OPEN EDUCATIONAL PRACTICES: MOTIVATING TEACHERS TO USE AND REUSE OPEN EDUCATIONAL RESOURCES[*]

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Abstract

The paper presents the Open Educational Practices (OEP) initiative that was implemented in Greece, as part of the national strategy for digital educational content in primary and secondary education. It aimed at encouraging and motivating teachers to develop and share OEPs that draw upon the use and reuse of Open Educational Resources (OERs), found either at the Photodentro national content repositories for school education or elsewhere. A new Photodentro Repository for Open Educational Practices on resource-based learning was developed and used by teachers to host and share OEPs. A model structure and a template for describing OEPs, along with a set of quality criteria for OEPs are proposed. The country-wide action "i-participate", supported by a network of regional ambassadors and a web portal, and the 1st Hellenic contest for best OEPs in K-12 education are also presented.

Keywords: Open Educational Practices, OERs, resource-based learning, Photodentro, Open Badges

1. Introduction

Digital educational content constitutes a key pillar in many National Initiatives to effectively support ICT in school education (iTEC, 2011). The creation of digital educational resources, the development of on-line services for the systematic management, effective search, and wide availability of educational resources in school communities, as well as the design of methodological and pedagogical frameworks towards the improvement of the learning process are common objectives in the education policies of many countries.

Openness in education is a new paradigm of social production; In (Peters, 2008), Peters explores the movement of open education and the political, social, economic and technological frameworks that enable and permit greater *"democratic use and reuse of educational resources"* and *"the virtues of openness, such as the ethics of participation, collaboration, co-production, co-design and co-evaluation"*. Open Educational Resources (OERs) have become a widely discussed topic in recent years. OERs are teaching, learning and research materials of any type, which are either in the public domain or released with an open copyright license (UNESCO, 2012); in both cases, everyone enjoys free access to OERs and free permission to Revise, Remix, Reuse, and Redistribute, the 4Rs of OERs as defined in (Hilton et al., 2010; Wiley, 2009). A significant report by OECD (OECD, 2007) discusses fundamental questions such as what is an OER, who is using and producing OERs, why people are sharing for free, how OER projects can be sustainable. OLCOS report (Geser, 2012) focuses on policies, institutional frameworks and business models, open access and open content repositories, laboratories of open educational practices and resources, emphasizing that *"OERs are understood to be an important element of policies that want to leverage education and lifelong learning for the knowledge economy and society"*.

Regarding primary and secondary education, an increasing number of educational institutions and individuals are producing OERs. In addition, more and more Ministries of Education (MoE) are investing in building their own central, nation-wide OER Repositories (i.e. on-line digital libraries for hosting OERs, that provide the infrastructure and the tools to manage, classify, and describe OERs with metadata, as well as efficient search mechanisms), or aggregators (i.e. refaratories, that collect links to OERs stored in various repositories). Examples of national OER Repositories for K-12 education include the Flemish portal KlasCement *(www.klascement.net)* in Belgium; the Photodentro repository ecosystem in Greece

(photodentro.edu.gr); the Scuolavalore portal in Italy *(www.scuolavalore.indire.it);* the "portal das escolas" in Portugal *(www.portaldasescolas.pt*); and the Koolielu portal in Estonia (*koolielu.ee*).

While however there exist several OERs and OER repositories, their adoption by teachers seems to be slow. In (Geser, 2012) the need to "*foster open practices of teaching and learning that are informed by a competency-based educational framework"* is emphasized.

This paper focuses on Open Educational Practices (OEP) and presents an initiative that was designed and successfully implemented by CTI "Diophantus" under the "Digital School" large-scale Hellenic national framework for primary and secondary education. The overall context, including the Hellenic OER Repository Infrastructure for primary and secondary education, is described in section 2; section 3 focuses on the OEP concept, the needs, and the proposed OEP structure; the Photodentro Repository for OEPs is presented in Section 4, while in section 5, the i-participate action and portal for engaging and supporting teachers are given; finally, section 6 presents the 1st Hellenic contest for OEPs, as well as the OEP quality criteria and Open Badges.

2. The framework: the Hellenic infrastructure for open educational resources

Digital School is the Hellenic national framework for the modernization of school education in Greece, consisting of five pillars. The flagship, nation-wide program *"Digital School Platform, Interactive Books, and Learning Object Repository"*[†] was the main program that implemented the educational content pillar (2010-2015). In this context: (a) More than 7,500 Open Learning Objects (i.e. small, reusable OERs (Wiley, 2000) that are semantically and technically autonomous and are distributed under CC open licenses) have been developed by 120 qualified teachers in 10 domain-specific workgroups, each one operating under the supervision of a scientific coordinator; another 1,000 OERs were identified and extracted out of existing educational software products; (b) All school textbooks (~250) have been made openly available online *(ebooks.edu.gr)* in various digital forms, either pdf or editable html, while more than 100 of them were enriched with click-and-play OERs, resulting in interactive textbooks. Linking OERs within textbooks' open html proved to be a good, alternative approach for associating OERs with learning goals of the curriculum; (c) The *Photodentro* Hellenic Educational Repository Infrastructure for K-12 Education has been developed for hosting, organizing, and distributing OERs for schools. It implements the Hellenic National Strategy for educational content, which -among others- promotes the use of OERs for schools; and (d) the social *Digital Educational Platform e-me (e-me.edu.gr)* (Megalou et al., 2015) has been implemented, offering a safe working space for all pupils and teachers, with a modern and intuitive environment, to share their content, communicate, and collaborate with mates, publish their work, download useful apps, and efficiently exploit OERs.

The *Photodentro* ecosystem consists of a series of OER repositories, each one hosting different types of OERs or serving a different purpose: *Photodentro LOR (photodentro.edu.gr/lor)* hosts more than 8,500 open Learning Objects for K-12 education (Megalou & Kaklamanis, 2014), covering a wide range of disciplines and grades; *Photodentro EduVideo (photodentro.edu.gr/video)* hosts ~1,000 short length, curriculum-related educational videos, suitable for in-class use; *Photodentro EduSoft (photodentro.edu.gr/edusoft)* hosts 140 educational software products for download; *Photodentro UGC (photodentro.edu.gr/ugc)* allows teachers to upload and share their own resources, thus representing the user-generated branch of the ecosystem; *Photodentro Cultural (photodentro.edu.gr/cultural)* is a thematic aggregator for educational cultural objects, providing access to 7,500 selected objects from Europeana collections. Last but not least, the *Photodentro Greek National Aggregator* of Educational Content *(photodentro.edu.gr)* has been developed, providing seamless access to 17,200 OERs; it operates as the national service for harvesting educational metadata from various repositories and collections, serving as the focal access point to learning resources for schools in Greece.

3. Open educational practices on the effective use of OERs in school education

Open Educational Practices (OEPs) are teaching techniques that draw upon OERs in order to facilitate collaborative and flexible learning (Beetham et al., 2012). Various groups and scholars have defined OEPs. Ehlers defines OEP *"as practices which support the (re)use and production of OER through institutional policies, promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path"* (Ehlers, 2011).

[†]*"Digital Educational Platform, Interactive Books, and Learning Object Repository"* Hellenic National Program (http://dschool.edu.gr), co-financed by the European Union (ESF) and National funds in the context of Operational Programme "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF), coordinated and implemented by the technical partner of the Greek Ministry of Education "Computer Technology Institute and Press - CTI DIOPHANTUS" (www.cti.gr), Strategy and Digital Educational Content Directorate. Duration: 2010-2015. Budget: 8,75 million euro.

Having developed some thousands of OERs and a large-scale Repository Infrastructure for organizing, hosting and delivering them to the educational community, the next strategic goals in the context of the Digital School framework in Greece were:

- to boost the use of OERs of existing OER repositories;
- to involve teachers in the content creation process by motivating and supporting them to use, reuse, remix, and create new OERs from existing ones;
- to encourage the role of teachers as content creators;
- to develop active communities of practice on *resource-based learning*;
- to encourage sharing of *Open Educational Practices*; and
- to foster Open Practices in Education.

Towards these goals, we defined Open Educational Practice (a) as a reusable, teaching practice on resource-based learning; (b) that draws upon OERs; (c) has been implemented in a real educational setting; and (d) its creators openly share with others, along with the associated results, experiences, and reflections.

Thus, in this context, an Open Educational Practice is not just a learning scenario or a set of learning activities that draw upon OERs; in order to be considered as an "educational practice", it was a prerequisite for a learning scenario to have been implemented in a real educational setting, involving pupils, so that it can operate as a workable example for others through its extension, adaptation, or customization. The educational context is determined by the environment that the scenario applies, inside or outside a classroom, the pupils' level, etc.

Resource-based learning has been adopted as the educational approach for Open Educational Practices. The approach actively involves pupils in the effective use of a wide range of appropriate resources (Hambleton, 1992). Resource-based learning is pupil-centered. The emphasis is given to pupil activities and on their development of skills and strategies (critical thinking, problem-solving, communication and creativity). Constructionism, Learning by Design, and Project Based Learning can be used as models for implementing resource-based learning in the classroom (Campbell et al., 2002).

3.1 Describing open educational practices: OEP model structure

In order to support teachers in the development and sharing of OEPs, we defined a model structure for the description of OEP along with an OEP Template that included the following sections:

1. OEP summary;
2. OEP design and learning goals (initial goals set should not necessarily be achieved; unexpected outcomes are considered equally significant);
3. The educational context where the OEP has been applied (what, where, and how);
4. OEP detailed description, focusing on how OERs have supported learning activities and how pupils have been involved in the process; the Role of teacher in the process is described as well;
5. List of OERs used, reused, or produced;
6. Documentation of the OEP's extensibility and reusability, including:
   a. Results and Impact: added value, pedagogical outcomes, changes to the initial design etc.
   b. Innovative characteristics and Relation with existing OEPs
   c. Extensibility and Reusability to other educational contexts

4. Photodentro OEP: a repository for open educational practices

The "*Photodentro OEP*" repository was designed and developed to host, organize, and allow teachers to share Open Educational Practices for primary and secondary education. It is part of the *Photodentro* ecosystem, operating at *http://photodentro.edu.gr/oep*. All OEPs are freely available to everyone and are provided under Creative Commons BY-NC-SA license.

In order to upload and publish OEPs, teachers have to register and create a public profile. LDAP (Lightweight Directory Access Protocol) directory services are used to certify teachers' identity. Teachers are encouraged to include in their profile their professional experience, achievements, studies, publications etc. The list of their OEPs and any other social contribution (e.g. comments and ratings) is part of their public profile; this social approach supports a significant goal of *Photodentro OEP*: to build a *professional* social network of teachers on resource-based learning, OERs and OEPs.

No prior validation is needed for making an OEP public in the *Photodentro OEP* repository; it is part of the design approach to trust teachers at first place and take actions only if an issue appears. Each OEP initially labeled as non-checked; content is then checked under certain rules that aim mainly at avoiding links to external sites with ads or inappropriate content, or potential future broken links. A list of

"trusted" educational repositories or aggregators of OERs is provided, including Photodentro, LRE for schools service by European Schoolnet *(lreforschools.eun.org)*, and ODS portal *(opendiscoveryspace.eu)*.

As a means of describing and indexing its OEPs, *Photodentro OEP* makes use of metadata based on the IEEE LOM specification (IEEE, 2002). OEPs are organized into collections, each one corresponding to an educational level: pre-primary, primary, lower and upper secondary education. *Photodentro OEP* supports free text search, browsing, and faceted search, allowing users to narrow search results by applying multiple filters. Each OEP has a unique persistent identifier. Everyone can freely preview or download OEPs. *Photodentro OEP* implementation is based on DSpace (*www.dspace.org*), an open source platform for building digital repositories.

Photodentro OEP supports ratings and comments by registered users. A five-star rating system allows users to evaluate OEPs on the following aspects: (a) Overall Approach and Innovation; (b) Focus on 21st century skills; (c) Methodology; (d) Impact, Usefulness and Extensibility; and (e) Description and Presentation of OEP.

Photodentro OEP provides a form-based environment for registered users (teachers) to upload, describe and publish their OEP. The process has three steps: 1- Uploading OEP files; 2- OEP Metadata authoring; and 3- OEP Publishing.

OEP files include: a) an OEP thumbnail; b) The OEP documentation file (pdf). Teachers are asked to describe their OEP following the prescribed OEP model structure. The use of the OEP template is strongly recommended. Guidelines are given as well, encouraging teachers to focus on OEP results and impact, added value, and OEP extensibility; c) Any supporting material like pictures, video, other outcomes (optional); and d) An OEP presentation (optional); a presentation template is provided as well.

Teachers are also asked to provide a small set of metadata that include: title, short description, keywords, OEP type, thematic classification (using the *Photodentro* school taxonomy), educational level / grade, contributors, and distribution license.

5. Supporting and motivating teachers: the i-participate action

The Hellenic Open Educational Practices initiative was supported and promoted by the *"i-participate"* action. The action aimed at motivating and facilitating teachers to use, reuse, develop, and share OERs and OEPs for primary and secondary education. Teachers were encouraged to contribute their resources to the two dedicated National Repositories for teacher-generated content and open educational practices *Photodentro UGC* and *Photodentro OEP* respectively. The overall goal was the development of an innovative and active teacher community on resource-based learning and open practices.

The *i-participate* model was based (a) on a network of (five) regional ambassadors, whose role was to organize and run local and regional events and workshops with teachers, to increase teachers' awareness on OERs and existing repositories, and to motivate and support them in developing and sharing OEPs; and (b) the *i-participate* portal *(i-participate.gr),* a workplace where teachers find supporting materials, are informed about relevant events and workshops, and participate to discussion forums. Within eight months, the ambassadors have organized and run around 30 local events, where more than 500 teachers have participated. Co-organizing workshops with other local events proved to be a successful approach. Webinars also took place. Given that *i-participate* was part of the Digital School framework, the official MoE channels at a regional level have been used to inform teachers.

6. Open educational practices contest

The 1st Hellenic Contest on Open Educational Practices in primary and secondary education was organized and took place in August 2015. Its main goals were: (a) To award innovative ideas and best Open Educational Practices, highlighting creative and constructive use of open, digital educational content in the learning process; (b) to serve as a motivation for teachers to submit OERs and OEPs to *Photodentro UGC* and *OEP repositories*; (c) to increase awareness of the educational community on the results and infrastructure developed in the context of the Digital School program.

6.1 Quality criteria for open educational practices & open badges
The set of Quality criteria for evaluating Open Educational Practices were:
- Overall pedagogical approach and innovation i.e. Does it bring something new? Does it offer added value? Are pupils involved in the process? Do they create something or develop collaborations?
- Focus on 21st century skills, including: Thinking skills (problem solving, critical thinking, logical, numerical); Communication skills (reading, writing, speaking, listening); Teamwork skills; Ability to adapt to changing circumstances; Ability to learn independently; Networking and Social Skills
- Innovative pedagogical practices and methodologies;

• Documentation of the Open Educational Practice, i.e.: Is the OEP description complete and concise? Is the language used appropriate and easy to understand?

• Importance, Usefulness, Reusability and Extensibility, i.e. how useful, reusable, or exploitable is the OEP for others.

The contest had four sections/categories, each one corresponding to an educational level (pre-primary, primary, lower and upper secondary education), and it provided for three Best OEP winners per category. The concept of Open Badges (*openbadges.org*) was adopted to award Good and Best OEPs.

6.2 OEP contest results and next steps

Sixty five (65) OEPs were submitted within three months, the majority of which of a high quality. All OEPs are available at the *Photodentro OEP* repository. Two types of OEPs were identified: (a) where effective use or creation of OERs happened in the context of (usually long-term) projects, either local or European, that schools have participated; and (b) where OERs have effectively been utilized, extended, or customized in a short-length (1-2 hour) session of learning activities in a classroom setting.

The overall approach of the Hellenic Open Educational Practices (OEP) initiative proved to be very successful. The OEP contest is now planned to take place on an annual base.

The OEP contest idea has been endorsed by LangOER European project (*langoer.eun.org)* that aims at raising awareness on OERs for less-used languages and demonstrating best practices. The OEP initiative formed a core part of the LangOER teacher workshop in Greece; the result proved the significance of creating synergies among National strategies and European initiatives.

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