

Nataliya LUSHNIKOVA,
*Ph.D., Assistant-Professor,
National University of Water Man-
agement & Nature Recourses Use,
Rivne, Ukraine*

Praveen Kumar CHINTAKAYALA,
*MBAF, Executive Director,
Kanth Enterprises, Mumbai, India*

Aaron RODANTE,
*MBA, Aircraft maintenance supervi-
sor, United Airlines, Orlando, Fl. U.S*

MASSIVE OPEN ONLINE COURSES FROM IVY LEAGUE UNIVERSITIES: BENEFITS AND CHALLENGES FOR STUDENTS AND EDUCATORS

*Don't let schooling interfere
with your education*

Mark Twain

В статті розглянуто новий напрям електронного навчання - масові відкриті онлайн-курси, розроблені університетами Ліги плюща та іншими елітними університетами з усього світу. Оскільки ці курси є безкоштовними, мова йде про революційні зміни у системі вищої освіти на глобальному рівні. Поряд із низкою переваг, такий спосіб навчання створює певні складності як студентів, так і викладачів.

Ключові слова: *електронне навчання, масовий відкритий онлан-курс (МВОК), відкритий освітній ресурс (ВОС), університети Ліги плюща, безперервна освіта.*

В статье рассмотрено новое направление электронного обучения - массовые открытые онлайн-курсы, разработанные университетами Лиги плюща и другими элитными университетами по всему миру. Поскольку эти курсы являются бесплатными, речь идет о революционных изменениях в системе высшего образования на глобальном уровне. Наряду с рядом преимуществ, такой способ обучения создает некоторые трудности как студентам, так и преподавателям.

Ключевые слова: *электронное обучение, массовый открытый онлан-курс (МООК), открытый образовательный ресурс (ООР), университеты Лиги плюща, непрерывное образование.*

This paper gives in-depth understanding about the Massive Open Online Courses (MOOCs) from the Ivy League and other elite universities from across the world. As

these courses are free, this led to revolutionary changes in higher education on a global scale. Along with benefits, it creates some challenges for students as well as for educators.

Keywords: *E-learning, Massive Open Online Course (MOOC), Open Educational Resource (OER), Ivy League universities, continuing education.*

1. Introduction

Distance education and online education are nothing new in the education industry. However, 10,000s of students and sometimes more than 100,000s from more than 100 countries for each course is a relatively new phenomenon.

What is more interesting is that the **Ivy League** (Brown University, Columbia University, Cornell University, Dartmouth College, Harvard University, Princeton University, the University of Pennsylvania, and Yale University) and other elite universities from across the US, Canada, UK, China, India etc. are offering these courses.

The term **Ivy League** has connotations of academic excellence, selectivity in admissions, and social elitism. As of now, these universities are offering these courses free of charge. Hence, there is a rush from students from across the world to join these courses. The opportunity to get Ivy League education at zero fee is a huge attraction for students across the world.

This is the beginning of a revolution in academia. This is also being called the “Single Most Important Experiment in Higher Education” [1].

What are the benefits and challenges of such education for both students and educators? What is the impact on traditional universities? These questions need to be addressed.

2. The aim, object and methods of research

The aim of this research is to reveal the distinctiveness of online education and show the pros and cons of massive open online courses (MOOCs).

The objective of this research is to understand the open online university education.

The subject of research is to review the main features of online education in general and massive open online courses, in particular.

The research methods that were used are induction, deduction, generalization, extrapolation and comparison. A survey was also conducted to collect data from students.

3. Brief history of free online university education

Ten years ago, the idea of free sharing of knowledge on the internet started with the free sharing of video lectures without any assignments and deadlines [2]. In the later years, the idea transformed into free sharing of educational resources, initiated first by the University of Tübingen in Germany and then it became quite common when Massachusetts Institute of Technology (MIT) created OpenCourseWare (OCW) [2]. On the MIT OCW, today we can find lecture notes, assignments, and projects on over 2,100 courses [3]. MIT OCW initiative was replicated by other Ivy League universities such as Stanford and Harvard, by offering free online access to some of their courses and materials.

Yet, a few years ago, the development of self-contained online courses looked utopian. A major barrier to free online education was financial support due to economic decline in 2009. The good thing is that, the forecast for “death deadline” was right and now we are the witness to a unique global experiment by the top-ranked universities across the world. Online education is making great strides and revolutionizing the educational process. As part of having free access to videos, lecture notes etc. a person is able to feel as a real student with almost all the associated activities. A student can start studying at the time of his/her choice, take a break, then come back, and continue with the video lectures at the own discretion.

A major advantage of online learning is the elimination of a physical location. Sharing knowledge freely enables students (residing in different parts of the world) to pursue any course of their choice at any international university that offers online courses.

The educational model offered now sounds like: “Do you like this? Enroll now!” [2]. This recent development in area of distance education is called Massive open online course (MOOC) [4, 5], with it’s main attributes being short-term but large-scale participation and open access via the web.

There are several platforms offering wide range of online short-term courses freely (Tab. 1).

Table 1

The Courses platforms and their main characteristic (adapted from [6])

Courses platform	URL	Students enrolled for the 1 st course	Courses	Basic learning activities
Coursera	coursera.org	More than 100,000	The fullest selection, from poetry to probability	Short videos, quizzes and problem sets with immediate feedback, and a Q&A forum, Facebook study groups
EDX	edxonline.org	100,000	They pledge to offer humanities as well as the sciences	Short videos, problem sets, a forum, wiki
Udacity	udacity.com	100,000	Focus on computer science, with a few other science and math topics	Short videos, quizzes and problem sets, a wiki and forum, and a live course manager like a TA. Courses are organized by level with links to suggested prerequisites

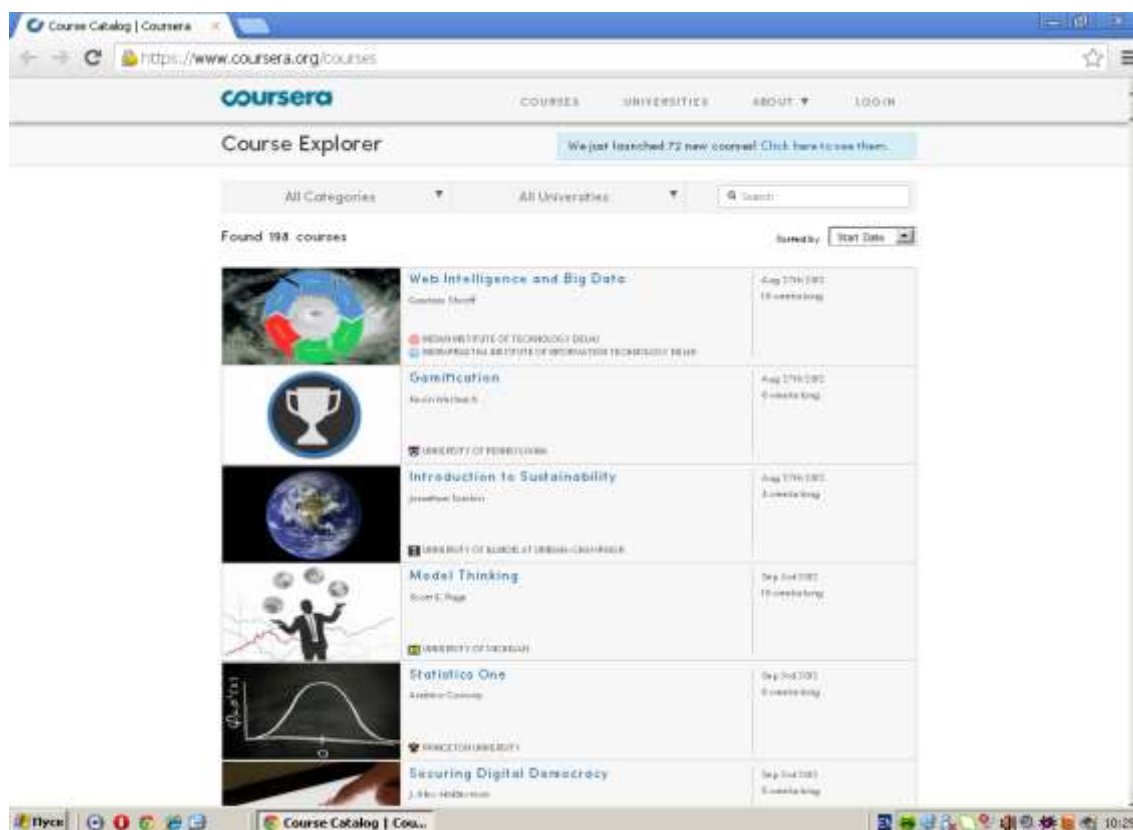


Fig. 1. Coursera.org. Screenshot of main window with the list of the course

A complete list of free online courses can be found at Online Education Database (OEDb) [7]. For example, Coursera platform (Fig.1) [8] offers 200 courses from 30 top-ranked universities in USA, Canada, Europe, China and India. Topics include Computer Science, Business, Social Sciences, Mathematics, Humanities, Medicine, Biology, and many others. At present Coursera's learning community counts more than 1.3 million students [9]. The duration of a course usually varies from 6 to 10 weeks. Each course has anywhere from, 10,000 to 100,000 students enrolled. To teach them face-to-face in a "real university" the professors will need hundreds of years.

4. Distinctiveness of the Massive open online courses: theoretical analysis

Regardless of the availability of distance learning courses including e-learning, the distinctiveness of MOOC need to be studied to understand their educational methods and how they are being further developed. Some early recommendations for online teaching, presenting tools types, examples and instructional uses are given in [10]. Studies determined that courses focused on development of cognitive abilities of the students are the most appropriate for teaching online.

All forms of E-learning (electronically supported learning and teaching) are applied – information and communication systems, mostly based on network learning [11, 12].

However, there is a viewpoint that distance learning tends to copy the so-called traditional educational model and that influences the balance against the distance learning [13].

The launch of a large number of MOOCs forced the creation of instructional strategies and types of learning activities different from those in traditional learning. Their teaching strategies consists of the application of traditional strategies (lectures, course project, case studies), on-line education strategies (self-directed learning, collaborative learning, forum) and hybrid strategies (case studies, mentorship, small group works) as shown in Tab. 2.

Table 2

Instructional strategies applied in online education (adopted from [14])

Traditional strategies	Hybrid strategies	On-line strategies
Lecture	Case Study	Self-Directed Learning
Discussion	Mentorship	Collaborative Learning
Project	Small Group Work	Forum

Educational platforms apply similar forms of learning activities, which vary depending on the course (see Tab. 1). However, all the courses have video and social-networking components (forums, study groups on social networks like Facebook, Google+). Weekly quizzes, design projects or essays, and sometimes a final project or exam provides evaluation of students' efforts.

According to data given in [15], three main didactical models are applied to the e-learning process (Tab. 3):

The traditional model of education is teacher-oriented and the 'student-student' links are comparatively weak there; whereas online educational model is student-oriented and 'student-student' links are strong and communicate less with the professor. The students give immediate feedback via The Discussion Forums. The students are also involved in the peer evaluation of course projects. (Fig. 2). The professors' direct feedback is rather low.

Table 3

Didactical models of online education (adopted according to [15])

Name of model	Behaviourism	Cognitivism	Constructivism
Essence of model	based on the assumption that learning is a function of change with stimuli and responses; focused on the results of learning; fragmented way of knowledge offering	based on the idea that the process of learning is comparable with the way a computer is working; using words like short term memory, long term memory and stimuli; focused on learning process	based on the idea that the dialectic or interactionist process of development and learning through the student's active construction should be facilitated and promoted by educators
Learning activities	didactical aspects like knowledge tests, homework and highly structured learning are common	collecting; adapting; integrating information	learners construct new ideas, structures, models and concepts and connect them to their prior knowledge and mental models

Therefore, **the main postulates** of massive open online courses can be formulated as follows:

Teacher is not at the centre of the classroom anymore.

Opportunities for studying and mentorship are endless.

Student can be a mentor and mentor can be a student.

The analysis of data [25], made by Coursera “demonstrates very convincingly that online learning methods are, on average as effective as face-to-face learning. Further, hybrid methods, which involve both methods of instruction, and is being offered by our partner universities to many of their on-campus students using our platform, are considerably more effective than either method alone”

[18].

5. Advantages and disadvantages of Massive open online courses

We can define the key advantages to free online courses as:

- Convenience: student has the ability to study at any location with access to a computer and an internet connection, while having busy schedules including work and family;
- Flexibility: students learn through a variety of work activities and allow them to apply different learning styles;
- Ivy League Opportunity: Ivy League education is available for free, without restriction, and made available to anyone interested.

Despite these advantages, some students might experience disadvantages with these classes. Ability to work with computer and the lack of face-to-face interaction are viewed as the main downside to free online courses. Individuals with little or no ability to manage computer files, software, and documents may find these courses difficult.

The analysis of the available data [2, 4, 6, 16-24], permits us to separate several

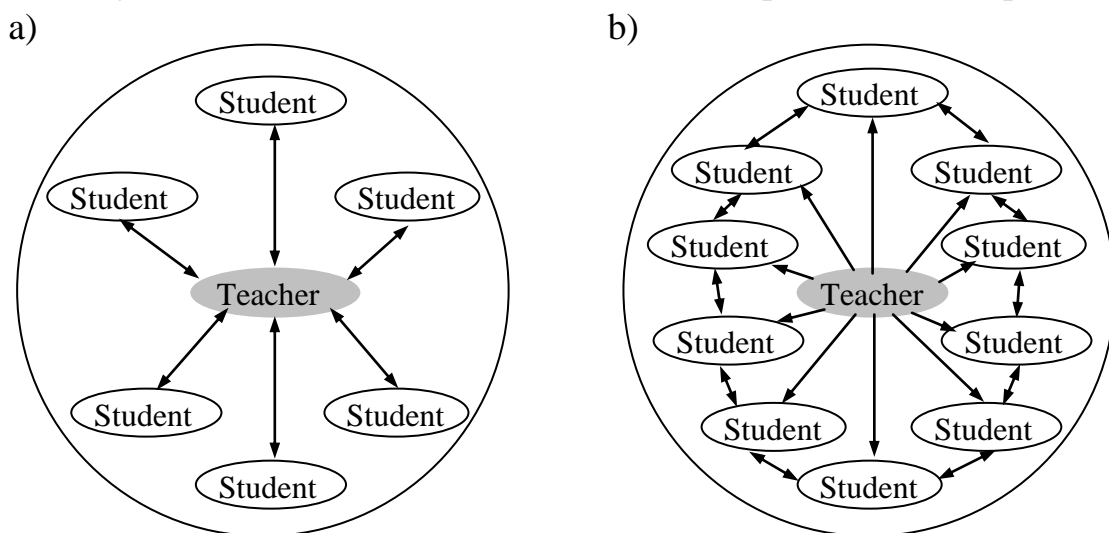


Fig. 2. Hypothetical scheme of educational models of face-to-face (a) and online education (b)

groups of factors reflecting advantages and disadvantages of online educational process:

- Institutional factors – related to organization of educational process;

- Social factors – related to social issues of educational process;
- Technological factors –related to technological issues of educational process;
- Economical factors – related to economical issues of educational process;
- Personality factors – related to personal issues of participants of educational process.

Therefore, the main advantages (benefits) and disadvantages (challenges) are represented separated into the groups reflecting above mentioned factors (Tab. 4).

Table 4

Main advantages and disadvantages of online education

Group of factors	Advantages	Disadvantages
Institutional	Competence-based education approach Less formal learning manner Permanent sharing, viewing and criticism of all instructions, thoughts and work No need in physical presence in a classroom and easy accessibility of the online class Wide variety of assignments to choose from Fix time for studying and no limits by classroom schedule Variety of courses' homework designed to give students multiple opportunities to study and demonstrate their knowledge The opportunity to reach out to a global audience and stimulate fresh thinking, share cutting-edge ideas Availability of instructors, who respond quickly through email, and generally are prepared to work with diverse students with a range of lifestyles and needs Documents, transcripts, live discussions and training materials are available for reading, downloading, and printing Digital skill development	Students can turn away the universities Absence of college credential (certificates) Statement of accomplishment can improve a résumé only for those who already hold a four-year degree Lack the kind of one-on-one faculty attention that's a hallmark of the best four-year colleges Missing the sound of an instructor or peer's voice Not all courses of study are easily available online Student assessment and feedback is limited Increased likelihood of academic dishonesty
Social	The only opportunity to study for pro-	Internet is a poor substitute

	<p>professionals, for women with responsibility to look after small children or elderly at home, and for people with restricted mobility</p> <p>Improving education for the world's have-nots: high-school dropouts, the global poor, those less able to self-teach</p> <p>Social life for “virtual” student campus formed in social networks</p> <p>Collaborative and exploratory learning environment consisted of students from all over the world.</p>	<p>for personal interaction and campus activities</p> <p>Minor interaction with the course instructor</p> <p>Most of the companies probably wouldn't hire someone who holds an online certificate rather than a degree</p>
Technological	<p>Language barriers are not an issue due to the availability of website translation</p> <p>Open infrastructure facilitates research on learning technologies and enables learning content to be easily portable to different educational platforms</p> <p>Easy and affordable training delivery</p> <p>Reduced technical support</p> <p>Ease of content update</p> <p>Web browsers and Internet connections are widely available</p> <p>Monitoring and direction of web training</p> <p>Direct access to many other training resources</p>	<p>The need for basic digital literacy</p> <p>Complete reliance on computers and internet connectivity</p> <p>Limited formatting of content in current browsers</p> <p>Provider for web server access, control usage is required</p> <p>Time required for downloading applications</p> <p>Many of today's web-based training programs are too static</p> <p>Cannot design and develop robust multimedia courses</p> <p>Time, experience, and money for may take longer designing and developing WBT courses, the first time around</p>
Economical	<p>Inexpensive worldwide distribution</p> <p>Travel cost and time savings</p> <p>Vast, untapped market for training</p> <p>Driving down the costs of on-campus teaching for universities.</p>	<p>Low financing of online education</p> <p>Free for students – expensive for universities</p>
Personality	<p>Easy planning of online learning ses-</p>	<p>Poor knowledge of English</p>

	<p>sions with a proper time management</p> <p>A short course can allow students to try out the subject first on a sort of trial basis, and then apply for the full-time programme</p> <p>It may also offer students a CV boost, even if they do not receive a formal qualification at the end</p>	<p>can be a serious obstacle regardless the availability of video subtitles</p> <p>Ability to communicate well through chats and discussion forum as the key communication channels</p> <p>Need in a huge amount of personal discipline</p>
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6. Survey results

To understand the student's attitude to studying MOOCs, a survey was sent to students of two courses on two different platforms. They are 'Technology Entrepreneurship' course taught on Stanford University's Venture Lab platform and 'Introduction to Sustainability' course taught by faculty from University of Illinois on the Coursera Platform. The amount of respondents was 27; therefore, each vote is equal to 3.7%.

Inspite of the low number of respondents, the results of the survey are rather representative of the viewpoints of students from across the world. The demographics include students mostly from Europe (51%) (Fig.3a), of different educational levels, but with at least one academic degree (37% with bachelor degree and 44% with master degree) (Fig. 3b). That confirms the higher interest and higher motivation to study short-term massive open online courses for persons who has diploma from traditional universities.

As to the number of courses started, (Fig.4a) about the quarter of the respondents started to study one or two courses and one third of them studies more than three courses. As to the completion, most of the respondents (two thirds) have completed one course. The most active part of respondents (11%) has completed more than three courses (Fig. 4b). Such results can serve the evidence of initial overestimation of personal capabilities, disappointment with studying process and its intermediate result at the initial stage, lack of stimuli to complete the course that usually happens in face-to-face education. As per the data, only about 20% of students enrolled complete the on-line courses [26]

On the other hand, that result can be linked to the short history of such courses. As for the main reasons to study short-term massive open online courses there are options: two thirds of the respondents selected 'studying for the sake of studying': so they enjoy the process of acquiring new knowledge. About 40% of the respondents expect to promote their career; one third of respondents feel lack of knowledge after completion face-to-face education and one fifth of respondents needs in re-training (Fig. 5). The respondents also suggested some other options: getting the certificate (one respondent), way of personal improvement, the basis for innovation (one respondent) and implementing personal dream (one respondent). Some persons want either to refresh knowledge (one reply), or to get new knowledge from the latest sources (two replies). One respondent pointed out that learning English is a prerequisite for all courses.

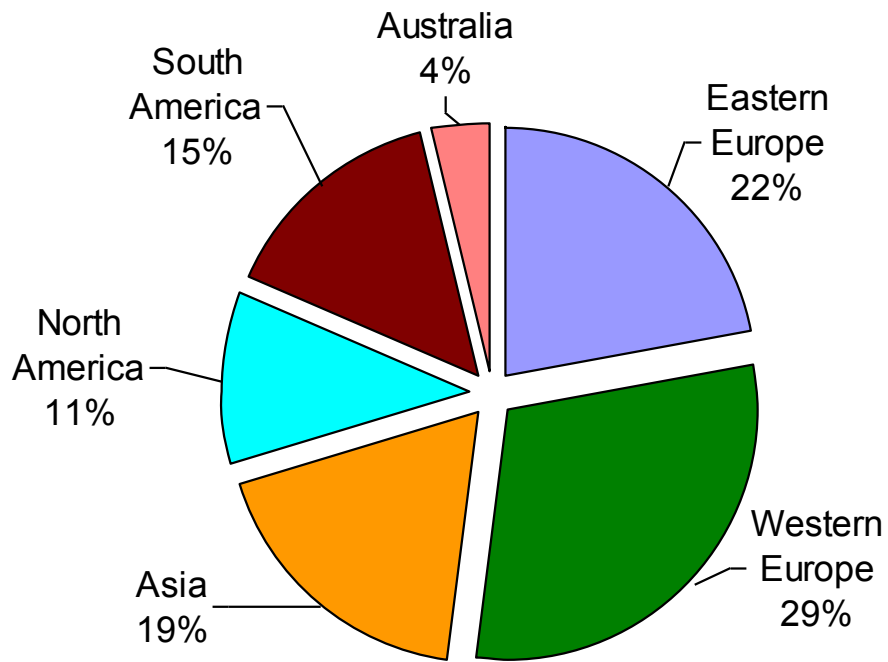


Fig. 3a. Location of respondents

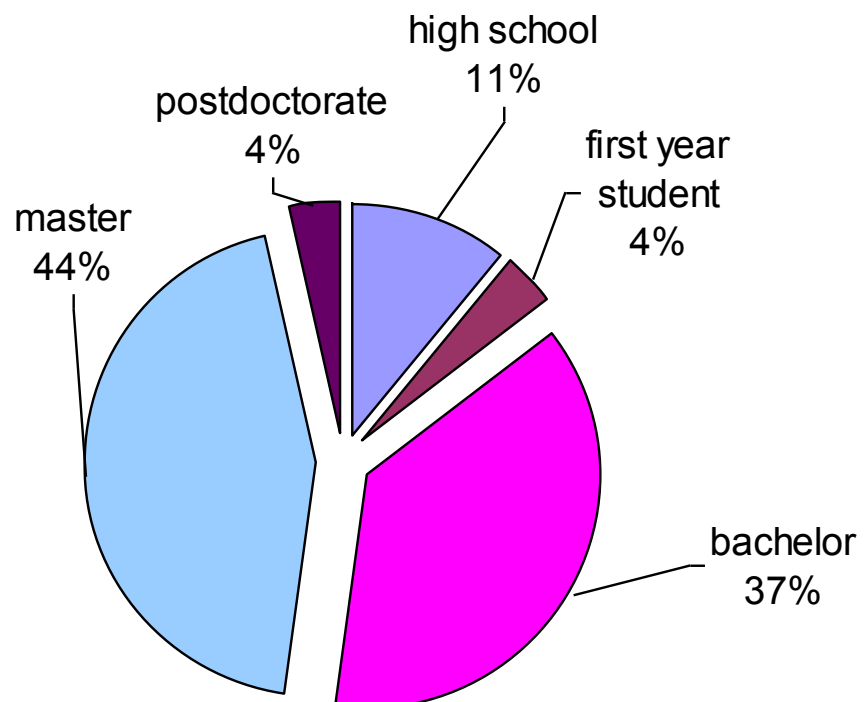


Fig. 3b. Education level of respondents

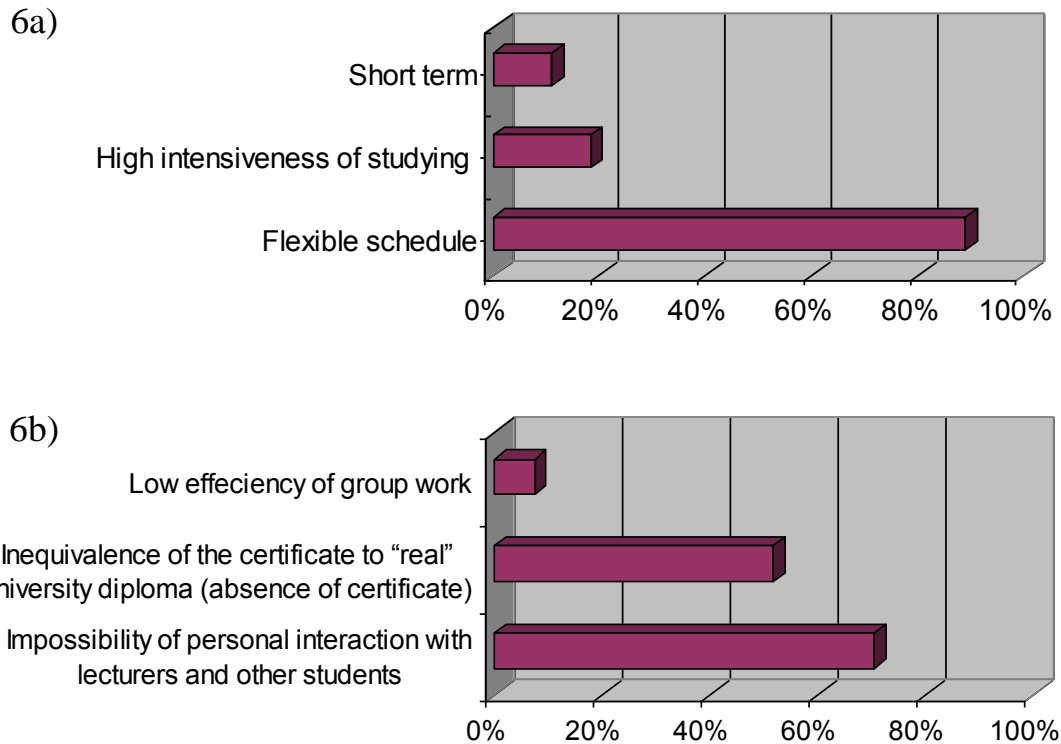


Fig. 6. Main advantages (6a) and disadvantages (6b) of massive open online courses

As the disadvantages go, most of respondents point out the impossibility of personal interaction with lecturers and students (70% of respondents). In other words, lack of ‘real’ social activity cannot be substituted completely by ‘virtual’ activity (70%) (Fig. 6b). Half of the respondent are concerned by the absence of certificates upon completion the course or their in-equivalence like a ‘real university’ diploma. However, in the eyes of some employers around the world, online certificates are worth almost the same or even more than some university diploma. In Ukraine, such a scenario exits, mostly for the Computer Science field [26].

Other issues include, low participation in group projects because, it is not a

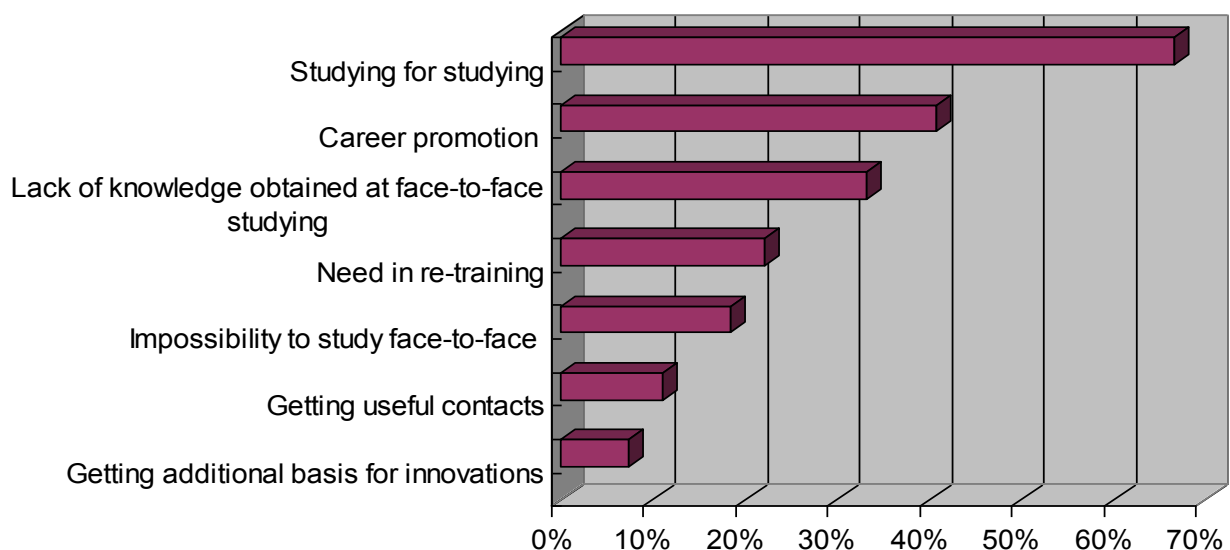


Fig. 5. Main reasons to massive open online courses

priority, people join and leave projects quickly as there is no commitment.

On a whole, considering the efficiency of online education, the respondents reveal optimistic view on it. One third of the respondents consider it more effective than face-to-face education and almost half of the respondents think that they are both equal (Fig. 7a).

60% of the respondents are completely satisfied with online education, 37% of respondents are partly satisfied with it and only 4% are unsatisfied with it (Fig. 7b).

6. Personal experience of the authors in on-line learning.

The authors of this paper graduated from the universities some time ago. On the other hand, we were students and got to know each other through the Technology Entrepreneurship Class at Stanford University Online. For now, we are enrolled in more than one on-line course and as consequence we cannot but share our personal impressions.

Being an educator (N.L.) I would strictly recommend the persons engaged in face-to-face educational industry to participate in MOOCs. It is my personal opinion that educators have to be enrolled in relevant courses both as students and as mentors, as it is a free opportunity to learn some new teaching skills, adopt priceless

teaching experience from professors of top-universities, to open a dialog and discuss with them. Openness to the whole world, short terms are essential conditions for the flexibility of the course and testing educator's skills would be interesting and useful for a wide audience as they get fast feedback.

Some students do not like the idea of gamification of education. Things like badges for mandatory posts every week in the Discussion Forum, mandatory voting on Forum posts etc. shifts the focus from education to playing games (P.K.).

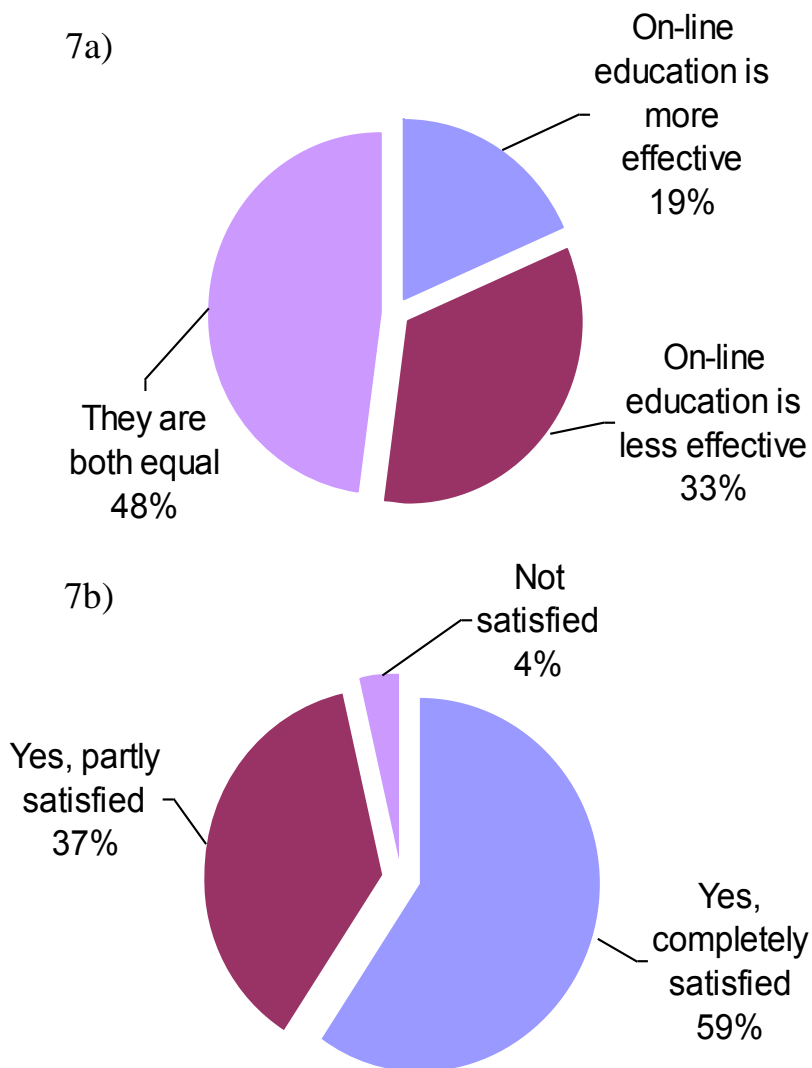


Fig. 7. Comparison of online and face-to-face courses (7a) and satisfaction with process and result of massive open online courses (7b)

The personal experience with free online classes proved to be the challenge student is seeking. There is a possibility to find classes that matched educational skill level and grow knowledge on specific topics. The ability to attend a free online course offered by an Ivy League school would not have been possible without the online platform (A.R.)

Conclusions

There is no doubt that development of Massive Open Online Courses has a significant impact on the education process across the whole world. The key advantages of it are convenience, flexibility, and opportunity. Now we observe a competition of two different value systems in the educational area i.e. real vs. virtual.

On the other hand, we should not overestimate the significance of that phenomenon. In our opinion, the 'virtual' education is not a total substitute for the 'real' educational in traditional universities. There are many branches of science, which are impossible to be taught online (architecture, medicine, etc.). Besides that, ethical issues of student evaluation came up, and there are doubts if student works independently.

Having the whole world as your classmates is definitely overwhelming. Thus, we should not consider it as a kind of religion and not create the illusion of getting the deep knowledge within a few weeks. Before making the decision to enroll in any online distance-learning program, a person must have clear evidence why he (or she) is joining the course. Otherwise, they will be confused about the work requirements and fall behind. The MOOCs are best for self-driven students with a high motivation to learn.

Most of the researchers prove that, the future belongs to blended learning when methods of face-to-face and online education coexist. We would find difficult to quarrel with this statement. As a separate learning method, MOOCs can exist for pre-diploma (to get a basic overview for a particular course) and post-diploma education (to retrain/refresh/broaden knowledge). MOOCs can be an integral part of continuing education process.

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