Innovative Educational Technologies: Professional Development Programs for University Staff

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Abstract: *A key role in improving the quality of higher education belongs to the executive staff, teaching employees, and academic staff as direct performers.*

The purpose of the article is to analyze the possibilities of advanced training of university academic staff using innovative educational technologies based on information and communication technologies (ICT).

The article notes the relevance of the search for new approaches to the organization of the professional development of the higher education system employees, as well as analyzes the experience of European countries in the professional development of university academic staff. The authors specify the requirements for the meaningful components of methodical system of training at the university, the prospects of ICT use in professional activity of academic and administrative employees of the university, training areas of university staff of different professional orientation, as well as highlight innovation areas of professional development of the academic staff in Russian universities.

Keywords: *university, academic staff, innovative technologies, educational process, professional development, training, information and communication technologies.*

I. INTRODUCTION

Today, no one has any objections to the opinion that the quality of training at the university primarily depends on the level of professional qualification of the university academic staff (UAS). And this depends both on the quality of training of specialists, who can later take various UAS positions, as well as on the constant professional development of UAS through self-education, self-development, as well as through

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training courses, internships and the like. Therefore, the analysis of the areas and prospects of professional development of academic staff in Russian universities is relevant and necessary to determine the ways of further development of the higher education system in Russia.

At that, the quality of conducting the educational process in higher education institutions in the modern era of global changes, first of all, depends on the quality of the professional development of each educator during his life. After all, only well-trained, qualified and capable of further training educators can adequately respond to the needs of society both during the development and updating of work plans and programs, as well as in the direct training of students, rationally using the possibilities of the latest pedagogically evaluated ICT.

In this regard, the search for new approaches to the organization of the professional development of employees engaged in the higher education system is quite urgent.

II. LITERATURE REVIEW

Many scientists paid attention to the problem of increasing the level of professional qualification of the academic staff of higher education institutions. Thus, A.G. Sergeev [1], E.V. Karavaeva [2], S.D. Reznik, and O.A. Vdovina [3] analyzed the results of the formation and development of the professional activity of the UAS, namely, the system of the UAS professional competencies.

Zakharova S.E. and L.E. Ukolova [4] investigated the essence of the expertise of the higher education teacher and the ways of qualification development at the stage of advanced training as a factor of education quality management in higher education. Podpovetnaya Yu.V., I.V. Rezanovich [5], and T.A. Vekovtseva [6] revealed the content, specificity, stages, and structure of professional self-improvement of teachers at higher educational institutions.

Numerous studies [7-12] are dedicated to the UAS advanced training system.

Analysis of scientific works and publications of researchers [13-16] indicates significant attention of the developed European countries (for example, Denmark, Luxembourg, Germany, Norway, etc.) to the creation of conditions for continuous training and professional improvement of the person throughout life.

Such training system is based on the determination of annual professional development scope of educators, free choice of training forms and terms, implementation of the assessment and recognition system to evaluate results of nonformal and informal education, electronic navigating platforms, etc. Thus, an important place in the professional development of educators in Europe is given to participation in scientific conferences, seminars, and colloquiums held at the national and federal levels [17].

Since 2008, the professional development of the UAS in universities of the Netherlands is based on the University Teaching Qualification (UTQ), as part of the personnel policy for the teachers' professional development. Currently, more than 60% of UAS in the Netherlands are UTQ certified. This certificate guarantees recognition of the educator's qualifications not only in the home university but also in other universities of the country and neighboring countries (Belgium, for example), and gives the opportunity to implement freely the principle of mobility. At the end of the UTQ program, educators form a portfolio or UTQ-case. The UAS with teaching experience exceeding five years can independently form a portfolio (which contains a teacher's resume, course description, teaching assessment, self-assessment, etc.) or UTQ-case (materials to confirm competencies acquired as a result of years of experience, as well as to develop individual programs for the development of competencies). Universities offer an intense two-day UTQ portfolio preparation program (IPP) to help experienced teachers to prepare a portfolio on their own upon completion of the program [18].

After receiving the UTQ certificate, the professional development of the UAS is not completed. It is continued through special programs, specialized courses, individual training, and consultations with colleagues. Most universities have introduced "Higher (senior) teaching qualification (STQ)" programs designed for teachers with more than five years of teaching experience, who plan to participate in the development and modernization of the university's educational policy. At that, the STQ qualification is both an indicator of professional development of the UAS and an opportunity for career development, since it provides the opportunity to hold the positions of educator, associate professor, and professor, as well as to perform various functional duties (to coordinate gathering of program components, perform as coordinating teacher at the departmental or faculty level, and join Program Committee as a member or chairman) [19].

Research hypothesis is as follows: the training quality of UAS depends on their continuous professional development through advanced training programs, internships, etc., using innovative educational technologies.

III. PROPOSED METHODOLOGY

A. General description

The theoretical research was based on the analysis of scientific literature on the research problem.

The expert survey was attended by 35 teachers, who were employees of technical, economic, medical, legal, and pedagogical universities.
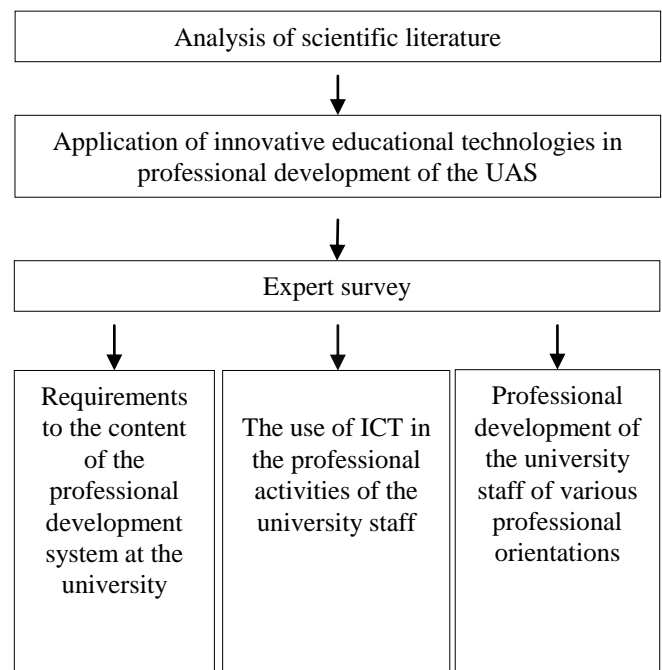
B. Algorithm

The first stage of the research has dealt with the analysis of scientific literature on the problem of application of innovative educational technologies in the professional development of the UAS.

At the second stage of the study, an expert survey was conducted regarding the following issues:
- requirements for the formation of the meaningful component of the methodological system of professional development at the university;
- the use of ICT in the professional activities of the academic and administrative staff of the university;
- professional development areas of university staff of various professional orientations.

C. Flow chart

Analysis of scientific literature

↓

Application of innovative educational technologies in professional development of the UAS

↓

Expert survey

↓

| Requirements to the content of the professional development system at the university | The use of ICT in the professional activities of the university staff | Professional development of the university staff of various professional orientations |

IV. RESULT ANALYSIS

A. Results

According to experts, the organization of professional development of UAS is characterized by features, such as:

- ability to timely identify and pedagogically substantively respond to the current and future needs of the university staff, which are subjected to rapid socio-economic transformations, globalization, informatization of the education system, and the rapid development of ICT;
- students of advanced training courses can critically evaluate the proposed innovations and take a direct part in their testing, development, and integration;
- academic, administrative, and ICT personnel is able to rationally apply the available pedagogically evaluated ICT when implementing professional development of educators due to the constant responsive development of their own professional competence.

These circumstances require taking into account the broad range of requirements for the formation of a meaningful component of the methodological system of professional development at the university.

Table 1: Requirements for the formation of the meaningful component of the methodological system of professional development at the university

No	Requirement	Justification and explanation	%
1	Development of curricula and programs for academic and administrative staff	The need for constant responsive improvement of the level of their own professional competence	91.4
2	It is necessary to provide adaptation of listeners to new conditions of educational and cognitive process	This is due to the development of ICT. Their mandatory component should be classed using ICT, where students improve existing and acquire new knowledge and skills when working with ICT. Forms and methods of their rational use in educational and professional activities.	82.9
3	For each staff category of the university, it is necessary to provide practical classes, training, and seminars on their professional activities	The content of training should be formed in accordance with the functions and tasks assigned to employees	77.1

Based on the experts' proposals, the authors developed the curriculum of the program "Use of ICT in professional activities of the academic and administrative staff of the university" (Table 2).

Table 2: The curriculum of the program "Use of ICT in professional activities of the academic and administrative staff of the university"

No	Content	Total hours	Total in-class hours	Lectures	Seminars	Practical studies	Independent study
1	*Invariative courses*	18	14			14	4
Module 1.1. Flowline multimedia presentation as a means of supporting the educational and cognitive process at the university		9	8			8	1
1.1.1	Using multimedia in the educational and cognitive process. Creating multimedia presentations: linear motion, transitions, text	2	2			2	
1.1.2	Creating multimedia presentations: videos, backgrounds, headbands	3	2			2	1
1.1.3	Creating multimedia presentations: specifying the objects' motion trajectory	2	2			2	
1.1.4	Creating multimedia presentations: audio recording, and video recording of the project.	2	2			2	
Module 1.2. Using cloud technologies in the professional activities of the UAS		9	6			6	3
1.2.1	Google services development trends, problems, and prospects	1					1
1.2.2	The functionality of cloud technologies, such as Gmail, Drive, Forms, Calendar, Google+ (social networks), Groups, Contacts, etc. in the educational and cognitive process	2	2			2	
1.2.3	Google Sites as a means of generalizing the pedagogical (scientific and pedagogical) experience of an academic employee	6	4			4	2
2	*Elective courses*	36	26	8	6	12	10
Module 2.1. Moodle system as a means of professional development of academic staff through distance learning		17	8		4	4	9
2.1.1	Basics of distance learning. Types of teaching and learning aids of distance courses	2	2		2		
2.1.2	Developing teaching and learning aids for distance courses	9					9
2.1.3	Creating and content filling of distance courses by means of the Moodle platform	4	4			4	
2.1.4	Training based on distance learning courses	2	2		2		
Module 2.2. Open support systems for academic research		14	14	8		6	
2.2.1	The concept of open access and its types	1	1	1			
2.2.2	Ethical aspects of doing research	1	1	1			
2.2.3	The problem of plagiarism. Software tools for checking texts for a match. Checking scientific papers for plagiarism	3	3	1		2	

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2.2.4	The ICT support systems for academic research (electronic publications, journals, monographs, conferences, scientific forums, blogs and social networks, electronic document management systems). Domestic and foreign experience of their use.	1	1	1			
2.2.5	Electronic journals. Submission of scientific articles to the journal based on Open Journal Systems software	2	2	1		1	
2.2.6	Electronic libraries. Types of scientific content. Uploading materials to an electronic repository based on EPrints software	2	2	1		1	
2.2.7	Electronic conference systems. Submission of abstracts through Open Conference Systems	2	2	1		1	
2.2.8	Scientometric and abstract databases. Citation indices. Creating and filling a personal profile of a scientist in Google Scholar	2	2	1		1	
Module 2.3. Electronic document management as a means of university management		5	4		2	2	1
2.3.1	Regulatory support for the use of ICT at the university	1					1
2.3.2	Fundamentals of electronic document management at the university	2	2		2		
2.3.3	Functional capabilities of pedagogically evaluated ICT in business process management, namely, planning (forming the curriculum, business meetings, tasks and the like), holding meetings, webinars, conferences, etc.	2	2			2	
Total hours		54	40	8	6	26	14

As experts explain, a significant number of training sessions at the university carries a considerable theoretical load of an advanced nature. Therefore, the assimilation of educational content largely depends on the quality of the development of multimedia presentations by academic staff and their pedagogically substantiated demonstration of educational material. This facilitates the presentation of graphic objects (photos, drawings, graphs, etc.) and video clips to demonstrate dynamic processes, as well as provides visibility at the advanced level that contributes to the comprehensive perception and better memorization of educational material by students.

According to experts, this determines the presence of the module entitled "Stream multimedia presentation as a means of supporting the educational and cognitive process at the university" (Table 2) in the content of the training program for academic and administrative staff of the university. Based on the conducted comparative analysis of programs for creating multimedia presentations necessary to support the educational and cognitive process at the university, experts recommend teaching this module based on the ProShowProducer program.

In addition, as experts specify, for academic staff, the main tasks are as follows: a) quality implementation of the educational and cognitive process at the university; b) coordination of students during their courses; c) control, analysis, and submission of proposals to improve the quality of the educational and cognitive process – such training should include mastering the basics of adjustment and support of both individual and group relationships between students and educators in the framework of working on joint documents, projects, activities, etc.

Interaction between participants is based on Google Apps for Education. Therefore, based on expert recommendations, the program (for UAS) includes a module entitled "The use of cloud technologies in the professional activities of academic staff". Also, for this category of employees, experts propose to develop a module named "Moodle system as a means of improving the skills of teachers on distance learning".

Involvement in scientific and pedagogical research is another component of the UAS activity. According to one of the experts (Vadim O.), today "the key to the success of the university academic employee as a researcher and scientist is his publication activity, which implies a high level of knowledge and skills in the use of modern ICT in the course of collecting empirical data, their analysis, creating their own scientific product and presenting it on the pages of scientific periodicals". Taking into account the above, thematic planning includes the module "Open support systems for scientific and pedagogical research".

Also, the official duties of the academic staff include the preparation of the training schedule, organization, and conduct of Internet training, forums, seminars, master classes, and science-to-practice conferences that in addition to educational and cognitive aspects, are related to managerial skills. As pointed out by the experts, administrative positions are usually offered to the UAS who usually combine training sessions at the university with new job responsibilities. Therefore, due to the acquired significant pedagogical experience and successful implementation of the invariative courses of the program (Table 2), each administrative employee, namely, rector, vice-rector, dean, deputy dean, and head of the department can be characterized by a high level of ICT competence in the implementation of the educational and cognitive process. But the implementation of tasks related to the process management, as well as general management of university departments, require additional knowledge and skills in the rational use of ICT when performing directly managerial functions, namely:

a) developing, coordinating, correcting, checking of availability, and conducting quality control, as well as endorsing documents;

b) planning, organizing, and conducting educational and cognitive activities, business meetings, etc.

According to experts, the above determines the presence of the module "Electronic document management as a means of university management" in the elective courses of the program.

B. Algorithm

In general, according to experts, UAS can improve their skills through:

- training according to the educational and scientific program;

- training according to the educational program (on long-term advanced training courses);

- participation in certification programs, training, seminars, workshops, meetings, training seminars, webinars, masterclasses, round tables, etc. (short-term advanced training courses);

- internships.

Upon successful completion of the above types of professional development, UAS receive a document (diploma, or certificate).

According to experts, UAS can improve their skills at advanced training courses (or internships) at their university or at any other university or scientific institution, independently choosing the type, form, and subject of advanced training. Programs of short-term advanced training courses (internships) may be offered by university departments or divisions, specialized in advanced training, while long-term advanced training courses are the prerogative of the relevant structural units of universities and research institutions.

At the same time, as experts point out, UAS can attend short-term forms of professional development at any university or scientific institution (of course, after registering), while long-term training courses or internships can be offered only by institutions having signed relevant agreements with the native university of UAS. At that, a certain course (subject) can be selected from the list submitted by partner institutions. This somewhat limits the ability of the UAS to improve skills, because not always needed courses can be found in the list of offered training courses (disciplines, etc.).

The results of the expert survey indicate that at present universities pay considerable attention to improving the level of communicative (foreign language) competence of the UAS (the study of foreign languages (mainly English). According to one of the experts (Mikhail D.), to this end, his university has organized:

- free training in English for young teachers, while for all other UAS, training is paid, while there is a corporate discount on training;

- paid training programs for teachers (at the expense of faculties (universities) or at their own expense), aimed at preparing the UAS (who already have the English language proficiency at a level not lower than B1) to teach academic subjects to foreign students in English (achieving B2 level or higher on the CEFR scale);

- additional foreign language (others than English) courses for graduate students and young teachers;

- activities of the English-language discourse studios;

- conducting lectures of foreign specialists to improve the level of foreign language proficiency;

- the English-language courses in pedagogical disciplines;

- specialized author's programs for learning a foreign language according to the Common European Framework (CEF).

As noted by the experts, universities pay attention to the formation of professional competence (in the psychological and pedagogical area) of newcomers. Thus, according to one of the experts (Konstantin U.), graduates, who are first employed to full-time positions of the university, must be trained on the course "Higher school of pedagogical skills", which consists of a cycle of educational and methodological seminars. At the end of the course, students defend their methodological projects before the certification commission.

At that, as pointed out by one of the experts (Victoria G.), newcomers of medical universities immediately after admission to the position must pass in their university following training:

- in the field of pedagogy − at permanent training seminars;

- internship in the specialty − at the department (organized and supervised by the head of the department).

But this is not enough for teaching, therefore UAS of the medical universities with experience of scientific and pedagogical work of 2-5 years, must undergo 6-week training courses, whose programs include:

- educational activities (obtaining pedagogical and psychological skills in the educational process);

- development of educational process organization technologies, as well as monitoring the level of knowledge and skills;

- study of forms of methodical work, features of the educational process at the department;

- mastering the skills of ICT application in the educational process;

- pedagogical practical work at specialized departments;

- execution of certification and graduation work and passing the final evaluation test.

In economic and law universities, according to experts, attention is focused on the development of the vocational component of professional competence. For example:

- the economics university offers advanced training programs in the following areas: accounting and taxation; marketing; finance, banking, and insurance; economic theory; entrepreneurship, trade and exchange activities; economics, etc.;

- law university offers educational and professional programs designed for the cycles, such as historical and theoretical cycle, civil law, administrative law, criminal law, etc. When developing programs, the professional needs of the academic staff, the connection of training with practice, the need to use various modern forms of education, ICT, etc. are taken into account.

- in universities of the pedagogical profile, professional development of UAS is directed on the development of pedagogical, social-humanitarian, and psychological components of professional competence, as well as information competence. For this purpose, long-term programs of professional development in the corresponding area are offered.

According to experts, short-term training courses (training, master classes, seminars, etc.) in the following areas are also widely used for the professional development of UAS:

- psychological and pedagogical skills;

- innovative learning technologies;

- using ICT in the educational process.

Universities attract both young and experienced trainees to constantly improve their professional level.

An example is the program "School of professional skills" offered at the law university. The school operates on two curricula: "Problems of theory and pedagogy of higher education" (for UAS with pedagogical experience up to 10 years) and "Urgent problems of higher legal education" (for UAS with a pedagogical experience more than 10 years). Collections of abstracts and scientific reports of the participants are published in consequence of the training.

The UAS internships can be held free of charge or under contract both at their native university or other educational institutions, research institutions, and organizations with which cooperation agreements have been signed. The results of the expert survey indicate that the academic staff members of classical universities are trained mainly in scientific institutions. There is also a practice to count participation in scientific (science-to-practice, and scientific-methodical) conferences and seminars with duration of at least two days as scientific internship. For this, the conditions are availability of certificates or other evidence confirming participation in these events, as well as the total number of training hours of participation in such events (according to the program of the corresponding event).

For technical universities, according to experts, there is a significant proportion (up to 30%) of UAS, who undergo advanced training (internship) at the workplace, while in economic universities, part of the UAS (20%) increase their level of competence in private structures and banks. The UAS internships in institutions or organizations, for which universities train specialists, are one of the conditions for improving the quality of training of graduates.

Important is the experience of medical universities, where UAS of clinical departments, along with the certain type of activities, also perform practical (therapeutic) activities (direct involvement of UAS in the treatment process of medical institutions and clinical bases of the university, according to experts, amounts up to 50%). The advantages of this practice are that UAS replenishes the practical experience for further teaching and research activities, put into practice scientific developments, and share their experience and knowledge with students in a working environment. This experience should be extended to all universities. To this end, for the graduating departments in the institutions and organizations, for which these universities train specialists, it is worthy to create educational and practical bases, where the UAS could combine scientific, pedagogical, and practical activities.

After successful completion of the training program (internship), trainees are issued with a relevant document. However, despite this, the assessment of the process and result of the professional development of the UAS is still imperfect. While the criteria for assessing the effectiveness of professional development upon the completion of educational-scientific or the scientific program are defined, and are the same for all universities, for long-term or short-term training programs assessment criteria are developed by the universities which form and implement these programs. Accordingly, it is not certain that these criteria are the same in all universities. In the authors' opinion, the report on professional development prepared by the UAS cannot provide an answer about the acquisition or development of certain competencies by the UAS. This is confirmed by the experts who suggest implementing the need for additional requirements in universities to introduce within a month the results of training (internship) into the educational process. This should be done through the following activities:

- developing the educational and methodical edition (the textbook, the manual, practical work, situational exercises, methodical instructions, abstracts of new lectures, the collection of test tasks, etc.);

- carrying out research and preparing scientific papers on the topic of dissertation or research areas of the department, forming regulatory documents, and performing other professional duties.

V. CONCLUSION

The research results have confirmed the hypothesis that the quality of UAS training at the university depends on their continuous professional growth through professional development programs, internships, etc. based on the use of innovative educational technologies.

According to the results of the study, the following innovative areas of professional development of UAS of Russian universities have been identified:

- developing communicative competence component of the UAS (foreign language competence), which will contribute to free communication of UAS with foreign colleagues, allow disseminating their experience through international research publications and, consequently, increasing their competitiveness in the labor market;

- compulsory training in the psychological and pedagogical area by graduates of universities of the nonpedagogical profile, who were first employed to full-time positions at the universities;

- professional development of all UAS by involving them in permanent seminars "School of professional skills";

- conducting internship of the UAS in institutions and organizations that are potential employers of graduates of these universities;

- forming educational and methodological support of disciplines, using the experience gained during training (internship).

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