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eQNet

*Quality Network for a European
Learning Resource Exchange*

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Project coordinator:	Riina Vuorikari
Project coordinator organisation:	EUN Partnership AISBL (European Schoolnet)
Project coordinator telephone number:	+32 2 790 7537
Project coordinator email address:	riina.vuorikari @ eun.org

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Executive Summary

"This annual report is primarily designed to inform the network of policy makers defining 'travel well' quality criteria but will be of value to repository owners and other content stakeholders outside the project. It will review major projects and initiatives working on quality criteria for educational repositories/content (e.g. Q4R) as well as how work from relevant standards and licensing bodies (IMS, CEN/ISSS, Creative Commons etc.) impact on eQNet quality criteria."

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1 Introduction

What makes some educational resources more useful for different cultural and linguistic contexts? This is a difficult question to answer but, in a number of its projects, European Schoolnet has found that some resources in its Learning Resource Exchange (LRE) have the potential to “travel well” which means they can be used cross-border in different educational contexts.

From an economic and cultural exchange perspective, it is a good idea to share resources and to stimulate reuse in European level. For example, the results from the MELT project (2006-09) show that an international learning resource exchange does indeed offer a clear and well-appreciated added value. Therefore, defining “travel well” quality criteria is important so that Ministries of Education and other LRE content partners can more easily identify those resources that can be easily shared and reused by teachers and learners across Europe.

2 Previous projects and findings

The “travel well” concept has been addressed in several previous projects: the European projects CALIBRATE (2005-08) and MELT (2006-09), and the Open Educational Resources Teacher Network (OERTN) funded by the Hewlett Foundation (2008-10).

In **CALIBRATE**, one of the pilot’s aims was to identify learning resources that teachers could use in all or most of the piloting countries. The results indicated that certain characteristics increase resource’s potential to travel well.

These characteristics include:

- High-level visualisation, e.g. animation, simulation, audio files.
- Interactive customisable learning environments especially with changeable parameters, e.g. online exercises and test.
- Innovative methodological content with little text, e.g. graphs, maps, cross section diagrams.
- Materials for multicultural education with little text and many visual components
- PowerPoint lecture support materials.
- Learning assets with international relevance, e.g. images of famous art works, audio clips.

The **MELT** project stated that for a pan-European federation of learning repositories it is important to enrich content, which increases its potential to be used in different national classroom contexts.

Therefore, the project defined quality criteria according to which a resource is more likely to travel well if it:

- Is modular so that the parts of a content item are functional on their own.
- Is adaptable meaning that the resource can be modified, e.g. through a configuration file, source code or an authoring tool.
- Has a strong visual element, which is broadly understandable with only little text.
- Is language customizable ('choose a language option') or is already available in more than one language.
- Addresses trans-national curriculum topics (e.g. geometric shapes or human physiology).
- Is adaptable from a technical (e.g. resources are supplied along with an authoring environment or tools) or Intellectual Property Rights (IPR) perspective (e.g. they are not made available under a “No derivatives” Creative Commons license which would prevent users from even translating the resource).

MELT created a collection of 100 travel well learning objects, which was considered as a precondition for teachers to realise the existence and value of such resources and to promote LRE at a European level.

The most recent project about travel well, **OERTN**, was concluded in the beginning of 2010. The key aim of OERTN was to investigate mechanisms that would make it easier to identify and exchange open education resources (OER) that could travel well and be used in different cultural, learning or curriculum contexts. In the project, the participating teachers from Australia, Africa, Europe and the USA identified and rated over 250 travel well resources that can, in their opinion, be used in different countries.

The project identified some general dimensions that can have effect on resource's ability to travel well. The first dimension, Intellectual Property Rights, was considered relevant because some types of open licenses can support the travel well concept better than others allowing remixing and reusing of resources. On technical side, adoption of standards such as SCORM can enhance interoperability of content and the ability to replay resources from different providers in VLEs and learning platforms. Also, the possibility to translate and localise resources after publication are technical features that should be taken into account often already in an early phase of design. Finally, careful planning can help avoid socio-cultural obstacles for the reuse of resources, such as differences in languages, disciplines, teaching models and tasks for which the resources are used.

Based on the resources selected by the teachers and a workshop organised for them, the identified travel well features are quality, usability, adaptability, technical and openness. These five features consist of sub-characteristics explained in the following:

- **Quality** features include cultural appropriateness, updated or real time content, content related to real-life contexts, engaging user to interact with the material instead of only reading, and free of advertisements.
- **Usability** features include quality design increasing visual attractiveness, engaging user's interest over a long period, easiness to navigate, relevancy to curriculum, adherence to W3C guidelines for accessibility.
- **Adaptability** features include modularity, independence of content from structure, resource is language independent or multilingual, remixable.
- **Technical** features include easiness to find (without login), easiness to download and save (without impeding technical, IPR, firewall or similar issues), use of common file types, cross-browser compatibility.
- **Openness** features include degree of openness (e.g. type of license, rights), free-or-charge, labelling (metadata, ratings, tags), enabling search engines to

index resources, free of time limitations (use is not limited to a certain period of time).

The project showed also that many different content quality guidelines and checklists have been developed by different projects and organisations, and therefore, achieving a consensus on travel well criteria in the OER community might be challenging and involve some compromises. However, it could be possible to obtain a consensus about the “essential” features for travel well resources. This kind of checklist could be incorporated in teachers training and be especially useful for pre-service and early teachers.

Also, further larger-scale investigation was seen necessary for example using the OERTN model and extend it to more teachers, countries and curriculum topics. For example, how language skills affect the use of a resource should be investigated further among average teachers instead of expert teachers.

The project recommended a larger-scale study that should involve a wider group of OER stakeholders and could:

- Review and map the travel well features across at least ten repositories in different countries, identifying the gaps and the mechanisms by which the additional information can be added to the resources.
- Create a pilot with five foundation members and test searching characteristics with teachers from around the world.
- Identify at what point the additional metadata should be added to resources that are recommended by teachers in the network.
- From the research, create a demonstrator that could connect a wider set of repositories.
- Analyse how repository strategies may need to adapt to how teachers and pupils discover and use learning resources “beyond repositories”.

3 OER quality standards

The quality of the content that is exposed via a public learning resource exchange service can only be as good as the underlying content/metadata provided by Ministries of Education and other content partners from their own repositories and collections.

According to Kurilovas (2010), reusability of learning objects – or their ability to ‘travel well’ between different contexts and education systems – should be considered as a part of the overall quality of LOs. Any high quality LO has some reusability level (or potential to ‘travel well’); however, this does not mean that any reusable LO is a quality one.

Different approaches to quality standards are presented in this chapter: The quality guidelines developed in the framework of the MELT project, quality standards that the eQNet project partners apply in their own collections of resources, and finally, quality criteria promoted by different, independent initiatives.

3.1 MELT “quality guidelines” checklist

The MELT project (2007) analysed its national partners’ quality guidelines and created a checklist that was used to select items from the national/regional repositories to MELT. As indicated by MELT (2007), the list was to be considered as a minimum framework to be used in a flexible way.

The MELT checklist comprehends five categories: pedagogical, usability, reusability, accessibility and production. In the following the categories are explained more in detail:

- **Pedagogical:** The learning resources should:
 - deal with relevant content
 - have the learning objectives clearly stated
 - be engaging, thanks to the correct use of interaction and multimedia
 - be flexible, so that they can be used in different ways and can accommodate different learning styles
- **Usability:** The learning resources can be easily navigated, found and understood, thanks to an adequate user interface, structured information and clear directions of the actions to be carried out by the learner.
- **Reusability:** The learning resources should have the potential to be used to support a variety of pedagogical models and learning contexts in their country of origin. And, in addition, the resources should lend themselves to use by pupils in several countries; they should have the capacity to ‘travel well’

- **Accessibility:** The learning resources and user interfaces should be accessible to all users, to the extent permitted by the underlying technology (i.e. an image can always have an alternative text but a video clip cannot always be dubbed). The aim is that MELT resources should conform to the W3C Content Accessibility Guidelines Double A minimum.
- **Production:** All items made available via the MELT federation must have undergone, at a national level, a quality check that will ensure: the correctness and accuracy of the content and that copyright has not been infringed. Therefore, all material included in MELT, should have passed a formal review process administered by a recognised national authority.

3.2 eQNet partners' quality standards for digital learning resources

The national resource portals apply different selection criteria for incorporation of new content. In the following table are summarised the quality/selection criteria used by some national partners:

Country (portal)	Quality / selection / validation criteria
Belgium (Flemish-speaking Community) Klascement www.klascement.net	<ul style="list-style-type: none"> • <u>Content criteria:</u> Validity, Accuracy, Authority, Actuality, Unicity, Substantial, Coverage, Completeness • <u>Educational criteria:</u> site/ware/doc • <u>Formal criteria:</u> Navigation, User support, Use of ICT and standards • <u>Process criteria:</u> Integrity of info, Site stability, Platform stability
France PrimTICE primtice.education.fr/ EduBases www.educnet.education.fr/ Educasources www.educasource.education.fr/ Éducnet (Thematical digital universities) www.educnet.education.fr/	RIP (Reconnu d'Intérêt Pédagogique) Label (applied to resources from private publishers): <ul style="list-style-type: none"> • Curriculum conforming • Free rights for pedagogical use in the classroom and out of the classroom • Respect of publishers' engagements • Provide access to expertise the resources • Updating information must be available • Provide the possibility to block advertising (if included)
Lithuania http://www.emokykla.lt/	<ul style="list-style-type: none"> • Methodical aspects • User interface (incl. personalisation) • LOs arrangement possibilities • Communication & collaboration possibilities and tools • Technical features (incl. working stability) • Documentation

	<ul style="list-style-type: none"> • Implementation and maintenance expenditure
Norway	<ul style="list-style-type: none"> • <u>User orientation</u>: the interface between user and resource • <u>The digital resource's characteristics</u>: possibilities and limitations of digital resources • <u>Academic and educational orientation</u>: the learning and evaluation potential • <u>Technical interoperability</u>: file formats, standards (IMS QTI & CP, etc.) • Metadata labelling • Accessibility • Parallel language editions
Portugal Schools Portal www.portaldasescolas.pt	<ul style="list-style-type: none"> • <u>Content</u>: scientific accuracy, appropriateness, adequateness to subject and curriculum objectives • <u>Teaching and learning (pedagogic features)</u>: adequateness to learning objectives, curriculum articulates/integration, respecting different learning rhythms, pedagogical approach • <u>Language</u>: appropriateness to target group and content, accuracy, clearness • <u>Values and attitudes</u>: absence of bias or stereotypes, promotion of gender equality, absence of content that instigates violence, promotion of a positive attitude towards nature and the environment
Sweden Länkskafferiet (the Swedish Link Library) http://lankskafferiet.skolverket.se/	<ul style="list-style-type: none"> • Every web site must have source information and must not conflict with Swedish law • The presentation must be clear and easy to navigate • The information must be reliable: who is responsible for the information, why the information is published, how often it is updated, etc. • Other criteria deal with general interest, language and access requirements
Switzerland Le Centre suisse des technologies de l'information dans l'enseignement (CTIE) www.ctie.ch	<p>Only minimal quality criteria applied (minimal set of metadata)</p> <p><u>National level:</u></p> <ul style="list-style-type: none"> • Recommendation for description (Application profile) • Technical tools • Harvesting <p><u>Local / Partner level:</u></p> <ul style="list-style-type: none"> • Selection and validation of resources according local criteria and culture • Metadata check, enrichment and maintenance

	<ul style="list-style-type: none"> • Publication (local)
The Czech Republic National portal: www.rvp.cz Repository: http://dum.rvp.cz	<ul style="list-style-type: none"> • Content accuracy • Connection with national curriculum • Didactics/pedagogy accuracy • Typographic rules • Citations, Copyright

3.3 Quality criteria from other initiatives

There exist several guidelines to help evaluate or check Internet pages and resources. Here are some examples of different initiatives:

The Quality for Reuse, www.q4r.org

The Quality for Reuse project (Q4R) has defined a three level approach to define resources level of reusability including technical, pedagogical and socio-cultural dimensions.

- Technical reusability refers to resource's technical interoperability and robustness; used metadata and metadata tagging tools as well as automatic metadata generation; and applied standards and specifications (IEEE Metadata Standard, DublinCore, IMS LD, SCORM, IMS-QTI, etc.)
- Pedagogical reusability refers to resource's adaptability to different contexts and target audiences taking into consideration objectives, content, language, and learning, teaching and assessment strategies.
- Socio-cultural reusability includes four categories to be taken into account when designing high quality LO. These are general cultural and social expectations; teaching and learning expectation; differences in the use of language and symbols; and technological infrastructure and familiarity.

Kathy Schrock's Guide for Educators,

<http://school.discoveryeducation.com/schrockguide/eval.html>

Kathy Schrock is the Director of Technology for the Nauset Public Schools on Cape Cod, MA and on her webpage she offers several question lists for different purposes based on user's self evaluation of the page. Here is presented her checklist for a critical evaluation of websites for use by educators.

- Technical and visual aspects of the page poses questions like does the page take a long time to load, are there headings and subheadings on the page, is the page signed by the author, is the format of the page standard and

readable with your browser, are the links clearly visible and annotated or explanatory.

- Content poses questions like is the title of the page indicative of the content, when was the document created, is the information found on the page useful for your purpose, does the information lead you to other sources (print and Web) that were useful, does the information appear biased? (One-sided, critical of opposing views, etc.)
- Authority poses questions like who created the page, are you positive the information is valid and authoritative, what can you do to validate the information, are you satisfied the information useful for your purpose.
- Pedagogy poses questions like does the information on the page adhere to research-based principles of teaching, does the information on this page provide easily-replicable best-practice information.

Insight: Policy and innovation in education. Quality criteria,
<http://insight.eun.org/>

A publication from Insight (2005) summarises a common framework for e-learning quality. The presented common framework for e-learning quality identifies five broad and distinct categories including the following subthemes:

- Infrastructure provision: Built Environment, Network requirements, Equipment requirements, Accessibility specifications, Interoperability
- Technical standards: Interoperability, Functionality, Design Principles, Quality of assets
- Content development: Quality of assets, Fit to curriculum requirement, Content design, Planning
- Pedagogic affordances and practices: Planning, Learning, Assessment, Teaching
- Institutional development: Teaching, Management planning, Institutional delivery, Deployment and access

For infrastructure provision and technical standards the decisions about quality depend on conformance to specifications and standards. These are largely, but not necessarily exclusively, technical in nature. Then again pedagogical issues and institutional development is where issues of pedagogic quality are to be found. Here, judgements about quality are situated in fitness for purpose, depending wholly on the education context.

Criteria for Evaluating Internet Resources, the University of British Columbia,
<http://www.library.ubc.ca/home/evaluating/>

The library of the University of British Columbia provides the following list of questions to determine whether a Web page is a suitable resource for a research paper.

- Author or source
 - Is there an author of the work? If so, is the author clearly identified?
 - Does the site or page represent a group, organization, institution, corporation or government body?
 - Is it clear who is responsible for the creation and/or maintenance of the site or page?
- Accuracy
 - Is this page part of an edited or peer-reviewed publication?
 - Can factual information be verified through footnotes or bibliographies to other credible sources?
 - Is it clear who has the responsibility for the accuracy of the information presented?
- Currency
 - Is it clear when the site or page was last updated, revised or edited?
 - Are there any indications that the material is updated frequently or consistently to ensure currency of the content?
 - If there are links to other Web pages are they current?
- Objectivity
 - Is the page free of advertising? If not, are the ads separated from the content?
 - Does the page display a particular bias or perspective?
 - Does it use inflammatory or provocative language?
- Coverage
 - Is there any indication that the page is incomplete or that it is not still under construction?
 - If there is a print equivalent to the Web page, is there clear indication of whether the entire work or only a portion is available on the Web?
- Purpose
 - What is the primary purpose of the page? To sell a product? To make a political point? To have fun? To parody a person, organization or idea?
 - Is the page or site a comprehensive resource or does it focus on a narrow range of information?
 - What is the emphasis of the presentation? Technical, scholarly, clinical, popular, elementary, etc.

4 Impact of content standards on eQNet quality criteria

For eQNet it is also important to take into account the work of relevant standards and licensing bodies, e.g. IMS, CEN ICT and Creative Commons.

4.1 SCORM and Common Cartridge

eQNet is particularly monitoring the development of the new IMS Common Cartridge specification via the participation of European Schoolnet in the ASPECT Best Practice network¹. In June 2009, a presentation was made to MoE in the LRE Working Group by Icodeon, a technology partner in ASPECT that is currently working with both SCORM and Common Cartridge. The presentation highlighted that:

- In 2008-2009 SCORM use is still increasing although SCORM has a number of technical and pedagogical limitations. In particular, the SCORM run time environment *replaces* typical browser features and SCORM is designed primarily for individual self-paced learning.
- SCORM has been most effective for Icodeon customers involved in corporate training and adult professional development that are in the corporate (not school) sector.
- The conclusion is that SCORM has a limited pedagogical model focused on the area of training for specific systems and situations by people who are not generally in full time education.
- Common Cartridge *assumes* typical browser features such as bookmark, hyperlink and back button, uses standard http and html features, and is more suited for Web 2.0 learning environments.
- Unlike SCORM, Common Cartridge does not support user tracking or sequencing but the feature set includes questions, discussions, tools, roles, lesson plans and curricula, DRM, profiles. This opens up a wider range of pedagogical possibilities, reflecting the fact that Common Cartridge features are built for learning that is teacher led and group based.
- Since 2009, the focus of Common Cartridge is interactive collaborative learning situations, typically with a teacher, professor or instructor involved in guiding a group – a situation often referred to as hybrid or blended learning.
- In ASPECT, the project will be using the Icodeon Common Cartridge player and cartridges created in the project will be tested by teachers in ASPECT pilot schools.

¹ <http://aspect-project.org/>

While SCORM provides an important element of technical interoperability that can impact on the potential of resources to ‘travel well’, the pedagogical limitations of SCORM content have also been noted by a number of MoE in previous EUN content projects.

eQNet will continue to monitor how Common Cartridge appears to have the potential to address a number of the perceived weaknesses in SCORM. The specification has been tested with over 40 teachers in ASPECT during 2010.

The report (ASPECT, 2010) of the last workshop held in May 2010 shows that:

- Teachers have higher expectations when using a dedicated educational resource portal compared to Google or other internet sources. They expect to find a large number of relevant resources in portals like the LRE and are impatient if they find broken links or resources of low quality. It is important, therefore, that educational resource portals implement effective quality assurance procedures as well as offering a critical mass of resources.
- The experiences of running the ASPECT workshops for teachers proved once more the importance of enabling teachers from different countries to work together. The workshops not only contributed to the professional development of the teachers themselves but enabled the ASPECT work on learning content standards to provide real added value at European level.

The eQNet partners will continue examining the findings from these school pilots once the final ASPECT validation report is published on November 2010.

4.2 Creative Commons

EUN recommends that Creative Commons licenses are applied to all content that is added to the public version of the LRE. eQNet has been closely following developments relating to the Creative Commons licensing scheme, particularly the attempt to provide a greater degree of clarity and understanding related to the use of the “Non-Commercial” CC option. Earlier EUN projects have shown that MoE are applying an NC option almost by default to their content without fully considering the potential societal costs of the decision to restrict commercial use.

While the *Defining Noncommercial*² study carried out by Creative Commons in 2009 provides some useful discussion of the issues and challenges involved, the report’s conclusions fall some way short of providing a clear set of guidelines for MoE on when applying a non-commercial use option may actually work against their intention to maximise the reuse of their content. Indeed, some commentators suggest that the study may have even further muddied the waters on this issue³. In 2010 project will continue to monitor this issue and bring further developments to the attention of MoE in the LRE Working Group.

² http://wiki.creativecommons.org/Defining_Noncommercial

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