

Open Education 2030

Call for Vision Papers

School Education

Enabling the use of OER in schools in 2030

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Enable teachers to simply create and use OERs in their respective educational scenarios.

1. OERs today

Open Educational Resources (OERs) have been available on the internet for quite a while. When referring to OERs, we understand the following specific concepts in close relation to how the OECD defines OERs (OECD, 2007): “Open” means that resources are findable and accessible via the web, but not necessarily for free. “Educational” refers to the context of use, that is, resources can be used for educational purposes. And “resources” refers to any kind of digital representation, may that be some sort of media (e.g. writing, images, simulations, or movies) or some sort of service (e.g. experiments, personal learning environments, distributed labs, etc.)

One of the most apparent, but not really addressed yet, problems with OERs is their support for reuse and repurposing. We carried out a number of European projects with school and university teachers to gain experience in their handling of OERs. The following projects were involved: The MACE project aimed to make architectural contents on the web available for educational contexts by establishing a portal with community functionality on the bases of a central metadata repository about architectural contents. The OpenScout project aimed to enable repurposing of educational resources in the domain of management education. It created a respective community portal. The NaturalEurope project aims to simplify the creation of learning paths through museums using digital representations of artefacts. The ROLE project supports the creation of personal learning environments (PLE) by enabling their educationally driven compilation. And finally and most recently the OpenDiscoverySpace project aims to make educational resources easily available to European school teachers.

One of the generalizable results from these projects is that most teachers prefer to use their own learning resources (Okada et al., 2012, Angehrn et al., 2012). Consequently, teachers are not really willing to just use OERs as they are provided. Instead, teachers pick those elements of OERs that they deem useful in their specific educational context. Even though this need has already been foreseen for a long time (Duval & Hodgins, 2003), it has not yet been adequately addressed. Too many problems remain unsolved today, among them questions regarding the rights of OERs, ways of finding suitable OERs, handling of quality of OERs and their metadata, funds to enable creation and provision, just to name a few.

The problem of legal obligations

It is not clear how teachers can reuse elements of OERs, which legal obligations they have to fulfil, or which laws they have to follow today. Furthermore, teachers are not being educated in the use of OERs, including how to repurpose them, which legal aspects are to be dealt with, and how to make OERs available. In addition, it is unclear who owns OERs when a teacher creates them.

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The problem of finding suitable OERs

Portals emerge that provide access to OERs. But help is needed to find the suitable or “right” OER that addresses the need of the teacher (Verbert et al., 2012b). Many OERs miss explanations on how to use them in which educational contexts. Only marginal support is given to help teachers find OERs that match their pedagogical requirements. For example, OERs lack some sort of usage history that might indicate how the OER has been or can be used. The usage history, e.g. in the form of best practice reports, would help teachers decide if an OER is worth the effort of repurposing or simply using it.

The problem of quality of OERs

Furthermore, the quality of OERs covers a wide variety, though as of today, no accepted standards have been established to “measure” the quality of OERs or their metadata. The portals of today check the quality of the OERs according to their own ideas, thereby preventing the comparison of OERs provided by several portals. Instead, OERs are used as seen fit by the teachers with little guidance and support. The given support often consists of some user feedback on OERs. Still, while this “Amazon-style” recommendation support provides some hints on usefulness, it lacks the insight into how and in which context an OER has been used.

The problems of funding OERs

Today, funds are made available to create OERs. But once the respective projects terminate, no further OERs are developed by the project consortia. There are some means identified on how funds for OERs are accessible (OECD 2007), but these suggestions have not been taken up. Rather, numerous schools and universities still see their educational resources as unique sales points and therefore are not willing to make them publicly available. They instead protect them where possible, e.g. through password-protected areas in their learning management systems.

2. OERs in 2030

Indicators show that by 2030 the situation as described above will have changed significantly. Teachers will be able to simply reuse those parts of OERs that they need for their educational settings. Humans will be very tightly interconnected via services and channels on the internet and OERs will be enriched with metadata about the use and revision. This extended OER metadata description will provide the base for user-centric services around OERs that make use of OER common day practice. In addition, the change in understanding education in society is already visible today (education becomes more and more important, (EC 2010a, EC 2010b)) and will have taken place by integrating learning into daily work practice, both from a consuming and a producing/providing perspective. This will increase the need for OERs.

Furthermore, learning scenarios will have changed. For example, the role of the teacher will have changed towards a more mentor-like role. Classrooms are going to be established independent of location and possibly of time. Internet access will be available everywhere with enough bandwidth for high-quality video conferencing. The internet will give up net neutrality in favour of paid channels. Channels provide means of access for certain types of media and services, e.g. watching movies, listening to music, communicating, etc. as well as for learning activities. A learning channel will provide content and services for the domain of learning, suited to the single user’s needs.

In the above described environment, legal obligations regarding the consumption (learning), creation and maintenance of OERs will have been incorporated into the daily work life. For example, already today several large organisations (like Fraunhofer) promote the open access

to academic publications. This can be seen as a first step towards incorporating the creation and maintenance of OERs (which academic papers are) into the workplace description. Consequently, funds are inherently made accessible for the creation and maintenance of OERs as well as for support infrastructures like providing servers, portals and their social web functionality, etc.

Finding suitable OERs will also be significantly simplified based on extensive metadata descriptions. The provided metadata about the OERs will incorporate comment and rating histories, usage, revision and repurposing histories (e.g. following an approach like CAM, Schmitz et al., 2011) and might even be accredited by some European agency (though standards would need to be developed for such purpose). A metadata scheme will emerge that is able to describe the respective information, most likely using micro-formats for specific fields. Instead of incorporating explicit educational information like a suitable age range, addressed students, etc., the schema will incorporate the context of use of the OER for each time that it is being used. OERs will then also be linked to competencies and user profiles which can be useful for the assessment of the achievements of students and teachers.

By relying on the context of use of OERs, profiling techniques like Learning Analytics and Educational Data Mining provide insights into advantages and shortcomings of OERs. Based on these and other technologies, new approaches to measure and evaluate the quality of OERs will be established. As the measurements will be community-driven, a much broader but also much more detailed spectrum of experiences in using OERs will emerge that help establish the context in which an OER is useful. Furthermore, OER recommender systems will also take the user's context into account when suggesting appropriate OERs. Tools will be available that support the simple repurposing of parts of OERs (e.g. Verbert et al., 2012a). Consequently, the metadata standard for OERs will draw on the findings of research on LinkedData for connecting OERs and on the findings of research on BigData for the provision of comprehensible analytics results of their usage.

3. Conclusion

Given that the metadata schema for describing OERs as well as their storage, sharing, and maintenance will be done automatically (as much as possible), it will be much simpler for teachers to use OERs in future learning scenarios. Teachers can easily adapt OERs to their specific learning scenario, thereby creating new OERs and experiences that will then be shared as integral part of the OER. OERs will be independent of the specific learning scenarios, might that be mentor-oriented, based on peer-learning, or old-fashion classroom style.

4. References

[Duval & Hodgins, 2003] Duval, E. and Hodgins, W. (2003). "A LOM research agenda," Proc. 12th WWW conference, Budapest, Hungary, 2003, pp. 1-9.

[EC 2010a] COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS An Agenda for new skills and jobs: A European contribution towards full employment, COM (2010), 682 final (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:0682:FIN:EN:PDF>)

[EC 2010b] New skills for New Jobs, experts group report, European Commission 2010, (http://ec.europa.eu/education/focus/focus2043_en.htm)

[OECD 2007] CENTRE FOR EDUCATIONAL RESEARCH AND INNOVATION. Giving Knowledge for Free. THE EMERGENCE OF OPEN EDUCATIONAL RESOURCES. OECD 2007

- [Okada et al., 2012] Eds.: Okada, A., Connolly, T., Scott, P.J. (2012). *Collaborative Learning 2.0: Open Educational Resources*, Hershey: IGI Global, 2012, doi:10.4018/978-1-4666-0300-4
- [Schmitz et al., 2011] Schmitz, H.-C., Wolpers, M., Kirschenmann, U., Niemann, K. (2011). Contextualized Attention Metadata, Human Attention in Digital Environments, Ed: Roda, C.: Cambridge University Press, Cambridge, US
<http://www.cup.es/catalogue/catalogue.asp?isbn=9780521765657>
- [Verbert et al., 2012a] [Verbert, K.](#), Ochoa, X., Derntl, M., Wolpers, M. & Duval, E. (2012). *Semi-automatic assembly of learning resources*. *Computers and Education*, 59(4), 1257-1272.
- [Verbert et al., 2012b] Verbert, K., Manouselis, N., Ochoa, X., Wolpers, M., Drachsler, H., Bosnic, I., and Duval, E. (2012). Context-aware recommender systems for learning: a survey and future challenges. *IEEE Transactions on Learning Technologies*, 5(4)
- [Angehrn et al., 2012] Albert Angehrn, Kyung-Hun Ha, Philipp Holtkamp, Marco Luccini, Boriana Marinova, Dawn Jarisch, Nele Leirs, Erlend Øverby, Jan Pawlowski, Henri Pirkkalainen, Christophe Terrasse, Krassen Stefanov, Airina Volungevičienė, Kristina Mejeryte-Narkeviciene, Margarita Tereseviciene. OpenScout Public Deliverable D6.2.4 Final Evaluation Report, <http://www.openscout.net/filesrep/category/16-wp-6-deliverables?download=84%3ADeliverables/d-6-2-4-openscout-final-evaluation-report.pdf> (retrieved 25 April 2013)