

# CHALLENGES FOR IMPLEMENTING OPEN EDUCATIONAL RESOURCES BY TEACHERS IN HIGHER EDUCATION

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## **Abstract**

*Higher Education Institutions (HEI) are facing a number of problems during the last decades: the need to update the curricula to make it compatible with the similar ones from other national and European universities; demand to update the content and the pedagogical approach due to knowledge, technological and research development. Open Educational Resources (OER) might be a sound strategy for institutions to meet these challenges. At the same time OER are themselves one of the challenges that the teachers are faced with. OER could be implemented in courses in different ways, depending on the types of OER and the educational philosophy adopted by the teachers. The paper describes some challenges for implementing Open Educational Resources by teachers in Higher Education in Moldova: the level of awareness on availability and usage of OER; fair use matters; quality assurance of resources; pedagogical approaches for implementing OER into teaching and learning. The paper also grasps the issues of the digital divide that emerge when investigating these challenges. The judgment is based on the literature analysis and on the author's teaching experience within courses for initial and continuous professional teachers' training.*

## **1. Introduction**

Among the major challenges and commitments made by Higher Education Institutions in the context of the Bologna process is the cooperation in quality assurance of the comparable study programmes and degrees. These main pillars of Bologna action lines are supposed to assure the development of the advanced knowledge, skills and competences of HEI graduates that should fulfil the increasingly labour markets demands. The Higher Education priorities for the current decade (2010 – 2020) [3] – social dimension, equitable access and completion, lifelong learning, employability, student-centred learning and the teaching mission of higher education – impose more challenges for Higher Education Institutions in terms of quality and comparability.

The subject of this paper consists in an endeavour to describe some connections between the necessary conditions for accomplishment of Bologna requirements, the digital divide and the usage of Open Educational Resources in Higher Education Institutions involved in teacher training from an Eastern Europe country – Moldova – in terms of implementation challenges. The digital divide related to this issue needs the analysis of several variables: university teachers and decision makers; their characteristics – digital skills, motivation and reason to use OER; level of OER usage.

## **2. Bologna reform and needs for OER**

Moldova joined the Bologna process in 2005 and the preparation phase was very short, albeit the reform means a complicated process of change. The degree structure and the curriculum were

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redeveloped in a few months prior to the academic year 2005/2006. The commitment to adopt easily readable and comparable degrees and to establish three cycles required essential efforts from Higher Education Institutions to modify the study programmes. The changes affected the structure and the content of the programmes, the courses, as well as the teaching & learning & assessment approach as the renewed curricula must meet the criteria of compatibility within European Higher Education Area (EHEA).

After almost a decade the HEI are still faced with a series of challenges, according to the National Report of Moldova on Bologna Process [12]. It turned out that some already implemented action lines are likely to require revision and updating. Even though the three cycles are in place, the main problems are compatibility of the degrees, the quality and the employability of the graduates.

The compatibility issue implies a complex analysis of policy documents released at European level, study and understanding of key milestones of the curricula reform; finding the solution for the implementation of the Bologna recommendations in the national context, identification and analysis of European surveys, projects' reports, research works that describe the experiences, the best practices or eventual problems and failings in the Higher Education Institutions' endeavours to build the European Higher Education Area. Apart from these generic documents, specific information about curricula and courses delivered by different European Higher Education Institutions is vital for the academic staff, who usually deals with study courses for the degree profiles. This specific information is related to points of reference, convergence and common understanding in assuring the quality and compatibility of study programmes; pedagogical approaches implemented in developing graduates' competences for employability; educational resources used. The primary and almost the only sources of such kind of information for the academic staff from Moldova HEI are found through web services.

The challenge is that many teachers assume that they are freely allowed to use materials made public available on the Internet in their courses and at their institution. They do not pay attention to the fair use rules and Moldovan institutions do not publish guidelines on this topic. Teachers might not always have the right to download, save, print or email files from the Internet to students or colleagues. The international, including European, copyright license schemes and free use exceptions regarding educational uses by teachers are complicated. Academics should spend valuable time trying to understand complex copyright rules and seeking permission to use web educational resources. The only Internet resources that can be used by teachers and students with no fear for copyright infringement are Open Educational Resources that are licensed under Creative Commons (CC) [5].

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". 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 [22].

With this definition, the answer to the question „Who can benefits from OER?“ becomes evident: teachers, course developers, institutional policy makers and students. The benefits involve several dimensions [14].

- *Safety.* It is much safer for teachers to use Open Education Resources, as they are free to reuse, remix, redistribute and adapt education resources, avoiding the risk of infringing the complex copyright exceptions and copyright license rules.
- *Accessibility.* There are hundreds of millions openly CC-licensed works and many searchable online databases of CC licensed materials available.
- *Compatibility.* The freedom which the Internet provides to copy, distribute, adapt and remix resources, the openness and the existence of many sources for the same content allow academics to choose, to compare and to select quality materials, peer reviewed already by other experts.
- *Improvement.* It saves teachers' time and energy by using resources that have already been created and tailoring them to the specific content of the own courses.
- *Enrichment.* It expands teachers' opportunities for interdisciplinary teaching and learning by allowing them to integrate multiple educational resources, including multimedia and project based education.
- *Enlargement.* It allows teachers to go beyond the limited use of available textbooks and own materials.
- *Collaboration.* Academics are encouraged to collaborate and to create communities based on sharing of education resources which can increase the quality of materials and the development of ideas.
- *Equitability.* Everyone has equal access to knowledge and to education resources that can be adapted for the own needs.
- *Costs.* It helps to solve the problem of low financial funds allocated for educational resources that the State financed institutions from Moldova are faced with.

Another question is „Are academics ready to use OER?“ The answer is more complex and it tackles different aspects of the digital divide.

### 3. Digital divide in educational context

The term digital divide is rarely explicitly discussed in the academic context of Moldova Universities, though implicitly it is used mostly to describe the users' access to Internet. However, the concept is more complex and the manifestations of its intricacy emerge immediately when someone is trying to analyse the usage of digital resources by the academics, as they are entitled to promote the correct and meaningful intellectual property rules of cyberspace and not only. A comprehensive review of ideas on digital divide in Higher Education, from simple physical access to infrastructures to the more complex and philosophical challenges of digital empowerment is provided in the monograph *Redefining the digital divide in Higher Education*. The authors [15] proposed a useful tool for the investigation of the state of digital divide: the comprehensive digital framework with five main pillars. This tool was adapted and simplified for educational purposes in [16]; graphically it looks like in the figure 1. The initial five pillars have been reduced to three,

leaving aside the ICT sector and the legal framework as they belong to higher levels of policy-making, outside the education institutions' usual decision-making areas.

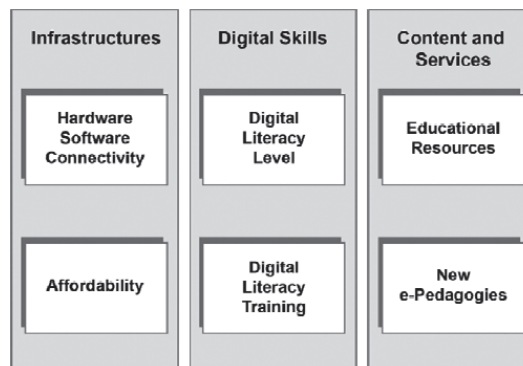


Figure 1: A digital framework to model e-education [16].

The three pillars – infrastructure, digital skills, content & services – involve six key issues:

- 1) (a) Infrastructure and access: hardware & software & connectivity and (b) affordability: provision of (a);
- 2) (c) Digital literacy level and (d) digital literacy training;
- 3) (e) Educational resources and (f) new e-pedagogies.

All these components are interwoven; the analysis of ICT usage/benefits on education should consider each of them.

In this paper, the status of the first pillar is omitted for 3 reasons: a) it belongs to the economic divide, which implies that institutions or individuals cannot afford to buy the needed technologies, but the problem cannot be solved by academics; b) the universities in Moldova have the minimum technical infrastructure for using Internet technologies in education; c) the paper aim is to fix other aspects of the digital divide.

Teachers' digital literacy (pillar 2) is far more important in education and the term covers a large set of skills starting from basic generic ones till advanced digital competences. The digital literacy picture reveals a distribution of teachers with different levels of skills: informatics disciplines and technological enthusiastic teachers at the competence edge and the majority at the very basic skills level. This majority can use computers, but don't achieve the modern world's full benefits because most of the available technologies are too difficult for their digital level to apply in the academic context. This aspect of skills differentiation is called usability divide.

The third pillar comprises educational resources – textbooks, tutorials, syllabuses, learning objects, assessment tasks and other educational aids, starting from digitalized versions of handbooks and ending with interactive simulations and collaboratively generated content on virtual platforms. E-pedagogy is a new concept and stands for enhanced ICT pedagogy covering also a large spectrum of changes: from implementation of some ICT tools and resources up to redefinition of teaching & learning & assessment approaches. It causes the most hard and less considered type of divide –

empowerment divide. The boundaries between usability and empowerment divide overlap in a greater or lesser extent.

In this paper, the digital divide is tackled in combination with the divide related to the implementation of Open Educational Resources (OER divide) in HEI offering initial teacher training. The digital technologies, in the form of open content, open licenses, open formats, and open software and their use in different e-learning approaches provide the opportunities for enhancing the quality of education. The use of digital technologies has opened up possibilities for open learning by increasing the scope for much more non face-to-face, two-way interaction and collaboration between groups of learners and their teachers. At the same time this mode of teaching and learning is extremely variable, with socially excluded groups being those who do not have much access to such technologies, who may find few opportunities available to them in their contexts, and who cannot cope with these new technologies and ways of learning [10]. In other words, the digital divide causes open education divide.

#### **4. Digital divide and OER usage**

The more challenging aspect of the digital divide consists in the use of OER by teaching staff for curriculum design and implementation. Compatibility of the study programmes and of the courses requires the conceptualization of the learning outcomes as a measure unit for easily readable and comparable degrees across Europe. In redesigning the curricula, the focus must rely on student centred approach and on flexible learning environment that includes rich teaching and learning resources, suitable for the individual academic pathways of the students. There is a strong need to learn from best experiences: the subject developers at national level should collect good examples at European level and make them available for the teaching staff. These reasons and the mentioned OER benefits impose the academics to adopt and to implement this kind of resources in their professional practice.

While the use of open educational resources has the potential to mediate the compatibility issues and to improve the quality of education, the existing opportunities might not be capitalized due to the digital divide. The availability, affordability and accessibility of OER do not certainly imply the acceptability and usability of this mode of teaching and learning. The variables that appear in this equation are the digital skills of teachers as well as their motivation.

Applied to teachers, “digital literacy is the awareness, attitude and ability to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyse and synthesise digital resources, construct new knowledge, create media expressions, and communicate with others (students and colleagues) in the context of specific life situations, in order to enable constructive social action (learning), and to reflect upon this process” [11]. The digital divide emerges due to several reasons: resources allocated by teachers to afford the technology, motivation (interest and confidence) and the offered opportunities (social, cultural, educational).

Resources allocated refer to time and efforts teachers devoted to cope with the new technologies and the ways of teaching and learning with or without direct support from intermediaries. The digital educational divide can mean that some teachers are more advanced users of digital technology which is implemented in their teaching activities than their colleagues, and the gap can increase as technology becomes more sophisticated. The teachers’ capabilities, their inputs as learners, and the formal interventions to support the professional teachers’ development are different in different contexts and the time needed by staff to learn and understand how to navigate

on net, to use the options the technologies offer, and to implement these technologies in classrooms must not be underestimated. The feeling that they cannot afford the achievement of the certain level of digital literacy can cause the lack of confidence in their competence to succeed to use the technology in general or for education in particular.

Motivation is determined preponderantly by the challenges the teachers face. Through interviews and conversations in different formal, informal and non-formal contexts with academics from Moldovan teacher training universities, it was revealed that they face a series of challenges:

- limited access and use of curricular components from other countries;
- lack of high quality, adequate teaching and learning resources, including textbooks;
- difficulties in implementing the learner-centred approach;
- the need to update the courses' content as consequence of the rapidly growing knowledge base;
- the students' demand for diverse high quality resources;
- difficulties to find appropriate web resources;
- the need to develop and to update the digital competences;
- the need to develop comprehensive learning tasks for diverse students' needs and levels.

Implementation of OER may be a sound strategy for HE institutions to meet the mentioned challenges. As it was stated in the OECD report *Giving Knowledge for Free* [9], OER can be expected to affect curricula, pedagogy and assessment. The main challenge for the staff is the awareness of Open Educational Resources and Open Educational Practices, as these resources provide a rich pool of different types of teaching and learning materials, starting from single objects, like course descriptions in terms of developed competences and declared learning outcomes and ending with complete courses, delivered as Massive Open Online Courses (MOOC). With thousands of open courses from internationally reputed higher education institutions available for free, and with the trend towards sharing learning resources, teachers will need to consider that students compare their curriculum with others and will be enforced to review and update their courses.

OER could be implemented in courses in different ways depending on the types of OER, educational philosophy and pedagogical approaches adopted by the teachers. As the knowledge base is changed quickly, national educational authorities (both governmental and institutional) are not able to develop quality resources such as textbooks, tutorials, reviews, complete electronic courses due to human and financial shortage. Open textbooks and tutorials published electronically are good assets to be incorporated as sources of knowledge for students and for teachers as well. Nowadays, when thousands of books and textbooks in physics, mathematics, chemistry, biology, programming, management, psychology etc. can be accessed online, it is easier than ever to synthesize the course topics and to design learning tasks for the individual student workload. At the same time, the large choice of study materials available can cause problems in choosing a textbook

or a tutorial: what is the best; what suits the learners' needs and abilities; how to compare different resources in terms of content explanation, novelty, adequacy to learning outcomes; how to combine different styles of presenting the ideas, laws, concepts etc.

The challenge in this case has two heads and a twofold meaning: on the one hand, the rich opportunity to implement or to adapt the existing OER in an adequate pedagogical manner in the own settings and learning environment, on the other hand, the difficult task to find and to select the appropriate resources. The good solution of these challenges could contribute to the quality of the courses and could lead to the better achievements of the comparability of the study programmes.

The frequent encountered barriers in the correct usage of OER are [6]:

- low awareness about the search facilities to find suitable resources for the teaching & learning activities on the web;
- confusions about the classification of digital resources;
- unaided awareness of the pedagogical approach, envisaged by OER to be implemented in accordance with the requirements of the learning environment;
- insufficient degree of critical assessment of the web resources;
- diffuse understanding of the terms 'open', 'free', 'no cost', as well as of the types of licenses, applicable to the educational content and software;
- doubts about the acceptance by stakeholders of OER implementation into curricula and of adequacy of OER to curricula;
- inadequate level of digital competences of the staff to develop their own OER;
- lack of OER in mother tongue; insufficient teachers' level of foreign language skills.

## 5. Initiatives on promoting OER

The level of awareness on availability and usage of OER is quite different among teachers from the Moldova's educational institutions. The national policy related to the implementation of ICT into education outlined in *the Education-2020 Strategy* document [11] includes a specific objective on the development of digital competences through the elaboration and implementation of digital educational content in the study process.

The European policies emerged from the Bologna process, *the Europe 2020 Strategy* [8] and the *Strategic Framework for European Cooperation in Education and Training* [21], also focused on the relevance of sustained Higher Education space where the development of competences are aligned with the labour market interests and needs. In its Communication, *Rethinking Education* [17], the European Commission calls for a fundamental shift in education, with more focus on learning outcomes – the knowledge, skills and competences that students acquire. Particularly, the strategy highlights the „...needs to be a much stronger focus on developing *transversal skills and basic skills* at all levels“ ...“*Technology*, in particular the Internet, must be fully exploited. Schools,

universities and vocational and training institutions must increase access to education via open educational resources. These reforms must be supported by well-trained, motivated and entrepreneurial *teachers*”.

As consequences from these policy documents, there should be appropriate social and cultural support for the prospective teachers to help to reduce the disempowering conditions to the inequalities in the educational and the digital divide. As was mentioned in [10] the open movements have mostly not been state interventions but have arisen through the acts of institutions themselves and wider communities sponsored by philanthropic foundations, although some governments begins to take note of these movements. This is not the case of Moldova which policy documents and the stakeholders at the university level do not envisage activities which aim to promote OER in education. Under these circumstances the task of promoting the OER in Moldova relies on the bottom-up initiatives of enthusiastic individuals. The start-up impulse on promoting OER among academic community, including institution stakeholders, with the aim to mitigate the digital divide, could rely on several actions:

- Providing links to the most relevant OER information (international policy documents, guides, projects, portals etc.) on the institutions’ websites.
- Elaboration of an OER guide for teachers and stakeholders in the national language.
- Organisation of trainings on OER benefits.

One of the bottom-up initiatives of an academic team from two universities from Moldova (State Pedagogical University “Ion Creangă”) and Romania (West University of Timisoara) was to propose and to implement a two years project “Teachers’ continuous professional training through development of Massive Open Online Courses (MOOCs)” within a bilateral cooperation programme [18].

The project sets out to improve the training of teachers from the participating countries by carrying out a MOOC course which integrates open access educational resources. The main objectives of the project refer to the identification of possible solutions to the mentioned problems; to facilitate access of teachers, who aim to improve their teaching and to update their digital competencies, to provide continuous professional training; to promote examples of good practices and to make pedagogical design recommendations in the valorisation of MOOC resources offered within professional and continuous training. Supporting the teachers to adopt the open educational resources in their courses will create real incentive to mitigate the digital divide on the awareness of a huge open knowledge basis available nowadays on the world wide repositories.

## **6. Challenges in training OER newcomers**

The teachers must be provided with opportunities for continuous professional development linked with the effective use of OER materials in their classroom. The awareness is the first step in the ascendance to the genuine infusion of quality OER into curricula. The next one is related to finding and selecting the appropriate open resources. This issue does not differ substantially from finding and selection of any digital resource, technically the only difference being the substance of searching, the hints for searching and the hubs where to perform the search. At the same time the searching process is very close to the awareness issue, as the teachers should distinguish what they



are looking for, what types of open resources are available and where there is information concentrated already.

According to a series of studies on academic adoption and usage of OER [2,13], the most recent one being about the educational resources in U.S. “both faculty and academic leaders believe that one of the most serious issues facing wider adoption of open educational resources is the effort needed to find and evaluate suitable material”. The three most-cited barriers to adopting OER relate to the availability and difficulty in finding suitable resources “there are not enough resources for my subject”, it is “too hard to find what I need” and “there is no comprehensive catalogue of resources” [2]. The same opinions have our faculty teachers; their willing is to have access to specialized catalogues with teaching and learning resources classified by disciplines.

Unfortunately, there is no single comprehensive listing of all OER, and given the rapid expansion of online content, is there ever likely to be one. With the advance of OER movement, the searcher will need to employ a number of search strategies to find appropriate OER: use specialised search engines; locate OER repositories; use OER directory sites; find OER projects’ sites [4]. Other challenge is that most of these OER sources exist independently of each other. As a result, the searchers must locate possible repositories and spend hours to compare the materials in each separate repository – a time consuming process in which many teachers may not have the will and the time to engage.

The selection of OER to be included in the courses is connected with the quality and the usability of open teaching and learning materials. Quality is a complex concept, and the issues related to OER have multiple facets. The concern of the academic community for the OER quality is proved by numerous articles, reviews and guidelines [19]. Two aspects should be considered in training the OER newcomers: 1) acquaintance with the conceptualising quality in OER, with frameworks of quality dimensions and their use in assessment of existing OER; 2) implementation of quality dimensions when developing OER. Both aspects are related, though development of OER is much more challenged and it is precocious to ask the newcomers for such a task.

Challenges with the implementation of OER into curricula are not limited to the teachers’ skills to find high-quality resources. Academics must also understand the effective ways to incorporate the materials into their courses and how OER might change their current pedagogic approach. Studies of OER usage indicate that a large number of teachers who have experimented with incorporating OER materials into their courses report that it increased the amount of preparation time needed for those courses [7]. This additional time is needed to identify materials, to adapt them, to conform to their initial intent and pedagogy or to change the own approach to teaching. Other pedagogical issues that should be addressed when implementing OER into courses are related to the use of information and communication technology in the educational process. The challenge that appears is the level of the digital competences the teachers might demonstrate or are eager to develop.

A significant challenge in using OER materials is the legal challenges associated with the academics understanding of copyright and fair usage. Many HE institutions have not enough policy documents regarding intellectual property rights of the faculty-created materials, neither explicit rules concerning fair use of the OER or other resources. Even if an institution has some intellectual property policy in place, there remain challenges over how the teachers interpret and apply these rules. As far as the OER awareness is quite low among the academic community, the fair use, share, reuse and remix of OER is an unexplored area full of uncertainties.

The last but not the least important challenge to be taken into account in the trial to promote the use of OER in Higher Education is that related to costs. The open access to the great amount of diverse educational resources does not mean that their use is at no cost. In fact, the costs are hidden. The OER cost digital divide is encountered in different ways and places. Digital divide is when the institutional and national policy stakeholders do not recognise the time and efforts the teachers put in use and reuse of OER; digital divide is when no technological premises exist to implement the appropriate OER in the classroom activities; digital divide is when the faculty colleagues continue to use traditional outdated or low quality educational teaching aids; digital divide is when competent, enthusiastic to develop OER academics do not have moral and financial support to do this task.

## 7. Conclusions

The paper presents an attempt to describe the challenges of emerging OER initiatives in the education space of Moldova. The awareness of OER among academics is at early stages and serious efforts are required to promote and to implement the OER till the advanced stage of e-pedagogy. The OER divide is correlated to the digital divide. The teachers' motivations, their digital literacy, and the support provided by training initiatives are the main factors in bridging the gaps. The existing initiatives to mitigate the digital divide are quite modest, rather bottom up, versus top down, individual driven versus institutional structured. Nonetheless, the international practices and the country educational needs prove that there is a growing necessity for all education institutions and policy stakeholders to get engaged in the OER movement.

## 8. References

- [1] ATENAS, J. and HAVEMANN, L.: Quality Assurance in the Open: An Evaluation of OER Repositories. <http://eprints.soas.ac.uk/17347/1/30-288-1-PB.pdf>, accessed on 25<sup>th</sup> of November, 2016.
- [2] A Study on Open Educational Resources and Their Potential for Use at Texas Colleges and Universities. [http://www.theceb.state.tx.us/reports/PDF/6377.PDF?CFID=36540331&CF\\_TOKEN=18703437](http://www.theceb.state.tx.us/reports/PDF/6377.PDF?CFID=36540331&CF_TOKEN=18703437), accessed on 14<sup>th</sup> of November, 2016.
- [3] Bologna Process at NUI Galway, <http://www.nuigalway.ie/centre-excellence-learning-teaching/teachinglearning/bologna/>, accessed on 17<sup>th</sup> of September, 2016.
- [4] CAMILLERI, A., EHLERS, U. and PAWLOWSKI, J.: State of the Art Review of Quality Issues related to Open Educational Resources (OER), 2014. <http://is.jrc.ec.europa.eu/pages/EAP/documents/201405JRC88304.pdf>, accessed on 16<sup>th</sup> of June, 2016.
- [5] Creative Commons. About the licenses. <https://creativecommons.org/licenses/>, accessed on 12<sup>th</sup> of December, 2016.
- [6] DUMBRAVEANU, R.: Implementing Open Education resources to newcomers, in DisCo 2016 Towards Open Education and Information Society, 11th conference reader, 2016 by Centre for Higher Education Studies Prague. <http://www.csvs.cz/konference/disco2016/Disco2016-sbornik.pdf>, accessed on 16<sup>th</sup> of December, 2016.

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- [7] ALLEN, E.J. and SEAMAN, J.: Opening the Textbook: Educational Resources in U.S. Higher Education, 2015-16. [http://www.onlinelearningsurvey.com/reports/oyer2016/html/openingthetextbook\\_format.htm](http://www.onlinelearningsurvey.com/reports/oyer2016/html/openingthetextbook_format.htm), accessed on 30<sup>th</sup> October, 2016.
- [8] Europe 2020 Strategy. [https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy\\_en](https://ec.europa.eu/info/strategy/european-semester/framework/europe-2020-strategy_en), accessed on 15<sup>th</sup> of October, 2016.
- [9] Giving Knowledge for Free. The Emergence of Open Educational Resources, OECD, 2007. <https://www.oecd.org/edu/ceeri/38654317.pdf>, accessed on 30<sup>th</sup> of November, 2016.
- [10] LANE, A.: The Impact of Openness on Bridging Educational Digital Divides. In International Review of Research in Open and Distance Learning, Vol. 10, no 5, 2009. ISSN: 1492-3831, <http://files.eric.ed.gov/fulltext/EJ869420.pdf>, accessed on 15<sup>th</sup> of February, 2017.
- [11] MARTIN, A.: Digital Literacy for the Third Age: Sustaining Identity in an Uncertain World, eLearning papers, no 12, 2009, <https://www.openeducationeuropa.eu/sites/default/files/old/media18500.pdf>, accessed on February 15<sup>th</sup>, 2017.
- [12] Moldova. National report. <http://www.ehea.info/cid101304/moldova.html>, accessed on 24<sup>th</sup> of December, 2016.
- [13] Open educational resources. <https://www.jisc.ac.uk/guides/open-educational-resources>, accessed on December.
- [14] Open Educational Resources (OERs). A Toolkit for Teachers, Curriculum and eLearning Developers. <http://www.lib.uts.edu.au/sites/default/files/attachments/page/oyer-toolkit---final.pdf>, accessed on 14<sup>th</sup> of February, 2017.
- [15] PEÑA-LÓPEZ, I.: Framing the Digital Divide in Higher Education”. In: “Redefining the digital divide in Higher Education” [online monograph], Revista de Universidad y Sociedad del Conocimiento (RUSC), vol. 7 no.1 UOC. (2010).[http://ictlogy.net/articles/20100118\\_ismael\\_pena-lopez\\_-\\_framing\\_digital\\_divide\\_higher\\_education.pdf](http://ictlogy.net/articles/20100118_ismael_pena-lopez_-_framing_digital_divide_higher_education.pdf), accessed on February 16<sup>th</sup>, 2017.
- [16] PEÑA-LÓPEZ, I.: From Laptops to Competences: Bridging the Digital Divide in Education. In: “Redefining the Digital Divide in Higher Education” [online monograph]. Revista de Universidad y Sociedad del Conocimiento (RUSC). Vol. 7, no. 1. UOC. [http://ictlogy.net/articles/20100118\\_ismael\\_pena-lopez\\_-\\_framing\\_digital\\_divide\\_higher\\_education.pdf](http://ictlogy.net/articles/20100118_ismael_pena-lopez_-_framing_digital_divide_higher_education.pdf), accessed on 16<sup>th</sup> of February, 2017.
- [17] Rethinking Education. [http://ec.europa.eu/education/policy/multilingualism/rethinking-education\\_en](http://ec.europa.eu/education/policy/multilingualism/rethinking-education_en), accessed on 30<sup>th</sup> December, 2016.
- [18] ROMOOC Teachers’ Continue Professional Training Through Development of Open Online Courses. <http://romooc.uvt.ro/>, accessed on 30<sup>th</sup> December, 2016.
- [19] State of the Art Review of Quality Issues related to Open Educational Resources (OER). <http://is.jrc.ec.europa.eu/pages/EAP/documents/201405JRC88304.pdf>, accessed on 20<sup>th</sup> November, 2016.

- [20] Strategia de Dezvoltare a Educației pentru Anii 2014-2020 „Educația-2020”, 2014, Monitorul Oficial din 21.11.2014.
- [21] Strategic framework – Education & Training 2020. [http://ec.europa.eu/education/policy/strategic-framework\\_en](http://ec.europa.eu/education/policy/strategic-framework_en), accessed on 30<sup>th</sup> of December, 2016.
- [22] UNESCO and Commonwealth of Learning, 2011, 2015. Guidelines for Open Educational Resources (OER) in Higher Education, <http://unesdoc.unesco.org/images/0021/002136/213605e.pdf>, accessed on 25<sup>th</sup> of November, 2016.