository)					

8. Any other comments.

Many thanks for your help

Please return this form to: a.m.dickens@soton.ac.uk

Appendix C – Glossary of Acronyms and Technical Terms

JISC	Joint Information Systems Committee. JISC is an independent advisory body that works with further and higher education by providing strategic guidance, advice and opportunities use to use ICT to support learning, teaching, research and administration.
Application Profile	a community adopted adaptation of a single metadata standard
Asset	An asset is any single level resource reduced to its smallest valid size. It can have either Pedagogical or Technical value.
CLARe	Contextualised Learning Activity Repository. A University of Southampton 'closed' Repository. Used by the project to store and catalogue online resources.
CRT	Content Re-Engineering Tool. This is a TELCERT customisation of the RELOAD systems that be used to content package resources with in-house metadata requirements.
Disaggregate Domain Profile Learning Object	the act of taking a resource, and breaking it down to its smallest valid component parts
Domain Profile Learning Object	community adopted base specifications and standards for organising metadata
LOM	See project terminology UKLOMCORE (often abbreviated as LOM) is a standardised metadata format. Learning Object Metadata has been adopted by many UK eLearning projects to assist in the cataloguing of resources.
Metadata	Metadata essentially means 'data about data'. It can be either embedded or associated with files to allow extra information about the file to be passed to the reader.
RLLOMAP	This is the RDN/LTSN LOM application profile. This is becoming a widely adopted profile for the LOM metadata
Schema	This is the defining structure of a meta data standard. Written in XML as an XSD file, it is used to valid an instance of XML for well-formed-ness and validity
TELCERT	TELCERT is a research and innovation project under the European Union's 6th Framework programme. Their aim is to help transform the adoption of standards-based e-Learning products and services.
UKLOMCORE	See LOM
XML	Stands for Extensible Markup Language, it is a language used (amongst other things) to hold metadata.

Appendix D – L₂O Case Studies

Applying Lessons Learnt from the L₂O Project in the creation of an institutional repository of LOs and pedagogic assets

Miguel Arrebola

Senior Lecturer in Spanish Language, University of Portsmouth

Background

L₂O: *Sharing Language Learning Objects*¹⁴ is a JISC-funded Distributed e-learning Pilot Project. Led by the University of Southampton, a consortium involving 4 regional partner hubs, including the University of Portsmouth, have generated online re-usable learning objects (RLOs) from existing learning materials. These have then been tagged, stored and can be retrieved from the Project's customised learning object repository, CLARe¹⁵, (Contextualised Learning Activity Repository) by learners and teachers for independent learning, classroom-based learning or blended learning according to particular need. In broad terms, L₂O has aimed to evaluate the feasibility of re-using learning resources across the regional community and in different educational and teaching contexts, and for different purposes.

This case study will describe how involvement with the processes and concepts explored by the L₂O Project has influenced practice and philosophy in the School of Languages and Area Studies at the University of Portsmouth.

Institutional Context

The School of Languages and Area Studies (SLAS) at the University of Portsmouth¹⁶ is one of the largest departments of its kind in the country. It offers some 20 degree programmes to more than 900 undergraduate students. These include French, German, Italian, Spanish, EFL and associated area studies units. In addition, it has a strong IWLP programme, which provides MFL tuition in the all major European languages, Arabic, Japanese, Mandarin and British Sign Language to over 1,000 specialist and non-specialist students across the University.

Over the last three years, the School has invested in excess of £300,000 in state-of-the art multimedia digital classrooms and software. It has also upgraded its Learning Resources Centre, computer suites, teaching classrooms and resources development workshop. WebCT-delivered online resources support most MFL courses within SLAS.

Intended Outcomes from participation in L₂O

These were some of the intended outcomes of Portsmouth's involvement in the project:

- To absorb lessons learnt in the creation and testing of the L₂O repository and then explore ways in which this experience could inform the design and piloting of a LOs and assets repository for SLAS.
- To adapt existing in-house materials to the Pedagogic Asset and Learning Object formats developed by the L₂O project team.
- To disseminate the development within the Faculty of Humanities in order to foster departmental participation across different languages, levels and disciplines.
- To explore initial student attitudes towards the pilot repository with an eye towards future development.

Challenges within Established Practice

1. WebCT-delivered online materials were an integral part of the Spanish *ab initio* course, and included a range of self-correcting and open-ended tasks to reinforce content covered in class. Available resources, for example videos, were aimed to cover a specific skill or areas of knowledge invariably attached to a particular level. The way in which students are centrally attached to resources on WebCT implied that only those registered for the *ab initio* Spanish course had access to the materials related to the course, adding accessibility constraints and preventing students doing

¹⁴ <http://www.elanguages.ac.uk/researchcommunity/projects/l2o.html>

¹⁵ CLARe Contextualised Learning Activity Repository: <http://clare.eprints.org/information.html>

¹⁶ <http://www.port.ac.uk/departments/academic/slas/>

Spanish at other levels from using the materials for revision purposes (for example, higher level students).

2. Online resources for Spanish are usually designed having in mind a particular level and they are, in most cases, an integral part of the course closely linked to the content covered in formal teaching sessions. Little attention had been paid to exploring ways in which existing resources could be repurposed and reused for different levels of instruction within the Spanish programme or across other Modern Foreign Languages and/or related disciplines.

3. The restrictive way in which materials were designed and made available to students left very little room for the sharing, repurposing or re-using of otherwise copyright free, high quality, and labour intensive, in-house produced resources. For example, a video filmed in a hotel in Santiago de Chile, including an interview with a receptionist describing her duties, booking a room by telephone and a tour of the hotel facilities could be exploited, as it originally was, for listening comprehension, vocabulary expansion and cultural awareness for *ab initio* students. However, by adopting a learning object approach to materials design, the same asset (i.e. resource) could also be used for transcription at advanced level, subtitling at postgraduate level, some areas of linguistics such as discourse analysis, regional and national varieties of Spanish, conversational rules and politeness or intercultural awareness in the case of, for example, hospitality management students. In the same way, more generic, less culturally-bound resources originally developed for Spanish could, in some cases, be re-used by other MFL language teams within the School and/or by other institutions across the different educational sectors.

Applying lessons learnt

The L₂O Project team defines a learning object as ‘a stand-alone, interactive resource which allows a learner to learn and/or practice a learning point connected with a skill, or a subject area.’¹⁷ Although some of the existing resources on WebCT could easily be adapted to the learning object format, thus allowing them to become self-standing units of learning, some others had to be re-designed according to the L₂O model. This implied a) avoiding the inclusion of open-ended tasks in those LOs included in the pilot repository, and b) exploring the LO’s potential for reusability, for example, with a variety of students at different levels and within different subject areas. It also involved the distinction of ‘pedagogical assets’ from the LO itself. The Project team’s definition of an asset is ‘a resource that has its own value for pedagogic purposes. An item which will have an implicit value for learning (already recognised), for example, an audio extract, or a downloadable Word document containing grammar reference information.’¹⁸ These examples may form part of activities within an LO, but could also stand alone and be used for a variety of pedagogic purposes.

The project team decided early on in the Project that CLARe should contain only LOs and assets (as opposed to other kinds of online material), in order to enable reusability and sharing; and it was observations and analysis of the testing of CLARe that informed the development of a prototype SLAS repository which also focuses on the inclusion of LOs and pedagogic assets. Students are currently participating in the piloting of the SLAS prototype are following a range of degree programmes which involve the study of one or two MFLs, one of them being Spanish at *ab initio* level. The prototype repository has also been piloted, to a lesser extent, with non-specialist students following IWLP courses in Spanish.

¹⁷ <http://www.elanguages.ac.uk/researchcommunity/projects/l2o/terminology.html>

¹⁸ <http://www.elanguages.ac.uk/researchcommunity/projects/l2o/terminology.html>

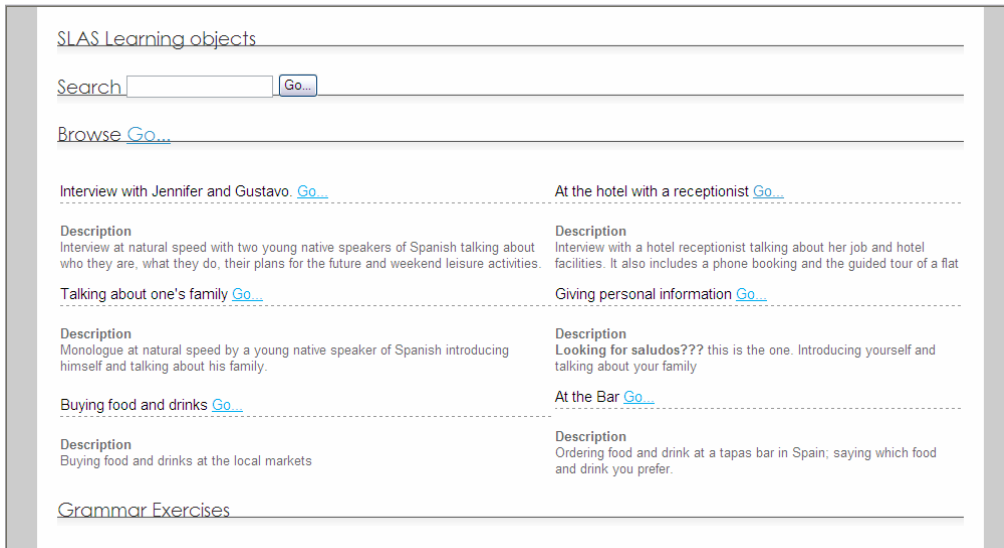


Fig 1. LOs on the SLAS repository

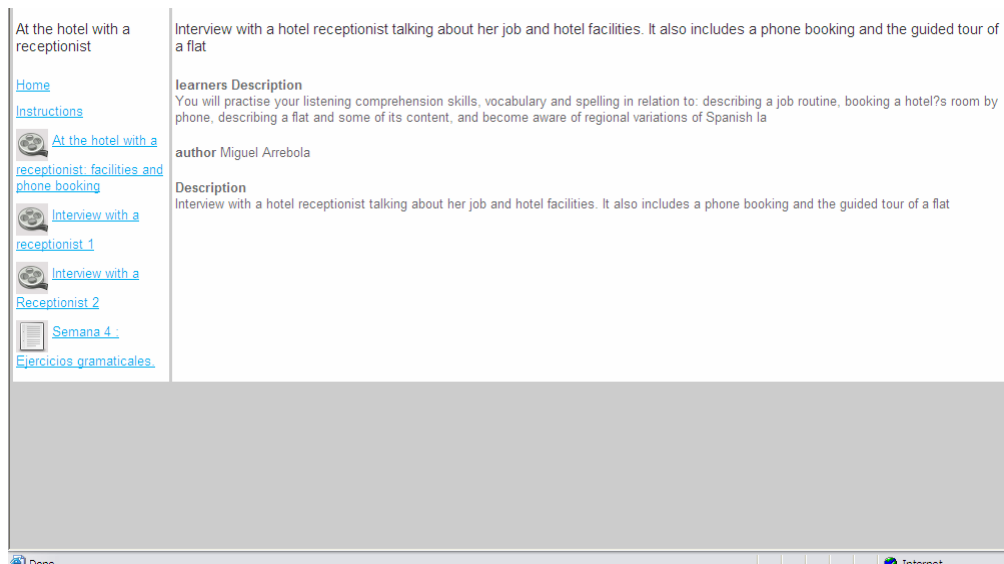


Fig 2. example LO page

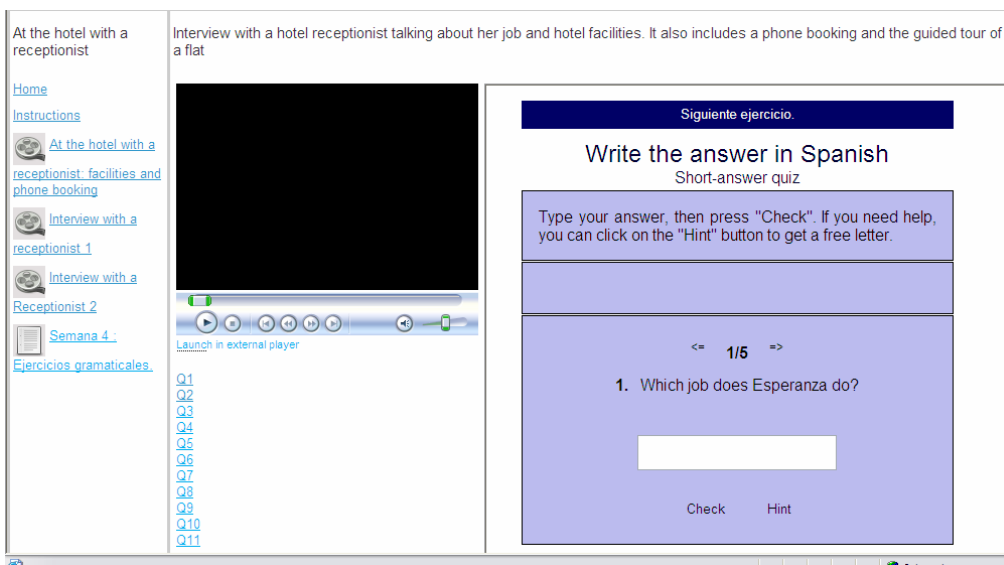


Fig. 3 An LO 'in action'

The integration of WebCT-delivered online materials into the *ab initio* Spanish course and the piloting of the prototype repository ran in parallel throughout the course. Further research into users' attitudes, preferences, patterns and purposes of use in what is primarily a face-to-face teaching environment will be conducted as the prototype is refined and becomes more populated.

Key lessons learnt for effective practice

- The nature of this type of project requires close collaboration among specialists in different fields (i.e. academic staff, web-developers, learning technologists, film makers, etc.). Lack of awareness of each other's fields of expertise might cause initial friction among team members. A strong collaborative approach to the task, based on a willingness to understand and assess the different constraints associated with the various specialist fields can minimise friction.
- Secure departmental support in order to embed new concepts and trial ideas
- Explore the copyright status of the resources you are planning to use. If they do not comply with institutional policy, they cannot be used.
- Clarify the ownership status of the materials you intend to develop, as educational institutions tend to have different policies in this respect: do materials belong to the authors who developed them or to the educational institution they work for? This may have implications if you are planning to share your resources across institutions.
- Set up realistic targets and inform your design. Is the approach appropriate to your teaching and learning context? Does it provide solutions to specific problems?
- Involve potential customers in your design: if students do not like it or find it useful, they will not use it.

Conclusions and recommendations

In the case of Spanish, participation in the L₂O project has made us rethink the potential that existing resources may have for reusability, and to adapt some of them to the LO format, as defined by the L₂O Project. The process models and metadata templates designed by the L₂O project team have provided clear guidance for achieving this task.

A future in-house repository based on the initial SLAS prototype will increase the potential for sharing resources across different languages, levels and disciplines, helping us overcome some accessibility constraints associated with WebCT. It will also increase the number of potential users of both LOs and assets. This early prototype was presented internally at last years' UoP, Faculty of Humanities Teaching and Learning Conference, and the development was welcomed by the MFL team. Inevitably, as the repository becomes more refined and populated institutional support beyond the departmental/faculty levels will have to be secured to ensure the project's further development.

Without any doubt, the reusing, repurposing, remodeling and sharing of resources offer potential advantages to language teachers, particularly so in the case of high quality audiovisual materials (scarce online and/or copyright protected). Sharing these types of copyright free resources within and across institutions would seem the obvious way forward in the current context. However, careful attention should be paid to the extent to which resources should be reused internally to prevent a practice which might cause student fatigue due to over exposure to the same resource.

Additional information

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Developing a pedagogically-driven process model for L₂O

Julie Watson,
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Background

L₂O is a JISC-funded Distributed e-learning Pilot Project. Led by the University of Southampton, a consortium involving 4 regional partner hubs have generated online re-usable learning objects (RLOs) from existing learning materials. These have then been tagged, stored and can be retrieved from the Projects customised learning object repository, CLARe, (Contextualised Learning Activity Repository) by learners and teachers for independent learning, classroom-based learning or blended learning according to particular need. In broad terms, L₂O has aimed to evaluate the feasibility of re-using learning resources across the regional community and in different educational and teaching contexts, and for different purposes.

This case study will present the pedagogically-driven process model developed for the L₂O Project, which has tried and tested an approach to transforming online learning materials into 'reusable learning objects'.

Challenges

The initial online learning materials for transforming into RLOs were submitted by Project partners in a variety of pre-existing formats. These included:

- a) Multiple-choice, gap-fill, drag and drop type student exercises developed using Hot Potatoes
- b) Complex and interconnected layers of web pages supporting sound files of full length lectures and associated activities bound together through a main index page

Two common obstacles to making such materials available as RLOs in their existing formats were, firstly, the lack of a micro-context and sufficient 'scaffolding'. Feedback and other learning support mechanisms, e.g. a transcript in the case of a listening task, to enhance independent learning were often absent in the case of a) above. The need for sufficient scaffolding had already been identified by eLanguages at the University of Southampton team as an essential requirement for the development of effective reusable learning objects (Watson, 2005). Secondly, another obstacle encountered was where the learning material was bound together as a large multiple resource as in case b) above. Where the level of granularity is set at 'course size' as in case b), any potential small reusable items of learning material the learning material contains cannot be captured by other users without taking on the whole package.

A further problem encountered was that in some cases a sound or video file might not be embedded with or linked to its task, which made it less accessible to the user for self-directed online use. So there were also a number of presentational issues of this kind that needed to be dealt with.

On receiving the existing learning materials from Project partners, an important first task for the Southampton team was the modelling of a process by which they could be effectively transformed into effective reusable learning objects. A pedagogically-driven model was developed in order to support the process of transforming existing online materials into RLOs.

Terminology

The process model aims both to facilitate the transformation of online learning materials into the format of reusable learning objects and capture any key metadata for the outputs, which are the reusable learning object(s) and pedagogic asset(s) that result from the process. A 'pedagogic asset' is the term created by the Project to describe:

...a resource, such as an audio extract, that has value for pedagogic purposes. The asset can be either a single resource or a collection of very small resources (for example a collection of 3 x 1 minute lecture introductions). Several pedagogic assets may be related to a single learning object, for example, an audio extract and a transcript of its content. (CLARe, 2006)

A learning object, in contrast, is defined as:

...an interactive online resource which allows a learner to learn and/or practice a learning point connected with a skill, or a subject area. It contains both a resource for learning (pedagogic asset) together with an activity with a pedagogic aim and integrated support and feedback. A learning object can often be used both independently by the learner or in a blended learning context. (CLARe, 2006)

Pedagogic assets as well as reusable learning objects are ascribed metadata since they have implicit pedagogic value and this, therefore, allows them to be retrieved individually from a repository by learners or teachers.

The pedagogically-driven process model

The pedagogically-driven process for transforming existing learning materials into RLOs is divided into a set of tasks through which the learning materials are essentially broken down, catalogued and reassembled as reusable learning objects. A number of micro-processes or tools accompany each stage of this process. The complete process is represented in Figure 1.

The first step involves the **disaggregation** of an item of online learning material into its component parts. This requires separating out and categorising pedagogic assets (e.g. a sound or video file) from tasks associated with it along with any related activity lead-in, instruction, feedback etc. The latter elements will belong to any reusable learning object that may be developed from the learning material and do not form part of the pedagogic asset(s).

Any pedagogic assets that have been identified can then be **catalogued** and their corresponding metadata forms completed. The next step requires a coherent learning point or teaching concept to be **identified**. This might be one or several depending on the scope offered by the material content. In effect, a learning objective or focus needs to be discerned for each of the reusable learning object(s) that may emerge (Wiley, 2001). In practice, a number of distinct reusable learning objects were produced from more complex packages of learning material with a high level of granularity whereas simple exercises that had been created using Hot Potatoes tended to produce just one reusable learning object, sometimes with several possible task options.

The stage at which one or more coherent learning points are identified and the following stage during which the learning materials are re-synthesized as reusable learning objects reflect a critical **decision point** in the process. At this point both creativity and foresight come into play to discern whether or not, the learning material provides sufficient scope for **re-use** as it stands; requires a degree of **repurposing**, or needs fairly drastic **remodelling** in order to transform it into one or more reusable learning objects. This decision will have been helped by the preceding stage of disaggregation and analysis of the constituent parts of the learning material.

From a series of developed templates, an appropriate selection can then be made and the reusable learning object(s) can be re-synthesized. Using the selected template, the various components (activity lead-in, task, feedback, other scaffolding etc) can be reworked and inserted together with the pedagogic asset to form a complete learning object. Reference to a style guide and/or checklist for the development of learning objects ensures that instructional and learning object design criteria are being met at this stage. Once the template has been used to produce the learning material in reusable learning object format, further **cataloguing** can be done and a metadata form for the learning object can be completed. The gathering of metadata that relates specifically to the learning and teaching context of use is particularly important for both the pedagogic assets and learning objects since it not only allows them to be stored in a repository, but also allows searching and retrieval by learners and teachers directly.

The final stages in the pedagogically-driven process model involve a **review** of the learning material in its new guise as one or more reusable learning objects and related pedagogic assets. Project partners peer reviewed each others' reusable learning objects using a blog especially developed for that purpose (L₂O Sharing LOs blog) and other tools (e.g. SKYPE) enabling review and discussion of development issues were made use of. Where possible the review process was supported by student

piloting and any necessary revisions were then undertaken. The reusable learning objects together with their captured and prepared metadata , enabling effective storage, searching and retrieval, were then **deposited** into the Projects customised repository, CLARe, enabling sharing by all Project partners.

Conclusions

The use of a clearly defined pedagogically-driven process for transforming learning materials into reusable learning objects had a number of benefits for the Project. The step by step approach helped guide the transformation of existing online learning materials into reusable learning objects in a clear, consistent and logical way. The completion of the metadata forms at fixed points in the process also ensured reflection and analysis of all component parts. RLO developers were also supported by being encouraged to think about the purpose(s) of the learning materials they were creating. By first disaggregating the materials it was easier then to identify an appropriate template that could be used to re-synthesize selected components to form a reusable learning object.

References

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Wiley, D. (2001) "Connecting Learning Objects to Instructional Design Theory: A Definition, a Metaphor, and a Taxonomy." *The Instructional Use of Learning Objects*. Wiley D.(ed)

<http://www.reusability.org/read/chapters/wiley.doc>

Is this resource repurposable?

Alison Dickens

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Background

The Subject Centre for Languages, Linguistics and Area Studies provides professional development for university staff in the form of conferences, seminars and training workshops. Via our website we disseminate online teaching resources, scholarly articles, news and statistics. The activity described below was undertaken as part of two projects (the *L₂O Project: Sharing Language Learning Objects*¹⁹ and *DeL II: Design Tools for Creating Online Learning Materials*²⁰) which explored e-learning in LLAS disciplines and investigated the feasibility of repurposing existing teaching resources in the form of learning objects to be shared via a repository.

Intended outcome

The outcome was a checklist (Flash tool) for teachers and would-be e-learning developers to help assess suitability of paper-based and other existing electronic materials for repurposing as learning objects, and to explore issues of good pedagogic and design practice in e-learning resource development.

The challenge

The Checklist tool came about in response to issues that arose during experiments in repurposing existing electronic materials as learning objects. To test it further, particularly during the L₂O Project, items from the Subject Centre's Material's Bank were selected for repurposing and a template for a learning object was devised. In the course of evaluating materials for repurposing it became clear that a number of factors were contributing to the difficulties subsequently encountered in repurposing these items. For example:

- The amount of text/on-screen reading required
- The need to disaggregate the resources (e.g. remove images, video, audio etc.)
- The need for rewriting (recourse to the original author)
- Copyright issues
- Feedback – how and what to deliver
- Interactivity – some resources were very content driven

As a result it was felt that there was a need to go back to first principles of LO design and use these in the context of repurposing. Consequently a checklist (delivered as a learning object) was drawn up to help evaluate materials in terms of content, pedagogic purpose and technology. This was formulated as a series of yes/no questions which were collated at the end of each section to produce a summary of responses together with feedback in the form of advice and comments. The final overall score was then calculated and feedback given which guided users to accept or reject a resource for repurposing. A secondary purpose, but perhaps its strongest one, was to help users to think through general questions of good practice in learning object design and general principles of e-learning as opposed to traditional (face-to-face) teaching.

¹⁹ <http://www.elanguages.ac.uk/researchcommunity/projects/l2o.html>

²⁰ <http://www.elanguages.ac.uk/researchcommunity/projects/detcolm.html>

File View Control Help

The LLAS
Higher
Education
Academy

Section: 1/3
Question: 7/37

Content questions

Is it complemented by other media such as digital images, video or audio?

Yes No

Fig.1 An example of a checklist question

The LLAS
Higher
Education
Academy

Section 1 - Results

You answered the following questions:

Question	Answer:	Action
Does the resource contain text (not including text used for navigation, labelling etc.)?	yes	Comment
Does the text comprise comfortable onscreen reading?	yes	Comment
Is it complemented by other media such as digital images, video or audio?	yes	Comment
Does it contain video/audio?	yes	Comment
Does the video/audio run for less than 3 minutes?	yes	Comment
Does the resource contain digital images? (photos, graphs, charts, diagrams etc.)	yes	Comment
Can the digital images be extracted and used independently?	yes	Comment

Comment:
Shorter chunks of text are easier to read online

Next Section

Fig 2. The comments area of section 1.

Established practice

The use of this checklist has led to the development of a pedagogically enhanced learning object development template which is being currently being trialled in workshops for HE teachers.

The e-learning advantage

This checklist was developed to meet the immediate needs of the projects concerned so was of great benefit to the project participants themselves. Participants in the L₂O Project were able to benefit directly from the checklist during the initial stages of converting existing electronic materials into reusable learning objects. The checklist helped them to consider and address a number of the key issues involved in repurposing their own materials appropriately.

The tool is now being used as part of other projects which are training teachers in learning object design and production and it is hoped that it will help to raise some key issues at the early stages of development and/or repurposing that will avoid many of the difficulties and frustrations that were experienced by project participants. Indeed, it should be emphasised that this tool is useful both as a test of repurposeability of existing resources and as a reflective tool for first-time learning object development. The focus is on pedagogy rather than technology thus it is expected that this is the area on which it will have most impact. The reason being that for an experienced classroom teacher it is by no means an easy transition to make from face-to-face teaching to electronic learning.

Key points for effective practice

This case study is intended to draw attention to some fundamental issues that arise in e-learning materials development from a pedagogic point of view. It raises questions of context and methodology for e-learning which may attempt to deliver the same content as traditional methods but will require adaptation for the new medium.

Conclusions and recommendations

In conclusion this case study recommends that practising teachers who are engaging or who wish to engage in e-learning resource and/or learning object development take a few minutes to consider the materials and content they wish to deliver using the checklist tool which should raise their awareness of some of the questions that need to be addressed and adaptations required for the electronic context.

Additional information

The LO checklist can be downloaded from the LLAS website at:

<http://www.llas.ac.uk/resources/materialsbank.aspx?resourceid=2698>

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L₂O: Sharing Language Learning Objects Questionnaire

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Background

L₂O is a JISC-funded e-learning Pilot Project. Led by the University of Southampton, a consortium involving 4 regional partner hubs have generated online re-usable learning objects (RLOs) from existing learning materials. These have then been tagged, stored and can be retrieved from the Projects customised learning object repository, CLARe, (Contextualised Learning Activity Repository) by learners and teachers for independent learning, classroom-based learning or blended learning according to particular need. In broad terms, L₂O has aimed to evaluate the feasibility of re-using learning resources across the regional community and in different educational and teaching contexts, and for different purposes.

Purpose of the questionnaire

As a pilot project, it was essential to find out the extent to which the materials being developed were useful. This was done in two ways; through discussions at a series of workshops held in different university venues (including Reading, Southampton, Portsmouth and Sheffield), and through a questionnaire which was distributed to individuals in order to gain a more complete picture. The purpose of both the workshops and the questionnaire included testing the underlying principles behind learning objects, by attempting to find out the following:

- a) the extent to which resources are useful
- b) who would be interested in using them, and in what situations
- c) the accessibility of the materials and how the interface be could be improved

The structure of the questionnaire

This questionnaire was designed by the Southampton team, and discussed with the other participants. The final version consisted of 13 questions, many of which had subsections e.g a, b, c. In many cases a number of the questions were not completed, either because some individuals only completed half of the questionnaire, mainly the first half, and others responded only to the main questions, rather than answering all the sub-sections. The layout of the questionnaire was not always clear, as there are 2 questions that almost everyone seems to have missed.

50 questionnaires were analysed A PowerPoint presentation which summarises the results is available: [Sharing Language Learning Objects: Analysis of questionnaire](#) (McCormack 2007).

The sample

This report analyses the data from 50 questionnaires which were distributed to participants, many of whom also participated in workshops which looked at the repository of language learning resources. The participants included individuals from universities and higher education colleges, the main representation being from universities (20 individuals). Departments represented were broadly either modern languages or EAP/EFL-related. 6 individuals held IT-related posts and the remaining people did not complete this section of the questionnaire (14 people).

The responses have been categorised broadly into three key areas according to the information being sought. This included the participants' opinions on:

- a) clarity of instructions
- b) process of accessing material/ease of navigation
- c) the usefulness of the metadata, in describing the resources

Clarity of instructions

The earlier questions dealt with evaluation of the information on the first page, and taking the user through the browse function. 34 of the sample population responded that the initial instructions were 'very clear' or 'clear'. However, many of the same people added suggestions on further information which they considered would have been useful. 9 people said they would have liked to have known who had access to the resources e.g could anyone use them?; could they just download what they wanted? 3 said they wanted information about ownership, and an instruction on how they should

acknowledge the resource. This issue came up again later, as within institutions there is serious concern over copyright issues, particularly in the area of online resources.

4 people from the sample said they would have liked more technical information – including information about the software required for accessing specific resources. 3 said they would have liked more information about the content of the resources, a view also expressed in response to a later section of the questionnaire.

Process of accessing material/ease of navigation

The respondents were also asked a series of questions relating to the steps they went through in downloading assets or learning objects, in order to get them to evaluate the process. A number of the sample did not respond to every question (23), but in general the problems identified by 16 participants fit broadly into the following categories:

- a) the need for clearer instructions; this reflected a similar response when asked about initial instructions in using the website. It was suggested that there should be a clear way of indicating the language of each resource
- b) difficulty not only in opening files, but in identifying what they should actually open; this is an issue of navigation; one suggestion was that there should be a 'model' process to follow before the user was expected to work autonomously. It was also suggested there should be more use of icons rather than text
- c) frustration some individuals felt in spending time trying out different steps, but too many of them leading nowhere. 3 individuals said they searched for some very common topics, but came up with no results

In terms of the content individuals in the sample choose to look at, listening material was by far the most popular, both in European languages (17 individuals), and in EAP (7 individuals). Within the modern language category 'Pancho and his family' proved to be the most popular choice! Study skills was the third main category, with 9 individuals opting for some aspect of this, including reading strategies.

Metadata – description of resources

In questions 4 and 6, the respondents were asked to evaluate the description of the learning object/asset they had chosen to look at, in terms of whether it yielded enough information to decide whether it would be useful for their purpose. The responses in both cases suggest that the metadata was not sufficient; respondents suggested a range of information which they felt should be included. The extra information felt to be relevant included:

- a) the content, including information stating the size of the asset e.g length of video clip, the level of the resource, and more information about the kind of group this learning object/asset would be suitable for
- b) more technical information available. This included wanting to know the software requirements etc.
- c) the language of the learning objects needed to be made more transparent – whether they were in English or another language
- d) information about the extent to which they could edit any of the materials to suit their own purposes

Use of the resources

Concerning use the resources, most respondents said they would use them in classroom situations, as supplementary material to their core materials. Others said they would recommend the resource to students for independent study. In general, it was felt this would be a useful resource, as reflected in the following comment made by one participant:

“A shared e-repository is exactly what is needed; it would be wonderful to follow its progress, expansion, adding new partners to the project etc.”

But it was also felt that than in spite of the fact that the resources themselves were useful, the interface was not user-friendly. The need for more description of the content was also raised again.

Conclusions

This is a resource that people are keen to have available; in many cases they would be happy to contribute, once the issues of ownership and copyright are accepted within institutions. The whole area of copyright concerning online material is a grey area, and as yet no clear set of 'rules' have been carved.

There is no doubt that the instructions need to be looked at again, taking on board the suggestions made by the participants in the survey. Having clear instructions at the beginning is particularly crucial in order to keep motivation high, and avoid the frustration felt by a number of the participants.

The process and ease of navigation also needs to be looked at; there were in fact changes made during the course of the project, and this is an on-going area that will continue to be developed, informed by the comments of the people who filled in the questionnaire.

Concerning the metadata, more information about the resources is felt to be a priority. However, it is important to keep a balance between too little information, and information overload. Less text and more use of icons and symbols may be the way forward in this area.

In terms of the questionnaire, a shorter more focused version, with fewer sub-questions, might have yielded more results. However, the results as they stand certainly indicate keen interest in this kind of project, and a desire for participation, which ultimately suggests that the principles behind this project are very sound.

Building on the L₂O experience: designing Reusable Learning Objects (RLOs) as structured question banks

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Background

The Department of Languages and Translation Studies at the University of Surrey has an established practice in designing and delivering online language courses. They are used in either blended or 'add-on' programmes as part of a range of online activities within the University's VLE, WebCT. These courses have been reused in different language programmes offered by the department. They consist of two parts: self-check exercises comprising vocabulary, grammar, listening practice and reading comprehension developed using the authoring tool, Hot Potatoes, and communicative discussion tasks carried out using WebCT's discussion board.

Stage one: Repurposing existing online listening material

For the L₂O Project a small number of these existing online learning materials, specifically those self-check exercises focussing on listening practice, were selected for remodelling (repurposing) as reusable learning objects (RLOs). This required the design of a suitable template so that the relevant tasks and resources could be repackaged as single items together with any necessary additions (e.g. an introduction, some task feedback) so that they could function as fully stand-alone items with potential for re-use. To perform this repurposing, the L₂O disaggregation process model was applied and then the template used to recombine all the required parts (introduction, task, task instruction, audio resource and feedback) forming a single content package for each RLO. The RLOs were then tagged with contextual metadata (reflecting the learning and teaching context in particular) and uploaded to a repository designed for storing and retrieving reusable learning objects.

Applying lessons learned

To date the study of phonetics in specialist language degree programmes has taken place in face-to-face sessions in a lab. Face-to-face time is quite restricted, so students also do independent work in the self-study centre. In the rest of the language programmes, pronunciation and phonetics have not been included in the online courses and they are left to the individual tutors to organise. Thus, the need for some kind of complementary online learning material to be developed in this area was identified.

Learning from the L₂O discussions on instructional design and RLO development, a plan was made to design a set of formative RLOs in Spanish phonetics that could be reusable in a variety of situations and levels, from both the student's and the tutor's point of view. These could be then potentially be used as, a whole, in basic and advanced modules in oral Spanish, or they could be added separately to existing blended learning modules in general Spanish.

The challenge

The original plan was to develop an online listening course in Spanish phonetics for specialist students suitable for *ab initio* and post A-level pathways. In a large class with a wide ability range, the online activities would offer students a flexible system so that they would have access to a wide bank of audio materials with instant feedback built-in anywhere, at any time. These would also support different learning styles and levels, and encourage students to work independently and at their own pace.

It was then recognised that phonetics is a language area that can be independent of level to a certain extent. Consequently, the scope of the project was extended to include non-specialist modules, to which the online phonetics material could also be added as a complement.

The pedagogic approach

In order to maximise their reusability, the RLOs were developed to be self-contained and with a low level of granularity or 'size'. The first condition was achieved by including the explanations, questions and feedback all on one webpage, using the template as the 'anchor point' for all of these parts. The second condition required each RLO to be devoted to one minimal pair of phonemes or aspect of change in pronunciation (e.g. the pronunciation of /j/ in different contexts representing the sound of the letters 'll' and 'y' in Spanish). These could, however, also be grouped into sets, such as "vowels",

“consonants”, or “stress”, each set of which could be completed by student users in about forty minutes. This approach made the exercises more flexible, as they could be targeted according to students’ native language and areas of possible interference between L1 and Spanish. Further RLOs were created providing self-test exercises bringing all of the phonetic phenomena from the other RLOs together into whole sentences.

Drawing from the discussion about repositories in the L₂O project, each question in the self-test exercises is in actual fact a bank of question items²¹, under the same topic and with the same task instructions. Only a limited number of items appear every time the webpage uploads, and these are then randomised. Thus, each student user can be offered a wider range of listening practice and can choose to re-use the exercise without the risk of remembering the order of the answers.

Finally, English was chosen as the language of instruction, explanation and feedback in the RLOs aimed at supporting the introductory level so that they could be reused at a wider range of levels, including lower levels²². Spanish was used in the instructions and feedback for RLOs aimed at supporting the advanced level.

The screenshot shows a web browser window displaying a page from the University of Surrey's ULearn system. The page is titled "Vocales IV" and is part of a course on "Fonética Española". The main content area is yellow and contains the following text:

The words in this exercise differ only by the pronunciation of one vowel sound: /a/, /e/, /i/, /o/, /u/. Listen carefully to the recordings and put the words you hear in the order they are pronounced.

Below this text is a media player with a play button. Further down, the text reads: "Las vocales del español (Spanish Vowels). There are 5 vowel sounds in Spanish. Click on the letters below to hear them."

A table lists the vowels and their examples:

Vowels	Examples
a	antes, hay
e	estoy, hermano
i	idea, y, hija
o	oios, hola

To the right of the table is a form with a "Comprobar" button and five dropdown menus labeled 1º through 5º. The 5º dropdown menu is open, showing a list of options: "???", "paso", "paso", "piso", "piso".

Figure 1. RLO providing listening practice with vowel sounds for use in the basic level course

²¹ The *GramEx* software (by the TELL consortium) uses a similar system (last accessed 17/4/2007: <http://www.hull.ac.uk/cti/tell/tellprod.htm#GramEx>)

²² As it was done in the CARLA project (last accessed 02/04/2007: http://www.carla.umn.edu/speechacts/sp_pragmatics/for_teachers.html#eng).

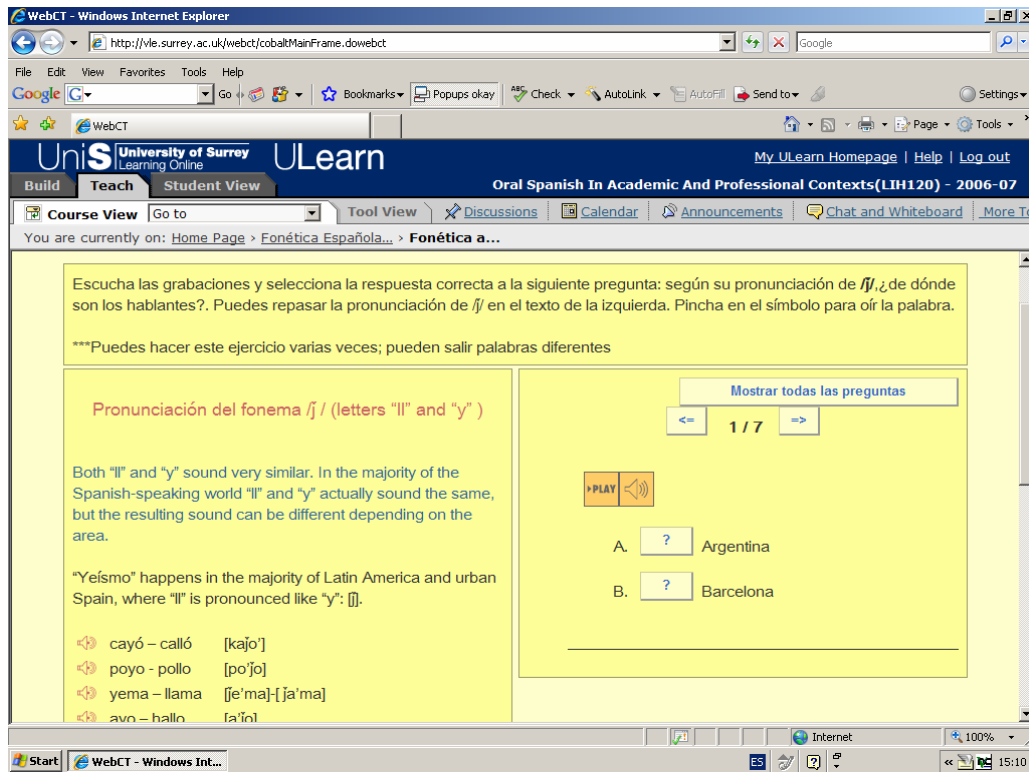


Figure 2. RLO providing practice with regional varieties used in the advanced level course

The e-learning advantage

Although the integration of the RLOs on the phonetics course is still in the pilot phase, feedback from students has highlighted their flexibility and instant feedback, and the fact that they offer a wide bank of questions to practise listening; something the students have welcomed. The piloting has also highlighted the need for RLOs centred around longer texts to contextualise all the phonetic phenomena studied. This was previously done face-to-face; so for the next stage of the project, the focus will be on RLOs focussing on syntactic phonetics and longer texts. Also, assessment of use of the learning materials shows an increased degree of reflection by the students about phonetic phenomena and regional varieties.

Key points for the effective development of RLOs in phonetics

A number of practical and technical considerations were identified as a result of the experience of creating RLOs in phonetics:

- Planning is vital; as the RLOs function as both a complete course and as a bank of task and audio practice files. Careful planning is required concerning the selection of question types and design, the explanations and the feedback etc. The experience of participating in the discussions about instructional design in the L₂O project was an element in the success of the RLOs.
- From the technical point of view, altering the flash files so that they are embedded in the question itself rather than in the instructions meant that the names of the audio files were generic and could be reused in other exercises more easily.
- Embedding a large number of sound files into Flash was a very tedious task for the e-learning technician; for a large number of sound files, it may be interesting to look into batch processing.
- Recording and editing the audio files, done by tutors trained in basic audio recording and editing software, was also definitely time-consuming, but easy to do.
- Support from the technical e-learning team was essential, as was peer review and student review of the resources.

Additional information

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