



Higher School Teachers Training Model Features

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ABSTRACT

The formation of a new generation of experts depends on their scientific qualification, professional and pedagogical competence. In this regard, this article aims to identify the peculiarities of their training in the system training. The leading method in the study of this problem is the method of modeling, which allows to represent the process of higher school teachers' advanced training as a whole system of components (theoretical, content, technology, assessment), the integrity of which is aimed at improving their research, self-education, organizational competencies. The requirements to the content of the teachers' training in the process of their qualifications' improving are revealed, goals and objectives are defined, the principles of this process are formulated, technological and scientific-methodical support of the process is developed; the features of quality's control monitoring of teachers' professional development are revealed in the article. The article is valuable for leaders and teachers of the system of additional professional education.

Keywords: Professional Development, Management of Education, Higher School Teachers, Additional Professional Education

JEL Classifications: A23, I23, I26

1. INTRODUCTION

Currently, a worldwide search for new systems of training, retraining and advanced training of teachers for secondary and higher professional schools is urgent. Moreover, there is no a single point of view, neither on the content nor on the organizational forms of training or on teaching methods (Mozhayeva, 2008; Senashenko, 2008; Golub, 2008; Ivanov et al., 2014; Latyushin, 2009; Sharifzyanova et al., 2015; Sadovaya et al., 2015; Zakirova et al., 2016). In some cases, the content of the training's traditional forms is updated (new courses are implemented in the system of faculty qualifications' improving, non-traditional forms of training, individualized and differentiated training is used, etc.), in others special training and retraining centers are created on the basis of the conceptual foundations of the new paradigm of education. In

traditional forms such pedagogical training only complements the professional one (Masalimova et al., 2014; Shaidullina et al., 2015a; Vlasova et al., 2015; Sakhieva et al., 2015a).

But the imperfections of the overall reforming of education in Russia and, in particular, of the system of teachers' training for vocational and high school, contributes to a vital need to gain additional professional education of teachers. Unfortunately, it should be noted that the main problems which are associated with increasing of teachers' professional training's level for vocational schools, with the formation of future and current teachers' pedagogical skills remain urgent ones, not only for today but also for the near future (Komelina et al., 2016; Aleksandrov et al., 2015; Priymak et al., 2015).

2. METHODOLOGICAL FRAMEWORK

Modeling of qualification improving (professional development) process can be defined as a managerial technology, which helps to achieve the goal. The subject of modeling is the process of professional development (its fragments).

2.1. Leading Approaches

The basis to develop the model of professional qualification improvement of the higher technical school teachers should be built on systematic, competence, student-centered, activity, individually-creative approaches to overcome the limitations of traditional mass reproductive and impersonal training.

2.2. Basic Principles

As a methodological basis of the study of this problem can be proposed the following principles: (a) Continuity - the relationship of organized educational activities and self-education of the teacher; (b) stimulating of the subjectivity - forming teachers' ability to work on self-development and self-organization; (c) variability - the flexibility and variety of contents, methods and forms of education of teachers; (d) continuity of content and methodology at different levels of qualification's improvement training (Khairullina et al., 2016); (e) the relationship between the content and methods of teaching with practical activities of specialists; (f) the modularity of the educational process, allowing the listener independently (fully or partially) to be trained on target individualized curriculum.

2.3. Requirements to the Content of Teacher's Training in the Process of Qualification's Improvement

The content of the studied process should be built taking into account several approaches to this problem solving: Cultural one (specialists' broad cultural training and the mastering of the cultural methods of educational work in vocational schools; simulating one (updating of pedagogical practices through the creation and implementation of innovative models of its organization); profession-gram one (use of profession-grams of workers as the reference point for the improvement of their training); regional one (taking into account and the using of features of the scientific-cultural, ethnic and human capacity of the region) (Shestak, 2009; Dimukhametov, 2006; Vedenskiy, 2003). The content's orientation of professional pedagogical improvement is connected with close specialization of the teacher in a particular type of activity - development of its theoretical and methodological aspects, the enrichment (or gaining of basic) psychological and pedagogical knowledge, including the theory and methodic of educating, age and pedagogical psychology, expanding and deepening of general culture which is necessary for the formation of creatively thinking engineer.

The efficiency and effectiveness of qualification's improvement process, in addition to its optimal content and organization, largely depends on the personal interest and activity of the teacher. Therefore, among the most important requirements to the above mentioned process the following ones should be allocated: The voluntary nature of teachers' participation in organized educational events, a variety of methods of educational

activities, the interrelation and complementarity of its various forms, differentiation of students by age, work experience, the level and nature of education, the profile of activity (Shaidullina et al., 2015b; Kirsanov and Kondratiev, 2009).

2.4. The Required Competencies for a Higher School Teacher

We have identified the competencies required in the practice of higher professional schools teachers' activity, their criteria and indicators:

3. RESULTS

3.1. Goals and Objectives of Technical Universities Teachers' Qualification Improvement

The aim of the simulation is the formation of psycho-pedagogical competencies of technical subjects' teachers in high technical schools. This may be achieved through the solution of particular problems, which should be revealed in the content of teachers' qualification improvement: Development of skills of pedagogical design of educational discipline on the basis of competence-based approach taking into account the integrative connections of disciplines as knowledge base system; the integration of humanitarian, fundamental, engineering and special knowledge of the higher school teacher using the content and procedural characteristics of the disciplines taught with the purpose of formation of students' integrative thinking; formation of teachers' system of psychological knowledge required to implement a student-centered approach to the development of creative qualities of students; the creative mastery of innovative educational technologies to develop their own pedagogical trajectory of original courses, allowing achieve the best results in achieving their didactic tasks taking into account the specific of disciplines; skills' development of pedagogical communication on the basis of entity-entity relations, democracy, tolerance, teachers' discussion and speech culture improvement; the formation of personal and professional competence of teachers, allowing to revise the previous criteria for self-assessment and consciously to think about the role of the teacher in the formation of value orientations and worldview of students.

3.2. Principles of High Technical School Teachers' Qualification Improvement

Providing of a quality, comprehensive qualification improvement of vocational schools' teacher should be built on the basis of (a) Humanity and democracy- freedom of choice by the teacher of the content, forms and places of training; (b) advanced nature of the content of education - orientation not only on urgent but also on prognosis problems in the sphere of professional technical education; (c) differentiation and individualization of learning-taking into account of the real level of professional-pedagogical training and personal development of teachers; (d) the modularity of the educational process, allowing the listener independently (fully or partially) to be trained on target individualized curriculum.

3.3. The Model's Content of Higher Technical School Teachers' Qualification Improvement

The developed model consists of the following units by its content:

3.3.1. *Process unit for training's maintenance*

Technological unit of the model is focused on managing by the implementation of advanced information, manufacturing, psychological and pedagogical technologies into the process of qualification improvement:

- 1) Multimedia educational service
This component is aimed to implement functions of multimedia educational service (with simultaneous maintenance of tasks of distance learning's modernization, automation of library search systems, increase of the availability of the Internet, etc.).
- 2) Manufacturing technology
Necessity to implement this component is dictated by the manufacturing (specific industry) innovations which are adopted by the enterprises (establishments, organizations) of regional national economy. Management of their research and implementation involves purposeful activities of the specialized departments on relations' making of social partnership with the entities of the regional economy and cultural environment, resource centers of the system of secondary professional education, the relevant faculties of higher educational institutions of the region. This is one of the most important activities of vocational schools teachers' qualification improvement courses.
- 3) Psychological technology
These technologies require psychological support and training of teachers towards their professional and personal growth. In the framework of the training courses we propose a module that includes the optional, elective courses in psychology, trainings of self-government.
- 4) Educational technology
This module performs in the system of teachers' training the function of nature-oriented educational environment's creation, providing a gradual ascent of the participants of educational process to the tops of: Knowledge for professional self-development; skills needed to apply knowledge in academic and real situations of professional activity; abilities, converting knowledge and skills into real opportunities to achieve professional goals; competencies as integral characteristics of the teacher, which determines the ability to solve professional problems and typical professional tasks that arise in real situations of professional activities using knowledge and life experience, values and abilities (Ganieva et al., 2014; Sakhieva et al., 2015b).

It produces the importance of system management by integration processes which will be more effective if the more established the horizontal links between the modules of a process unit. Management of building data of relationships is fulfilled through: Training seminars, workshops for teachers of departments; inter-attendances, lessons' analysis and adjustments' making to their implementation; joint study by the teachers of training projects and practice's results of students and building on this basis of the joint target curriculum of correction of their competence growth, etc.

3.3.2. *Scientific-methodological support unit of the higher technical school teachers' qualification improvement*

Methods of regulation and development of the technological activities are created in the unit of the scientific-methodical support

of the higher technical school teachers' qualification improvement:

- 1) Training and methodological support
The first module is connected with the creation and modernization of educational-methodical complexes on the basis of which a united training-methodical equipment of educational technology in the qualification improvement's system is formed. The structure of this equipment should include: (a) Information and resource equipment; (b) modern didactic resources, contributing to the promotion of self-awareness by educators of the perspectives of innovative professional activity.
- 2) Development of pedagogical staff's potential
Creation on the basis of qualification improvement's institutions of the young researchers' school, creation of conditions for promotion of themes of dissertation research, participation in specialized scientific conferences, implementation by teachers and managers of self-education plans, etc. It is important for these activities to have activity-based orientation connected with the practice-oriented component of improving skills of specialists in vocational schools.
- 3) Integration of science, education and manufacture
The competence orientation of teaching staff of the universities can be stimulated by collaborative with colleagues scientific and practical activity aimed at the identification and substantiation of rational ways of realization of the competence approach to the preparation of teachers of vocational schools. The optimal form of such activity is the integration of science, education and manufacture, because this consolidation of the scientific-educational and the manufacture forces provides integrity in the development of a regional system of staff training, a deep integration of all of its constituent subsystems, and most importantly - enhances the relationship between pedagogical theory and practice, creates the conditions for testing a variety of innovative ideas related to the formation of the actual competencies of a new generation of vocational schools' teachers (Shaidullina et al., 2015c).
- 4) Scientific publishing activity
All the modules included in the unit of scientific and methodological support of educational process, need for an effective system of publishing activity. It should provide an appropriate level of print quality, printing and dissemination of particularly important subjects' results in scientific and practical research. The management of this activity involves respect for the prerogatives of its thematic focus and planned expansion of its recipients.

3.4. **Quality Control Monitoring of Technical Schools Teachers' Qualification Improvement**

Quality assessment of teaching staff's qualification improvement must be carried out using the following control procedures:

- Input diagnostics - getting of information that allows us to differentiate the students according to the proficiency level of professionally significant qualities; receiving of information that allows us to adjust the teaching method taking into account the interests and needs of students; receipt of information, allowing students to conduct a self-test of professional competence; testing of measuring and control procedures used in the system of qualifications, etc (Table 1);

Table 1: The required competencies of the higher technical school teacher

Compe-tences	Criteria	Indicators
Gnostic (research) and self-education	The application of methods and techniques to identify dependencies between the purpose, content, terms, objects of educational process and results	<ol style="list-style-type: none"> 1. To find the necessary educational information; 2. To set goals, to plan, to organize their individual process of education and the trajectory of personal development of other entities of educational process; 3. To identify, solve, monitor, and correct the problem of self-education; 4. To find and benefit from the experience; 5. To evaluate the efficiency and effectiveness of the education received; 6. To explore the advantages and disadvantages of the activity, in the system of relations; 7. To investigate the factors of productive education, to analyze the status of the problem field in theory and practice; 8. To investigate the factors influencing the self-organization of educational process's entities; 9. To explore the strengths and weaknesses of their own work; to build on the strengths of their personality in problem solving
Organizational and communicative	Developing of the optimal model of relationships and interaction between all entities of educational process and effective personal self-organization	<ol style="list-style-type: none"> 1. To organize their own activities related to the solution of educational problems; 2. To organize the interaction, mutual aid and support between all participants of educational process; 3. To allocate efficiently their time and the time of participants of educational process on various activities; 4. To use an indirect impact on the organization of the activities of all participants of educational process; 5. To train the self-organizing activity of participants of educational process; 6. To build relationships on the basis of realization of programs of development (independence, confidence, etc.); 7. To encourage the development; 8. To teach communication (ability to establish contacts, to coordinate, to listen and hear others, to overcome conflicts, etc.); 9. To take decisions and responsibility; 10. To use computer technology.
Construction and design	The possession of theoretical methods of action in the development of a holistic process of training and education on the basis of progressive pedagogical technologies.	<ol style="list-style-type: none"> 1. To prepare personal self-education program (plan); 2. To develop educational-methodical complexes on the basis of modern knowledge; 3. To develop technological maps of educational material; 4. To establish intra-and interdisciplinary connection cycles of the studied disciplines; 5. To design of multi-profile and modular organization of educational process; 6. To determine the most rational forms, methods and technologies of educational process; 7. To choose the optimal structure of the whole process; 8. To determine the most productive structure of the classes; 9. To develop personal and collective reflection.
Social and personal	The definition of personal and social goals	<ol style="list-style-type: none"> 1. The ability to examine critically the phenomena and events in the world, Russia, particular region; 2. To identify the connection between past, present and future; 3. To assess social and personal trends related to health, environment, use of different types of resources; 4. To start the debate and develop their opinions; 5. To overcome the difficulties, conflicts; 6. To express themselves and their best qualities.
Adaptive	The ability to cope with current and projected situations to use the new information to update activity	<ol style="list-style-type: none"> 1. To apply new technologies to increase labor efficiency; 2. To be tolerant, flexible, resistant to rapid changes; 3. To be committed to transform themselves and others activities; 4. To respond adequately in terms of personal growth to changes in society

- The current diagnosis - is the tracking of intermediate results and the efficiency of the qualification improvement's process, identification of problems, difficulties of students, on this basis – updating of the content and forms of education;
- Final diagnosis – success evaluation of the training's passing by the trainees and determining of conformity degree of their professional competence to the declared category (for students on the category).

3.4.1. Input diagnostics

Input diagnosis is made in the form of entrance control and follow-up interviews. When carrying out of the input control the test and measuring materials in all subjects or tasks, compiled in logic for subjects that are read by the teacher are used.

The content of test materials includes the main questions of the minimum content of education in individual subjects. This tool

allows objectively assess the teacher's mastery of the content of the subject at a basic level.

The content of the tasks is necessary to develop taking into account the regulatory documents, including the Federal state educational standard of professional education, as well as local normative acts of institutions of qualification improvement training.

Input control can be supplemented by interviewing (individually with each student). In the interview process the reasons of possible detected difficulties are found made during execution of control and measuring tasks.

Differentiation of students is carried out according to generalization of the results of the input control and follow-up interviews. There are three conditional groups of students:

1. Having major gaps in knowledge;
2. Having sufficient knowledge and skills;
3. Having a high level of professional competence (including separately determined by the number of those who apply for the highest category).

Training's differentiation of courses is achieved by "exit" on individual educational paths for students based on the results of the input diagnostics.

3.4.2. *Current control*

This type of control is used during the course training and includes the assessment of students' tasks for independent work, their performances on practical training, etc.

3.4.3. *The final control*

The final control is the basis for a conclusion about the success of the listener's training course passing. Date of summing up of a course of training in teaching methods' module is announced to the students in advance. In cases of low individual rating of the listener - he is not recognized as successfully passed one of the training course.

Under PC the final control includes obligatory for all the students (irrespective of certification to any category) test procedures:

- a. Presentation of "business card" of the educational institution;
- b. Development of test materials for profession, the subject;
- c. The conceptual and terminological dictation;
- d. The exam in the form of a seminar - regulated discussions.

Thus, the model developed allows not only to obtain reliable and sufficient information about the quality of vocational schools teachers' training, but also to identify ways to achieve more effective results, to detect unrecorded things and introduce them into the logic of activity of qualification improvement system.

4. DISCUSSIONS

It should be noted that the question of diagnosis how to increase the level of professional competence in the process of educators' qualification improvement in the system of additional professional education is difficult to solve. Almost all the researchers note that measurement difficulties are related to the fact that it remains

unclear how to determine the necessary changes and how they are directly associated with a particular impact in the period of the training (Ingenkamp, 1991; Rachenko, 1990).

The researchers believe that evaluation of professional competence is performed by comparing of the obtained results with some norms, averages, and by comparing them with the results of previous diagnosis to identify the nature of the advance in the development and professional growth of a teacher and leader (Simonov, 2010).

The educational process of implementation of short and medium - term (from 72 to 144 h) educational training is unique because it is directed, generally, to solve emerging in pedagogical practice of relevant tasks. Therefore, for diagnosis it is necessary to have the indicators characterizing the level of professional competence of listeners before and after the development of appropriate educational curriculum.

5. CONCLUSION

Thus, features of the model of higher education teachers' qualification improvement involve its goals and objectives aimed at improving of research, self-education, organizational and communication, construction and design, personal and social and adaptive competencies of technical subjects' teachers. The proposed model includes the following components: Theoretical, presented by a systematic, competence-based, learner-centered, activity-based, individual creative approaches, principles of formation of the required competencies of higher technical school teachers' in system of their skills' improvement: Continuity, integration, variability, consistency, modularity; content, including the unit of technological support (multimedia, industrial technologies, psychological and pedagogical technologies), unit of scientific and methodological support of the higher technical school teachers' qualification improvement (training and methodological support, developing of teachers' potential, integration of scientific, educational and manufacture activities, research and publishing activities of teachers); criteria evaluation, involving the assessment of the training quality of the faculty through in-put, current and final diagnostics.

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