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# NEW CHALLENGES AND OPPORTUNITIES ONLINE EDUCATION ON THE EXAMPLES OF SUSTAINABLE DEVELOPMENT COURSES

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Climate change, biodiversity, mitigation of natural disasters, management of water and energy resources, the prevention of pandemics are the new challenges for science, and they should be given the leading role of UNESCO in accordance with policy documents. Only the coordinated and concerted efforts of the international community to achieve sustainable development and education for all can solve these problems.

With the spread of digital technology training takes the form of a continuous, individually oriented, flexible and dynamic process. Information and communication technologies (ICT) promote access to higher education and improve its quality.

**The purpose of research** - to address new opportunities and dissemination of knowledge with the development of modern technologies and the challenges that arise in this case.

**The results of research.** New models of education of the XXI century are focused on sustainable development and should be a whole-ahead information and educational system. Just as science, the education system needs to stay ahead of other areas of social activity, because that information processes are ahead of the material and energy processes. Until now, education is a conservative sphere of activity and are often not kept pace with science. Certain forward-looking mechanisms, future-oriented and especially on sustainable development, to be implemented in the innovation-leading processes in education.

The general trend of the development of social communication and educational technologies there is a clear line to accelerate the transfer, the volume increase rate, and use relevant information.

Massive Open Online Courses (MOOK) that the dynamics and pace of development can be described as explosive, respond to the new challenges and

provide unique educational opportunities for almost all walks of life. MOOK are a type of distance learning based on special platforms on the Internet, online education, which is characterized by the following features:

• large compared to conventional university courses the number of course participants (tens and hundreds of thousands of students, and in general, more than 10 million registered at the end of MOOK 2014);

• Easy involvement in the educational process; all that is required from the student - is go to one of the sites of interest to select a course, register and start the development of the material;

• courses in basic elements are open (available without charge) the nature of the content and purpose of education, despite significant nevsegda MOOK commercial nature of the business; rates may have an additional commercial component, such as a paid certificate, selection and employment of graduates of courses;

• courses all out online, using both asynchronous (with the possibility of recording all educational materials on various gadgets for further study is the Internet network), and synchronous learning methods (webinars, hang out) and it does not rule out a simulation of the atmosphere of the campus through informal meetings with teachers.

If you wish, and you have free time you can develop several courses in parallel without restriction.

The choice of courses offered by hundreds of universities around the world, is very broad. Sustainable energy and earth sciences (Energy & Earth Sciences) should be mentioned following courses edX: Solar Energy (Delft), Introduction to Environmental Science (Dartmouth), Our Energetic Earth (University of Toronto), Energy 101 (UT Austin), Natural Disasters (McGillX), as well as on similar topics courses Coursera: Organic solar cells - Theory and Practice (Danish Technical University), Introduction to Thermodynamics: energy transfer from one place to another (University of Michigan), Our Energy Future (University of California San Diego), Global Warming: Climate change science and modeling of climate change (University of Chicago), Basics of international energy business (Colorado State

University System) and many others. Only in March - April 2015 provided the possibility of development of a whole set of MOOK related technologies for sustainable development: Introduction to Metrics for Smart Cities, Water and Wastewater Treatment Engineering, Reclaiming Broken Places: Introduction to Civic Ecology, The Search for Vernacular Architecture of Asia , Making Sense of Climate Science Denial.

Interestingly, it is not always the universities organize courses. The World Bank offers a course, "reduce the heat: the more fraught with increasing global temperatures by 4 ° C». There are courses for teachers' Dynamic Earth: Course for Teachers "," The reorganization of the curriculum natural sciences »,« Critical Issuesin Urban Education »,« Design and Development of Educational Technology », self-learning, self-education, self-improvement, and even for fun" Fantasy and Science Fiction The Human Mind, Our Modern World »,« The Science of Happiness ». Even the names of the courses should arouse the interest of students "Earth ... and you!», «Greatest Unsolved Mysteries of the Universe», is an introduction to modern astrophysics, which deals with topics such as dark energy and dark matter. Paid Certificate on free platforms edX and Coursera involves tracking the student's personality when passing tests and requires a nominal fee.

At Coursera, for example, for the money (30-100 dollars) option is available Signature Track: Upon successful completion of the course a certificate issued by an official joint Coursera and the University of the creator of the course. This carefully verified the identity of the student. Such certificates are important for students who are studying in ordinary universities and supplement their education online courses. A number of universities accepting such certificates on a par with conventional COVERED university courses, which is very convenient for working students, since learning in online courses a student can plan, not tied to a specific time of classes.

It should be noted that currently most courses offers studies in the English language that can be seen as a lack or, conversely, as an opportunity to improve the language skills of the specialty and the perception of living speech of the lecturer (media format mp3).

For poorly trained English language students can be recommended to start from the platform Cousera, where the projects are implemented on translation rates.

If we talk about the shortcomings of MOOK, it should be noted that the engineering and medical courses - a lack of opportunity to complete hands-on training for work with the equipment and lack of access to appropriate skills.

Practical training of students - a special theme, which deals with the UNESCO Chair in FGBNU VIESH, including with students.

The problem can be solved practical training in design and research activities using the developed teaching and research stands and projects using the latest space technology, including interdisciplinary approaches, which are beginning to be implemented in the present and focused in the future.

For example, in terms of sustainable development of renewable energy forecasting of solar radiation on the earth's surface, depending on the cloud cover is an urgent task at present and in the near future when large solar power plants are used as energy sources for electricity, giving a significant contribution to the energy supply system based on traditional sources energy. Knowledge of solar radiation with the use of GIS technology will allow for the optimal planning of system operators.

## Conclusions

Online Courses MOOK can significantly improve the outlook of students and qualified teachers, as well as all interested in modern education. New educational technologies contribute to the formation of a paradigm of advanced education.

A wide range of courses in various disciplines significantly improves the interdisciplinary training of scientific and educational community and contributes to the improvement of international cooperation.

Virtually instantaneous dissemination of the course all over the world allows to form advancing the human mind, an ability to foresee the future, and to put into practice the most desirable model, if the proposed rate reflects the work at the forefront of scientific and technological progress, such as courses on artificial intelligence built electronics, robotics, solar energy, etc.

An essential complement to the online education should be practical work of the students, including the design and research activities using the most modern technologies.