

## THE APPLICATION OF OPEN EDUCATIONAL RESOURCES IN INSTITUTIONS OF HIGHER EDUCATION

**Summary:** Each institution of higher education and companies related to the industry, engineering and production work on the modernization of its processes, including the process of lifelong learning and improve the level of education of its staff. The idea is collected quality data and information, make available to the general population, those who want to work on their own training and education, all secured from a single location. The envisaged platform, BAEKTEL would enable publishing of course materials by higher educational institutions, on the one hand, and best practice examples by enterprise experts, on the other. The platform would support materials in different languages, through multilingual terminological resources, covering domain terminology. Ultimately, BAEKTEL would improve the quality and relevance of Open Educational Resource within Western Balkan higher education institutions and enhance knowledge and experience exchange between universities and enterprises, as well as society at large.

**Key words:** Open educational resources, elearning, education, information system

## PRIMJENA OTVORENOH OBRAZOVNIH RESURSA U INSTITUCIJAMA VISOKOG OBRAZOVANJA

**Sažetak:** Svaka institucija visokog obrazovanja i kompanija vezana za industriju, inženjerstvo i proizvodnju radi na modernizaciji svojih procesa, uključujući i proces cjeloživotnog učenja i unapređivanja nivoa obrazovanja osoblja. Ideja je da se sakupljeni kvalitetni podaci i informacije u ine dostupnim široj populaciji, onima koji žele da rade na vlastitom obučavanju i obrazovanju, a sve obezbijeno sa jedne lokacije. Razvijena platforma BAEKTEL omogućiti objavljivanje kurseva od strane visoko obrazovnih institucija na jednu stranu, i najbolja praktična iskustva koja nude privredne kompanije u drugu ruku. Platforma podržavati materijale na različitim jezicima, kroz višejezične terminološke resurse, potkrijepljene sa domaćom terminologijom. Konačno, BAEKTEL omogućiti kvalitet i relevantnost otvorenih obrazovnih resursa unutar institucija visokog obrazovanja zemalja zapadnog Balkana i unaprijediti razmjenu znanja i iskustva između univerziteta i privrednih subjekata kao i društva u cjelini.

**Ključne riječi:** otvoreni obrazovni resursi, e-učenje, obrazovanje, informacijski sistem

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## 1. INTRODUCTION

It is evident that on the territory of Bosnia and Herzegovina no higher education institution (public or private) is not formally, through policies and procedures, included in its educational and scientific process OER (Open Educational Resources) methodology of education. For this reason, the University of Tuzla joined the initiative to report to the TEMPUS project called Blending Academic and Entrepreneurial Knowledge and Technological Enhanced Learning (BAEKTEL) under the leadership of the University of Basilicata, Italy. The project was approved by the EACEA Agency of the European Union in late 2013. The consortium involved in this project is made up of the following institutions: Universities of Belgrade, Niš, Kragujevac, Podgorica and Banja Luka, and two companies: NIS (Serbia) and ArcelorMittal Prijedor (BiH). EU partners are the University of Ljubljana and University of Iasi.

With today's technology advances the development of technology and information systems, each institution of higher education and companies related to the industry, engineering and production work on the modernization of its processes, including the process of lifelong learning and improve the level of education of its staff. Each of these institutions develops their own databases that are available for use in its own terms. The idea is that so collected quality data and information, make available to the general population, those who want to work on their own training and education, all secured from a single location. By consolidating all these materials in the form of free and open with defined shape of the use of licenses will enhance not only the skills of the wider population, but also to allow further progress and development of each member that provides open source materials to use and upgrade, as well as those outside the existing categories member. With this project, the goal is to establish closer cooperation between higher education institutions and business entities of the Western Balkans and thus provide quality exchange of experiences and lessons learned, in order to contribute to the educational and economic development of the local and wider community.

## 2. OVERVIEW OF OPEN EDUCATIONAL RESOURCES

The term 'Open Educational Resources' (OER) was established in 2002 during the UNESCO Forum on the Impact of Open Courseware for Higher Education in Developing Countries, of the Massachusetts Institute of Technology (MIT) initiative to put course materials online for open access [1,4,8,12,19]. The participants in the meeting defined Open Educational Resources as digitalized materials offered freely and openly to educators, students and independent learners to use and reuse for teaching, learning and research. With their final declaration, the participants expressed their satisfaction and their wish to develop together a universal educational resource available for the whole of humanity, to be referred to henceforth as Open Educational Resources [3,9,17]. Following the example of the World Heritage of Humanity, preserved by UNESCO, they hope that this open resource for the future mobilizes the whole of the worldwide community of educators (UNESCO, 2002, p. 28). In the years following that meeting, there has been a growing number of initiatives, and an OER movement has emerged worldwide<sup>2</sup>.



*Figure 1. Logo of Open Educational resources*

The term 'openness' is based on the idea that knowledge should be forwarded and shared for free on the Internet for the welfare of society as a whole. The two most important aspects of openness are: freedom of access and limitations related to the use of resources, whether it is on technical, legal or other constraints. Most existing initiatives provide a basic level of openness where 'open' means 'no cost', but does not mean 'without conditions' [6,7,3]. This definition of 'open' is constantly changing according to the context. Some of the known open initiatives are: Open source (<http://www.opensource.org>), Open contents (<http://www.opencontent.org>), open access

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<sup>2</sup> Open Educational Resources, Conversations in cyberspace, Susan D'Antoni and Catriona Savage, UNESCO

(<http://www.pubmedcentral.nih.gov/about/openaccess.html>), the Creative Commons project (<http://creativecommons.org>)<sup>3</sup>.

Over the years, various new technologies have been tried and tested for their potential use in education as well as broadcast radio and television, audio and video cassettes, teleconferencing and videoconferencing, computer conferencing and computer-assisted instruction. Each was found to be useful in some way, but none had a profound impact on education. There is currently what may prove to be a fruitful convergence: connectivity to the internet is increasing; low-cost computers and enhanced mobile phones are being developed; and the body of open content in digital format is growing [6,14].

The concept of Open Educational Resources (OER) describes any educational resources (including curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts, and any other materials that have been designed for use in teaching and learning) that are openly available for use by educators and students, without an accompanying need to pay royalties or license fees [1,3,5,8]. An Open Course Ware is defined by the OCW Consortium as 'a free and open digital publication of high quality university-level educational materials. These materials are organized as courses, and often include course planning materials and evaluation tools as well as thematic content' [7,9,11,15,16,18].

OER has emerged as a concept with great potential to support educational transformation. While it's educational value lies in the idea of using *resources* as an integral method of communication of curriculum in educational courses (i.e. resource-based learning), its transformative power lies in the ease with which such resources, when digitized, can be shared via the Internet [2]. Importantly, there is *only* one key differentiator between an OER and any other educational resource: its *license*. Thus, an OER is simply an educational resource that incorporates a license that facilitates reuse, and potentially adaptation, without first requesting permission from the copyright holder<sup>4</sup>.

### 3. PROJECT OBJECTIVES

The wider objective of this project is to foster partnerships between higher education (HE) institutions and enterprises through blending of academic and entrepreneurial knowledge within an OER (Open Educational Resources) platform [5,10,13,17]. The envisaged platform, BAEKTEL would enable publishing of course materials by HE institutions, on the one hand, and best practice examples by enterprise experts, on the other. The platform would support materials in different languages, through multilingual terminological resources, covering domain terminology. Ultimately, BAEKTEL would improve the quality and relevance of OER within Western Balkan higher education institutions and enhance knowledge and experience exchange between universities and enterprises, as well as society at large [5].



Figure 2. Logo of TEMPUS project BAEKTEL

Specific objectives of the project are the following:

1. To establish an OER framework for fostering eLearning within HE institutions and life-long learning within enterprises in WB countries, develop and implement guidelines and procedures for quality assurance of OER according to EU practices at national level in WB beneficiary countries.
2. To provide training for relevant members of HE institutions and enterprises responsible for production of OER materials by qualified OER trainers from each partner country.
3. To produce course materials in various languages, both in video format and in written form as parallel (multilingual) corpora of lessons and texts, supported by electronic terminological resources, services, and functionalities for searching and browsing of terminological resources and using them for text annotation.

The aim is that, through this project at the level of the University of Tuzla and the Technical Science Group (Faculty of Mining, Geology and Civil Engineering, Faculty of Electrical Engineering, Faculty of Mechanical Engineering and faculty of Technology), combine all available, free to exchange, educational materials, and to prepare the same for publication on the joint web site of this project. Also, the goal is to establish with enterprises in the field of industry (mining, electrical, mechanical and technological industry) in order to collect the material and practical experience in their field in terms of OER which will be freely available not just to learning community but the local and wider community at the state level and the region as well, covered by this project. Given that the mining industry is the

<sup>3</sup> Open Educational Resources – Opportunities and Challenges for Higher Education, *Li Yuan; Sheila MacNeill; Wilbert Kraan, JISC CETIS*

<sup>4</sup> A Basic Guide to Open Educational Resources (OER), Neil Butcher for the Commonwealth of Learning & UNESCO

most developed economy in B&H, special attention will be devoted to material in mining, energy, energy efficiency, environmental protection, simulation methods and calculation [5].

To achieve all these goals with the fulfillment of the required quality of the OER materials and accessibility of the same (under the terms of the license), it is necessary to train staff on the selection, preparation and publication of all available digital resources, their maintenance and upgrades.

#### 4. PROJECT VISIONS AND GOALS

The project vision is increase the reach and impact of open educational resources. Vision can be described through next segments:

- Encourage educators to actively participate in the emerging open education movement. Creating and using open resources should be considered integral to education.
- Open educational resources should be freely shared through open licences which facilitate use, revision, translation, improvement and sharing by anyone.
- Governments, school boards, colleges and universities should make open education a high priority. Accreditation and adoption processes should give preference to open educational resources [2].

It has become important for educational institutions to support:

- Development and improvement of curricula and learning materials;
- Ongoing programme and course design;
- Organisation of interactive contact sessions with students;
- Development of quality teaching and learning materials;
- Design of effective assessment tools for diverse environments;
- Links with the world of work.

OER can make a significant contribution to these processes. The transformative educational potential of OER depends on<sup>5</sup>:

1. Improving the quality of learning materials through peer review processes;
2. Emphasising openness and quality improvement;
3. Building capacity for the creation and use of OER as part of the professional development of academic staff;
4. Serving the needs of particular student populations (those with special needs);
5. Serving students in local languages;
6. Involving students in the selection and adaption of OER in order to engage them more actively in the learning process.

#### 5. CONTRIBUTION OF UNIVERSITY OF TUZLA

UNTZ will contribute in process of improving OER quality assurance and eLearning methodology in our countries. UNTZ will be the partner in next segments of proposed project:

- Implementation of OER procedures and guidelines
- Development of a common BAEKTEL portal
- Training of persons responsible for preparation of OER content
- Preparation of educational and expert materials for OER repositories
- Integration of prepared OER materials within BAEKTEL nodes
- Further improvement of OER content
- Establishing and maintaining interactive project website
- Organizing round tables and special sessions, Organizing information days for students on OER facilities
- Development of sustainability strategy for BAEKTEL network

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