

The page features a decorative graphic consisting of three blue circles of varying sizes, each composed of concentric rings of different shades of blue. These circles are arranged in a vertical line, with the largest at the top, a medium one in the middle, and the largest at the bottom. Two thin, light blue lines intersect at the top left and extend diagonally across the page, framing the circles and the text.

Open Educational Resources and Open Access in Higher Education in Macedonia

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Abstract:

Open Access (OA) and Open Educational Resources (OER) represent the core values of the free sharing of knowledge. By following their beginnings, understanding their concepts, the ways in which they are used by the society can assist the build of knowledge-based economies of South Eastern European countries like Republic of Macedonia. The need for shifting toward the openness of scholarly communication and the construct of information infrastructure in the higher education requests the use of more flexible copyright licenses used for the academic publishing of textbooks and e-journals in order to provide the society with valuable knowledge. By using EU recommendations from the OA and OER best practices projects, the higher education institutions in RM can improve their role as leading figures in production of knowledge and develop the economy of the country. In order to do so, new models of OA and OER should be explored and implemented at the national level supported by the information literacy initiatives as a part of lifelong learning scheme.



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1. Introduction

The educational institutions around the world are experiencing global change in the ways in which they produce, disseminate and share academic information. The Internet age has changed much the internal structure of the educational institutions and surely is influencing the way the knowledge is shared. In today's globalized world, knowledge becomes increasingly important as one of the main factors for building knowledge-based economies. In the last couple of years the European Union has facilitated initiatives for sharing the knowledge between universities, libraries and government agencies. The fruits of the freely shared knowledge that will benefit the society as a whole can be:

- *free access to libraries (open access to digital libraries and scientific repositories)*
- *free access to major research (open access to electronic journals) and*
- *free access to government data (open access to some of the government information)*

The main theme of this research paper will be to concentrate on open access to scholarly published information and the production, use, re-use and sharing of open educational resources amongst universities in Republic of Macedonia. The creation of the university/faculty scientific repositories will be the most important aspect that comes way ahead of the above mentioned topics. The main data for this research was collected via live interviews with research scholars and Library professionals, Deans and Rectors from 10 Faculties from the State University of "St Cyril and Methodius" in Skopje and Bitola, State University "Goce Delcev" in Stip, and State University for Information Science and Technology in Ohrid along with the 4 Private Universities: University American College-Skopje, FON University-Skopje, European University-Skopje and South-Eastern European University in Tetovo.

The literature that was used for the research can be found in the section Bibliography at the end of the document. I have given my best to include most of the

European Union declarations, statements and project outcomes from the European and International Open Access (OA) and Open Educational Resources (OER) community. Also, this research for OA and OER in the higher education in the Republic of Macedonia has been concentrated on the local initiatives in South Eastern Europe and Southern Europe which will be the cornerstone of this effort to facilitate the national agenda toward understanding the role of “open education” as one of the main bridges toward information literate society and knowledge-based economy. Thus, the main goal of this research will be to include practical directions for projects that would include not just the building of digital scientific platform for the Republic of Macedonia but also proposals for training sessions, seminars and workshops on the basics of digital literacy. Finally, most of the findings will lead toward the necessity of understanding the principles of open scholarly communication and between scientific community, libraries and information professionals which are essential if we want to build a strong ground for publicly funded academic publications that will be freely available for all interested parties.

This kind of research in the higher education in Republic of Macedonia will find its readers between educational policy makers, funding bodies and governmental institutions concerned with the level of availability of open educational resources and open access scientific publications that will foster the development of the information society which is one of the goals on the agenda of the Ministry for information society in the Republic of Macedonia.

2. Open Educational Resources Concepts

The concept of open educational resources is fairly simple and it can be explained as an idea of sharing the knowledge for free through the Internet for the benefit of the society as a whole. For more detailed definition we can consult the UNESCO report of a spring 2002 meeting organized with support of WCET and the William and Flora Hewlett foundation. In the final report of the Forum on the Impact of Open Courseware for Higher Education in Developing Countries, UNESCO gave the following definition:

Open Educational Resources are defined as “technology-enabled, open provision of educational resources for consultation, use and adaptation by a community of users for non-commercial purposes”. They are typically made freely available over the Web or the Internet. Their principal use is by teachers and educational institutions support course development, but they can also be used directly by students. Open Educational Resources include learning objects such as lecture material, references and readings, simulations, experiments and demonstrations, as well as syllabi, curricula and teachers’ guides (UNESCO, 2002).

It was as early as in 2002 when UNESCO saw the power of the web as a tool used for delivering open educational materials to the whole world especially for those countries that don't have necessary resources for investing in education. Five years after that, a report that has been published by the Organization for Economic Cooperation and Development (OECD) saw a new short-term definition emerging to the concept of Open Educational Resources as “digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research”. In their 2007 report OECD suggest that ““Open Educational Resources” refers to accumulated digital assets that can be adjusted and which provide benefits without restricting the possibilities for others to enjoy them.” This definition was established by the Centre for Educational Research and Innovation (CERI) who are a major division of the OECD Directorate for Education. CERI was one of the pioneers in the research of e-learning in the higher education and have published 2 reports

on that issue from which “E-learning in Tertiary Education – Where do we Stand?” (OECD, 2005) will be further mentioned in the next chapters.

OLCOS, the Open eLearning Content Observatory Services project (1/2006-12/2007) which was co-funded under the European Union’s eLearning Programme published his full report in 2007. The goal of this project was building an (online) information and observation centre for promoting the concept, production and usages of open educational resources, in particular, open digital educational content (ODEC) in Europe”. The project consortium consisted of six institutions from five European countries and included the following:

- ❖ Fernuniversitaet in Hagen, Germany (Distance University),
- ❖ European Centre for Media Competence, Germany,
- ❖ to European Distance and E-Learning Network, Hungary,
- ❖ Mediamasteri Group, Finland,
- ❖ Open University of Catalonia, Spain and the
- ❖ Salzburg Research Forschungsgesellschaft, Austria (project co-ordinator)

In 2007, in the OLCOS report called [“Open Educational Practices and Resources: OLCOS Roadmap 2012”](#) we saw the concept that no single definition that can be used as “authority” in the OER community. Instead of defining open educational resources, OLCOS report concentrated on recommendations and policies for implementing OER initiatives addressing to different stakeholders including educational policymakers, funding bodies, boards, directors and supervisors of educational institutions, both teachers and students, developers and implementer’s of e-learning tools and environments. Also, on the OLCOS website, a list of tutorials for the use, creation and sharing of OER resources was produced specifically aimed at educators, students and managers on [WikiEducator platform](#) used as a development tool.

Both David Wiley in his 2006 paper [“On the Sustainability of Open Educational Resource Initiatives in Higher Education”](#) (who was commissioned by the OECD’s Centre for Educational Research and Innovation (CERI) for the project on OER) and OLCOS team agreed that the definition for OER is very broad. It can include different educational materials

including curricula materials and educational software. The [OECD “Giving Knowledge for Free: the Emergence of Open Educational Resources” \(2007\)](#) report provides us with conceptual map (p.31) of OER that consists of:

- ❖ **Learning content:** Full courses, courseware, content modules, learning objects, collections and journals.
- ❖ **Tools:** Software to support the development, use, reuse and delivery of learning content, including searching and organization of content, content and learning management systems, content development tools, and online learning communities.
- ❖ **Implementation resources:** Intellectual property licenses to promote open publishing of materials, design principles of best practice and localize content.

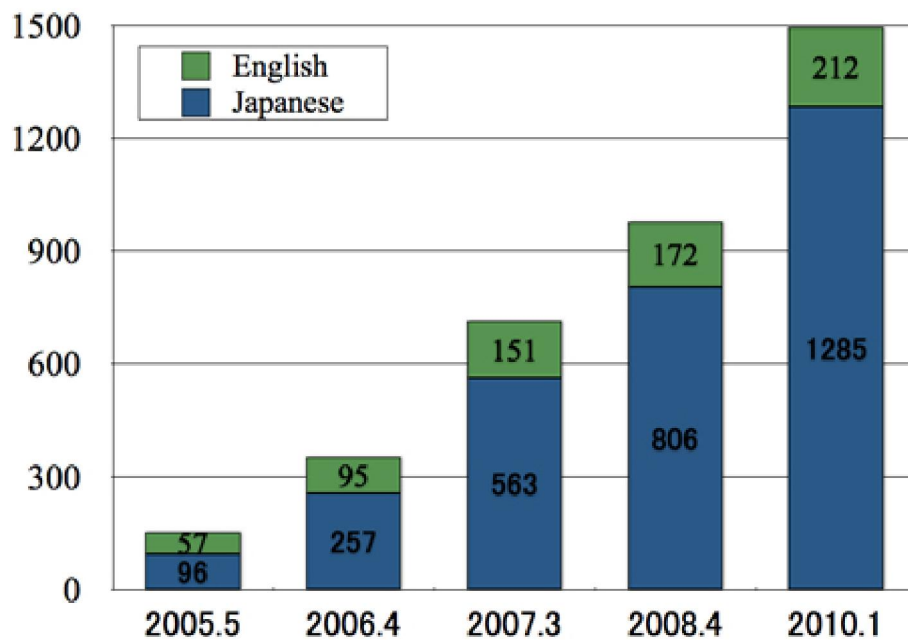


Figure 1 Source <http://www.jocw.jp/> retrieved 07/07/2010

According to the same report (OECD, 2007) there were more than 3000 Open access courses available worldwide offered by 300 Universities. To this present day the number of OER initiatives has grown unimaginably. The Japanese OCW Consortium (<http://www.jocw.jp/>) in the Q1 of 2006 had 400 and in the Q2 in 2010 well over 1500 courses as seen on Figure 1.

Finally, in September 2007 the [Cape Town Open Education Declaration](#) was adopted and signed by more than 227 institutions and 2140 individuals until July 2010. The Declaration aims at fostering the dialogue and inspiring action for future development of the open education concept. The Cape Town Open Education Declaration brings the attention to the lack of digital literacy skills by stating that “Most educators remain unaware of the growing pool of open educational resources. Many governments and educational institutions are either unaware or unconvinced of the benefits of open education.” The concept of implementing OER in higher education might be a great opportunity for low-income countries like Republic of Macedonia since most of “these resources include openly licensed course materials, lesson plans, textbooks, games, software and other materials that support teaching and learning. They contribute to making education more accessible, especially where money for learning materials is scarce. They also nourish the kind of participatory culture of learning, creating, sharing and cooperation that rapidly changing knowledge societies need.”

Briefly, we will mention a couple of well-known OER projects worldwide that have a different economic and self-sustainable approach which represents the core of the international OER and OA community.

MIT OpenCourseWare (<http://ocw.mit.edu>) – the best-known example of OpenCourseWare. Probably the most copied institutional OER model.

USU OCW (<http://ocw.usu.edu/>) - Utah State University has a big collection of OER which is used by faculty and students but also by self learners who have an option to obtain a college credit for some of the courses learned throughout using USU OpenCourseWare.

Connexions (<http://cnx.org/>) – funded by Rice University, the Connexions is trying to bring the content, communities and software in one place.

For the most current list of various OER initiatives consult the appendix in JISC CETIS briefing paper the Li Yuan, Sheila MacNeill and Wilbert Kraan (2008) Open Educational Resources – Opportunities and Challenges for Higher Education.

At the present, there are no existing initiatives for OER among higher education institutions in Republic of Macedonia. The OECD (2007) stated a number of reasons for using and producing OER. Among many, we should state only the most important ones addressing at the Governments, who should be the main contributor to this kind of initiatives:

- ❖ The altruistic argument that sharing knowledge is in line with academic traditions and a good thing to do.
- ❖ Educational institutions should leverage taxpayers' money by allowing free sharing and reuse of resources.
- ❖ Quality can be improved and the cost of content development reduced by sharing and reusing.
- ❖ It is good for the institution's public relations to have an OER project as a showcase for attracting new students.
- ❖ There is a need to look for new cost recovery models as institutions experience growing competition.
- ❖ Open sharing will speed up the development of new learning resources, stimulate internal improvement, innovation and reuse and help the institution to keep good records of materials and their internal and, there are three arguments for governments to support OER projects.
- ❖ They expand access to learning for everyone but most of all for non-traditional groups of students and thus widen participation in higher education.
- ❖ They can be an efficient way of promoting lifelong learning for both the individual and the government.
- ❖ They can bridge the gap between non-formal, informal and formal learning.

One of the best concepts to use in exploring the possibilities for the OER platform in Republic of Macedonia will be to use open source software like the Educommons. Behind the Educommons (<http://educommons.com/>) web site is the idea to offer "Site course materials that are used in the teaching of undergraduate and graduate subjects available on the Web, free of charge, to any user anywhere in the world." Based on the OpenCourseWare platform, Educommons demo is also providing a place where you can

upload some of your course material or just explore the interface. The localization on the interface should be considered along with some experimental open textbooks. The further promotion of the Creative Commons (<http://creativecommons.org/>) and Open Access concepts in OER context in higher education will be a great opportunity to present the core values of the free educational resources in Republic of Macedonia.

3. Open Educational Resources and Open Access

Open-access (OA) literature is digital, online, free of charge, and free of most copyright and licensing restrictions (Suber, 2007). The main aim of Open Access is to provide the public with the latest state-of-the-art research and to foster the scholarly communication by providing common ground for interoperable web portals that can be cross-searched for publication data without any restrictions. OA is a very important part of the knowledge transfer and it is the best way to bring the concepts of Open Educational Resources to the wider public.

There are 2 ways of providing open access:

- ❖ OA Archives (also called **green** open access). If an article is deposited in an archive by the author or somebody on the authors behalf it is called self-archiving.
- ❖ OA Journals (also called **gold** open access). If the journal is open access that means that article becomes available immediately as a part of the publishing process

For the purpose of better understanding the concept of Open Access it is important to mention some of the main institutions who, historically speaking, were the pioneers of the movement access and later on were the spokesmen of the OA policies and recommendations. The first is the [European organization for nuclear research](#) (CERN) who in the 1953 has promoted the decision that all of its experiments and scientific findings will be generally available. In a statement issued in 2003, CERN has adopted open access model for all of its electronic publications and later on has signed the Berlin declaration (281 academic institutions and research centers are part of this document) which stands for open access publishing of knowledge. [The Berlin declaration](#) (2003) has been logical progress of the first meeting for open access which was organized by Soros foundation in Budapest in 2001 and the meeting in Bethesda, Maryland, USA. All of the three conferences have established the BBB-definition(Budapest-Bethesda-Berlin) and at the same time they have tried to bring to the attention the technical and organizational issues. the [Budapest Open Access Initiative](#) (February 14, 2002) gives a broader definition of the OA:

By "open access" to this literature, we mean its free availability on the public Internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited.

The conferences that have followed have already implemented Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH <http://www.openarchives.org/>) and thus the interoperability of the OA repositories has been enabled (for better understanding of interoperability visit the ScientificCommons web site at <http://en.scientificcommons.org/> where you can full-text search 37 million publication across 1 216 open access Repositories who support the OAI-PMH Protocol).

International Federation of Library associations (IFLA <http://www.ifla.org>) in 2003 has published [a statement](#) about open access to academic literature and research papers emphasizing the importance of information infrastructure which will be organized by the library who will digitally preserve the scientific literature and provide remote access to the users.

Scientific Council of European Research Cente in 2006 have stepped forward in defense of open access publication which are financed in the 7-th framework programe for research and development. The petition who is supporting this initiative and which currently has more than 20,000 signatures has been issued by the Danish digital research library (DEFF), German Research foundation (DFG), Coalition for Scientific Publication and Academic Resources (SPARC), Joint Information Systems Committee (JISC) and Organization for the Collaboration of Higher Education Institutions (SURF).

In 2008 at the University of Barcelona in Spain the working Group on Open Access from the European University Association issued [recommendations](#) which were later adopted by the EUA council. The set of recommendation that were issued for University leaders are here as follows:

- ❖ Universities should develop institutional policies and strategies that foster the availability of their quality controlled research results (in the form of research papers and other outputs) for the broadest possible range of users, maximizing their visibility, accessibility and scientific impact.
- ❖ The basic approach for achieving this should be the creation of an institutional repository or participation in a shared repository. These repositories should be established and managed according to current best practices complying with the OAIPMH protocol and allowing interoperability and future networking for wider usage.
- ❖ University institutional policies should require that their researchers deposit (self archive) their scientific publications in their institutional repository upon acceptance for publication. Permissible embargoes should apply only to the date of open access provision and not the date of deposit. Such policies would be in compliance with evolving policies of research funding agencies at the national and European level such as the ERC.
- ❖ University policies should include copyright in the institutional intellectual property rights (IPR) management. It should be the responsibility of the university to inform their faculty researchers about IPR and copyright management in order to ensure the wider sharing and reuse of the digital research content they have produced. This should include a clear policy on ownership and management of copyright covering scholarly publications and define procedures for ensuring that the institution has the right to use the material produced by its staff for further research, educational and instructional purposes.
- ❖ University institutional policies should explore also how resources could be found and made available to researchers for author fees to support the emerging “author pays model” of open access.

The set of recommendations should be carefully analyzed from the Rectorates of the Universities in Macedonia in order to start shifting toward more public academic resources regulated by more flexible copyright regulations like Creative Commons. The Ministry of Education and Science should also play a major role in this by providing the Universities with a set of recommendations based on the importance of using Open Access approach to

scientific publishing and textbooks. The Ministry for Information Society should also join in this initiative by providing the national IT infrastructure recommendations for the deposit of scholarly published data based on OA principles and open source localized software.

Establishing a National foundation that will include Librarians, Information managers, Teachers and Students along with the Government representatives initializing an open textbook initiative and start producing examples of open textbooks will be the best way to begin with OER initiatives. The [Joint Information Systems Committee \(JISC\)](#) and [Higher Education Academy](#) in UK via government sponsored research support projects that will deal with some of the basic challenges of the processes in creation of the textbooks and educational materials, study of policies for use and adaptation of Intellectual property rights (IPR) at the Universities involved. As an example, English Language Teaching program in higher education in Republic of Macedonia might see this as a great opportunity to learn from the experiences and development of OER in UK. Following the recommendations from JICS examples of the OA and OER should be taken as a part of the National agenda that will set its recommendations on the new grounds considering the specific situation with the legal framework of the law for higher education in Republic of Macedonia that will be discussed in the next chapter.

4. The context of OER and OA in Higher Education in Macedonia and the legal framework in Republic of Macedonia

The law for higher education in Republic of Macedonia barely mentions the concept of learning. When mentioned, the learning concept is in the context of lifelong learning which is considered as a form of continuous learning throughout the whole life for the purpose of specializing, deepening and updating the current knowledge of the student. Furthermore, the law for higher education is considering that lifelong learning concept is a form of non-formal education and cannot be included with the formal study program. As a country that never had Department of Library and Information Science in the higher education, the government of the Republic of Macedonia is lacking the opportunity to acknowledge and formalize the trained Library and Information Science professionals and used them as a driving force in the creation of information infrastructure of the country. Needless to say, Library and Information Science professionals should become as soon as possible part of the strategy for the implementation of AO and OER principles and also be consulted for legal framework of the laws that concern the higher education.

There is much to be done considering the basic principles of learning concepts and formal and non-formal learning that include information literacy skills as a core area in the lifelong learning scheme. The concept of open educational resources and open access needs to be seriously reconsidered from the higher authorities of the Ministry of education and science and the Ministry of Information Society in Republic of Macedonia in order to include information literacy at the core of the digital competencies of the student and teachers in higher education.

The Department for Higher Education at the Ministry of education and Science in Macedonia was contacted several times during this study, but they never replied, nor have shown an interest for the interview about the legal framework of the law for higher education in Macedonia. The implementation of new policies in the favor of open access and open educational resources will be almost impossible if we don't consider the

importance of lifelong learning programs in higher education with the special emphasis on the information literacy initiatives.

The most widely definition used for information literacy was stated by the [American Library Association](#) in 1989 *“To be information literate, a person must be able to recognize when information is needed and have the ability to locate, evaluate and use effectively the needed information.”* Information literacy principles go hand in hand with the basic digital literacy skills and play a big role in the way in which information is managed, evaluated, generated and critically created. In 2006, International Center for promotion of Enterprises (<http://icpe.si/en/>) published a report with policy recommendation and practical directions for Central and South-East European countries. This report clearly stated the importance of information literacy (IL) skills in the 21-st century as one of the paths toward achieving information society and a knowledge-based economy. As further stated in the report, most of the countries from Central Europe, especially those from South-Eastern Europe don't have initiatives and programs for IL. It is due to the fact that these countries haven't been investing in the information and library infrastructure for a long period or there is a lack of Library and Information Science education at the university level. In the case of the Republic of Macedonia, both of the above mentioned reasons have lead toward the lack of national information literacy strategies and insufficient focus on information literacy in (higher) education.

The law for higher education (National Gazette 64/2000) in the Republic of Macedonia will need to be reconsidered based on the principles of lifelong learning umbrella which encapsulates national policies and strategies for information literacy. This kind of initiatives would require strong political, cultural and economic support of the national level. Coordinated action between policy makers, university administrators, teachers, faculty staff, information specialists and librarians will be needed in order to prepare the coordination groups that will follow and implement national social and economic development policies and strategies within the EU law framework in the higher education, with an emphasis on the draft report [“Digital Agenda for Europe: from i2010 to digital.eu”](#). Some of the key recommendation for “Digital Europe” will be briefly stated here.

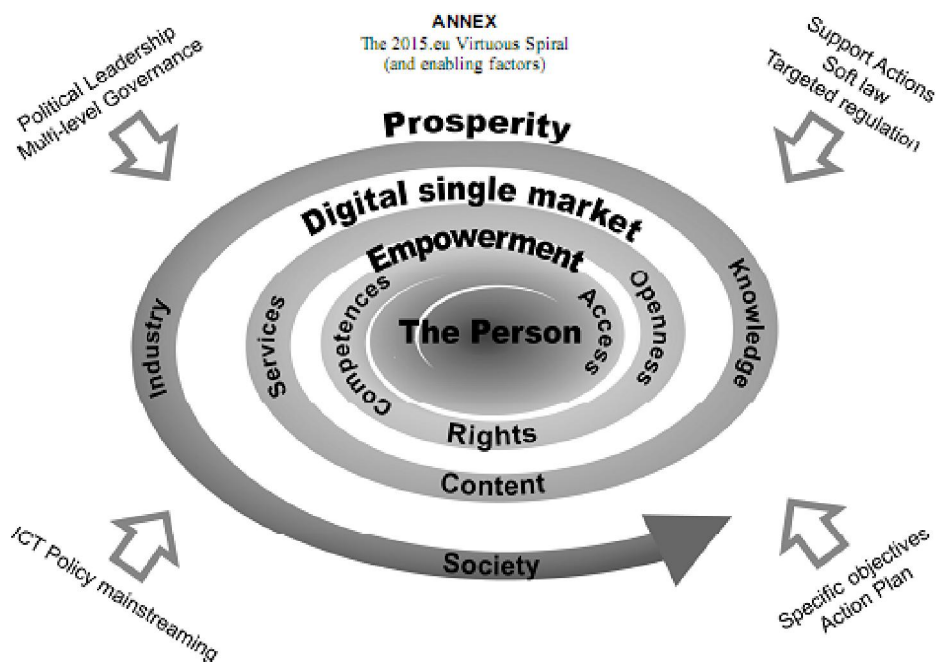


Figure 2 http://www.europarl.europa.eu/meetdocs/2009_2014/documents/itre/pr/801/801523/801523en.pdf
retrieved 07/07/2010

Explanatory statement of the Digital competences for an inclusive digital society proposes a policy action for the “EU level ICT diploma as part of standard education and EU certification scheme for digital skills acquired outside the formalized education system”. As shown in the Figure 2 the 2015.eu Virtuous Spiral competences and access are at the centre of its interests. Providing greater broadband connectivity in the society and improving the digital literacy skills does not necessarily means that openness of knowledge will be set in the right hands. Supporting social inclusion through Information literacy and explaining Open access in the context of open educational resources will have a stronger impact on the whole agenda of “access competences”. This concept needs to be implemented via continuous open public debates of information literacy trainers, librarians and information professionals on one side, and publishers, researchers and legal framework policy makers on the other. In order to emphasize the importance of open access to scholarly published information and thus explain the benefits of the OER - the law for higher education in Republic of Macedonia need to be revised so it can encapsulate the Information literacy concept on the national level. The most important aspect of this change will be to provide the future student with the basic principles of the knowledge and the free sharing of theirs publications (seminar papers) within the academic community. The support

of open access is strongly advised as a mean of presenting the production of university knowledge as one the key stones of knowledge-based economy.

Also, the Law for financing research projects (National Gazette 46/2008 and 103/2008) will have to reconsider the financing of the national projects by implementing the open access agenda for all scientific publications produced with taxpayers' money. A priority should be given to those projects that will promote the use of Creative Commons Educational Licenses and Open Access Initiatives.

The promotion of world class research and innovation in the EU digital agenda will have to consider the broader budgets for Information professionals and library education at the university, copyright policy makers and meaningful digital literacy programs. Considering the fact that the law for higher education in Republic of Macedonia does not mention scientific research and academic publishing the above expectation should be meet by establishing a national agenda for the promotion of publicly funded research and explore more flexible copyright licenses (Creative Commons <http://creativecommons.org/>) that can both be used by publishers and researchers. Also, the creation of Open Access policies for University presses, digital preservation strategies and creation of scientific repositories at the National and University level (with the recommendation of using open source software and interoperability standards) will be a right step for reconsidering some of the traditional beliefs in the higher education institutions as "guardians of knowledge".

5. Scientific publishing and textbooks in higher education

One of the key questions in this research was the use of textbooks and scientific papers as course materials in higher education. Nearly all of the Private and State Universities in Republic of Macedonia have an annual book with scientific articles that's been published on paper by the University (or Faculty) press. The annual review is a book of scientific articles that is mainly used for the publications of the research findings of the academic stuff from the Faculties. The main purpose of the annual book is to provide the Faculty staff with the necessary credits for their ongoing academic career. Usually, the content of the annual book is peer-reviewed within the Faculty members and only a small amount of papers has been used for the curricula courses.

However, in the last years we saw an emerging trend of publishing the annual book at the Faculty (University) web-site in a full-text searchable PDF. The European University, South-Eastern European University in Tetovo and Faculty of Philosophy in Skopje have already done this with their annual books from 2008 and 2009. The South-Eastern European University in Tetovo annual books have copyright restrictions referring to the University press.

This kind of scientific publishing is a perfect example of a University/Faculty press closed circle where the researchers earn money from the publishing of their articles and the Universities do the same with the hard copy selling. Needless to say, the libraries are getting hard copies of the annual books instead of digital ones. The promotion of Open Access policy at the University level will be crucial in order to inform the publishers and researchers about the possibilities of Creative Commons licenses and the value of scientific repository where all of the annual books should be deposited. In this case, librarians and Information specialists will play a bigger role in promoting digitization initiatives of old annual books, their digital preservation strategies and Open Access policies that should be implemented on a National level for the publicly funded research data if we intent to follow the EU example.

The lack of textbooks in the higher education was officially acknowledged when the State Government issued a project a year ago for the translation of 500 textbooks used as main source for curricula at the established world Universities. The main goal of this project will be to translate textbook into the local languages and then give it for free to the Academic Libraries in the State Universities only (!). There might be a reasonable solution for providing the Universities with a digital copy, but since **we are at the beginning of the Information Infrastructure in the higher education** in Republic of Macedonia this kind of possibility is not (yet) considered. In other words, it is technically and virtually impossible at this moment to consider the use of government financed e-books as course materials. But, it might be considered that if the government buy the digital right and donate the e-books to the Universities for their use in the classrooms, the principles of intellectual property rights and fair use by the student and teachers should be explored first. Thus, copyright issues represent the biggest concern at the moment as one of the main obstacles for fair use of e-textbooks.

The situation with the printed textbooks might seem similar to the one of the Annual book publishing for the University/Faculty presses since it is regarded as one of the main financial source revenue for both the Professors and the publishers. The textbooks published by the Faculty are usually the pre-requisite for the successfully passed exams and in most of the cases this textbooks represents the core of the given curricula. To better understand the situation with educational resources in the higher education in the context of textbooks an additional economic and copyright research will be needed. The use and promotion of OA and Creative Commons licenses in the higher education will be crucial in shifting the current strict copyright models used for the publication of the hard-copy Annual textbooks. The creation of trusted repositories where text books will be deposited at the University/Faculty level will be essential and it must be considered as compulsory.

The findings of the Final report [“Study on the economic and technical evolution of the scientific publication markets in Europe”](#) published by the European Commission Directorate-General for Research Information and Communication Unit (2006) have give some recommendations for access issues which should be the subject of the academic discussions between the University presses, researchers and Library managers. We will quote the whole set of recommendations in order to provide the general public with the 5

most important issues of the Open Access to scientific publishing and textbooks for the purpose of more open knowledge sharing produced by the Universities:

- ❖ Public Access right after publication
- ❖ Self-sustainable Business models
- ❖ Highly OA journals ranking
- ❖ Permanent access to digital content
- ❖ Metadata interoperability standards.

The set of recommendations are here as follows:

“ RECOMMENDATION A1. GUARANTEE PUBLIC ACCESS TO PUBLICLY-FUNDED RESEARCH RESULTS SHORTLY AFTER PUBLICATION (Research funding agencies...should promote and support the archiving of publications in open repositories after a (possibly domain-specific) time period to be discussed with publishers. This archiving could become a condition for funding.)

RECOMMENDATION A2. AIM AT A ‘LEVEL-PLAYING FIELD’ IN TERMS OF BUSINESS MODELS IN PUBLISHING (allow for experimentation and competition between various possible business models, which means allocating money to libraries to subscribe to reader or library-pay journals but also to authors to pay for publication costs in author-pay journals, and to researchers in the reader-pay model.)

RECOMMENDATION A3. ‘EXTENDED QUALITY’ RANKINGS OF SCIENTIFIC JOURNALS (While scientific quality, approximated for example by citation counts, should remain the dominant criterion, dimensions related to the quality of dissemination (self-archiving authorization, publisher archiving provisions, copyright provisions, abstracting and indexing services, reference linking, etc.) could be tracked explicitly and possibly valued by research funding bodies. There could be an impetus from public authorities at the European level for such an initiative, which would naturally induce publishers to stress good practices in these dimensions.)

RECOMMENDATION A4. GUARANTEE PERENNIAL ACCESS TO SCHOLARLY JOURNAL DIGITAL ARCHIVES (Given the heterogeneity of the publishers’ current provisions, promote

the creation of not-for-profit long-term preservation archives, which balance interests among publishers, libraries, and scholars. More particularly (i) Promote business models for legal-deposit libraries to allow remote online access to their journals digital archives, therefore providing them with return on investments and making the preservation efforts cost-effective;)

RECOMMENDATION A5. FOSTER INTEROPERABLE TOOLS TO IMPROVE KNOWLEDGE VISIBILITY, ACCESSIBILITY AND DISSEMINATION (This could be achieved by (i) supporting research and development on interoperability issues, notably on metadata to improve scientific information search and retrieval efficiency and on the XML format to improve and accelerate the overall publishing process, and by (ii) promoting the wide implementation of linking technologies, especially the open standard OpenURL, and of interoperable standard protocols, especially the OAI-PMH that enables metadata harvesting and searching across different platforms. Both developments could be taken into account by the European Commission in its e-infrastructure building strategy for the European Research Area (involving DG-Information Society R&D funding programmes and the forthcoming “i2010: Digital Libraries” Communication on scientific information).”

This set of recommendations should be taken seriously by the Universities and they should form teams of experts that will examine the current situation and propose adequate business models for financing the creation of high-quality peer-review academic publications and open textbooks based on the recommendations from the National commission for the improvement of education which can facilitate the public debate. The Ministry of education and Science should issue a set of recommendations also concentrated toward the promotion of Creative Commons Educational licenses that will best suit the needs of authors of new textbooks and explore the preparedness of the authors for a more flexible licenses for copyright of the printed textbooks already used.

6. Thesis, dissertations and institutional Repositories (DSpace)

Scientific research in the higher education is producing the large amount of publication data among which the master and PhD thesis are certainly the most important ones. Large numbers of private and state Universities in Republic of Macedonia have already considered the possibility of building a scientific repository for monographs which they produce but haven't got the knowledge and the financial resources to do that. There is very positive climate toward the digitization initiatives for building scientific repositories of this kind and we will be hearing more about this issue in the next couple of years. The strong part of this kind of initiatives will be coming from the Computer Science departments of the Universities as it seems that most of them already have explored the possibilities for building digital libraries with pioneering digitization activities. However, not a single Faculty has established an experimental scientific repository so far.

Currently, the most used platform for scientific repositories is the DSpace software (<http://www.dspace.org>). It is an open source platform currently licensed under the BSD open source license which means that you can use, modify and integrate the code into commercial application without paying any fees. There are more than 80 developers that contribute to the code worldwide and over 700 organizations who are using DSpace platform. There are couples of reasons that make DSpace platform user-friendly:

- ❖ User interface is easily customizable to suit your needs
- ❖ Ability to customize metadata is one of the key issues for the use of library metadata formats such as MARK and MODS. Dublin core is the default metadata format here
- ❖ Ability to choose the default language between 20 languages
- ❖ Ability to configure Browse and search is giving you the freedom to choose between various display options for browsing and metadata fields in the main interface

- ❖ Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) compatibility OAI-PMH is lightweight harvesting protocol for sharing metadata between services.
- ❖ Configurable database – either Postgres or Oracle can be chosen

The DSpace platform has been used by various institutions such as: National libraries (The National and University Library “St. Cyril and Methodius is one of the first academic libraries that is considering the DSpace as a platform for its scientific repository), universities, museums, commercial companies, journal repositories etc. DSpace can easily recognize and manage large number of formats such as PDF, JPEG, MPEG, TIFF etc. which means that it is suitable for any kind of collection that will contain music, video, document and picture formats.

The [OpenDOAR](http://www.openaccess.org/) (Directory of Open Access Repositories) service provides a listing of open access repositories around the world. Currently, as shown in Figure 3 there are 1696 open access repositories worldwide in which 589 with a DSpace platform (35%).

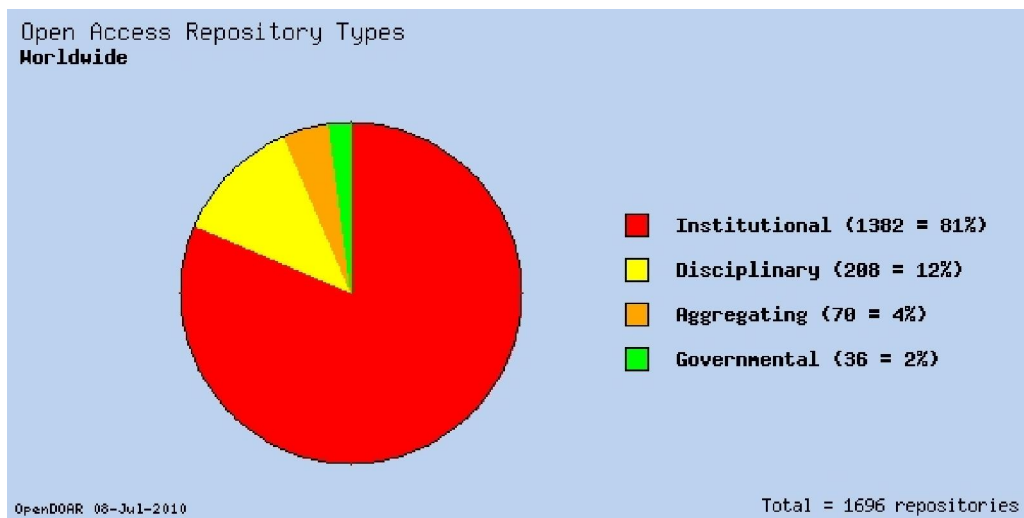


Figure 3 <http://www.openaccess.org/> retrieved 08/07/2010

As shown in Figure 4, DSpace is often used for Journal Articles, Thesis and dissertations as well as the repository of conference and workshop papers, e-books, audio-visual materials and learning objects. This kind of usability and openness can be ideal for the first scientific repositories in the higher education in Republic of Macedonia since the

DSpace has already been localized and can be used as live CD experimental platform before deciding the final choice for the educational scientific repository.

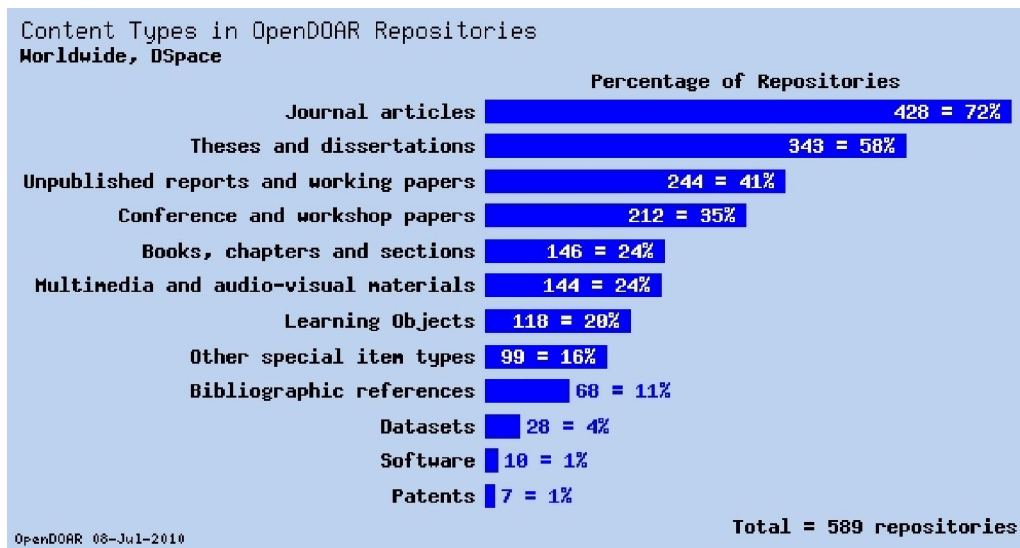


Figure 4 <http://www.opendoar.org/> retrieved 08/07/2010

The main reason for using the scientific repository at the University/Faculty level will be the mandatory open access to scientific publications (Master, PhD) couple of month before the thesis defense along with the availability of the seminar and scientific papers produced as a result of projects with taxpayers' money. Digital preservation and the need for educational self-archiving of the course materials are crucial for curricula evaluation at every single level in the formal and non-formal learning year by year. By digitally preserving the educational materials Universities will build the information infrastructure of the higher education which is an integral part of the language self-preservation and is a fundamental part of the rich cultural heritage in Republic of Macedonia. Above all this, there are numerous reasons for preserving the country's educational heritage since knowledge presents the most essential and fundamental core of the economic and social development.

7. E-learning in Higher Education (Moodle)

With the rapid development of ICT technologies and their use in the everyday classrooms the concept of E-learning emerged as one of the inevitable parts in the latest forms of gaining knowledge. Every student in higher education who is using IT as a part of its learning process is in fact using E-learning. Compared to the traditional methods of classroom training E-learning has numerous advantages such as:

- ❖ It is easy to produce
- ❖ Basically free
- ❖ It can work at any place and any time
- ❖ It solves the lack of classrooms
- ❖ It is student centered
- ❖ Works perfectly for large groups of students

Being aware of the constant dynamic changes in the learning environments, the Ministry of Information Society and the Ministry of Education and Science of Republic of Macedonia have acknowledged the importance of the use of ICT tools in all the levels of education. The OECD study “E-learning in Tertiary Education – Where do we stand?” (OECD, 2005) have concluded that E-learning is growing in higher education but cannot completely replace the traditional classroom methods. It can simply be used as a tool for providing broader and richer educational content in a variety of formats.

Moodle (<http://moodle.org/>) is open source software (published under the GNU Public Licence) that can be installed on Windows, Mac and Linux platforms as long as the computer can run PHP and can support SQL type database. Moodle has a large user community with over [937128 registered users](#) on Moodle.org web site, speaking over [78 languages](#) in [212 countries](#).

Surprisingly, there is a small community in the higher education in Macedonia that uses Moodle as a tool for E-learning. It is used mainly at the private Universities in the

Republic of Macedonia such as FON University, European University, South-Eastern European University and New York University. The reasons for such a high usage of MOODLE should be really easy to guess since all of the Private Universities in Republic of Macedonia are strictly driven by self-supporting financial schemes and experienced business managers. By providing their students with the latest trends in the E-learning environment the private universities in Republic of Macedonia are promoting their curricula as modern and flexible toward the need of their “customers”. This kind of approach has been really well accepted by the students since private universities are integrating the strengths of “face-to-face” and “text-based Internet” learning activities together.

There are also a small number of State financed Universities that implement the Moodle software for the creation of on-line courses. Still, it is only among Technical and Mathematical Faculties where this kind of use is possible due to the level of ICT skills by the Faculty members and students. An example of a good practice in this case will be the state founded University “Goce Delcev” from Stip who is using Moodle since 2007. Since then, they have managed to create 400 courses which are active with well over 5233 users out of which 220 are Faculty members. As shown in Figure 5, the University “Goce Delcev” is one of the first 1000 registered web sites that have more than 5000 active users.

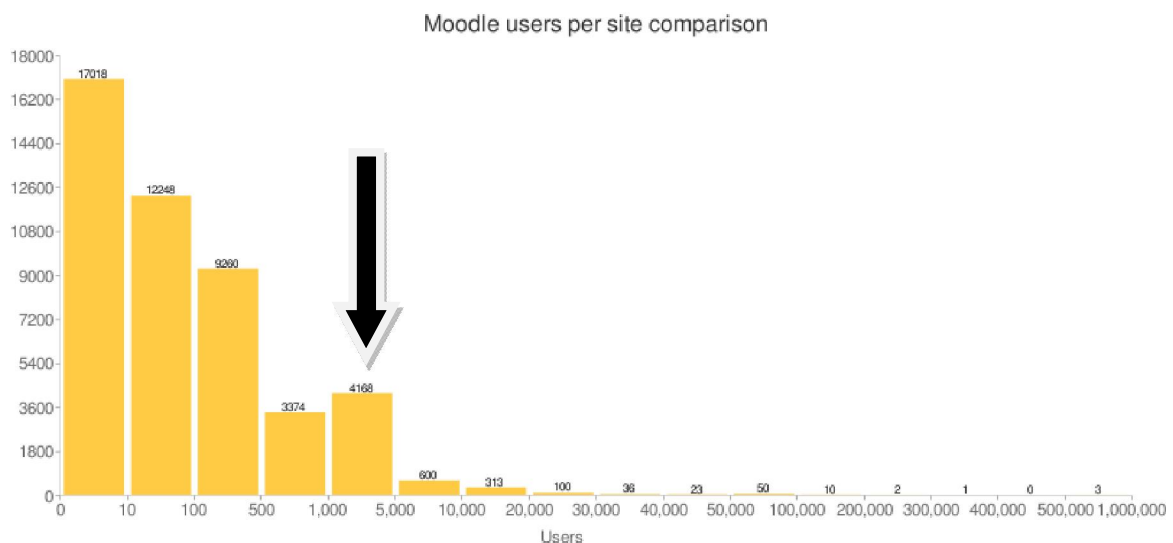


Figure 5 <http://moodle.org/stats/> retrieved 08/07/2010

In general, the E-learning Moodle platform is a head start for the creation of the OER scheme. It is possible that some of the textbooks and web presentations could be used as

OER, but the use of Creative Commons Educational licence should be explained first to the teachers in order to produce OER resources to the public. The creation of the network of excellence at the national level including representatives both from the State and private Universities should be created and used as a driving force toward the promotion of the recommendations by National commission for improvement of higher education from the Ministry of Education and science. The main goals will be the promotion of high quality open educational courses in higher education with CC educational licenses.

8. E-journals in Higher Education (DOAJ)

The Directory of Open Access Journals (DOAJ) was initially started in 2003 with a financial support from the Open Society Institute and since then has been developed and maintained by Lund University Libraries. The prime concern of the DOAJ is to provide the users with a quality controlled peer reviewed scientific open access journals in full text. DOAJ is the authoritative source for open access journals with over 8 million monthly hits, up to 4000 journals published in almost 100 countries.

The DOAJ is defining OA journals as journals that are using a financing model that doesn't charge readers or their institutions for access. Based on this, DOAJ is taking the right of users to "**read, download, copy, distribute, print, search, or link to the full texts of these articles**" as mandatory for a journal to be included in the directory. (<http://www.doaj.org>).

There are 3 high education published e-journals listed at the DOAJ repository from the Republic of Macedonia, the first two of them from the State University "St. Cyril and Methodius" in Skopje and the third one from the Private University for tourism and management in Skopje.

- ❖ The oldest e-journal from the three is the **Journal of Special Education and Rehabilitation** (JSER) (<http://jser.fzf.ukim.edu.mk/>) - peer reviewed international journal edited by the Institute of Special Education and Rehabilitation of the Faculty of Philosophy in Skopje and Macedonian Association of Special Educators. It contains 24 issues and has been published since 1997. JSER is the most comprehensive and certainly the most prestigious Open Access journal in the higher education in the Republic of Macedonia.
- ❖ **Macedonian Journal of Medical Sciences** (MJMS) (<http://www.mjms.ukim.edu.mk/>) - internationally peer reviewed journal edited by the Institute of Immunobiology and Human Genetics (IIBHG) of the Faculty of Medicine in Skopje. It contains 9 issues and has been published since 2008. MJMS publication is supported by the Ministry of

Education and Science and it has a strong OA perspective. It is the only one amongst the three that has a SPARC Europe Seal for Open Access Journals which means that MJMS has accepted the [CC-BY license](#) and provide DOAJ with metadata on article level.

- ❖ **UTMS Journal of Economics** (http://www.utms.cc/e-student/index.php?option=com_content&view=article&id=29&Itemid=418) – peer reviewed journal edited by the private University for Tourism and management. It contains only 1 issue and has been published since 2010. Even so, UTMS Journal of Economics is really interesting because it is the first OA e-journal from the private universities in Republic of Macedonia.

The most important part in the e-journals publishing is to build sustainable business models for maintaining the publication in the OA. It is strongly advised that The Ministry of Education and Science and the Ministry of Information Society in Republic of Macedonia recognize the importance of the local OA e-journals and provide them with necessary finances that will be used for transferring their content to platform suitable for metadata harvesting. Evaluation and use of the self-sustainable models of OA journals should also be strongly supported since these journals are in their early beginning, and are pioneering the path for the use and re-use of academic information in the higher education in Republic of Macedonia. There is a strong need of promotion of the OA E-journals initiatives on their starting level since most of them are not known in the scientific community in Republic of Macedonia due to the fact that they have not still considered the copyright restrictions and the basic metadata issues. The existence of the DOAJ is certainly a big plus for the new OA e-journals since it is providing the basic (flexible copyright licenses (CC), peer-review, metadata, digital preservation) principles for the successful launch of the so much needed freely available academic research right after the publication date.

9. Concrete projects

✓ Open Educational Resources

Higher education institutions in Republic of Macedonia have already acknowledged the use of ICT tools as one of the main facilitators for educational innovation and economic model for on-line learning. Universities/Faculties are constantly finding themselves in a situation where they need to improve the educational resources and current practices. In order to do so, a set of recommendations for possible projects in OER should use the OLCOS Roadmap 2012 as one of the OER promotion projects that offers “best practices” model. However, since the situation with OER in the higher education in the Republic of Macedonia is at the beginning we will offer only the basic ideas for creating the principles for OER projects such as:

- Organizing workshops, seminars and local conferences around the core idea of free sharing of knowledge based on innovative educational and lifelong learning practices. The core group for this should be local Information literacy and library professionals, along with the information managers and Vice Deans for Teaching Affairs at the Universities/Faculties.
- Preparing a local web site for the promotion of the idea of OER and Open Access in the higher education. The web site should be also used as a meeting point for the community interested in innovation in educational practices and resources. A strong use of social software and Web 2.0 technologies will be a smart approach.
- Offer free Information literacy training seminars for librarians and teachers. Free training for the promotion of the Creative Commons Educational licenses in the context of OER. Explaining the OER concepts and business models as a tool for University/Faculty self-promotion.

✓ Open Access (Digital repositories, Dspace)

The recommendations for projects in the area of Open Access and Institutional repositories should be merged into one framework because they do explain the same area. Explanations of the Creative Commons licenses should be the third integral part of the same story. The Alhambra declaration on OA which was developed in May 2010 by the representative groups from the South European countries (Spain, Portugal, France, Italy, Greece and Turkey) stated some of the basic principles for the development of OA. Still, there are different approaches to the area of scientific communication like the Kosson community project platform (<http://www.kosson.ro>) which aims at gathering all the Information professionals in South-Eastern Europe at one place. Based on the principles of OOO triangle: Open-source, Open-Content, Open-Access, Kosson community is providing its members/contributors with the valuable information about current trends and practices of OA policies and management and data communication. All of the works published in the web portal are falling under the Creative Commons 3.0 license. Based on the both approaches, it will be of great importance to

- Create a web community for the local networking of Information professionals, teachers and policy makers that will advocate the OA principles for scientific repositories
- Organize a meeting for the purpose of discussing and publishing local policies and recommendations for the development of OA and Scientific Repositories in the higher education in Macedonia by following the Alhambra declaration statement and the recommendations of the final report [“Study on the economic and technical evolution of the scientific publication markets in Europe”](#) published by the European Commission Directorate-General for Research Information and Communication Unit (2006)
- Install, promote and maintain an localized DSpace repository that can be freely used by interested educational institutions for the deposit of academic peer-review publications

✓ E-learning

The wider use of Moodle as e-learning tool in the higher education in Macedonia is already establishing the path toward the creation of best practices in the local level. In order to achieve best possible results for the promotion of Moodle e-learning platform at the state Universities it will be crucial to develop a strategy for policy makers and to implement the use of ICT as an integral part of the formal educational process. In order to do so it will be necessary to

- Create a National working group of ICT experts, Library and Information professionals that will explore the best practices in the use of Moodle e-learning platform at local level.
- Publish a report on Moodle local best practices and explore the possibility of the creation of OER platform based on most frequent use of university courses
- Promote the use of e-learning and ICT in the higher education as an positive outcome for the economical impact on the University budget and self-promotion of the Faculty curricula

✓ E-journals

The situation with OA e-journals in the higher education in Republic of Macedonia is at its beginnings. Thus, the promotion of the OA publishing idea in the national context might not give the expected results if we don't concentrate on the already existing OA e-journals and their promotion. Advocating the support of the few existing ones and further exploring the journals citations impact might seems as a great way toward the:

- Promotion of existing E-journals as a pioneers of the OA movement of publicly available data from the government taxpayers' money
- Promotion of E-prints open source software as a publishing platform for the OA e-journals
- Promotion of OAI-PMH protocol for metadata harvesting and Creative Commons licenses as core values in the context of OA e-journal publishing

10. Conclusion

There are a substantial number of literatures about the open access movement and open educational resources, most of them available for free. The author of this paper have tried it's best to make a quick overview to some of the local and European best practices models, set of recommendations for policies about OA and OER. Still, due to the limited timeframe and scarce (local) web information resources it will be necessary to organize a broader research written by different experts in the fields of education, law, economy, computer and library/information science that will further explore the various segments of the context in OA and OER in the higher education in the Republic of Macedonia.

The set of recommendations for projects should be understood as a single concept, since most of the work that needs to be done is from the starting point. The Ministry of Education and Science and the Ministry for Information Society in Republic of Macedonia will need to understand that the digital/information literacy gap between the EU countries and the member candidates could be broaden very quickly if we do consider that some of the (if not most) Universities have already started shifting toward more economic and practical models of teaching, learning and sharing knowledge without any government interventions. Recognizing this kind of local initiatives and implementing policies for fostering Creative Commons and Open Access to scientific information would be crucial. Financing projects of OA and OER in the higher education community will further develop the best practices situation and will lead toward broader understanding of the way in which higher education in Republic of Macedonia is shifting. Developing international cooperation and producing the national OA and OER task forces in harmony with the European related project seems the best way forward for improving the higher education in our country. Yet, it will be important to become an integral part of the South-Eastern European network of Library and Information professionals (Kosson community) that represents the moving force for the promotion and development of OA to scholarly published works. The main reason for becoming a part of the South Eastern European library and Information Science community is the lack of information professionals in Republic of Macedonia as one of the key figures that can better understand the future trends and policies regarding the building

of the local Information infrastructure, especially in the context of OA and OER in higher education

At the end, the most valuable contribution to the process of improving the OA to scholarly literature and building the premises for Open Educational Resources in Republic of Macedonia will be given by an organized action of government founded bodies consisted of policy makers, directors of educational institutions, teachers, specialized ICT non-governmental organizations, student representatives and library and information science professionals as pillars of this initiative for providing free educational content to all learners, formal and non-formal. Building a strong educational infrastructure in the higher education institutions and implementing new (business) models for the dissemination and publicly available knowledge should be one of the priorities of the Ministry of Education and Science toward the creation of digitally literate society which represents the basic of the knowledge-based economy.

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