Institutional Open Access Repositories in College Education: A proposal for their role in Open Educational Resources in Greece

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Abstract

A series of actions have been carried out by European Union bodies towards the use of information technology in education, which led to the idea of e-learning and the advantages such practice could have. Many services, software and tools have been developed on top of e-learning. This has put on the map the issue of Open Educational Resources (OERs). This paper highlights the role that Open Access repositories could play in Greece as far as the OERs are concerned. The topic is approached supra-nationally and specifically in relation to the following European projects: e-Europe, e-Learning and OLCOS. It is attempted, through a European case study, to point out the importance of institutional repositories as key players in OERs administration. The paper concludes in suggestions that concern current Greek reality, considering that now is the right time for further development of OERs in the country, as a significant number of repositories in college education already exists. These suggestions point some necessary actions that aim at enhancing open access educational practice for the benefit of the end users through the common use and reuse of OERs.

Keywords: Open Educational Resources (OERs), institutional repositories, college education, Greece, Open Access

"Every society has resources that are free and resources that are controlled. A free resource is one that anyone equally can take; a controlled resource one can take only with the permission of someone else. $E=MC^2$ is a free resource. You can take it and use it without the permission of Einstein estate. 112 Mercer Street, Princeton, is a controlled resource. To sleep at 112 Mercer Street requires the permission of the Institute for Advanced Study"

Lessig, 2002

1. Introduction

It is quite clear that there is an increasing interest for the creation of open access repositories both at the national and transnational level, through European programs and cooperation initiatives. Information should be provided in the best possible way to all end users, at the proper quality and size. As members of the Information Society we realize that there is a constant effort to overcome certain obstacles – both at the transnational and national level – that impede information access.

One could initially address the issue of Open Educational Resources, through registering and shortly analysing open access repositories as a political phenomenon. This view is supported by the fact that politics can be viewed through three different angles, and more specifically as a relationship, a value or a process (Kouskouvelis, 1997). Thus, certain relationships are being established among end users, information scientists, trainers and trainees in educational institutions and a large number of other actors that wish to exchange information through digital repositories.

The value of this process stems from the basic model on which digital repositories are 'built': the open access model. As Zmas (2007) puts it: "…knowledge and information can now be found at the heart of the European university". This process starts with the establishment of a methodology that is being followed up to the final integration of print information into the information 'reservoirs' of digital repositories. Print documents include books, magazines, conference minutes, scientific papers etc.

It is thus quite obvious that the future of information lies mainly upon the correct use of technological developments. However, there seems to be a certain amount of reluctance on the part of universities, concerning the use of open access information and digital repositories. This phenomenon is mainly due to the fact that the scientific community does not have the adequate information in order to evaluate the progress of their deposited documents.

Despite that fact, there seems to be an increasing intention to create and properly manage open access repositories in Greece, attested by the increasing amount of recently founded Greek digital repositories. The key elements for the development of those repositories lie in providing adequate information to the administration and scientific staff of universities, so as to promote the complete integration of this new information model.

2. Designing the Education of the Future
2.1. eEurope

The transition to a digital information economy is considered to be fundamental for financial development, competitiveness and employment in the EU. Furthermore, it is expected to improve the life quality of EU citizens and protect the environment.

In order to create a wide "Information Society" the Committee launched the eEurope initiative in December 1999, an ambitious project aiming at spreading Information and Communication Technologies (ICTs). The main objectives of this initiative were:

- Introducing European citizens into the digital era and online.
- Building a digitally literate Europe, supported by an entrepreneurial culture, and
- Making sure that the process is socially inclusive and builds consumer trust.

2.2. 1st phase: eEurope 2002

The eEurope 2002 action plan was adopted by the Feira Council in June 2000 and is part of the Lisbon Strategy for financial, social and environmental reform. The plan was updated with eEurope+, which was launched following an appeal by the Feira Council for the adoption of the Lisbon strategy. The action plan included 11 fields of action and 64 goals that should be reached by the end of 2002 (European Commission, 2003).

The eEurope 2002 action plan was generally quite successful in bringing European citizens and businesses into the digital era and online, as well as in establishing a framework for the development of a knowledge economy. More specifically:

- A significant increase in internet connectivity was observed, and
- A legal framework was established for online communication and e-commerce.

If Europe wishes to create a knowledge economy, it should invest in the modernization of education and provide schools, teachers and students with an easy access to high quality information and communication resources.

The progress marked during the first phase of the eEurope initiative, through the eEurope 2002 action plan, in improving school internet services and providing computer equipment for staff members and students, has been quite significant. Annual surveys that were conducted in order to monitor educational improvements as perceived by the teaching and administrative staff, produced the following results (European Commission, 2003):

- Computer equipment levels within the EU are high and constantly increasing.
- The main factor influencing the levels of computer equipment is the level and type of education.
- 93% of the schools were already connected to the internet since February 2002.
- As regards bandwidth, narrowband connections seem to be more common. However, since late 2002, broadband connections have been constantly increasing.
- Since late 2002, more than half of the EU teachers have been formally trained in the use of computers and four out of ten know how to use the internet.

Schools are increasingly interested in electronic educational products and services and the framework of their use. Their interest exceeds connectivity and infrastructure issues and touches upon issues of content, teacher training, consequences on organizational structures, as well as new social impacts outside of the educational environment.

2.3. 2nd phase: eEurope 2005

This action plan is the successor of eEurope 2002, following the same approach and setting specific goals. The eEurope 2002 action plan aimed at improving internet connectivity in Europe, which could be "interpreted" into an increase in relevant financial activities. This was the actual focus of the eEurope 2005 action plan. It aimed at accelerating the creation of new legislative frameworks and reorienting the already existing programs, based on certain priorities. More specifically, it aimed at: boosting services, applications and content that can create new markets and minimize costs. The plan focused on fields where politics could provide added value and contribute to the creation of a positive environment for private investments (European Commission, 2002).

The goals of eEurope 2005 can be summarised as follows (they were to be achieved by the end of 2005):

1. Modern public internet services
2. Electronic government services (eGovernment)
3. Electronic education services (eLearning),
4. Electronic health services (eHealth),
5. An active electronic environment for businesses (eBusiness)

And in order to achieve the above mentioned goals:

- Wide broadband connectivity in competitive prices
- Secure information infrastructures

The action plan was structured around four interconnected lines (European Commission, 2002):

1. Political measures in order to reform and adapt legislation, at the national and regional level, promote competitiveness and interoperability, raise awareness and express political will.
2. Measures that should be based on the development, analysis and diffusion of best practices.
3. Measures that focus on a comparative evaluation of the progress marked, and
4. The coordination of existing policies and proposed actions.

Ever since its first implementation, the eEurope initiative has had a wide political impact, reinforcing existing initiatives and promoting the creation of new ones. One of its main principles was the establishment of policies at the European, national and regional level.

E-initiatives and support programs are now very common within the EU, and are even being launched by individual member-states and regions. The example of the EU has been followed by other geographically European and candidate countries, such as Norway with the eNorway initiative.

2.4. The eLearning program (2004-2006)

The eLearning program was mainly based on the eLearning action plan 2001-2004, approved on May 24 2000 (European Commission, 2001, 173), and the eLearning initiative (European Commission, 2000, IP/00/522). The initiative's main goal was to optimize the use of new technologies, multimedia and the internet, as well as to improve the quality of education and

facilitate access to information services. The program aimed at supporting and further developing ICTs in education and training. Its main aim was to promote high quality education and address the needs of the knowledge society through a lifelong learning framework (European Commission, 2009, 159).

The available budget for the period 2004-2006 amounted to 44 million Euros, 45% of which was used to finance the collaboration of schools through ICTs (the eTwinning project). New organizational models were developed in order to create virtual educational spaces and add a virtual dimension to the European University Cooperation. Digital literacy was further reinforced through the promotion of all the necessary skills required in an information society.

The program was extremely successful in achieving short-term benefits for several institutions. Over 98% of the eLearning coordinators surveyed believed that their projects had a positive impact on improving cooperation among institutions. Other benefits of the program include transnational cooperation, communication and exchange of best practices. The eLearning program was also quite effective in producing positive results for staff-members and teachers. 75% of the respondents agree or totally agree that their projects had a positive impact on the quality of teaching, learning and the curriculum (European Commission, 2009, 159).

Overall, the eLearning program has positively contributed to the goals of Education and Training 2010. It produced significant results in promoting knowledge society skills and reinforcing access to ICTs. 67% to 75% of the respondents agree or totally agree that their projects contained significant models of digital literacy (European Commission, 2009, 159).

The eTwinning program has been extremely successful in creating an innovative and interesting free access model for schools, through the eTwinning portal and a peer browsing service, as well as through the organization of projects at the school level and the promotion of educational counselling and best practices. This approach has proven to be quite popular for the target public and extremely cost-effective. The program has actually exceeded expectations for participation and popularity.

The eLearning activities are now part of the EU lifelong learning program. The eTwinning is part of the Comenius program and virtual educational spaces are part of the Erasmus program.

2.5. The i2010 Initiative

The i2010 initiative is an effort of the Committee to respond uniformly to the needs of the information society and establish legal frameworks for the audiovisual sector in Europe. The initiative aims at coordinating the actions of member states, in order to achieve digital convergence and address challenges linked to the information society. In order to form this strategic framework, the Committee 'drew inspiration' through a large scale debate of all interested parties, concerning older initiatives such as eEurope, eLearning, eTwinning etc.

The Committee proposes three priority goals that should be achieved by the end of 2010 through European policies at the fields of information society and the media (European Commission, 2005, 229). More specifically, the initiative aims at: creating a unified European information space, reinforcing innovation and investments in ICT research and developing an information and media society, based on social integration.

The Committee wished to create a more open and competitive internal market for information society and the media. The first aim of the i2010 initiative was to create a unified information space, providing accessible and secure communication, differentiated and high quality content and other digital services. In particular, the Committee was aiming at achieving the following:

- Faster broadband services in Europe.
- Encouraging the introduction of new internet services and contents.
- Promoting equipment and platforms that "talk to one another", and
- Making the internet safer against fraudsters, harmful content and technology failures.

In order to create a unified European information space, according to the i2010 initiative, the Committee proposes to (European Commission, 2007, 694):

- Revise the regulatory framework on electronic communications, so as to include an effective strategic management of the radio spectrum.
- Create a cohesive framework for the services of information society and the media.
- Provide constant support to the creation and diffusion of European content, such as eLearning, eContentplus and all future initiatives.
- Define and implement a strategy that promotes a safe European information society, mainly through self protection, threat monitoring, rapid and effective response to attacks and system failures, and
- Organize and promote targeted action on interoperability issues and especially on digital rights management.

2.6. The OLCOS Project

As part of the EU electronic education initiative (eLearning), open educational content monitoring services –i.e. the OLCOS Project – implement a series of actions that aim at reinforcing the creation, widespread use and reuse of Open Educational Resources (OER) in Europe and throughout the world. The OERs include teaching and learning content, tools based on specific software and services, as well as licences that allow the development and reuse of content, tools and services (Geser, 2007). This project wishes to present the existing situation and possible future developments on OERs, while recording a series of proposals and strategies to address the existing issues.

Despite the fact that the results expected from the OLCOS project may support government and institutional decisions, there is a strong need for a strategic leadership in decision-making processes, so as to implement measures that further promote educational practices and open educational resources. OERs are a key factor for decisions that aim at reinforcing education and lifelong learning within the information society and economy. However, the project insists that it is equally important to promote innovation and bring about change in educational practices (Geser, 2007).

The OLCOS project provides significant information on OERs. More specifically, it is quite clear that if OERs are implemented in the prevailing teacher-centered educational model, both students and teachers will be able to develop the necessary skills and knowledge, so as to actively and efficiently participate in the information society and economy.

It is clear that there is an urgent need to reinforce open access teaching and learning practices, on the basis of an educational framework that promotes the development of all the required skills. Nevertheless, it is obvious that progress in this field can only be achieved in the long run, gradually and at the right 'pace'. Change can be brought about only with targeted and sustainable efforts by politicians and other actors responsible for shaping educational policies.

2.7. Conclusions

New information and communication technologies (ICTs) deeply affect the ways in which we obtain information, communicate and learn. The challenges for education and training are multifaceted and touch upon different parts of society (European Commission, 2001). These technologies entail challenges for the industry, which uses and produces them; challenges for employment, since it creates new professions and professional skills; and finally, cultural challenges, with the development of new internet services that affect cultural habits and are considered to be either a threat or a chance to achieve cultural and social diversity.

Challenges for education are equally important. Nevertheless, innovative technologies should explore their full potential for the benefit of education and prove their effectiveness in different learning fields, respecting linguistic, cultural and social diversity.

Furthermore, financial challenges are definitely present in the field of education. The use of ICTs should adjust to different educational goals and existing financial means, in order to strike a balance between infrastructure, education, content and human resources.

The fact that education can be found at the heart of innovation and EU decisions, demonstrates the significance of this field for the implementation of ICTs. Actually, it seems that the concept of education has become a 'pillar' for information accessing.

3. Looking into today's education

ICTs are changing education by helping broadening access to educational materials. Many new services and products have been developed for this purpose, such as Virtual Learning Environments (VLEs), digital repositories and Open Educational Resources (OERs), and many institutions have been changing the course of education towards a more open model for accessing educational information. Looking profoundly into today's education, there is a new trend, that is OERs.

According to Madden (2010), there is no need for an institution to create OERs if they can't be shared. But what is exactly an Open Educational Resource and how is related to Institutional Repositories and Open Access?

According to OLCOS Roadmap 2012 (Geser, 2007) there is no accredited definition of OERs, but the following core attributes would characterize any possible OER definition:

- *access to open content (including metadata) is provided free of charge for educational institutions, content services, and the end-users such as teachers, students and lifelong learners;*

- *that the content is liberally licensed for re-use in educational activities, favorably free from restrictions to modify, combine and repurpose the content; consequently, that the content should ideally be designed for easy re-use in that open content standards and formats are being employed;*

- *that for educational systems/tools software is used for which the source code is available (i.e. Open Source software) and that there are open Application Programming Interfaces (open APIs) and authorizations to re-use Web-based services as well as resources (e.g. for educational content RSS feeds)*

Atkins, Brown and Hammond (2007), in their report to The William and Flora Hewlett Foundation proposed the following definition: *OER are teaching, learning, and research resources that reside in the public domain or have been released under an intellectual*

property licence that permits their free use or re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge.

According to UNESCO (2002) the recommended definition of Open Educational Resources is: *The open provision of educational resources, enabled by information and communication technologies, for consultation, use and adaptation by a community of users for non-commercial purposes.*

Wikipedia (2011) defines OERs as *digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research.*

One could easily assume the relation of Open Access and Open Educational Resources. But, let us document the term of Open Access as National Documentation Center (2011) of Greece defines it: *Open Access is the open, direct, constant and free of charge and most of the legal intellectual property limitations internet access to digital academic and scientific content. Users can use freely the available material for educational and other purposes.*

Thinking of the above definition and having in mind what an OER is, it is understood that both terms use within their definitions the words free, open, use and access alone or combined as phrases, meaning that both the movement of OA and the OERs refer to the fact that one can access freely scientific and educational content, respectively. Furthermore, the principle underlying both terms is summed up to the following statement: *the commitment to the value and quality of research and educational information carries with it a responsibility to extend the circulation of this work as far as possible, and ideally to all who are interested in it and all who might profit by it* (Willinsky, 2005). However, in order for these materials to be accessed openly, it is presupposed that they are hosted in places that can support efficiently not only free access, but search and indexing functions, metadata administration and preservation and Intellectual Property Rights management mechanisms; as well as established policies upon which all mentioned above can rely and function properly for the benefit of the end user.

Institutional Repositories (IRs) could play this role as they bring together all these supporting mechanisms. IRs fulfill four functions that are directly related to their content: They are institutionally defined; they contain a wide range of materials, scholar and educational, which represent the intellectual wealth of an institution; they are cumulative and perpetual, and thus act as an archive and open and interoperable (Crow, 2002 and Prosser, 2003). In Greece, Open Access IRs have developed mainly among colleges, as 21 Colleges run their own OAI IRs as shown on the following table (Georgiou and Papadatou, 2010):

No	Title	Organization	Content
1	Bibliotheca	Technological Educational Institute of Crete	Grey Literature
2	E-Locus	University of Crete	Grey Literature, Archives
3	EPRINTS server of the Computational Systems & Software Engineering Laboratory	University of Macedonia	Grey Literature
4	Anaktisi	Technological Educational Institute of Western Macedonia	Grey Literature
5	Grey Literature of the Aegean University	Aegean University	Grey Literature
6	AUTH Digital Collections	Aristotle University of Thessaloniki	Grey Literature, Archives, Special Collections
7	Estia - Digital Repository of Harokopio Unversity	Harokopio University of Athens	Grey Literature
8	Eureka!	Technological Educational Institute of Thessaloniki	Grey Literature, Archives, Journals Articles
9	Helios: Repository of the National Hellenic Research Foundation	National Hellenic Research Foundation	Grey Literature, Archives, Journals Articles, Books
10	Psepheda	University of Macedonia	Grey Literature, Archives, Journals Articles,Special Collections
11	DSpace at NTUA	National Technical University of Athens	Grey Literature, Archives, Journals Articles,Special Collections
12	Dpt of Electrical & Computer Engineering: Repository	Aristotle University of Thessaloniki	Grey Literature
13	Digital Repository of Agricultural University of Athens	Agricultural University of Athens	Grey Literature
14	Ktisis - Institutional Repository	Technological University of Cyprus	Grey Literature
15	Nemertes - Institutional Repository	University of Patras	Grey Literature
16	Pandemos	Panteion University of Athens	Grey Literature, Archives, Journals Articles
17	Grey Literature of Democritus University of Thrace	Democritus University of Thrace	Grey Literature
18	Grey Literature of Technical University of Crete	Technical University of Crete	Grey Literature
19	Digital Library of the University of Piraeus	University of Piraeus	Grey Literature, Archives, Journals Articles
20	Digital Library of the University of Ioannina	University of Ioannina	Grey Literature, Archives, Journals Articles
21	Pergamos Digital Library	University of Athens	Grey Literature, Archives, Special Collections

Table 1: OA IRs in Greece (Georgiou and Papadatou, 2010)

Does really Greece have OERs? Throughout this section a European case study will be presented to show the importance of hosting OERs in repositories and a descriptive study of the current state of educational resources in Greece will be used to point out the need for further development regarding all matters concerning OERs.

3.1. The case of OpenLearn

A typical example where OER can be found is the educational repository of the UK Open University, called OpenLearn (OpenLearn, 2011). The Open University was the first distance education institution and the first UK university to join the OpenCourseWare Consortium (2011), that is a collaboration of higher education institutions and associated organizations from around the world that creates a broad and deep body of open educational content using a shared model (http://www.ocwconsortium.org/). This leadership but also the continuous development of its content, makes OpenLearn a worth mentioning repository.

OpenLearn is a website created from the UK Open University in October 2006. It is part of the Open Educational Resources (OER) project and its main concern is to provide free access to all Open University educational material throughout the world. It uses a Creative Commons Licence (Attribution-ShareAlike-NonCommercial). This means that anyone can share, amend and reuse the contributed material, but not for commercial use. In other words, the OpenLearn

repository contributes in making new knowledge available to all, in allowing users to use and reuse (download, modify, translate, adapt) the educational material and in giving them the opportunity to collaborate so as to modify all this material.

In a Moodle-based virtual learning environment, the Openlearn hosts and gives free access to over 400 structured study units, divided into different disciplines such as Arts and Humanities, Business and Management, Computing and ICT, Education, Health and Social Care, Law, Psychology, Social Science, etc. All material is hosted in "LearningSpace". This area is enriched by learning and communicational tools that support the use of forums, instant messaging, video conferencing and blogging, tagging or labeling of content, learning journals, the creation of personal profiles, the creation of the visual representation of the resources, etc.

Moreover all users can contribute their own educational material using the LabSpace area of the site. OpenLearn declares that in LabSpace someone can:

- *Access all the content and tools from the LearningSpace as well as archived materials that may be useful but need updating*

- *Download the learning materials in several formats and adapt them to suit his needs*

- *Upload her/ his versions to share with the LabSpace community.*

- *Set up a collaboration zone to work with others in creating materials* (OpenLearn, 2011).

The first two years, OpenLearn managed to host over 8000 study hours of learning materials and this rising course still continues. In 2010 OpenLearn made another step forward, by giving access to a variety of topical and interactive content, even to educational videos and games. This was achieved when OpenLearn was merged with open2.net, the online learning portal from the BBC and the Open University (http://www.open2.net/) where the latter broadcasts. Moreover, all users can follow OpenLearn on Twitter (http://twitter.com/openuniversity) or find it on YouTube channels (http://www.youtube.com/ou), Facebook and iTunesU (http://www.youtube.com/ou). It is worth mentioning the feedback that users leave on some of the above social media, expressing the usefulness of OpenLearn: *I've found the resources here to be extremely useful. I'm currently in my first year of an undergraduate degree, but the materials available on Open Learn are a great supplement to that and are often more interesting than the stuff we cover in formal lectures/tutorials* (From repsitory's Facebook wall).

Web 2.0 technologies and other relative social applications along with OpenLearn's licensing model encourages replication of the content and enables interoperability with other provider's content management systems. Users have the ability to download and upload materials in various formats. This way, viral content is created and is accessible for remote communities around the world. The fact that viral content is created enhances the importance of OpenLearn repository adding value to its services (Wikipedia, 2011).

OpenLearn repository could form a paradigm for every institution that wishes to create OERs as it has developed all means and policies necessary for the supporting of OER sharing, the trait that distinguishes them from other similar resource types.

3.2. Monitoring ER in Greece
3.2.1. Methodology

A descriptive study was conducted aiming at monitoring the current situation in Greece as far as the educational resources in college education are concerned. The study objective is to identify the amount and type of educational resources (open, locked, registration required courses), the types of software platform used and matters regarding metadata and IPR licences.

In order to reach the goals of this attempt, information was collected through an onsite (online) inspection of every college in Greece, on January 2011. The sampling covered the entire population of Greek colleges, according to official data provided by the competent ministry, and comprised a total of 38 colleges, 23 of which are Universities and 15 Technological Education Institutes (Ministry of Education Life long learning and religious affairs, 2011). The amount of the courses of each college was calculated separately resulting in a total of 18.527. This figure corresponds to visible courses only, as some college VLEs don't give access to any data. Each course forms a unique entity, that is, every course is counted once even if it appears in more than one software platforms a college may use. The courses are divided into three categories, open, locked and courses that require registration. Open courses are those that give free access to every user, internal (student or college staff) and external (every internet user). Locked are the courses whose content is visible only to registered students under permission granted by their professor. Courses that require registration permit access to registered internal and/ or external users.

The collected data were processed using SPSS 17.0 and produced descriptive statistics. To analyze software type variable set with college type group variable, cross tabulation was implemented. Since the courses came from two different types of colleges possible differences among the three types of courses had to be examined. To evaluate the role of the college type, independent *t-test* was applied. It was found that college type plays no significant role to course type, as *p* resulted higher than 0,005. So, this information will not be further mentioned.

3.2.2. Results

Table 2 shows how many colleges have certain type of VLE software. Out of the 38 colleges that were studied in total, 15 correspond to technological institutions and 23 to universities. According to the results of Table 2, only 2 institutions have an IR where ERs can be found, while the VLEs are most popular. It appears that most colleges have at least one VLE and the most popular platform is the OpeneClass, as 24 out of 38 colleges use it. However, there are four colleges with no software platform at all.

		College Type		Total
		University	Technological Educational Institution	
Software type	Blackboard	2	1	3
	OpeneClass	13	11	24
	Dspace	2	0	2
	Moodle	4	3	7
	CoMPUs	1	0	1
	Claroline	0	2	2
	Custom	3	2	5
	N/A	4	0	4
	Total	**23**	**15**	**38**

Table 2: Software and College Type

Table 3 and Chart 1 show the software type frequencies. At this point, it should be made clear that there are institutions that use more than one platform. Also, there are some colleges that do not use a ready-made platform, but a custom one (13, 2%). Among others, the 63,2% of colleges prefers OpeneClass and 18,4% Moodle.

		Responses		Percent of Cases
		N	Percent	
Software type	Blackboard	3	6,3%	7,9%
	OpeneClass	24	50,0%	63,2%
	Dspace	2	4,2%	5,3%
	Moodle	7	14,6%	18,4%
	CoMPUs	1	2,1%	2,6%
	Claroline	2	4,2%	5,3%
	Custom	5	10,4%	13,2%
	N/A	4	8,3%	10,5%
	Total	**48**	100,0%	126,3%

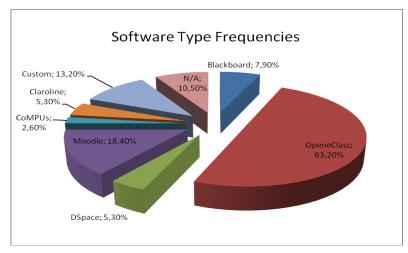**Table 3: Software Type Frequencies**

Chart 1: Software Type Frequencies

These platforms do not host only open educational material, but locked courses or courses that need registration too. In table 4 and chart 2 appear the total numbers and percentages of all courses that have been measured. It is found that all courses are 18.527; Out of those the majority, 47%, are open, 19% locked and 34% courses that require registration. The mean of open courses in Greek colleges is 264,76 per college and the maximum value found in one entry is of 1351 open courses. It seems that open courses are more than half of the locked ones; however, comparing them to registration required courses they don't seem to have a significant difference that is a 13% more. The issue here is that it is not possible to know which of the registration required courses present the same characteristics to the locked ones – regarding level of access to students only (case of locked courses), nor the number of courses needing registration that allow any type of registered user to at least view the course material once registered to the course. In other case, there would be two categories of courses (open and locked) and the comparison would be clearer. Nevertheless, according to the figures of the chart 2, 47% still remains the highest percentage pertaining to open courses.

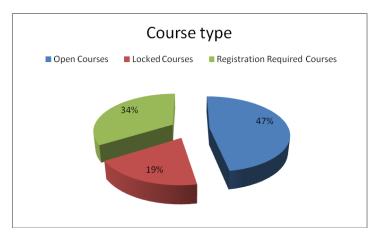|		Open courses	Locked courses	Registration required
N	Valid	33	33	33
	Missing	5	5	5
Mean		264,76	106,21	190,45
Std. Deviation		297,493	186,945	224,518
Minimum		0	0	0
Maximum		1351	779	967
Sum		8737	3505	6285

Table 4: Course type summary

Chart 2: Course Type

As mentioned above (Table 2), there are only two universities that use among others DSpace to host ERs. DSpace software supports metadata schemas and Creative Commons Licences within the default deposit workflow. However, it was found that none of those two repositories assign Creative Commons Licences to their courses. Regarding metadata, both repositories support a Dublin Core schema; University of Patras repository supports LOM data model as well, though it seems that it has not been used so far. VLEs assign neither metadata nor CC Licences to their courses. Concerning content licences inspection showed that every college applies its own respective policy.

3.2.3. Conclusions

The findings of the study show that there is a great number of ERs, though according to the definition of an OER, these cannot be characterized as such. This happens because open courses are of free access but they can't be shared. As a consequence, this educational trust, 47% of the total of courses studied, remains unexploited.

Another issue arises from the fact that the ERs that have been studied here are hosted in a VLE, rather than a repository. It is understood that colleges trust mainly, among others, OpeneClass software, which means that they prefer to use open software and that they seek after the respective support, since OpeneClass has been developed by GUnet, the Greek Universities network. At the time being, those VLEs are not customized in a way that will allow sharing of content. Although the repositories studied use a software system that can support sharing, that doesn't apply, because the policies formulated prevent it from happening. Another finding is that repositories do not seem to be quite popular for the hosting of ERs, since the two colleges that have repositories use a VLE too; particularly, their VLEs host the majority of courses.

Sharing is not supported in any way, as each college applies its own policy. So, the concept of open content, in terms of access only, can stand, but the concept of OERs cannot. This is clear not only regarding educational material but the scholar one hosted in IRs as well. It is not the technological infrastructure that lacks, nor the know-how in building such services, but a central coordination concerning on how all this can be put together and function through a viable model that will allow a fair, as possible, adjustment to Information and Knowledge Society, that will consist of skilled citizens who will be equal to it.

It is obvious that a common central policy and a clear legal framework as far as OERs and repositories are concerned needs to be enacted, as a start point for every other change related

to practical matters, such as semantic metadata creation, clear licensing statements and support, awareness raising campaigns, motivation issues regarding educational community, student engagement, etc., as explicitly listed in OLCOS Roadmap 2012 (Geser, 2007).

4. Recommendations

As mentioned above, the number of ERs in Greece is remarkable, as it is also evident the interest for free access to the world's information and knowledge.

A crucial, therefore, proposal for the Greek educational repositories that host open access material could be any amendment and/ or addition of articles or paragraphs in laws 3191/ 2003 and 3369/ 2005. Law 3191/ 2003 refers to the national system that links vocational education and training to employment. Moreover, the law 3369/ 2005 complements the above mentioned one on the same topic.

Additions could be made to the Law 3369/ 2005 which concerns the systematic lifelong learning, a vital European vision for the Information Society and by extension for the Knowledge Society. So, in Article 2 of this Law, that lists the organizations that promote lifelong learning (colleges are included), it would be useful to get a new paragraph added legislating the Open Learning Repositories. This would give a separate substance to repositories recognizing them as providers of information services. This way, funding would be easier, as well as policy development. Furthermore, the way of functioning, the purpose and the assessment of OERs would be enacted by law. Therefore, the quality assurance of free information, provided through educational repositories in Greece, would be achieved immediately.

Alternatively, an article could be added to Chapter II of the same Law within the section *Other Provisions* that would refer to the Greek educational repositories exclusively. The above option offers the possibility of a mild adjustment to this law and thus to the attempt of quality assurance of information, as it was mentioned already. This way, a key institutional framework for the existence of the repositories and their nationwide operation under common rules could be achieved.

Provided the legal framework is regulated, a series of OER related tasks should be set out to form the landscape of educational change. Changes need to be human-centered and could, among others, include:

- Enhancement of OERs.
- Use of tools and services that promote collaborative learning.
- User – friendly design iterfaces that allow easy access and resource search.
- Enforcement of open content initiatives.
- Engagement of teachers and learners in the developemnt of learning tools.
- Clarification of Intellectual Property Rights and determination of the way a CC Licence is acquired, etc.

The prerequisite for these changes to be fruitful in Greek society is the promotion of educational practices that allow for acquiring competences and skills that are necessary to participate successfully in the knowledge society (Geser, 2007). This could be accomplished through the establishment of Information Literacy programs at all levels of education. Unfortunately, in Greece – at least in college education – such programs are very few as resulted by a research conducted in academic libraries. Respondents of the survey believe that

more money is needed, the specialized library staff is not enough to run such programs and that there is a lack of appropriately equipped spaces (Korobili et al., 2008).

5. Further discussion

Currently, the Operational Program "Education and Life Long Learning" (Hellenic Republic et al., 2010) is taking place in Greece funding, through EE and the Greek state, the following actions:

- Amelioration of education at all levels of the Greek educational system
- Connection of education to the labor market
- Lifelong learning and
- Research

Through this program, within the Act "Digital action in higher education", interested colleges are invited to lay down proposals about the creation of Open Educational Resources. At the same time, as a horizontal action, GUnet, the Greek Universities network will develop a central platform of hosting OERs, as well as the technical infrastructure and regulations that all participating colleges will have to follow. The Greek ministry of education has set as an example for the participants the initiative of MIT (Massachusetts Institute of Technology), "OpenCourseware" (ocw.mit.edu/). The program will be completed in 36 months, namely by the end of 2014 a number of courses from the participant colleges will be of an OER format. So, for the years to come changes in education are expected and new data are to come up for research.

As of the results of this program it could be further discussed the idea of an online space where instructors all over Greece and/ or internationally could interchange opinions and share their educational material. A good example of how this could be done is the "Jorum repository" (Jorum, 2011). Jorum is part of and funded by JISC (http://www.jisc.ac.uk/). It is a service that collects and enables the sharing of learning and teaching materials, allowing their reuse and repurposing across the UK. This free online repository is intended to become part of the wider landscape of repositories. It stands as a national statement of the importance of creating interoperable, sustainable materials, supporting individuals, teaching teams, collaborative groups and communities in the development and sharing of resources (JISC, 2009).

Jorum, a service in use – yet in development (JISC, 2011), could form a good example for Greece, as it was designed with a thorough human-centered logic. At the time the team behind Jorum reflected how the project would grow better concluded in a series of statements (Casey, 2008). It is worth mentioning the following:

- There is a need for clarity of purpose to support the sharing of learning and teaching resources.
- This clarity of purpose needs to be supported by an IPR and licence regime that enables the aims of the service and does not hinder it.

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