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An extended abstract of a paper on the subject of:

**“The cloud computing as imperative of the university education and research environment modernization”**

**Problem setting.** Nowadays, innovative technological solutions for learning environment organization using cloud computing (CC) and ICT outsourcing have shown promise and usefulness. The challenges of making the ICT infrastructure of the university environment fit the needs of its users, taking maximum advantage of modern network technologies, and ensuring the best pedagogical outcomes, have led to the search for the most reasonable ways for its modernization. So, the modelling and analysis of the processes of cloud-based learning environment formation, design and deployment in view of the current tendencies of ICT advance have come to the fore.

**Recent research and publications analysis.** According to the recent research the problems of the cloud-based learning environment formation and design are recognized as a priority by the international educational community, and are now being intensively developed in different areas of education. Among the current issues there are those concerning existing approaches and models for electronic educational resources delivery within the cloud-based setting; the methodology of design and use of the cloud-based learning components; evaluation of current experience of cloud-based models and components use. This brings the problem of the cloud-based learning environment modelling and design to the forefront.

**Paper objective** is to deepen the basic conceptual and terminological body of investigation; to define the general cloud-based model of learning and research university environment formation and development and consider the possible ways and techniques of its use and application within the pedagogical systems of higher education.

**Paper main body.** The cloud computing is now among the leading innovative learning concepts and its implementation significantly affects the content and forms of different types of activities in the sphere of education. This introduction contributes to unified learning infrastructure formation and the growth of access to the best examples of electronic resources and services. Using the cloud-based models of environment design is to provide applications virtualisation, unifying infrastructure, and integrating services, increasing the use of electronic resources, expanding collaborative forms of work, widening the use of the hybrid models of ICT delivery and increasing the quality of electronic resources.

The general model of the university cloud-based learning and research environment formation and design proved to be a reasonable framework to deliver and research the cloud-based learning resources and components. The ways of methods selection on the basis of the proposed model and the prospects for their use within the learning systems of higher education are considered. Among them there are the methods of cloud-based components design on the basis of Microsoft Office 365, AWS, SageMathCloud to support learning and research processes. The recent tendencies of CC development in view of such emerging concepts as Internet of Things, Fog computing and others are considered and evaluated in view of the cloud-based learning and research environment creation.

**Conclusions of the research.** Formation of the high-tech environment of the university based on the cloud computing, which would unite educational resources for learning purposes, support of scientific research, and cover different learning levels is to contribute for ICT tools advance, university environment modernization, better learning outcomes.