

THEORETICAL AND METHODOLOGICAL ASPECTS OF MOOCS. AN ANALYSIS OF SELECTED EXAMPLES

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Abstract: *The aim of the article is to analyze the methods and models of functioning MOOCs and their importance in traditional education. To achieve the above objectives literature recorded in the selected databases was studied. The results were complemented by selected characteristics of the platforms developed according to uniform criteria. The discussion of the orientations of development MOOCs as alternative models of education was presented at the end.*

Keywords: MOOCs, e-learning, open educational resources (OER)

INTRODUCTION

The aim of the article is to analyze the methods and models of functioning MOOCs and their importance in traditional education. To achieve the above objectives literature recorded in databases was studied: ERIC, LISA, LIST, Teacher Reference Center, and collected on the basis of searches on Google Scholar. The results were complemented by the characteristics of the selected platform (developed according to uniform criteria: provider, type (commercial, non-profit), example institutional participants, educational offer, the community, other.

Search in the selected databases was performed with the use of indexes, selecting index *TX All Text* (in databases: ERIC, LIST, Teacher Reference Center) and index *Everywhere* (in database LISA) and entering the search term *MOOCs*. The total number of records retrieved (20th August) was 461. Analysis of the retrieved records registered in the database ERIC allowed to extract the following thematic categories:

- Conference and symposium on MOOCs;
- Surveys on the use of MOOCs;
- Expressiveness and emotive vocabulary in MOOCs;

- Technological aspects of MOOCs;
- Impact of MOOCs on higher education;
- Connecting MOOCs and library services;
- MOOCs vs mobile knowledge;
- Examples and types of MOOCs;
- Research ethics in emerging forms of online learning;
- The importance of MOOCs in educational practice.

The selected and specific issues were discussed in the next parts of the article: (1) institutions involved in the creation and providing MOOCs (American, European, Polish); (2) the specificity of action of MOOCs and procedures for the confirmation of qualifications; (3) the use of the platform of MOOCs (offers, structures, users).

1. THE INSTITUTIONS INVOLVED IN THE CREATING AND PROVIDING of MOOCs

The term MOOCs was first used in 2008 by Dave Cormier of the University of Prince Edward Island and Senior Research Fellow Bryan Alexander of the National Institute for Technology in Liberal Education. In the first MOOC participated 2,200 people. The course was called *Connectivism and Connective Knowledge* (also known as *CCK08*). The basic assumptions for the course were: open access and resources built on the concept of distributed content. All course content was available through RSS feeds, and students could participate through online collaboration tools, including blog posts, threaded discussions in *Moodle* and *Second Life meetings* (S t e p h e n 2008).

In 2011, Stanford University launched three courses whose subject was the introduction to AI. The number of people recorded on the course was 160,000. Sebastian Thrun and Peter Norvig, and later Andrew Ng and Jennifer Widom were the first creators of the courses. Thrun founded Udacity and Daphne Koller and Andrew Ng launched the company *Coursera*. Then the Coursera announced a partnership with University of Pennsylvania, Princeton University, Stanford University and University of Michigan. In 2012, on the initiative of MIT the not-for-profit *mITX* was founded, renamed later to *EdX*. Harvard University, University of California, University of California Berkeley, University of Texas System, Wellesley College and Georgetown University joined the group of universities, which used *EdX*. In January of 2013 *Udacity* launched its first MOOCs in collaboration with San Jose State University. It was partnered with AT&T and Georgia Institute of Technology. As for May 2014, more than 900 MOOCs are offered by US universities (L i s t o f M O O C s 2014).

In Europe, work on the development and implementation of MOOCs began in 2012 (M a s s i v e o p e n 2014). In the same year, work began at the University of Helsinki. The ex-Nokia employees in Finland based CBTEC launched *Eliademy.com* based on the Open Source Moodle *Virtual learning environment* (VLE). The UK's Open University launched a British MOOC provider, *Futurelearn*, as a separate unit, and then it teamed up with partners outside the university. MOOCs courses are also made available by other universities and institutions: Universidad Politécnica de Madrid with the use of the platform *Crypt4you*, Stifterverband für die Deutsche Wissenschaft with the use of the platform *iversity.org*, the Ireland ALISON (Advance Learning Interactive Systems Online), the France Université Numérique and other. The transnational platform *OpenupEd* operates with the support of the European Union (M O O C s i n E u r o p e 2013).

MOOCs, currently offered in Poland, are used in the implementation of some subjects at university in the English language, for example within the Centre for International Education at the University of Łódź. There still does not exist the consortium implementing the Polish version of MOOC. It is postulated that in the future the consortium will have the appropriate structure and offer relevant topics including ITC, accounting for field research and implementation and teaching activities, in accordance with the best conceived idea of *problem-based learning* (PBL) (K r a ś n i e w s k i 2013a).

In spite of the absence of the consortium implementing the Polish version of MOOCs, a lot of courses and distance education platforms are implemented. For example. Wrocław University of Technology offers classes on education platform *ePortal* (e P o r t a l z d a l n e j e d u k a c j i 2014), where students can choose courses of interest to them with constantly widened base classes. Appropriate studies have been carried out and the methods of implementation of distance education courses have been compared on the basis of Wrocław University of Technology portal and portal *Coursera*. *ePortal* platform adopted formulas with examples of western platforms, referring directly to the objective of e-learning in universities. Its level can be described as high, also for reasons of improving teaching and saving lecturers' and students' time (Ż e l a z n o w s k a 2014).

The course prepared as a project of the Warsaw School of Data Analysis (WSAD) is another aspect of the MOOCs. The project includes the launch of a platform (specifically the extension of the platform COME) and two electronic courses of data analysis (S m a r t e r P o l a n d 2014). On the other hand, on the Virtual University are available online courses (12 courses in economics, finance, information technology, law, sociology). Information about the courses includes the objective, theme, structure, method of implementation and the certificate confirming the implementation of the course. Access to the course requires log-in (U n i w e r s y t e t W i r t u a l n y 2014).

In light of the report *Open science in Poland 2014. Diagnosis* the most important element of open science in Poland is open access to scientific content, and other

forms play a minor role or even are absent. Open access is implemented by the editors of scientific journals (almost half of Polish scientific journals is open), centers providing IT solutions and a few institutions providing repositories (Szprot 2014). In this context, particularly important are MOOCs that arose as *open educational resources* (OER). On the other hand, it is impossible not to notice that most of the courses available in this way do not share their resources as open. It also raises the question how long such courses will be available as free (Mitchell 2014).

2. THE SPECIFICITY OF THE ACTIONS OF MOOCs AND PROCEDURES FOR THE CONFIRMATION OF QUALIFICATIONS

Open education is related to the performance of the digital revolution. *Thanks to digital technology we all will be able to learn anywhere, anytime, using any available devices freely using the help of others* (Sprawozdanie 2013, p. 4). The main objectives of this initiative are: - *the creation of institutions, teachers and students to teach and learn in a more innovative way, by increasing the scope of application of digital technologies and content [...];* - *wider use of Open Educational Resources (OER) by ensuring that educational materials whose development was financed from public funds, for example with the new EU education program Erasmus+, it will be available without any restrictions [...];* - *greater, from the point of view of users, clarity on the issue of copyright to educational resources* (Sprawozdanie 2013: 4-5); - assistance in obtaining broadband Internet access and construction of ancillary infrastructure information and communication technologies (ICT) for use in the process of teaching and learning; - strengthening cooperation with international organizations and other institutions, to better understand the importance of technology in teaching and learning and to enable learning and testing new solutions in this area (Sprawozdanie 2013). Undoubtedly, the scope of these tasks is part of the design, implementation and dissemination of MOOCs.

MOOCs in the field of education are variously defined and classified, for example as the concepts of learning objects (Littlejohn 2003) or open educational resources (Glennie, Harley, Butcher, van Wyk 2012). These courses are classified as MOOCs, xMOOCs or cMOOCs. According to George Siemens cMOOCs refer to the connectivism model and xMOOCs are courses more institutionalized and structurally organized. Some authors believe that the so-called cMOOCs are more creative and dynamic than the current xMOOCs that resemble TV programs or digital textbooks (Conole 2013).

Describing the nature of MOOCs Stephen Downes proposed four criteria: autonomy, diversity, openness, and interactivity (Downes 2010). In contrast, Donald Clark (Clark 2013) proposed a taxonomy of the following types of MOOCs:

- transferMOOCs – where existing courses are transferred to Mooc (*Coursera* courses largely fall into this category);
- madeMOOCs – courses that are more innovative and interactive, effective use of video (*Udacity* take this approach);
- synchMOOCs – courses with fixed start and end date (*Coursera* offers such courses);
- asynchMOOCs – courses that do not have a fixed start and end dates and deadlines are more flexible (*Udacity* have developed their courses to enrol and proceed at user's own pace and *Coursera* offers a completely open self-study option);
- adaptiveMOOCs – courses that provide individualized educational process with the use of dynamic assessment and data collection on the course (*Cogbooks* is a leading example of this type of MOOC);
- groupMOOCs – courses that focus on cooperation in small groups (*NovoEd* which offers both MOOCs and closed, limited number, internal courses);
- connectivistMOOCs – courses that emphasize collaboration with peers in the Network (connectivist MOOCs rely on the connections across a network rather than pre-defined content);
- miniMOOCs - which are much smaller than the traditional massive MOOC (to be more intense experiences that last for hours and days, not weeks) (C o n o l e 2013).

An important issue in the operation of MOOCs is confirmation of acquired skills obtained during their implementation. Increasingly, we have to choose the path of unofficial and official path - which is completed by diploma roll call. An example of such an official path (*Signature Track*) is the path implemented on the platform *Coursera*. The *Signature Track* is payable (although, at least so far, you could enroll in the free, and after a few classes to decide that you want to get a/the paid certificate). Diploma is a qualification sponsored not only by MOOC, but also by the participating university. Electronic version of diploma we can link (secure URL) and we can connect to our account in Linked In. A similar solution was introduced on the platform *Udacity* (path *Verified Certificates*). Both the first and second case procedure is required to confirm the identity (presentation of an identity document, webcam use during classes) (W r o n a 2014).

3. THE USE OF THE PLATFORMS FOR MOOCS

By the end of the 2013, 18 of the top 20 universities in North America were offering MOOCs (Future Learn 2014). In November 2013, in 28 institutions from the European Higher Education Area (24 from EU member states, plus three from Russia and one from Turkey) were offering courses on *Coursera* (Gabel 2014). These and other data confirm that the number of offered MOOCs increases. The list of the most important providers of the MOOCs model are shown in Table 1.

Table 1.

Characteristics of selected platforms of MOOCs¹

Provider (accessed)	Description	Type	Example institutional participants	Educational offer	Community	Comments
Audacity (http://audacity.sourceforge.net/)	It is free software, developed by a group of volunteers and distributed under the GNU General Public License (GPL).	Non-profit	Some vendors, Umixit, Thinklabs, and Audiotouch, have additionally supported Audacity by sponsoring custom versions	We can use Audacity to: -record live audio, -record computer playback on any Windows Vista or later machine, -convert tapes and records into digital recordings or CDs, -edit WAV, AIFF, FLAC, MP2, MP3 or Ogg Vorbis sound files, -other.	Community members offer: subscribe to the audacity-users mailing list to share tips, visit the Audacity Wiki, join our Audacity Forum.	Audacity is a multi-track audio editor and recorder for Windows, Mac OS X, GNU/Linux and other operating systems. The interface is translated into many language.
Canvas.net (www.canvas.net/)	It gives instructors and institutions an open platform to share their expertise and institutional experience with the world.	Commercial	The Canvas Network has a built-in network of 260+ schools to create open online courses based on their current customer base. Likewise, they have ~4.5 million students already using the platform.	Canvas Network offers open, online courses taught by educators everywhere. It is developed and supported by Instructure, an education technology company that partners with educators, institutions, and	Courses are defined by you--whether long or short, involved or hands-off, fun or serious. Canvas Network is where instructors can design and teach the type of open	Canvas Network leverages the features of Canvas to provide a simple, flexible experience.

¹ Based on the analysis of web pages: *Mooc List* and *List of MOOCs*.

				technologists.	courses that fits them and the vision of their institutions.	
Cogbooks (http://www.cogbooks.com/)	It is an adaptive web-based learning platform. Their vision is make web-based learning as effective as it can be for each individual learner.	Commercial	The platform is used by publishers and institutions in the US and UK post-secondary education market, including Edinburgh University, the OCR exam board and many others. Off-the-shelf training programs can be purchased individually or in packaged suites for 10 or 10,000 users.	CogBooks can be incorporated into standard Learning Management Systems or Virtual Learning Environments allowing you to easily upgrade to a Personalized Learning Management System (Personalized LMS) without changing your existing software.	The network presents information on the blog (subscribe by e-mail, blogs we like, website we like, articles and resources, categories, archives, blogs by associates, staff favorites).	The CogBooks adaptive learning platform lets you personalize your web-based learning so that each individual receives the learning and support they need, at every step.
Coursera (www.coursera.org)	It is an education platform that partners with top universities and organizations worldwide, to offer courses online for anyone to take, for free.	Commercial	As of September 2014, Coursera has 9.2 million users in 750 courses from 111 institutions. (for example: University of Maryland, Wharton School, University of Virginia, Stanford University, University of Tokyo).	Courses are eligible for specialization certificates, verified certificates, on-demand and starting soon.	Coursera empowers people to improve their lives, the lives of their families, and the communities they live in with education.	The aim to empower people with education that will improve their lives, the lives of their families, and the communities they live in.
Crypt4you (crypt4you.com)	Crypt4you new format is a massive, online and free education in information security.	Non-profit	It is the first MOOC, in Spanish in information security, was created March 15, 2012 within the Thematic Network of Cryptography and Information Security Criptored at the Polytechnic University of	The courses are on cryptography and information security.	To learn more about this training project, reading the FAQs is recommended.	Crypt4you developing other projects of mass training; among them are the Visual Encyclopedia of Information Security and Información Intyped y las Pildoras Formativas

			Madrid. His courses exceed 400,000 visits.			Thoth.
EdX (www.edx.org)	EdX was created for students and institutions that seek to transform themselves through cutting-edge technologies, innovative pedagogy, and rigorous courses. EdX is based in Cambridge, Massachusetts and is governed by MIT and Harvard.	Non-profit	EdX offers interactive online courses and MOOCs from the world's best universities, and institutions (for example: MIT, Harvard University, UC Berkeley, Kyoto University, Australian National University, University of Queensland, IIT Bombay).	Topics include biology, business, chemistry, computer science, economics, finance, electronics, engineering, food and nutrition, history, humanities, law, literature, math, medicine, music, philosophy, physics, science, statistics and more.	edX presents Guest and full articles. Blog Post	The aim of the platform is to become a leading resource for learners and learning worldwide by staying focused on the goals and principles set forth when forming edX.
Eliademy.com (https://eliademy.com)	It supports educators and students with free online classrooms that enable them to create, share and manage courses.	Commercial	Started in February 2012, Eliademy is backed by CBTEC Ltd, a company founded by ex-Nokia veterans, who possess core expertise in Open Source Technology. It is used, inter alia, by Aalto University Executive Education.	Every organization has its own private learning space and course catalog. You can create introductory courses or safety course for employee.	Eliademy offers an educational calendar. the platform offers a news feed and e-mail notification system that everybody can personalize according to their own learning schedule.	The Eliademy mobile application is an extension of Eliademy. Eliademy is also compatible with Moodle LMS.
FutureLearn (www.futurelearn.com)	It is aim is to connect learners from all over the globe with high quality educators, and with each other. The platform is	Non-profit	FutureLearn offer a diverse selection of free, high quality online courses from some of the cultural institutions and world's leading universities (for example: University of	Courses are available in three categories: New & upcoming, In progress, Past.	FutureLearn have had a lot of experience in developing successful online and mobile consumer products, for some of the biggest brands in	The FutureLearn team – currently based in the British Library, near King's Cross, London – contains experts in learning design and

	a private company wholly owned by The Open University (UK).		Reading, Open University, Monash University, Trinity College Dublin, Warwick University, University of Bath, University of Southampton).		broadcasting, publishing, marketing, gaming and social networking.	educational technology. It works with companies such as BBC, Microsoft, Skype, Harper Collins, Bigpoint, Endemol, BSkyB, NBC, Paul Smith, Jasper Conran, and GOV.UK
iversity (https://iversity.org/)	It is a platform for Massive Open Online Courses. They are a diverse interdisciplinary team based in Berlin, Germany.	Non-profit	iversity is being used by hundreds of professors to organize classes at dozens of universities (for example: Universidad Autonoma de Madrid, University of Florence, University of Hamburg).	Courses are constantly expanding and cover a range of subjects that include medicine, computer science, economics, physics, law, design and philosophy.	iversity work in close cooperation with instructors, universities and knowledge-based companies to build high-quality courses that are engaging, interactive and fun.	The partnered institutions have the opportunity to offer exams that award ECTS credits.
Khan Academy to Platforma (www.khanacademy.org)	It is a not-for-profit organization with the goal of changing education for the better by providing a free world-class education for anyone anywhere.	Non-profit	Khan Academy has received the time, energy, and expertise of many volunteers and part-time contributors.	The library of content covers math, science topics such as biology, chemistry, and physics, and even reaches into the humanities with playlists on finance and history.	Students can make use of our extensive library of content. Coaches, parents, and teachers have unprecedented visibility into what their students are learning and doing on Khan Academy.	The platform is joining millions of Khan Academy students from all over the world who learn at their own pace every single day.
MiriadaX (www.miriadax.net/web/excel-avanzado)	It is an initiative created by Telefónica, via Telefónica	Lack of information	MiriadaX is used by the Universia (the most important university network in	During the pilot scheme around 700,000 persons had signed on in one or more of the 153	Courses are open to all audiences, regardless of whether the participant is	MiriadaX is the second Mooc platform in the world and the first in

	Learning Services (TLS) and Banco Santander via Universia, the biggest network of Spanish and Portuguese speaking universities (institutions officially launched the definite portal on 27 July 2014 in Rio de Janeiro).		Ibero-America, comprising 1,290 universities from 23 countries, representing 16.8 million students and professors).	MOOCs offered ² .	a university student or not, or belongs to a specific university.	Spanish ³ .
NovoEd (https://novooed.com/)	It is allowed to take courses from thought leaders and distinguish ed professors from top universities ; to get to know your fellow students around the world as you collaborate with them on course projects; to work on real-world course projects that excite you and make a difference.	Comm ercial	The partners include universities, foundations, training companies, consulting firms, and corporations. (for example: Stanford University, Carnegie Foundation, Universidad Católica de Chile).	NovoEd partners with leading institutions to offer team-based courses and programs that emphasize project-based learning.	Users can share your feedback about course material, structure and your experience on your course forum.	The learning environment can be used in online courses (either free or for a fee).
OpenupEd (http://www.openupe)	It is a portal of a pan-	Non-profit	OpenupEd has been initiated by the European	Courses are available in two categories:	It is to 'open up education for you' who	In order to account for the variety in

² Global Statement 2014.

³ Santander Corporate.

d.eu/)	European initiative OpenupEd around so-called MOOCs. The OpenupEd initiative was launched on April 25th 2013.		Association of Distance Teaching Universities (EADTU) and mostly involves open universities. The 11 launch partners are based in France, Italy, Lithuania, the Netherlands, Portugal, Slovakia, Spain, and the UK, and outside the EU in Russia, Turkey and Israel. Another 10 institutions confirmed that they most likely will join this initiative in the near future.	Institution, Language(s).	wishes to learn at the level of higher education in the language you prefer without a whole set of restrictions, restraints and regulations.	needs and circumstances of (lifelong) learners and the demands of a changing knowledge-based society, openness may serve in various ways (high-quality learning materials designed for self-study; in the best tradition of the highly acclaimed open universities model).
iTunes U (http://www.apple.com/education/ipad/itunes-u/)	iTunes U is a dedicated section of Apple's iTunes Music Store that features educational audio and video files from universities, museums and public media organizations for free download to PCs and mobile devices ⁴ .	Non-profit	Participating institutions include Stanford, UC Berkeley, University of Melbourne, Texas A&M, MIT, Yale, Trinity College Dublin and other.	In the 2008 since its introduction, iTunes U has logged over 4 million downloads.	The user is required to download and install iTunes on an Internet-connected PC and then visit the iTunes Store. The user may also visit the relevant subdomain of a participating university, like http://itunes.stanford.edu	The iTunes U app lets students enroll in a course and download all of the materials they need when they are connected to Wi-Fi — which means learning and studying can happen anywhere, at anytime with just an iPad.
Udacity (www.udacity.com)	Its mission is to bring accessible, affordable, engaging, and highly effective higher education	Commercial	Udacity was created at the Stanford University in which Sebastian Thrun and Peter Norvig offered their	Courses that allow you to master basics and build a solid technical foundation (business, marketing, finance, design,	Relevant courses taught by passionate, experienced industry leaders from companies such as	The courses are on-demand so you can level-up your skills just in time to start that new project, take on new

⁴ WhatIs.com.

	to the world.		"Introduction to Artificial Intelligence" course online to anyone, for free. (over 160,000 students in more than 190 countries enrolled).	and product management require technical skills). Courses are for all skill levels.	Google, Facebook, Cloudera, and MongoDB.	responsibilities, and explore new technologies.
Udemy (http://www.udemy.com/)	It mission is to help anyone learn anything online.	Commercial	Cooperating institutions are, among others, Georgia Institute of Technology, San Jose State University, Google, Salesforce, Facebook, Cloudera, Nvidia, Autodesk, Cadence.	Characteristics of the platform: 18,000 courses, 10,000,000 course enrollments, 53 course languages, 2,400,000 minutes of video content.	Every course is available on-demand, students can learn at their own pace, on their own time, and on any device.	4 million+ students are taking courses in everything. Each of our 18,000+ courses is taught by an expert instructor.

New offer of open courses in distance education includes courses which are characterized in that they are completely free (fee is charged sometimes only for the certificate), public (in a course may participate everybody who has access to the Internet), offered by reputable universities (first courses on *Artificial-Intelligence* have been released by Stanford University in California, another *Circuits and Electronics* - course realized in the field of electronic engineering - by the Massachusetts Institute of Technology), implemented was based on modern educational tools available over the Internet. This is a new educational model (first courses were made available to this system in 2012), and now more and more universities reach this form of education (Kuruluşwilić 2013: 58).

E-learning courses are often used to improve the qualifications of employees of banking, medical doctors, computer scientists, teachers, salesmen, industrial workers, lawyers, employees of insurance and financial sector. There is also a group of issues that are particularly well suited to e-learning, regardless of which group will be dedicated to professional training. These include: e-learning courses in computer application service (popular computer programs, office programs, communication, financial and accounting or professional - dedicated to specific institutions platform), training, marketing and sales (the so-called product training, prepared specifically for a particular company and a particular product), legislative training (training on the amendments to the law on public procurement, training, protection of personal data or information security), universal training (eg. mandatory safety training, service in secretariat of the institution in business training, job design mode or time management), language training, e-learning area,

which apparently may seem difficult to teach this method (eg. training in the first aid, soft skills training, such as negotiation, conflict resolution, team management and change management), specialist management training (eg. of the foundations of the theory of constraints and implementation of Lean Manufacturing) (Kuruliszwilić 2013: 60-61). MOOC courses are also designed for librarians, for example course *Library Advocacy Unshushed. Values, Evidence, Action*, organized by the Faculty of Information (iSchool) at the University of Toronto using the platform EDX (edX: Library 2014).

The offer of courses is increasingly addressed also to individuals (these are usually subjects also performed as part of vocational training, such as coping with stress, but also learning to cook, or rather odd - such as the art of seduction of women for men). A large range of courses and growing demand clearly indicate the popularity of this form of teaching. The diversity of subject matter training available shows that e-learning can help to improve skills in many areas, occupations addressed to different audiences (Kuruliszwilić 2013: 61).

It is also worth mentioning that the biggest platforms Mooc often formed as spin-offs (a company formed at the initiative of the university and closely collaborating with them in order to transfer knowledge from the academic world) of the company of the most well-known universities and technical colleges. For example *edX* is the effect of cooperation between Harvard University and MIT (Massachusetts Institute of Technology), while *Coursera* is a spin-off from the University of Stanford (Levin 2012). Potential of MOOCs platforms is recognized in the private sector. For example, Bill & Melinda Gates Foundation granted in November 2012 12 grants to support the development MOOCs. The total amount of funding amounted to \$ 3.000.000 (Wais 2013).

CONCLUSION

Lines of action and development of MOOCs are the subject of many workshops, programs, experiments, for example a workshop entitled *Developing Issues in Licensing: Text Mining, MOOCs, and More* which was co-sponsored by the Collection Development and Electronic Resources Management Interest Groups of the Association of College and Research Libraries New England Chapter (Indianapolis, April 10-13 2013) (Rathemacher, Smith 2013). It is proposed that MOOCs were used in blended learning and converted themselves in MOCCs (Mid-Sized Online Closed Courses). Such projects involve a limited number of students who pay tuition. An example of such a course is *Master in Computer Science*, which was established in January 2014 within the framework of the agreement *Udacity* and the Georgia Institute of Technology. 600 students participated in the course (ultimately 10.000 of the world), the tuition fee is \$ 6.600 (\$ 45.000 for full-time studies), the course was supported by AT&T in the amount of \$ 2 million (MOOC Potential 2014). Among the other forms are SPOCS (Small Private On-Line Courses) used locally with on-campus students and mOOCs

(micro Open On-Line Courses) - a small, highly targeted course (K r a ś n i e w s k i 2013).

It seems that in the area of technology offered the most visible change is the transfer of attention from the organization of teaching in closed e-learning environments on the introduction of arrangements for teaching in a more flexible and open way (Z a j a c 2014). The basic, new methods of knowledge distribution through the new media of universities that provide online scientific content, are inter alia: science blogs, recorded lectures and podcasts, distributed through university dedicated channels, channels such as *YouTube* and *iTunesU* and our own servers streaming or e-learning platforms, such as synchronous learning environment *Wiziq* on the *Moodle* platform, and open lectures online, including massive open courses (MOOCs) (G o b a n – K l a s 2014).

Inspiring pedagogical theories aided tools in the network and applications on mobile devices allow you to create Individual Learning Environment (PLE). Information, knowledge and work rules are personalized and tailored to the recipient. It is creating presentations and visualizations, infographics, videos, teaching, computer simulations, work in the cloud computing. All these new solutions can be used in the created and developed MOOCs, a popular idea MOOCs draws a picture of the future of global education (R u d n i c k a 2013).

Techniques to better prepare graduates for professional start, observations of economically active persons about their educational experiences and effectiveness of education, as well as efforts on improving the methods, techniques, forms and training programs should have an effect on the appropriate preparation of young people for employment and further development. Alternative models of education, which also certify the completion of the programs and their paths within the bulk of online courses (MOOCs) offered by leading universities in the world, as well as certificates sponsored by individual employers or their associations serve this purpose, inter alia. Current questions remain: whether MOOCs are the real threat to the future of higher education and level of education? What is their place in traditional universities? How to encourage teachers to their preparation?

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Annex 1. MOOC directories:

- <http://openeducationeuropa.eu/en/find/moocs>
- www.class-central.com/
- www.coursetalk.com/
- www.distancelearningportal.com/articles/241/moocs-online-education-for-the-masses.html
- www.moocs.co/Higher_Education_MOOCs.html
- www.mooc-list.com/
- www.uniwersytet-wirtualny.edu.pl