

Information and communication technologies in modern geological education

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2018, International Multidisciplinary Scientific Geoconference. All rights reserved. Geological education has a number of specific features. Modern geology is a complex of more than a hundred of sciences and scientific disciplines. The objects of study of the geology are distributed both in space and time in the widest ranges: these being planetary and nanometric dimensions, billions of years of geologic history and the nanoseconds of the processes of crystal formation. The cognition of the diversity of the geological phenomena requires the fundamental knowledges of mathematics, physics, chemistry. The interdisciplinary relationships are considered to be the hallmark of modern geological science and education. The primary tool for the realization of such relationships in the modern world appears to be information and communication technologies. The promising direction of cognition of the nature of geological processes using information and communication technology in the geological education is the application of virtual reality technology and 3D modelling. The basic advantage of virtual reality technology is modeling the entity of processes and phenomena in the virtual space while taking into account the processes of feedback. Simultaneously, the peculiarities of geological education makes it necessary to preserve traditional educational technologies, such as conducting training and field practices aimed at development of professional competences.

<http://dx.doi.org/10.5593/sgem2018/5.4/S22.019>

Keywords

Competence, Distance learning, Educational electronic resources, Educational standards, Geological education

References

- [1] Ducrotoy Jean-Paul, Shastri Sunil, Williams Peter Coastal sciences and management: the need for networking in higher education/ Ocean & Coastal Management, vol. 43 pp 427-444, 2000.
- [2] [2.] Innovative approaches to the developing of the Federal State Educational Standard and approximate main educational programs for the direction of preparation of higher education "Geology". Under the editorship of V.A. Bogosslovsky.-Moscow state university, Russia, 208 pages. 2007.
- [3] [3.] Bershada, A. M., Glotova T. V., I. G. Krevsky Modern University: educational and information technology in a multilevel system of higher education./ Collection of scientific articles of the XIX joint conference "Internet and modern society" IMS-2016, St. Petersburg, June 22-24, Russia, pp 143-160, 2016.
- [4] Borisov A. S., Nurieva E. M., Khasanov R. R. Geological education in Russia and Bologna process: the changing aspects of the information educational environment / Scientific notes of Kazan state University. Series of Humanitarian Sciences Russia, vol. 151/ book.5, Part 1, pp 282-286, 2009.

- [5] Fersman A. E. Entertaining Geochemistry: chemistry of the Earth. Moscow: Publishing house of the USSR Academy of Sciences, Russia, 399 p., 1959.
- [6] Borisov A. S., Latypov R. H., Nurieva E. M. Information technology in geological education: distance learning in Moodle environment/ Scientific notes of Kazan state University. Series of Humanitarian Sciences Russia, vol. 152/ book.5, pp 225-230, 2010.
- [7] Shroder John F. Jr., Bishop Michael P., Olsenholler Jeffrey, Craiger J. Philip Geomorphology and the World Wide Web, Geomorphology, ELSEVIER, vol.47 pp 343-363, 2002.
- [8] Jana Dlouhá, Simon Burandt Design and evaluation of learning processes in an international sustainability oriented study programme. In search of a new educational quality and assessment method / Journal of Cleaner Production ELSEVIER, vol. 106, 1 November 2015, pp 247-258, 2015.
- [9] Johnson Donald R., Ruzek Martin, Mike Kalb Earth System Science and the Internet. / Computers & Geosciences, ELSEVIER, vol. 26 pp 669-676, 2000.
- [10] [10.] Stephen D Hurst Use of "virtual" field trips in teaching introductory geology Computers & Geosciences, ELSEVIER, Vol. 24/ Issue 7, pp 653-658, 1998.
- [11] Trofimov V. T., Pushcharovsky D. Yu., Bogoslovsky V. A. About new trends in the development of geological education in classic Russia universities./ Mineral resources of Russia. Economics and management, Russia, № 2. pp 46-51, 2010.