THE GLOBAL TECHNOLOGICAL REVOLUTION IN ONLINE STUDIES

More and more universities throughout the world are joining open education programmes, thus signifying a global technological revolution in online studies. The study platforms of such universities as Stanford, Harvard, the University of California at Berkley, the Massachusetts Institute of Technology and others, already embrace a multi-million audience of students, proposing unrestricted and cost-free access to learning resources of the highest quality.

The current stage of the development of education is distinguished by global technological improvements in the sphere of education technology, related to the development and dissemination of online study platforms, providing unlimited access to the best «Massive Open Online Courses», or MOOCs. Well-known universities such as Stanford University joined specialized *Coursera* Internet portal in 2011. Now *Coursera* offers more than 300 study courses in a wide range of disciplines (humanitarian and social sciences, medicine, biology, mathematics, business, computer sciences and many others) and captures an audience of more than one million throughout the world. In the field of socio-economic sciences, the following study courses are very popular: «Introduction to Finance» (University of Michigan), «An Introduction to Operations Management» (University of Pennsylvania), «Healthcare Innovation and Entrepreneurship» (Duke University), «Introduction to Computational Finance and Financial Econometrics» (University of Washington), «Principles of Economics for Scientists» (California Institute of Technology), «Microeconomics Principles» (University of Illinois), «Games Theory» (University of Illinois), «Statistics One» (Princeton University) and many others. The courses are a series of previously recorded video lectures, read by well-known university professors (the video materials are generally given in parts on a weekly basis, based on the rate at which the material is learned), interactive exercises and tasks, which are subject to evaluation and supplemented by Internet forums, where students communicate and exchange ideas. The cost-free certification of listeners is provided for, based on the results of the successful learning of material within the framework of certain selected disciplines

— the so-called Certificate of Completion/ Accomplishment.

Another on-line platform of Stanford University — *Udacity,* which was also established in 2011, offers a wide range of courses, which generally pertain to computer studies and programming. World-renowned university professors are involved in this programme. It's worth noting that 160,000 people from more than 190 countries signed up for the first course, which was presented on the portal — «Introduction to Artificial Intelligence». A special multi-level system of certification and evaluation has been developed for both paying and non-paying students who successfully complete the studies. More than 100,000 students and instructors are registered on Udacity at the present time.

In May 2012, Harvard University and Massachusetts Institute of Technology announced the establishment of a new venture in the sphere of online studies — *EdX,* in which joint-investments totaled USD 60 million. In time, another renowned university joined this project — the University of California at Berkley. The partner universities, which are part of this consortium, officially have a common brand *«X-Universities».* Thus, the Massachusetts subdivision of the platform *(MITx)* offers studies in chemistry, electronic networks, computer sciences and programming. The Harvard subdivision *(HarvardX)* specializes in computer sciences and clinical medical research. The California participant in the consortium *(BerkeleyX)* ensures the functioning of courses in IT and artificial intelligence. The project anticipates the direct transmission of lecture material in the Internet for all persons, who have previously registered for the courses, as well as the free download of text and video materials. On the successful completion of the course based on exam results students, that were first enrolled in autumn 2012, will receive *Certificates of mastery.*

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QUALITATIVE EDUCATION, NOT ONLY ON PAPER

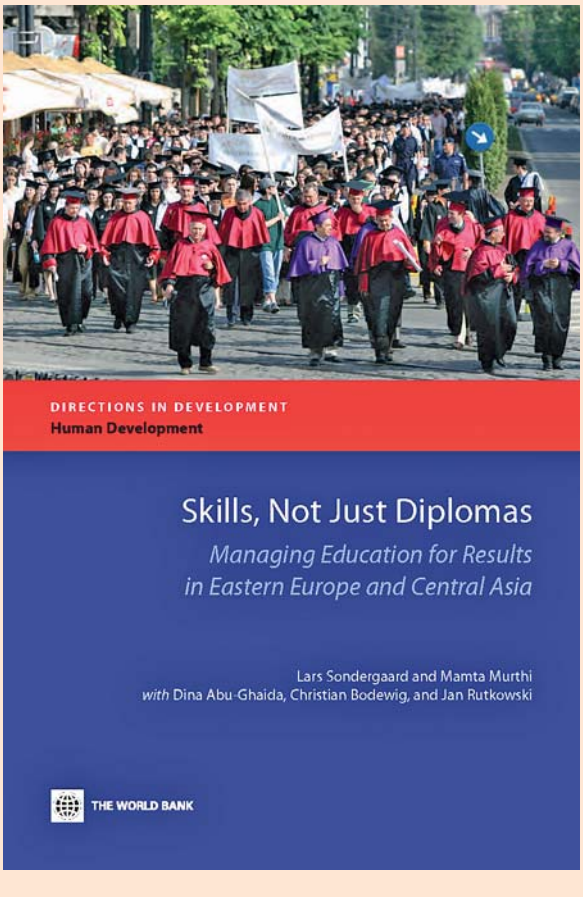
It is no secret, that qualitative education plays a key role in the socio-economic development of countries. However, ensuring the conformity of education to current requirements is an unusually complex task, in view of the absence of universal recipes and policies in this sphere. Many modern specialists and institutions prepare publications, dedicated to urgent issues of the reform of national education systems, including in Ukraine. Recently a group of specialists from the World Bank has prepared in-depth research on «Skills, Not Just Diplomas: Managing Education for Results in Eastern Europe and Central Asia».

The authors of the publication substantiate the theory that if economic growth today is limited by the global financial crisis, then in several years, and even now, the lack of qualified employees, the deficit of which could significantly hinder economic progress, is one of the key influences. So this research is an attempt to answer the following questions. Why are companies in this region continuously facing a lack of qualified university graduates? What measures have been taken in the countries of this region to resolve this problem?

The research has outlined the main reasons for the lack of a qualified workforce in the countries of Central Europe and Central Asia. Experts sum up that the legacy of the times of central planning has led to these countries devoting too much attention to ensuring adequate funding for education, rather than the analysis of actual study results. No significant progress can currently be seen in the development and implementation of a system for the monitoring and evaluation of the quality of students' learning and the success of the job placement of university graduates (as was the case in OECD countries in the 1980s). Consequently, as noted in the document, national education policy is conducted without clear orientation points, which significantly complicates the making of necessary and effective political decisions in this sphere. The existing management system limits

the ability of education institutions to influence the teaching process and does not allow local authorities and representatives of the public to initiate the modernization of study programmes in order to better satisfy the needs of the labour market. This, together with limited autonomy and responsibility for the results of the teaching, leads to decreased incentives for improving the quality of education and, as a result, to the stable lack of qualified personnel in most countries of the region.

Among the reasons for the inadequate status of the university education system, the authors also cite the reduced quality of pre-university, secondary school education. The lack of qualified personnel is caused not only by the unsatisfactory quality of education services at this level, but also the insignificant progress in providing teaching staff the opportunity to attend advanced training. The authors have classified Ukraine as part of the group of countries, where the development of their own system of instruments for the evaluation of learning results has begun and where there is only a certain participation in international evaluations.



Experts recommend that for the elimination of the negative impact of the above mentioned factors, the countries of Eastern Europe and Central Asia should reorient their national education systems towards attaining qualitative results. To achieve this, it is necessary to ensure the more efficient monitoring of the study activities of students and learn their perspectives after they have gained their qualifications (what disciplines the students are learning, job placement and the salary level after the completion of studies). It is also suggested the positive experience of the transition from a centralized education management system to one, directed towards results, as was the case in such countries as Hungary, Italy, the Netherlands and Romania, etc. Experts stress that this transition should provide greater autonomy to educational institutions and the optimization of accountability mechanisms (for example, in the sphere of contracts and budgeting, it is necessary to rely on the study results, rather than on specific standards). If there is a greater quantity of data on the results of study and providing that educational institutions are given autonomy, as indicated in the research, realistic pre-conditions in countries will inevitably emerge for the better satisfaction of the needs of the labour market for a highly qualified workforce, trained by national educational institutions. The higher education system also requires more consummate mechanisms for controlling the quality of teaching and learning, including via the more active circulation of information regarding its results and the job placement of graduates (the monitoring of indices, compilation of university ratings) in order for potential students to make considered decisions, when selecting their future profession. In addition, the adult education system has to work efficiently.

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THE ROLE OF HIGHER EDUCATION IN ENSURING SUSTAINABLE DEVELOPMENT

The «RIO-20» United Nations Conference on Sustainable Development took place in Rio de Janeiro on 20—22 June 2012. 20 years after the «Earth Summit», world leaders met once more in Brazil to make important decisions in the sphere of sustainable development, including in the education system, which are decisive for the future of our planet.

To ensure the sustainable development of our planet, it is vitally important to become aware of the objectivity and importance of such transformation processes, that are currently occurring in the world. The participants of the «RIO+20» Conference appealed with the call to the world public to focus particular attention on the key role of education in the spreading of the idea of sustainable development. A fundamental base of modern education, as has been stated, should be the awareness and informing of people of the importance of global challenges, which the people of the world are now facing. The Education Internationale compiled by the participants of the worldwide forum stressed the necessity if changing the very paradigm of social order, the global expansion of which largely depends on the education system. In their turn, the goals of the development of the latter should reflect the priority of the qualitative improvement of national models of economic systems and their reorientation to the principles of sustainable development. Currently it is very urgent not only to rescue and protect the environment, but also to revive the spiritual values, which will promote productive interaction between people.

In an exclusive interview for the mass media, Elizabeth Thompson, the Executive Coordinator of the «RIO+20» Conference, noted that: «Education is transformative. We must build learning societies around the concept of sustainable development and get people to transition from the brown economy to the green economy. And to change their practices and attitudes — that can only happen through education, both formal and informal education».

According to the results of the Conference about 200 universities from 50 countries had signed up to the initiative of the implementation of the concept of sustainable development into the study process. «Teaching sustainable development in the university and business school system across all disciplines, so that every graduate understands what sustainable development means in terms of their area of enterprise and activity» — noted Elizabeth Thompson.

According to the results of a forum, university leaders agreed to sign a joint declaration and establish a special institution, which would promote the integration of the principles of sustainable development in education. The Declaration contains a range of key positions, which determine the readiness and willingness of universities to cooperate in the following areas:

1. *Expansion of knowledge on the concept of sustainable development.* Teaching the concept of sustainable development and ensuring that relevant material comprised part of the fundamental teaching program of all disciplines, allowing future university graduates to develop competencies, necessary for the revival of the workforce and human capital, responsible for sustainable development. Educational establishments also

declare their readiness to train professionals-practical workers in this sphere.

2. *Support of scientific research in the sphere of sustainable development.* Encouraging the research of sustainable development, for the purpose of attaining a better scientific understanding of issues by relevant circles and ensuring an efficient exchange of scientific knowledge on its basis, including their transformation into new and innovative technologies.

3. *The establishment of green campuses.* Ensuring the ecological status of university campuses by means of: improving the efficiency of the use of energy, water and material resources in buildings; providing students and the teaching staff with the academic mobility capacities, based on the principles of sustainable development; the approval of efficient programmes for the minimizing, recirculation and recycling of waste.

4. *Support of efforts for ensuring sustainability in communities.* The necessity to build a model for the cooperation of communities with the local authority is declared, which would establish efficient communities as regards the use of resources with the high level of social integration that are inherent in them and an insignificant «ecological footprint» (minimal ecological consequences from vital activity).

5. *Participation in international framework initiatives* for sustainable development and the sharing of their results.

It is expected that the obligations, which have been undertaken by the chancellors and deans of universities when signing the Declaration, will be executed by virtue of the development and successful implementation of a sustainable development strategy at higher education establishments.

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RESEARCH UNIVERSITIES AND THE FUTURE OF AMERICA: 10 BREAKTHROUGH ACTIONS VITAL TO OUR NATION'S PROSPERITY AND SECURITY

The «Research Universities and the Future of America: 10 Breakthrough Actions Vital to Our Nation's Prosperity and Security» report was published recently, the authors of which analyzed the state of research universities in the USA, forecasted the roles these entities will play over the next 10—20 years, and proposed necessary measures that have to be taken, in order to strengthen the role of research universities in the implementation of the strategic goals of the country's social and economic development.

The report indicates that innovation is a motivational force for economic growth, the creation of new types of economic activity and jobs, improving living standards in both the USA and throughout the world. The authors of the document focus their attention on the fact that the main sources of new knowledge and talented graduates, who can apply this knowledge in order to attain national goals, are research universities.

These institutions have significant support from the national government, work in partnership with American business and are respected in society due to the high quality of education and research. At the same time, the materials of the report indicate that now, research universities are facing many challenges: economic and demographic problems, global competition, and the constant appearance of new technologies.

The authors stress that even when other countries follow the experience of the USA in the establishment of research universities, the partiality of the American government to stable and productive partnerships with them has weakened somewhat in recent times. In 2009, expressing concern that the nation's universities are at risk, Senators A. Lamar, B. Mikulski and members of the House of Representatives, B. Gordon and

R. Hall, asked the National Academies to assess the competitive position of America's research universities, both public and private, and to respond to the following question:

«What are the top ten actions that Congress, the federal government, state governments, research universities and others can take to assure the ability of the American research and doctoral education needed to help the United States compete, prosper and achieve national goals for health, energy, the environment and security in the global community of the 21st century?»

In response, the National Research Council convened a committee of individuals who are leaders in academia industry, government and national laboratories. The resulting report states that US research universities can be better prepared for the implementation of national ideas, if these institutions become more productive and innovative, they will be guaranteed necessary resources and will work creatively in partnership with business. To strengthen such cooperation, the authors of the document recommend that federal and state governments, research universities, business and industry to take the following measures:

— Within the broader framework of US innovation and research and development strategies, the federal government should adopt stable and effective policies, practices and funding for university-performed research and development, and graduate education so that the nation will have a stream of new knowledge and educated people to power the future, helping the country to meet national goals and ensure prosperity and security.

— Provide greater autonomy for public research universities so that these institutions may leverage local and regional strengths to compete strategically and respond with agility to new opportunities. At the same time, restore state appropriations for higher education, including graduate education and research, to level that allow public research universities to operate at world class levels.

— Strengthen the business role in the research partnership, facilitating the transfer of knowledge, ideas and technology to society, and accelerate «time-to-innovation» in order to achieve national goals.

— Increase university cost-effectiveness and productivity in order to provide a greater return on investment for taxpayers, philanthropists, corporations, foundations and other research sponsors.

— Create a «Strategic Investment Program» that funds initiatives at research universities, critical to advancing education and research in areas of key national priorities.

— The federal government and other research sponsors should strive to cover the full costs of research projects and other activities they procure from research universities in a consistent and transparent manner.

— Reduce or eliminate regulations that increase administrative costs, impede productivity and deflect creative energy without substantially improving the research environment.

— Improve the capacity of graduate programmes to attract talented students by addressing issues such as attrition rates, time-to-degree, funding and alignment with both student career opportunities and national interests.

— Secure the full benefits of education for all Americans, including women and underrepresented minorities in science, mathematics, engineering and technology.

— Ensure that the United States will continue to benefit strongly from the participation of international students and scholars in research activities.

The authors of the report stress the necessity for the revival and strengthening of the unique partnership between the nation's research universities and the federal government, business and industry, which dates back to 1862, when the US Congress approved a special document — the Morill Land-Grant Act, which stimulated such cooperation. It also notes that although the recommendations require significant, increased productivity and investments on the part of each member of the research partnership, however their implementation can generate significant returns for a stronger future America.

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