

Training Modernization Strategy of the Teachers of Vocational Education

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Abstract: The urgency of the problems due to the lack of scientifically grounded strategies (platforms) for upgrading the current system of educators training for continuous professional education. The increased need for development multi-channel variants of implementation of professional-pedagogical education is swept aside. The study aims to present a panorama of problems modernization-vocational teacher education and to justify the possibility of its solutions. The methodological basis of the study made by the concept of professional development of the individual, the provision on the integration of the system, process and project approaches and principles for the development of professional pedagogical education. Panoramic approach identified the logic of scientific research. Determined psycho-pedagogical problems of professional education and multidimensional metaprofessionalnye quality vocational school teachers. A innovative vocational qualification structure of teacher's continuing professional education, justified its psycho-pedagogical educational platform. The discussion aspect is reflected in the project psycho-pedagogical platform independent educational program including developmental psycho-pedagogical structural components: modules, minors, trainings implemented by high educational technologies. Science-based vocational qualification structure of educators in professional schools is an become the basis for a substantial expansion of organizational forms of training and vocational teaching personnel and ensure their social and professional mobility. Implementation of educational psycho-pedagogical platform will help to improve the quality of vocational education which it's important for the innovation economics of the country. The researchers are grateful to the founder and methodology of vocational teacher education Academician RAE G.M. Romantsev, evidence-based and train teachers of vocational training in Russia for the updating of our innovative research.

Key words: Educator, professional education, methodology of vocational teacher education, qualification structure, psycho-pedagogical platform, academician

INTRODUCTION

The development of the continuous education system makes actual the problem of improving the psychological and pedagogical preparation of employees engaged in vocational-education activity in organizations of secondary, corporate professional education (learning).

We will describe briefly describe the main problem-based situation, conditioned by the development relevance of the professional school teaching staff.

The country has developed a system of vocational and pedagogical education in the direction of "Vocational Learning (branch-wise)". The scientific and methodological centre of this education is the Russian State University of Vocational Education (Yekaterinburg). Learning is carried out according to the educational programmes; Bachelor's programme 44.03.04 and Master's programme 44.04.04. This form of education is well justified when learning teachers in mass professions of

skilled labour but the lack of sectoral (production and technological) preparation for implementation of vocational and educational activities of the Secondary Vocational Education (SVE) professions as a part of the undergraduate is difficult. It is obviously that the additional 1 year job training, internship or Master's program is required.

Master's graduate teachers from among persons with higher baseline industry education seems appropriate for implementation of professional and pedagogical activity in high-tech industries. The framework construct of this education can be the new educational platform where integrating the engineering and manufacturing, psychological and pedagogical training in vocational and teaching qualification of a teacher.

In educational institutions of SVE, additional corporate and professional education, about 75% of the teaching staff do not have special psychological and pedagogical education which adversely affects the implementation of psychological and pedagogical

functions. For this group of teachers, the improvement of psychological and pedagogical skills is important. Its best form could be the educational program psychological and pedagogical platform.

The development of online continuous education, the dynamism of vocational education, the emergence of new professions and the wide spread of information, communication and interactive teaching technologies have made it necessary to prepare teachers capable of mastering and carrying out a wide range of functions and types of vocational and pedagogical activities. Trans professionalism a qualitatively new level of professional development of the teacher becomes popular.

Noting the obvious importance of engineering and manufacturing training of educators in vocational education, it should be emphasized that its content needs to be transformed into a didactic-oriented format. That is, implementing the training of teachers for the system of continuous professional training on the basis of basic branch-wise education, its didactic requires transformation by strengthening its vocational and pedagogical orientation. The introduction into the Master's programme and professional development programme of the innovation module "Modern production technologies" becomes justified.

In-depth analysis of the status and problems of vocational education development of is provided in the studies of Zolotaryova (2014), Dorozhkin and Shcherbina (2013), Ronzhina *et al.* (2016), Smimov (2014), Tkachenko (2014), Dorozhkin and Zeer (2014), Fedorov and Tretyakova (2016) and Zyryanova *et al.* (2016), etc. The content of these sources shows that the training of educators in vocational education is not widely discussed, although, all scientists recognize their crucial importance in modernizing the education sector.

Educational structures reformation, approval of the competence approach, introduction of modern professional and educational standards, the wide spreading of information, communication and interactive learning technologies and other innovations have led to the search for strategic guidelines for the modernization of teachers training for vocational education. The replenishment strategy of the education sector with qualified leaders and teachers having the fundamental psychological and pedagogical training and being experts in one of the sectors of the economy made the issues discussed in the article relevant.

The intellectualization of production and the transition to a post-industrial economy reinforce the importance of continuing education. In the researches of Western specialists, the modern society is interpreted as "learning" one (Field, 2000; Livingstone, 1999; Merriam and Caffarella, 1999). The need for continuous

updating of professional competencies due to the rapid obsolescence of knowledge has led to the emergence of the lifelong concept that obtained a wide circulation in the late 1990's (Dorozhkin *et al.*, 2016, 2017; Guzanov *et al.*, 2016; Zeer and Streltsov, 2016).

In the innovative economy, the ability of a specialist to Master and carry out not only related but also quite distant from each other professions and willingness to go beyond experience is important. The dynamic labour market and the constantly increasing sophistication of professional activity require a multi-dimensionality from employee: he must be capable of decision-making, responsible, communicative, ready for innovation, self-governance and self-education. The formation of these qualities is largely determined by the education system, the integrated part of which is the higher vocational education. This integrated qualification characteristics of the activity subject is called transprofessionalism.

Currently, there is a growing contradiction between the persistent traditional orientation of the vocational education to training specialists who perform certain labor operations and solve typical production issues and the modern economy's demand for mobile highly skilled transprofessionals engaged in a broad range of social and professional functions.

At the methodological level, there is a need to develop a universal curriculum adaptable to specific professions and specializations which will be the basis of the psychological and pedagogical platform for training educators of the continuing education. The plan's methodological support should include a psychological and pedagogical training invariant and recommendations for the development of elective components. For the invariant part, the scientific and methodological support in the form of training manuals and workshops is provided for including the modern electronic information carriers.

To implement the idea of a psychological and pedagogical platform (support for the effective functioning of its informational organizational and educational components), the integrated portal (information resource) in internet should be created. Based on this resource, the professional activities of continuing education educators, networking cooperation of various educational institutions and the research of the professional social network can also be organized.

MATERIALS AND METHODS

In course of research, the following methods were used: theoretical (analysis, synthesis, specification, generalization), hypothetical-deductive, project-oriented.

The definition of teachers training strategy, building a panorama of research was based on multivariate, network and process approaches.

Experimental research base: Russian State Vocational Pedagogical University is the experimental research base.

Stages of research: The research was conducted in two stages: at first stage, the theoretical analysis of scientific literature on the research issues was carried out, the specification of the main trends of modernization of vocational and educational panorama was conducted, the purpose and the methods were established, the research plan was drawn up.

At second stage, the experimental-research has been carried out, its results have been analyzed, summarized and systematized in the form of a conceptual model for the teaching staff professional and qualification structure for the continuous professional education system.

RESULTS AND DISCUSSION

Education modernization implies the restructuring its aims, contents, forms, methods, means and the entire system of its organization in accordance with the needs of the country's innovative economy. Currently, the new paradigm of the higher school, the so-called advanced education is in the process of approving. This paradigm is based on the integration of research, educational and professional activities. For this purpose, the fundamental principles of specialists training should be re-considered. The traditional understanding of fundamentality should be replaced by the notion of fundamentalism adopted in non-classical science. Outdated disciplinary education is in contradiction with the context-competence approach, the implementation of which is possible only on the basis of interdisciplinary learning programs. The development and implementation of transdisciplinary modules is one of the most pressing problems in the field of vocational education requiring prompt decision.

Change in the logic of vocational training is justified: transition from traditional forms of learning to the network strategy (convergent) that ensure the formation of specialists in conditions of the new technosphere and using virtual technologies allowing you to execute all forms of continuous education (formal, non-formal and informal learning) as well as to diversify educational routs.

The objective of our research was the theoretical justification of the professional-qualification structure model of the vocational education teacher, the scientific

and methodological support of learning innovative content of future specialists in this profile, the choice of effective educational technologies, the means to navigate the educational process and the tools for evaluating the achievements of students. Our design methodology is presented by the following concept-based provisions:

- The concept of the person professional becoming from formation of his professional intentions to completion of his professional activities performs the system-forming function of continuous vocational pedagogical education
- Logic of the person's professional becoming is determined by the social situation of development and the content of the leading activities that determine the emergence of major psychological new formations in every age
- Professional becoming is determined by natural, biological, social factors, individual-psychological qualities of the person as well as random events and circumstances
- Individual professional becoming is determined by the psychological development of each individual
- Professional becoming is accompanied by the overcoming of external and internal barriers and individual human development has its limits

As the initial positions of designing the professional pedagogical education panorama (hereinafter-panorama) we have chosen the general-methodological, systemic, transdisciplinary, process-oriented, project-oriented and multivariate approaches. The networked, process-oriented and project-oriented approaches has become the leading ones meeting the target orientation of professional-pedagogical education.

The networked (multivariate) approach: It is based on integrating the interaction of all the components of the vocational education infrastructure and consideration of multifactorial determinants of multilevel learning and cognitive context. The introduction of new information technologies into the educational process has conditioned the transition to online forms of perception of the surrounding reality. It should be emphasized that online education is characterized by eclecticism, heterogeneity, the lack of hierarchy in the received information, the logic of mastering which is determined by the motivational orientation of the student (Berulava, 2004).

The process-oriented approach: Ensures the effectiveness of the educational organization at the input of which there

are requirements for the preparation of prospective university students and at the output the quality of the graduates meeting the requirements vocational and educational standards. The university possessing resources converts the input characteristics of the learners into a final product corresponding to the vocational and educational standards that are backbone factors of educational activities of all subjects of organization. The focus of the process-oriented approach is to improve the quality of the specialist's training. The internal and external monitoring objects are the educational processes and their effects.

The project-oriented approach: Education is understood to be the research of learners on design, both the learning content and educational-vocational activity involving modern interactive educational technologies in accordance with the requirements vocational and educational standards. The project-oriented approach aims at changing and modernizing traditional education. Its thematic core is innovation and the sense-making factors in our case are the performance and implementation in practice the foresight projects of vocational education development, creation of developing vocational educational learning environment, prediction of individual educational routes, formation of a developing personality.

During the scientific substantiation of the panorama-project and its mechanisms of implementation, we relied on the methodological principles of projecting: advancing learning content, the variety of ways to achieve educational outcomes, the innovative orientation of educational programs, provision of instructional literature, scientific and methodological support and prompt correction of learning technologies (Zagvyazinsky, 2005).

The study of vocational education methodology has made it possible to define the private principles of Panorama projecting:

- The vocational and pedagogical orientation of the content and technologies of learning
- Diversification of vocational and pedagogical education, ensuring the diversity of educational programs for teachers preparation
- Co-development of personality, education and professional activities of the learners
- Variability of the education content which determines the individual educational paths
- Interconnection of vocational and educational standards with the psychological and pedagogical functions of continuous professional education

Concentration of content and educational technologies of the Panorama on the expansion of vocational and pedagogical opportunities of students, their development, personal development and self-education, formation of their transprofessionalism and professional multi-dimensionality (Zeer *et al.*, 2016).

A set of concept-based ideas, approaches and principles has determined methodological platform for designing the model of the professional-qualification structure of the vocational education teacher. Based on the methodological platform of research, the conceptual model of the professional qualification structure of pedagogical staff for the system of continuous vocational education was developed. The introduction of multi-level vocational education has provided for the possibility of diversifying the structure of vocational pedagogical education.

Bachelor's degree program is the orientation to training the teachers of pre-professional education (handcraft teachers) and teachers of professional training: craftsmen and teachers in mass professions (for the service sector of skilled labour) as well as in the enlarged social-technological groups of professions.

Master's degree program is the training teachers of vocational education for highly technological specialties and professions based on basic branch-wise training.

Post-graduate study is the training teachers in the fields of high technology, innovative industries and future professions: AeroNet, HealthNet, NeuroNet and EnergyNet.

It seems appropriate to combine technological education in direction of 050100 pedagogical education along with vocational education in the direction of 051000 vocational learning. The integration of these two directions would provide qualified teachers of all levels of vocational and pedagogical education: in general-education schools, lycees, technical schools, colleges, resource centres of vocational-oriented education and applied qualifications as well as in the vocational educational organizations of supplementary education.

In the branch-wise universities it is also advisable to carry out training of educators in high-tech occupations by introducing psychological-pedagogical platform in basic educational programs. The aim is the formation of psychological and pedagogical skills, readiness and ability to implement vocational and pedagogical activities, the possession of multidimensional competencies on generalized labour functions.

The competent psychological and pedagogical support of continuous professional education requires human resourcing. The professions that promote human's

Table 1: Conceptual model of the professional qualification structure of pedagogical staff for the system of continuing vocational education

Office	Levels of education	Organizations of professional activities
Handcraft and business teacher; specialist in vocational-oriented education	Bachelor's degree program	General education schools, gymnasiums, lyceums
Foreman of vocational training	Bachelor's degree program (applied)	Technical schools, colleges
Teacher of natural science, general technical and special subjects	Specialist's degree on the combined profiles of training: technology + informatics, physics + vocational training, etc.	Technical schools, colleges
Teacher of vocational training in the fields of branch-wise education, teacher-technologist	Bachelor's degree program: teacher + foreman of vocational training	Vocational schools, colleges, multifunctional qualification centers, employment services
Educator on high technology industries	Higher industry education: Master's degree programme, post-graduate study	Corporate universities, industry types, professional development departments
Vocational education managers	Master's degree programme, post-graduate study	Management of educational organizations, staff development service
Specialists of continuous education: professionologist, network career coordinator, HR certification expert, specialist in vocational-oriented education, etc.	Bachelor's degree, Master's degree, post-graduate study	Educational organizations, staff development services, qualification certification centres

professional becoming include professionologist, tutor of educational routes, specialist in vocational-oriented education, professional adviser, expert of career startups, network coordinator of the career. Training of these specialists whose professional sphere of activities are management of educational organizations, staff development services, multifunctional centers of certification and qualification, employment services, etc., should be carried out in the Master's degree courses in the second higher education system and further education centres.

In the system of educators professional training, the use of the educational platform will be effective in mastering psychological and pedagogical disciplines. Key elements of this platform are:

- Mass Open Online Courses (MOOC)
- Learning Management Systems (LMS)
- Support for the innovative educational infrastructure
- High education humanitarian technologies (Konanchuk, 2013)

The sense-making components of educational programmes are the competencies that extend (enriching) the transprofessional possibilities of the education subjects.

Our ideas about possible diversification of the qualification structure of vocational education teachers are summarized in the conceptual model (Table 1). Its heuristic advantage is the multi-channel receiving of professional pedagogical education, the variety of educational routes, the openness of the vocational education space. The promising directions of teachers training for vocational education system.

The support vocational education models include professionology, professional orientology, professional-oriented consulting, job specification, foresight of professional development and others. The

training of specialists according to these modules is reasonably to carry out in framework of Master's degree program on the basis of branch-wise education in the Bachelor's degree course. There is a need for a pilot project for intensive training of vocational education teachers in multifunctional resource centres on the traineeship sites, etc.

The existing system of vocational and pedagogical education cannot adequately provide qualitative training of educators in knowledge-intensive and high-tech sectors of the economy. Therefore, in addition to specialized education, there is a need for multichannel training of specialists of the given profile through mastering psychological and pedagogical modules by students (from 2nd-3rd course) and graduates from the branch-wise and classical universities. Educational psychological and pedagogical platforms developed on the basis of systemic, project-based and process-oriented approaches have become the primary means of implementing such education.

The psychological and pedagogical platform can also be an innovative centre for training teachers of professional organizations from among the persons without pedagogical education.

The target orientation of such platforms is the development of transprofessional competencies on the self-actualization of the professional and psychological potential of the teacher: social-professional dynamism, predictive abilities, tolerance to innovations, social and professional mobility, reflexivity, excessive social and professional activity, capacity for selfdevelopment, etc. The process-design content of the platform can be represented by four main modules:

- Adaptive consolidating the professional and psychological potential of the individual
- Backbone forming educational and developing competencies

- Functional implementing alternative pedagogical activities
- Instrumental integrating in practice, all psychological and pedagogical competencies

The invariant disciplines in the education model that, we are considering include the professional orientology, education methodology, psychophysiology of development, project-based pedagogy, professionology, psychology of vocational education, interactive learning technologies, navigation of students achievement and alternative functional-oriented modules: management of education, design of professions, e-Learning, project learning technologies, monitoring of the education quality, etc. (Zeer and Symanyuk, 2016).

The main advantage of a heuristic psychological pedagogical platform is its universalism, transprofessionalism and produce-ability regardless of the specifics of developing vocational pedagogical education (Konanchuk, 2013).

The following technologies can be used to implement the platform: Foresight-projects representing the ability to predict the professional future based on the formation of the education competencies, self-control of professional personal development and the self-actualization of cognitive abilities. Minors is a technology expanding professional psychological possibilities of forming the social-professional competence in specialists, enhancing professional activity, dynamism, mobility, developing skills of personal communication. Depending on the qualifications that students try to master, they are offered a wide range of psychological and pedagogical minors: design of the future professions and individual educational paths, online courses on self-education and self-development, cognitive learning technologies, diagnosing seminars, trainings, etc.

High-hume educational technologies that help to systematize, co-organize and regulate group activities of learners on the basis of their cognitive abilities stimulation. These technologies include discussion and moderation, project technologies, case-technologies, game methods, trainings, webinars, etc.

CONCLUSION

The implementation of psychological and pedagogical platform in the system of vocational pedagogical education will significantly increase the vocational pedagogical potential of teachers, actualizes the formation of the social-professional values. The change in the logic of vocational education (transition

from convergence of traditional forms of education to a networked educational strategy) will contribute to the development of information competence and to the acquisition of skills to research in virtual environment, acquisition of technological skills, independence in choosing the form of continuous education (formal, non-formal, informal) and their own educational route.

RECOMMENDATIONS

The multichannel and diversified training of the teachers of continuing vocational education, based on the process-oriented and project-oriented approaches with the involvement of high learning technologies will significantly improve its quality.

It is also necessary to expand the organizational forms of preparation of professional pedagogical staff in addition to the basic universities, it should be implemented at psychological and pedagogical departments of the branch-wise universities and in the resource centers of qualification based on networking cooperation with enterprises.

The innovative approach to educational practices leads to the application of high-hume learning technologies: developmental diagnostics, case-stage method, positional discussions, reflexive, role-playing, business games, etc. The introduction of such technologies in turn, requires a fundamentally new block-modular structure of curricula that includes:

- The methodology of teaching and professional activities: invariant, soft skilled (core) disciplines
- Transprofessional, integrative training: polivariant technological disciplines
- Project specific training: special and branch-wise disciplines
- Personality-developing training: variable and elective courses

The strategy of modernization of vocational pedagogical education stated above does not exhaust all aspects of its advanced development. Some provisions are of a debating nature while others require more detailed analysis and third ones expert assessment.

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