

## **APPLICATION OF INFORMATION TECHNOLOGY (IT) ON THE SPHERE OF FORMATION, DEVELOPMENT AND CAPACITY BUILDING OF THE HIGHER EDUCATION TEACHERS**

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### **ABSTRACT**

In the article there are considered the tendencies defining requirements to the level of IT competency of a present-day teacher. Following the results of the undertaken studies there was drawn the conclusion that IT competency of a present-day teacher is one of the key indicators of the success rate of his activity and at the same time – the necessary precondition for the further level increase of his professional competency, that determines significance of working out of the professional development system of a modern teacher, focused on the system usage of IT. The above-described models of professional development allow to solve some tasks of level increase of IT competency of a present-day teacher, however they possess a number of disadvantages and do not allow fully to solve the problems of the active usage of IT by a teacher in his professional activity. It allows talking about the need of the model of qualification development of a teacher based upon the idea of integration of the examined models and personified requirements of a modern teacher.

**KEYWORDS:** Competency, education, model, qualification, quality improvement, teacher.

### **INTRODUCTION**

Problem of formation, development and improvement of IT competency of higher education teachers is a topical one for the modern higher education. In spite of realization of the target-oriented programs, the project of the World Bank “Informatization of education system” the application level of IT by subject teachers is still not-too-high. In total, by 2013 in Kazakhstan no less than 800 pedagogical staff underwent training on IT competency. At that in the project of IES on the programs of IT competency formation there were trained 125 teachers. In such a case in Russia following the results of researchers that were conducted at HSPU of Russia by 2013 65% of teachers (research comprehended the teachers from the regions which participated in the project IES at approbation of Digital educational resources that made the Integrated collection) actively use IT in their professional pedagogical activity, and sufficiently large percentage of teachers (47%) has formed skills of informational teamwork in the educational network on the Internet (they are active partners of Internet-actions, Webcities). It is a result of the state program “Electronic education” realized in Russia in 2011-12 for the purpose of preparation of schools for transition to a new FSES within which there was conducted the training of about 1500 tutors-methodologists and 65 thousand teachers-tutors on the program of use of new IT and electronic educational resources of new generation and GER ([www.fcior.edu.ru](http://www.fcior.edu.ru)) in the educational process with use of distance learning (approximately 10-25 representatives from the teachers of innovative different subjects, including teachers of elementary school from each municipality from 75% of all regions of the country) [Blair and Schwartz, 2012].

Certain changes of existing situations are connected with formation and introduction of the National system of monitoring and certification of computer literacy and IT competency into the system of the Russian continuous education, and also with formalization of requirements for preparation in the field of IT in the Uniform qualification reference book of positions of the heads, experts and employees of Russia in which information competence of pedagogical workers is considered as “quality of worker’s actions providing effective search, structuring of information, its adaptation to the features of the pedagogical process and to the didactic requirements, formulation of an

educational problem by various information and communicative ways, the qualified work with various information resources, the professional tools, the ready program and methodical complexes that allow to project the solution of pedagogical problems and practical tasks, the use of the automated workplaces of a teacher the in educational process; the regular independent cognitive activity, readiness for conduction of remote educational activity, use of computer and multimedia technologies, digital educational resources in the educational process, maintaining the school documentation by electronic media" [Sclater, 2010].

## **MATERIALS AND METHODS.**

Requirements for application of the information and communication technologies by a subject teacher, which are designated in this document, include necessary obligations of each teacher [World, 2012]:

- to carry out a conscious choice of educational technologies, including information ones, as well as to carry out a choice of electronic educational resources;
- to realize control and valuation activities in the educational process with use of the modern valuation methods in the conditions of information and communication technologies (maintaining electronic documentation, including the electronic magazines and diaries of students);
- to know the basic operations with the word processors, spreadsheets, e-mail and browsers, and the multimedia equipment.

Therefore, for effective introduction of the information technologies (IT) in the sphere of formation, development and increase of competence of the higher education teachers in RK there have to be developed and accepted the corresponding state standards of preparation and retraining of pedagogical staff in the field of IT. As a conceptual basis for development of such standards there can be considered the “Standards of IT competence of teachers: modules of competence standards”, offered by UNESCO in which the stress is displaced not only to the necessity in formation of IT competency of teachers, but it was focused on updating on the basis of IT of realized traditional techniques, methods and technologies of training. After development and official start of multilingual versions of “Competency Framework for Teachers concerning the structure of IT competency” (UNESCO ICT Competency Framework for Teachers (ICT-CFT)) in 2011-2012 this very document today is a basis for development of the national (regional) standards of IT competency of teachers. At the same time, offers of UNESCO have to be considered as reference points and to adapt taking into account the features of the national education systems, including Kazakhstan one, features of the informatization process, ethno-national cultural traditions, etc. [Buckingham, 2012]. Further we will consider the tendencies defining requirements to the level of IT competency of a modern teacher. The first such basic tendency is shift in emphasis from the technological level problems (relating to possession of the certain tools, certain software products) to the pedagogical one. The information educational environment should include electronic educational resources, the “electronic” diary and the magazine, a school site, an environment for the electronic portfolio of pupils and teachers, etc.

The similar situation is observed at the level of the higher school where there is a transformation of all processes within the State program of a development of education of PK [State, 2010]. On the other hand the circumstances connected with technological support of educational process constantly change. It means that teachers and students become completely responsible for the solution of a problem of selection of available IT of tools in case of self-education [Voogt, 2012]. The similar situation is observed at the level of the higher school where there is a transformation of all processes within the State program of education development of PK [‘State’, 2010]. On the other hand the circumstances connected with technological support of educational process constantly change. It means that teachers and students become completely responsible for problem solution of selection of available IT tools in case of self-education [Voogt, 2012].

The second important tendency is distribution of “cloudy technologies” and global educational platforms (educational environments) where the significant role is played by the distributed resources created at interaction of authors. Web technologies united all before existed decision by the universal interface (from e-mail to file archives) and on the basis of high-speed highways created a multimedia platform for the joint solution of IT tasks [MacNeill and Kraan, 2010]. Development of separate local offline products (lesson presentations, individual working calendars, etc.) has lost its significance as the worthy sample of almost any product now exists in a web, and to going through the efforts of creating something, similar to an existing one, is unreasonable, it is much more rational to join in order to improve the

available versions of products [Arum and Roksa, 2011]. For example, instead of writing the own article in a wiki-resource it is more logical to correct and to add new information to the available article (that can demand deeper studying of a material). The second tendency means transition to the joint creativity in space of collective authors in which skills of social interaction, managements of educational process and creativity presentations gain special importance. The third tendency can be connected with reflexive competence. Change of character and form of solved tasks makes traditional ways of control and assessment inefficient. Owing to the control of correctness of a definite answer there happens transition to versions control, to monitoring of changes chronology in a product which is the result of joint creativity. There is estimates not so much compliance of the obtained result to any norm (except for those cases when a subject matter is a standard, a normative document) as a rate of active participation of an individual in a team project and his readiness for reflection of the relatively reached results. At physical level the result of reflection and at the same time IT tool is the electronic portfolio in the form of author's site, blog, and forum [Conole, 2012]. At some instant the teacher loses opportunity objectively to estimate technologies as they change once too often, in consequence of which the teacher stops being the expert. The third tendency means that at teaching IT the bigger value is considerably gained by competences of general pedagogical character, that is ability of an organizer of the educational process in the educational environment, of a tutor, than technological abilities of a programmer or a designer [ICTs, 2006].

All of the aforesaid defines requirements to necessity in realization of innovative models of professional development. However, in spite of the fact that in pedagogical researches there have been developed and approved innovative models of professional development on the basis of IT, remote educational technologies, and these models did not find their application in large scale in the professional development system. The course linear model of professional development is still prevailing while the demanded ones are:

- the personified pattern model of professional development with use of the Internet and remote educational technologies;
- corporate model of professional development (firm training), assuming training on a workplace in the educational institution taking into account not only level of created IT of the saturated medium of concrete educational institution, but also satisfying professional pedagogical inquiries of each certain listener and educational institution as a whole.

Thus a necessary condition is the accumulative system of professional development in the environment of continuous training that assumes continuous updating of its contents adequately to the level of development of both IT and the modern educational technologies on their basis. As it was shown by the analysis of programs of professional development of academies and institutes of professional development, initiative and realizable within educational initiatives, in the majority of them there are no programs or the modules focused on preparation on modern educational technologies on the basis of IT, there are insufficiently submitted the programs focused on training of moderators, tutors, facilitators, and also the programs assuming training of teachers for professional pedagogical interaction by means of the Internet which could show to the teacher the possibilities of self-education, coauthorship in the developing network pedagogical communities, and also programs on the modern developing models of electronic training (mobile training, adaptive training, etc.) [Johnson, Levine and Smit, 2009]. It makes sense to design the contents of professional development programs of teachers in the direction of use by them IT in professional activity taking into account the formation regularities of IT of competency. When forming IT competency it is necessary to use the following general strategies of the task solution: 1) problematic approach; 2) definition of information needs; 3) tactics of information collection; 4) ability to work with information sources; 5) ability to synthesize information received from different sources; 6) creative approach to the task solution; 7) criticality of thinking.

For formation of necessary skills and abilities it is reasonable to use such thinking techniques as: 1) problem vision; 2) formulation of hypotheses; 3) anticipation; 4) definition of the main point; 5) analysis, assessment, interpretation and fixing of ideas; 6) flexibility in approaches; 7) use of heuristics; 8) understanding of difficult relations; 9) use of the general models; 10) transfer of solution ways to the new situations. It is necessary to select the contents and the methods of training promoting formation of such qualities of a personality as: 1) independence; 2) discipline; 3) systematicity; 4) internal motivation; 5) reflection; 6) flexibility; 7) initiative.

It is necessary to build the program of increase in level of IT competency with founding upon the didactic principles: 1) real context; 2) feasibility of tasks; 3) avoiding of routine tasks; 4) continuous control; 5) logical partitioning of the material; 6) integration of knowledge, skills and abilities; 7) creative role of a teacher; 8) collectivism; 9) spirit of innovation. Thus, the results of the carried-out analysis of the modern approaches to investigation of professional activity of a modern teacher in aspect of his interaction with IT allow concluding that: IT competence of a modern teacher is one of the most important indicators of success of his activity and at the same time – the necessary precondition for the further increase in the level of his professional competence that defines the importance of working out of the professional development system of a modern teacher, focused on system use of IT. The described above models of professional development allow to solve some problems of increase in the level of IT competency of a modern teacher, however possesses a number of disadvantages and do not allow to solve fully a problem of active use of IT by a teacher in his own professional activity. It allows telling about the necessity of working out the professional development model of a teacher based on the idea of integration of the considered models and personified inquiries of a modern teacher.

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