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Professional Culture of the Specialist of the Future

**ORGANIZATIONAL AND ECONOMIC AND ADMINISTRATIVE
ASPECTS OF PROCESSES OF INFORMATIZATION
OF EDUCATION**

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Abstract

In article features of training of specialists in the conditions of the increasing introduction of infocommunication technologies (ICT) in educational process are considered. The novelty of the article is the identification and systematization of the main organizational, economic and managerial factors that influence the processes of informatization and digitization of education and the development of appropriate e-learning methods. As a result of the analysis of organizational and economic and administrative aspects of processes of informatization of education and development of the corresponding techniques of electronic training the problems and the directions connected with formation of competences on the basis of the acquired knowledge by means of ICT are revealed. It is established that strategic management, including strategic planning, is needed to manage the processes of transferring the process of forming competences into a virtual environment. The obtained results showed that these processes in Russia occur in co-evolution with the processes of commercialization of education with a relative reduction in state funding for higher education. Recommendations are offered and conclusions have been made on the solution of this problem. In particular, the most promising model for training specialists for the "digital" and innovative economies can be a model of mixed training, based on a competence approach that meets the requirements of professional standards and allows to significantly reduce the costs of employers for training young or re-training already established specialists about the new competencies.

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1. Introduction

Under the conditions of innovative development of the Russian economy, universities should adapt to the rapidly changing conditions of development, first of all, of innovative business and its needs in specialists with a certain set of competencies in newly emerging professions, including by increasing the speed of the reaction of the educational environment to the demands of innovative business, reduction of time between the emergence of business needs in a certain set of knowledge and practical skills and the beginning of training of future specialists in the university or in the system of additional vocational education in order to form their respective competencies, and ideally - to advance in training specialists for future new business needs.

In turn, the co-evolution of such public institutions as Digital Economy and innovative knowledge-based economy raises the issue of the development of the educational process (Firstov, Moiseeva, Akulov, Timofeev, & Fedorov, 2017), including the active implementation of information and communication technologies) in the educational process (Robert, 2015), providing the interaction of students on distance learning forms with teachers and with each other, and to a large extent contributes to the solution of this task. The creation of cloud technologies has contributed to the expansion of open online courses and online universities. Not only new competencies develop, but also professions related to e-learning. All this allowed to scale educational technologies and methods of e-learning.

The market for teaching foreign languages using ICT is already established by companies such as LinguaLeo, SkyEng, English First, Global English, etc. CodeAcademy and Point of Code companies offer online training to specialties "PR-specialist", "Internet marketer", "Programmer", "specialist in search promotion", etc. (Kotova & Balakhanova, 2018).

At the same time, the issue of teaching directly by the ICT, which have firmly entered the production processes and life, became the environment of social life and dominate in the need for specialists in the labor market in the 21st century, is solved.

2. Problem Statement

The processes of training, the formation of a wide range of competences in the ICT environment, have now entered the stage of self-development and the task of managing these processes has become a task for the pedagogical community in order to maximize their efficiency and forming the teacher's corresponding world outlook (Filin & Yakushev, 2018). At the same time, the very introduction of ICT into the educational process causes a number of problems:

a) the maximization of profit strategy naturally leads to the introduction to the ICT environment of the training products approved for "traditional" training, not designed for the ICT environment, and designed primarily to transfer information and knowledge intended for the formation of competencies in direct contact with the teacher in audience. Sometimes contact in the classroom is inadequately replaced by contact with the teacher with the help of ICT;

b) impossibility of immediate answers to questions (in contrast to full-time forms of education) reduces the engagement and motivation of trainees and, as a consequence, the quality of their training;

c) lack of full-time interaction of trainees with a teacher and classmates adversely affects their socialization as an important element of the educational process.

Development of training products based on new scientific and methodological principles, including minimizing the personal contact of the trainee and teacher and person-oriented principle, requires significant investment, primarily in the form of intellectual property, information capital and knowledge capital, which requires patent-licensing protection of the results of intellectual activity as educators (Pustyl'nik & Vlasova, 2018), as well as programmers, ensuring the use of relevant materials in the ICT environment, legal and financial settlement process transmitting their intellectual property to educational ICT environment and which must be carried out in a systematic manner for a relatively long time. Attempts of internal mobilization of investment resources by attracting human capital (Faria, Mixon, & Upadhyaya, 2016) of educators, formed as professionals in the traditional conditions of training, are not effective for this work for the following reasons:

a) these higher education system educators do not have the relevant competencies, and recruiting specialists with relevant competencies can be expensive for trainees, which makes it difficult to attract them;

b) teachers at all levels of education understand that by developing an ICT-based education system that minimizes the contact of the trainee and educator, they reduce the demand for their own work, and therefore deliberately or unconsciously "hamper" the development process of the ICT-based education system and / or reduce the quality of the materials they prepare used in this system and / or prepare it in a form that requires constant updating by the developer of these materials, including with respect to updating the software product, that allows the trainees to use an appropriate material ICT environment;

c) the issue of the distribution of innovation the rent from the creation of the results of the intellectual activity of teachers and programmers that design their materials is usually decided in favor of the relevant educational institution, therefore, to assume the labor costs and risks inherent in innovative activities requiring strategic management and, often, long-term forecasting (Fred, 2012) in the interests of the development of the educational institution and of the Russian education as a whole in terms of preparing the demanded "digital" and innovative economies of specialists becomes economically unprofitable for teachers and programmers, especially in the long run.

All of these problems should be addressed.

3. Research Questions

To solve these problems, it is necessary to study the organizational, economic and management aspects, including strategic management and planning, the processes of informatization and digitization of education, the development of appropriate methods of e-learning, and the transfer of the process of forming certain competence groups into a virtual environment. It is supposed, in particular, that the existence of schemes for the strategic management of the development of e-learning methods will make it possible to selectively and purposefully identify the key directions of this work by forming a system of strategic goals based on a mission and vision of the educational process in the conditions of the formation and development of the "Digital Economy" and an innovative economy based on knowledge.

The use of special ICT environments to expand the professional horizons and sharing knowledge among already established specialists, including those with developed innovative consciousness and thinking, is beyond the topic under discussion.

4. Purpose of the Study

The purpose of the research is to offer recommendations based on the analysis of organizational, economic and managerial aspects of the processes of informatization of education and the development of appropriate e-learning methods to improve the efficiency of the organization of the educational process and to train specialists for the "digital" and innovative economies in the ICT environment.

5. Research Methods

Authors use methods of logical research, forecasting, analysis and synthesis, as well as methods and principles of e-learning within the framework of a common system-cognitive approach.

6. Findings

The mission and vision of computerization and digitization of education (Machekhina, 2017) in subject areas, in particular at the undergraduate level, can be formulated in the following versions, each of which requires appropriate scientific and methodological support.

a) mass access to the acquisition of competences through the use of ICT capabilities while maintaining the established quality of the transferred competencies and their assimilation. The most difficult in terms of assessing the logic and thinking of the trainee (Grigorieva, Trubin, & Cheremnykh, 2010), the goal within the framework of this mission is to maintain the quality of mastering competencies. Most automatic testing systems currently used are largely formal, often the assimilation of competence is replaced by the assimilation of the logic of building a testing system. This phenomenon is called "training on tests" (Grigor'eva, Trubina, & Cheremnyh, 2010);

b) improving the quality of the transferred competences by replicating the courses of leading professors and practitioners with the help of ICT. The possibilities of this goal appear to be limited. Transfer of information with the help of ICT is an essential step forward, but it does not solve the problem of qualitative assimilation of competencies;

c) improving the quality of competence formation, including their assessment (Popova, Romanov, & Evseeva, 2016), through the use of ICT-based learning systems built on new scientific and methodological principles, including minimizing the learner's personal communication with the competency bearer and person-oriented principle (Korol, 2014). Otherwise, ICT can save only transport, time and material costs, which reduces the version of the mission (a).

The vision of the educational process and the organization that carries out the educational process can be as follows:

a) the transfer of information and theoretical, methodological and practical knowledge to the trainee is carried out on the basis of ICT, while the formation of competences based on the acquired knowledge is carried out in the organization by traditional methods involving personal contact of the trainee and teacher;

b) the transfer of relevant information and knowledge to the trainee is carried out on the basis of ICT, while the formation of competences based on the acquired knowledge is carried out through ICTs, involving personal contact of the trainee and teacher;

c) the transfer of relevant information and knowledge to the trainee is carried out on the basis of ICT, while the formation of competencies based on the acquired knowledge is carried out through the

application of ICT-based learning systems built on new scientific and methodological principles, including minimizing the personal contact of the trainee and teacher and person-oriented principle.

Currently, employers in order to gain competitive advantages (Hollenbeck, Noe, & Gerhart, 2018) to form and develop the necessary competencies for their employees:

a) create corporate universities or form an infrastructure for network universities. However, this is quite an expensive option, requiring a certain management model and permanent subsidies;

b) entrust the design of individual courses of retraining and advanced training to outsourcing and then subsequently place these courses in the distance learning system deployed on the company's domain;

c) use hybrid forms of education with the use of educational programs created on the basis of competence cards or professional standards, which the employer adheres to. At the same time, their own specialists can be used as teachers, and outside consultants can be involved;

d) organize the training of specialists through the network cooperation of the company and the educational institution (Savchenkov, 2017), including in the form of creating the basic department of the company in the university.

Thus, the main goal of the modern development of e-learning methods in subject areas on the basis of ICT at the present time is their construction on new scientific and methodological principles, including minimizing the personal contact of the trainee and teacher and person-oriented principle. Otherwise, e-learning systems are a reproduction of the system of correspondence education in the new conditions, which was intended to expand the theoretical outlook of a specialist supporting certain industrial production processes on the basis of competences obtained outside the training system in question. In most other cases, such training is not very effective or, at times, falsified in the control of knowledge and competences conducted through ICT.

Organizational and economic aspects of the processes of informatization of education (Vezirov, Guseynov, Sultanov, Abdulgalimov, & Sorokopud, 2014) and the development of appropriate e-learning methods occur in co-evolution with the processes of commercialization of education, with a relative reduction in state funding for higher education. Higher educational institutions become business entities in the market of educational and consulting services, with all the ensuing consequences. At the same time, the state strengthens control over the quality of the transferred competencies and their formation, including creativity, at students (Ramankulov, Useмбаeva, Berdi, Omarov, Baimukhanbetov, & Shektibayev, 2016), as defined by the Bologna standard of the educational process, the conformity of which with the traditions of Russian education and the needs of the accelerated strategic development of Russia's national innovation system (Filin & Yakushev, 2016) raises certain doubts and is the topic of a separate study. The field of professional training responds to this by two seemingly contradictory but complementary tendencies in the development of private educational organizations: a) corporate, which are not business entities by themselves, but become centers for the formation of the necessary competencies for the corporation staff, its scientific and intellectual body and research center; b) which, being entrepreneurial structures, compete with the system of higher education as the quality of the competences formed, and the quality of their assimilation.

Both use the strategy of "withdrawal" from the issuance of a state-recognized diploma and the state system of quality management of specialists training by enrolling people who have the first academic bachelor's degree, that is, legally competent trainees.

As part of this process, the reduction in the availability of "traditional" higher education, including as an opportunity to obtain highly paid competencies in the labor market, is compensated by the increased accessibility of education on the basis of ICT, which in turn becomes for organizations of the state higher education system and educational institutions under state control, an important tool to enhance the innovative activity of the university, including informatization of system of the higher education in it (Bobkova, Korobejnikova, Birina, Nelyubina, & Safina, 2015) and an additional source of profit.

7. Conclusion

Based on the study, the following recommendations can be proposed.

1. The problem of interaction of trainees with a teacher and classmates can be solved by organizing communication in specialized spaces (forums, webinars, social networks, in the office on the website of the training organization, accessible to trainees in the group and for the teacher); via e-mail messages, etc.). Moreover, network forms of socialization and social interaction are becoming more and more popular, forming an information society (Bell, 1988). For the constant involvement of trainees in the learning process, a personal assistant who corrects the training load, helps to cope with emerging difficulties, reminds to perform assignments can be appointed. Digital methods of data analysis make it possible to form an individual educational trajectory based on the control of the speed and quality of the individual tasks.

2. An effective alternative to digital learning, which is useful at this stage, is the introduction of hybrid training combining distance and full-time forms, in particular: a) blended learning technology - remote theoretical and practical trainings for students and full-time intermediate and final attestation. The positive effect of such types of training is possible only in the case of detailed study of the material, its logical linkage with the goals and objectives of the discipline and the competencies formed; b) flipped classroom technology (inverted class), first involves the independent mastering of the students' theoretical electronic material (Kuzyk, 2014; Yachina, Valeeva, & Sirazeeva, 2016) in the ICT environment, and then group work in the classroom in the presence of the teacher to gain practical skills. In particular, the course can consist of theoretical and practical modules. The first one involves remote mastering of video lectures, additional materials and legislative acts regulating the relevant sphere, and intermediate testing after each lecture. Materials can be placed in the personal account of the trainee on the website of the training organization. In a practical module (for example, with a separation from production), interactive communication with leading experts in this field is expected during business games and master classes. At the final session, the examination of qualification works prepared by trainees and their protection by the authors of these works can be conducted (Kotova & Balakhanova, 2018).

3. The scientific justification for the need to train specialists in the ICT environment for future new business needs and, accordingly, advance in the training of such specialists in the ICT environment will require the creation of a long-term labor market forecasting system that will be formed in the process of transition of an increasing number of enterprises to new levels of development in the "digital" and innovative economies and, especially, in the transition to new technological structures.

On the basis of the conducted research it is possible to offer the following conclusions.

1. The development of training products based on new scientific, methodological, philosophical and ethical principles is conducted by private organizations, counting on the receipt of appropriate innovative rents and on the increasing influence in the education system in the future. The creativity of innovative pedagogy proper in the ICT environment should involve the possibility of forming competencies among learners, including in the training of independent generation of innovative business ideas, their patent-license protection and commercialization, the formation of innovative worldviews necessary for the accelerated creation of the Digital Economy and an innovation economy based on knowledge in Russia.

2. Although the most promising model for training specialists for the "digital" and innovative economies is currently the hybrid training model, built on a competence approach that meets the requirements of professional standards and allows to significantly reduce the costs of employers for training young or retraining already established specialists the new competencies. It is necessary to provide a choice between traditional teaching methods, including the possibility of organizing an individual educational process and models of mixed education and training only in the ICT environment, taking into account the capabilities of students to pay the organizational, economic and administrative expenses for the implementation of appropriate forms of training.

3. The creation of digital learning systems requires the involvement of specialists who create basic training products as strategic beneficiaries of the process, which is natural in the formation of new macro technologies. This involvement can be realized, in particular, on the basis of their participation in the distribution of innovative rent, including its part, obtained as a result of the effects of non-linear growth in the digital economy. The very organization of involving specialists requires the participation of professional organizations representing the interests of both workers and state and corporate organizations of higher education..

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