JSSER
www.jsser.org

Journal of Social Studies Education Research
Sosyal Bilgiler Eğitimi Araştırmaları Dergisi

2018:9 (2), 65-79

Methodical Training of Future Teachers as a Requirement of New Standards

Tatyana Anisimova[1] & Landysh Sharafeeva[2]

Abstract

The article presents the experience of the teachers of the Elabuga Institute of Kazan (Privolzhsky) Federal University to develop new educational programs for bachelors. The leading approach to the study of this problem is the analysis of existing basic professional educational programs for the preparation of bachelors of teacher education, which allows to conclude that it is necessary to introduce additional competencies. The developed training program is presented by the module "Methodological Preparation", the main purpose of which is to ensure students the ability to plan and implement the educational process in accordance with the requirements of the federal state educational standard of basic general education.

Key words: *teacher's occupational standard, labor actions, competences, federal state educational standard, preparation of bachelors of pedagogical education.*

Introduction

Occupational education in modern Russia is the preparation of bachelors able to work efficiently in dynamically developing socio-economic conditions. The bachelor must independently, quickly and economically find and use new scientific data, organize the research, use all modern sources of information, and also see, understand, theoretically substantiate and practically solve professional problems, that is, have certain intellectual and professional competencies.

However, all reforms in the field of education are impossible without solving the main problem – the training of a new type of teacher. A modern school require a universal teacher capable of building a comprehensive picture of the world at the level of the basic education (Aminov, 2014; Magmusov, 2013; Tarman, 2016) giving the integrated knowledge, while focusing on the student as a unique, unrepeatable personality, which is not so much to be taught according to the model, standard, stereotypes, as "to accompany" in intellectual and personal formation, development (Gavrikova & Pevznera, 2001; Valeeva et al., 2016).

[1] *Assoc. Prof. Elabuga Institute of Kazan Federal University, Russian Federation, Tatarstan, anistat@mail.ru*
[2] *Senior lecturer, Elabuga Institute of Kazan Federal University, Russian Federation, Tatarstan, shlandysh@yandex.ru*

In June 2016, Russia launched the second project on modernization of pedagogical education aimed at development of the Fundamental Occupational Educational Program (FOEP), combining the requirements of three basic documents: the occupational standard of the teacher (OST) (Occupational standard, 2013), the federal state educational standard of higher education in the field of training 44.03.01 Pedagogical education (FSES HE 3+) (Federal Standard, 2015) and the federal state standard for educational institution of the compulsory education (FSES CE) (Federal Standard, 2010). It should be noted that the occupational standards of teachers are studied in the works (Mayer et al., 2005; Thomas & Kearney, 2008; Nyshanova et al., 2014).

Within the framework of this project, the teachers of the Elabuga Institute of the Kazan (Privolzhsky) Federal University (EI KFU) began to develop new (modernized) basic professional educational programs in the field of training 44.03.01 Pedagogical education in two profiles "History" and "Mathematics".

This project is a logical continuation of the first project to modernize the pedagogical education in Russia. The description and results of practical evaluation on the first project are presented in the works of the teachers of the EI KFU (Anisimova, 2015; Gilmullin & Pupysheva, 2016; Aydarova et al., 2017; Fedorov, 2014). They point out that a transition from the traditional disciplinary to the modular principle of their formation must be carried out in the modernization of pedagogical programs (Mauch & Tarman, 2016). This principle is continued at the second modernization project. Developed by FOEP consists of 13 interrelated modules:

1) General cultural basis of higher education
2) Introduction to professional activities
3) Normative bases of professional activity
4) Culture of communications
5) Methodology, methods and organization of professional activities
6) Education, upbringing and development of students
7) Scientific basis of psychological and pedagogical activity
8) Design, management and implementation of educational processes in the main school
9) Developmental psychology of students
10) Fundamentals of a healthy and safe lifestyle
11) Theoretical bases of research activity / Design of educational programs
12) Definitive training

13) Methodical training

The author of the article, along with other teachers of EI KFU, participated in the development and practical evaluation of the programs of the last two modules. A literature review on the problems of the training of teachers, the analysis of the three standards of the OST, FSES HE 3+, FSES CE. The analysis revealed the need to introduce additional competencies (AC), which should have a teacher, and which are based on the work of the module "Definitive training" from the OST. The results of the implementation of the module "Definitive training", as well as the recommendations for its refinement are presented in the work following the results of the first two stages of practical evaluation (Anisimova & Ganeeva, 2017). Some results of the implementation of the module "Methodological training" were presented at the conference "Training of the Teacher of Compulsory Education: Challenges of Time and Implementation Strategies" in October 2017 (Anisimova and Ganeeva, 2017).

The purpose of this study is to present the results of the two final stages in the development and practical evaluation of the program module "Methodological training".

Method

The following research methods are used in this study: the analysis of scientific literature on psychological, pedagogical, philosophical, methodological and special aspects related to the field of study; the analysis of documents and literary sources (regulations, concepts, programs); conversation, pedagogical observations, questioning of students.

Experimental and testing work are carried out on the basis of the Elabuga Institute of the Kazan Federal University. The main goal of the pedagogical experiment is to test the assumptions of the hypothesis:

- the developed ACs are fully aimed at forming the readiness of the graduate to carry out his professional activities in accordance with the OST;
- the proposed program of the module "Methodological Training" is aimed at the effective formation of the developed ACs.

Let us consider the stages of the study.

At the first stage, the present state of the problem under investigation is analyzed in pedagogical theory and practice; a questioning of the students of different years is conducted to study their readiness to carry out the labor activities from a special module of the OST "Definitive training".

To study the readiness of the students for the implementation of the declared labor activities, a questionnaire was conducted for the EI KFU students of the 1st, 3rd and 5th year of study in the direction of training 44.03.05 "Pedagogical Education". In the questionnaire, the students assessed the level of his or her readiness (low, medium, intensive and high) to carry out the labor activities on a scale of 1 to 10. The results showed that in most cases, students note the intensive, and in some cases even the high level of readiness, which indicates that they do not fully understand the meaning of the questions of the questionnaire (Anisimova and Osedach, 2016). It's no secret that not all teachers are aware of the OST, and those teachers who claim to have studied the standard, a significant proportion is not aware of the information contained in it (Margolis et al., 2016). All of the above require the development of a new FOEP for the training of future teachers, which would take into account the requirements of the OST.

At the second stage, additional competencies and the module program "Methodological training" are developed. The data sheet is drawn up for each AC, the planned results of training are determined.

At the final stage, the systematization, comprehension and generalization of the study results are carried out; the theoretical conclusions are refined; processing and registration of the results of the research are carried out.

Findings

The module "Methodological Preparation" is one of the thirteen developed modules of the main professional educational program of higher education in the field of Pedagogical Education, refers to the variable part of the OPOP and is implemented on 3-4 courses from the 6th to the 7th semester. The purpose of the module is to form the ability to plan and implement the educational process in accordance with the requirements of the federal state educational standard of basic general education.

In the module "Methodical Preparation" the following tasks were set:

- formation of knowledge and understanding of the methods of collecting, systematizing, selecting and adapting information in accordance with the goals of the lesson and after-hour activities of students;
- formation of abilities to develop plans for various types of lessons, educational programs and implement them in the learning process;

- the formation of the ability to evaluate and analyze the results of their pedagogical activities and learning activities of the students in the process of teaching and, if necessary, adjust the educational process;
- formation of the ability to explore own professional activities.

The program of the module is implemented in the conditions of organizing the activity of the students to master the theory and methodology of teaching and has a practical focus (Tarman et al., 2015; Akhmetshin et al., 2017), which resulted in the application of modern methods for teaching the school children on the basis of programs, lessons and extra-curricular activities developed by the student.

The module includes several sections: "Methodology for teaching mathematics", "Methods of teaching the solution of problems in mathematics", "Internet technologies in mathematical education", "Practice of teaching mathematics in the main school", educational and pedagogical practices.

The volume of the module is 27 credit units (cu), of which 21 cu are assigned to various types of practices.

Mastering the module begins with the section "Teaching methodology for Mathematics", which is the main ensuring the awareness of:

- the content and principles of construction of school curricula and textbooks;

- the fundamentals of the theory and methodology of teaching the school course of the discipline, the basic principles of the activity approach, the types and techniques of modern pedagogical technologies;

- the features of teaching in different age groups of pupils and with special educational needs;

- modern methods of monitoring and evaluation of the educational outcomes of pupils.

the abilities:

- to collect, systematize, select and adapt the information to the lesson and extracurricular activities of pupils;

- to apply the mathematical apparatus and computer tools in pedagogical activity;

- to develop and implement a lesson plan and to apply the educational technologies;

- to development the sections of educational programs on the basis of a model;

- to evaluate and to analyze the results of teaching, to adjust the educational process as necessary;

- to carry out the reflection on their own pedagogical activity;

- to conduct the research work under the guidance of a supervisor;

- to organize the project and study and research work of the pupils.

the skills in:

- collection, systematization of the choice and adaptation of the information to the lesson and extracurricular activities of pupils;

- development of a lesson plan for mathematics and application of the latest educational technologies.

In the seventh term, all other sections of the module are mastered, as well as educational and pedagogical practices.

The student educational practice is one of the forms of the organization of the educational process aimed at forming the professional pedagogical activity skills.

The purpose of the training practice is the acquisition of experience in the execution of professional research tasks in accordance with the training profile of the "Teacher of basic general education", the acquisition of practical research skills in future professional activity, the development of professional competencies by means of practice (Ganeeva et al., 2015).

In connection with the development of informatics, its influence on the methodology of teaching mathematics is strengthened (Yiğit & Tarman, 2016; Korableva and Kalimullina, 2016; Korableva et al., 2017a): a certain style of thinking is formed, related to the use of computers, the coding of information; Information technologies are used to improve the efficiency of teaching. That is why the module (practice) "Internet technology in mathematical education" is included in the module, the purpose of which is to ensure the student mastering the Internet technologies necessary for the

pedagogical activity of the mathematics teacher in accordance with the requirements of the federal state educational standard of compulsory education (Lyubimova and Galimullina, 2016).

The program of the module was tested on the basis of Elabuga Institute of Kazan Federal University in the mode of network interaction with educational organizations.

Discussion

According to the student survey results and the comparative analysis of the educational standards, it can be concluded, that the FSES HE 3+ competencies do not fully correspond to the labor activities stipulated in OST, so it is required to introduce the additional competencies, directly aimed at the formation of the labor activities of the module "Mathematics". Table 1 presents the ACs, as well as the labor activities (LA), necessary skills (NS) and necessary knowledge (NZ) from OST, on the basis of which the competence is developed.

Table 1

Additional competencies

Competency code	Formulation of additional competence	Labor activities, necessary skills and knowledge from OST
AC-1	Able to form in the pupils the awareness of the absoluteness of mathematical truth and mathematical proof with an understanding of the meaning and the possibility of choosing different ways in solving the problem set.	LA: To form in pupils a belief in the absoluteness of mathematical truth and mathematical proof, to prevent the formation of a model of superficial imitation of actions leading to success, without a clear understanding of the meaning; to encourage the selection of various ways in the solution of the problem
AC-2	Able to form in the students the ability to adequately assess their own level of mastering mathematics, including using the mathematical methods	LA: Formation in pupils of the ability to give the mathematical proof and counterexample

AC-3	Able to form a mathematical culture in pupils, including special educational needs, using the mathematical language in the classroom and in extracurricular activities	LA: Formation in pupils of the ability to check the mathematical proof and to give the counterexample
AC-4	Able to form in pupils the ability to apply the mathematical apparatus and computer tools in the search for information, analysis and solving the educational and practical problems	NS: In cooperation with the pupils to analyze the educational and life situations in which the mathematical apparatus and mathematical tools (eg spreadsheets) can be applied, and the same – for the idealized (problem) situations described in words
AC-5	Able to create and use models of mathematical objects and processes in cooperation with pupils, using computer tools	NS: To master the basic mathematical computer tools: visualization of data, dependencies, relationships, processes, geometric objects; calculations – numerical and symbolic; data processing (statistics); experimental laboratories (probability, computer science)

The second and the third stages of practical evaluation of the program in the direction of 44.03.01 Pedagogical education, including the module "Methodological Training" were conducted in the period from January 19, 2017 to September 28, 2017. The module was practically evaluated at the Elabuga Institute of Kazan Federal University. The practical evaluation was attended by 46 students. The practical evaluation was carried out in the form of implementation of the educational programs in accordance with the methodological recommendations (Bochkareva et al., 2017; Korableva et al., 2017b).

The entrance to the module "Methodological Training" began with the following problem to be solved by the students:

To develop a lesson or fragment of the lesson on one of the topics of mathematics of grades 5-6 in accordance with the requirements listed below, considering FSES CE, and also using a textbook

from the list of textbooks recommended by the Ministry of Education of the Russian Federation. Present this lesson in the form of a technological map.

When solving the tasks, the following problems were identified:

1. Inability to set the planned results of the lesson.
2. The difficulty in relating the planned levels of achievement of training results and activities.
3. Difficulty in compiling assessment materials and evaluation criteria.

The Module "Methodical Training" is aimed at the solution of the above problems.

Conclusion

Development of the module begins with a section on the theory and methods of teaching the subject. The result of which was the study of the use of modern techniques for teaching students based on student-designed programs, lessons and extracurricular activities.

As part of the development of this section, students had the opportunity not only to prepare theoretically, but also the opportunity to visit real lessons at school, develop lesson plans tailored to the individual characteristics of children, consult with teachers, and master the labor functions necessary for the future teacher to carry out pedagogical activities in compliance with standards.

Each of the sections provided for a certain form of reporting.

As a report on the section "Internet technology in mathematical education" it is required to prepare a master class and perform self-presentation on the Internet. As a result of this work, students are to include in the report:

- a selection of web-resources and services on the considered problem.
- a selection of the URLs of the most relevant pedagogical communities, forums, chats, web conferences, etc.
- files and videos of the master-class conducted by the student.
- a description and the URL of the resource containing the self-presentation on the Internet.
- essay-reflection.

Table 2 shows the correspondence between the competences, educational results and descriptors (indicators) in the section "Internet technology in mathematical education"

Table 2

Planned Results of Training, Correlated with the Required Competencies of a Student

Competencies	Educational result	Descriptors (indicators)
AC-4. Able to form in pupils the ability to apply the mathematical apparatus and computer tools in the search for information, analysis and solving the educational and practical problems	Applies computer tools when searching, analyzing and selecting information and information resources of the Internet when solving a methodological and mathematical problem.	Applies various computer tools for self-presentation on the Internet as a teacher of mathematics.
AC-5. Able to create and use models of mathematical objects and processes in cooperation with pupils, using computer tools	Uses the Internet resources and models of mathematical objects to solve the methodological and mathematical problems.	Simulates real objects and processes using the Internet resources. Communicates on the Internet on pedagogical and methodological issues in the teaching of mathematics.

Similar work was carried out for each section of the module.

The final assessment on the module "Methodical training" is conducted in the form of "Certification", which includes the development and implementation of the lesson construct (a technological map) for a given topic for a particular class, analysis of the own lesson.

Based on the results of mastering the sections of the module, a questionnaire was conducted. Students are asked to answer the following questions:

1. Evaluate the quality of the lessons conducted using a 5-point system. Argument the assessment.
2. What sections (themes) have caused the greatest interest for you?
4. Were there any difficulties (in mastering the course)? If any, name the reasons.
5. Do you think the knowledge gained useful for your professional work? Give reasons why.

46 students of the EI KFU took part in the survey. The quality of the lessons was assessed by all students at 4-5 points (100%). The main arguments: the acquired knowledge is necessary in the professional activity of the teacher; the lessons were substantial; a variety of creative types of work in the classroom is used; the use of active and interactive teaching methods; cognitive and interesting didactic material.

The topics of interest were "Number, sum and product of natural divisors", "Equations and inequalities containing unknowns under the modulus sign", "Nonstandard methods for solving inequalities", "Boundless circle".

Difficulties for students arose when mastering the topics "Planimetric tasks of USE", "Parametric tasks of USE."

All students consider the knowledge acquired to be useful for future activities. The main arguments: the knowledge acquired is necessary in professional activity, it is necessary to understand the laws of development of algebra and geometry for solving the problems of training.

In the process of practical evaluation of the module it was shown that the proposed ACs contribute to the formation of the graduate's readiness to carry out their professional activities in accordance with the OST, and the program module "Methodological Training" is aimed at mastering these additional competencies.

However, the stages of practical evaluation showed that several sections of the module require improvement, namely, with regard to the requirements for the use of e-learning technologies, including open online courses; the requirements for educational and methodological support of the educational process, including the ratio of auditor and extracurricular activities, the volumes of employer involvement and the conditions for the implementation of programs using online training.

Acknowledgements

The work has been performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

References

Akhmetshin, E. M., Makulov, S. I., Talysheva, I. A., Fedorova, S. Y., & Gubarkov, S. (2017). Overcoming of intercultural barriers in the educational environment. Man in India, 97(15), 281-288.

Aminov, T.M. (2014). System of professional education in regions of pre-revolutionary Russia (through the example of Bashkiria). Voprosy Obrazovaniya. 3: 244-262.

Anisimova T.I. (2015). Forming Bachelors Labor Actions in Teacher Training When Studying Disciplines of Mathematical and Natural Science Cycle. *IEJME-Mathematics Education*, 10(3), 157-165.

Anisimova T.I. Ganeeva A.R. (2017). Features of subject training for future mathematics teachers. *Modern Journal of Language Teaching Methods*. - 2017. - Vol.7, Is.9. - P.634-641

Anisimova T.I. Sediment S.G. (2016) The study of the level of formation of labor activities in bachelors of teacher education [Electronic resource]. *Pedagogical innovations: from theory to practice.* URL: https://interactive-plus.ru/article/116200/discussion_platform (reference date: 12/20/2016).

Anisimova T.I., Ganeeva. A.R. (2017). Features of methodical training of future mathematics teachers. *Training of the teacher of the basic general education: challenges of time and strategy of realization.* Collection of scientific papers. Ed. R.A. Valeevoy. - Kazan: Fatherland, 2017. S. 23-28.

Aydarova, S. H., Giniyatullina, L. M., Sagdieva, R. K., Husnutdinov, D. H., Mirzagitov, R. H., & Gabidullina, F. I. (2017). Models of media education in teaching tatar language. *Espacios*, 38(60)

Bochkareva, T. N., Akhmetshin, E. M., Korotkova, A. L., Lyitkina, N. L., Nasipov, I. S., & Khaliullina, A. G. (2017). Research of students' cognitive activity. Espacios, 38(60)

Fedorov, A. (2014). Commitment to Asia. The Russian Academic Journal, 28(2). doi:10.15535/267

Federal state educational standard of higher education in the field of training 44.03.01 pedagogical education (bachelor's degree) "from December 4, 2015 No. 1426. Retrieved April 24, 2017, from http: //минобрнауки.рф/ocuments / 7995

Federal state educational standard of basic general education of December 17, 2010 No. 1897. (2010, Desember 17). Ministry of Education and Science of the Russian Federation. Retrieved April 24, 2017, fromhttp: //minobarnauk.rf/documents/543

Ganeeva, A. R. & Pavlova, P. A. (2015). Methodology of studying polygons using the computer system "mathematics". *International Review of Management and Marketing*, 5(4), 271-278.

Gilmullin M. F. & Pupysheva E. L.. (2016). Workshop on Design and Implementation of Education Programs. *Mathematics Education, 11* (1), (April 2016), pp. 35-44. DOI:10.12973/iser.2016.2104a.

Korableva O. N., Kalimullina O. V. (2016). Strategic approach to the optimization of organization based on BSC-SWOT matrix. Paper presented at the 2016 IEEE International Conference on Knowledge Engineering and Applications, ICKEA 2016: 212-215.

Korableva O., Kalimullina O., Kurbanova E. (2017a). Building the monitoring systems for complex distributed systems: Problems & solutions. Paper presented at the ICEIS 2017 - Proceedings of the 19th International Conference on Enterprise Information Systems, 2: 221-228

Korableva O. N., Razumova I. A., Kalimullina O. V. (2017b). Research of innovation cycles and the peculiarities associated with the innovations life cycle stages. Paper presented at the Proceedings of the 29th International Business Information Management Association Conference - Education Excellence and Innovation Management through Vision 2020: From Regional Development Sustainability to Global Economic Growth: 1853-1862.

Lyubimova E.M, Galimullina E.Z. (2016). Ensuring the readiness of the future teacher to implement information and communication activities in the context of strengthening the practical orientation of training. Problems and prospects of informatization of physics and mathematics education: *Proceedings of the All-Russian Scientific and Practical Conference*, Elabuga, November 14, 2016, edited by F.M. Sabirova (editorial editors) and others - Yelabuga: EI KFU. 2016. - 351 p.

Magmusov, T.A. (2013). School and children during the celebrations of the 300th anniversary of the romanov dynasty. Bylye Gody. (4) 30: 79-87.

Margolis AA, Arzhanykh EV, Gurkina OA, Novikova Ye. M. (2016). Readiness of teachers to introduce a professional standard: the results of sociological research. *Psychological Science and Education*. 2016. T. 21. № 2. C. 22-34. doi: 10.17759 / pse.2016210204

Mayer, D., Mitchell, J., Macdonald, D. & Bell, R. (2005). Professional standards for teachers: a case study of professional learning. *Asia-Pacific Journal of Teacher Education. 33*(2). 159-179. http://dx.doi.org/10.1080/13598660500121977/.

Mauch, J., & Tarman, B. (2016). A historical approach to social studies laboratory method. *Research in Social Sciences and Technology, 1*(2), 55-66.

Nyshanova, S.T., Baimukhanbetov, B. M, Abdigapbarova, U. M., Mukhamedzhanov, B.K. (2014). Developing Future Teachers Creative Abilities in Competence-Oriented Educational Process of High School. *Procedia - Social and Behavioral Sciences*, 116. 4287-4292. doi:10.1016/j.sbspro.2014.01.933.

Pedagogical education at the university: contextual biographical approach. Pevzner; NovSU them. Yaroslav the Wise. Veliky Novgorod, 2001. - 300 p.

Professional standard. Teacher (pedagogical activity in the preschool, primary general, basic general, secondary general education). (2013). Retrieved April 24, 2017, from http://www.rosmintrud.ru/docs/mintrud/orders/129

Tarman, B. (2016). Innovation and education. *Research in Social Sciences and Technology, 1*(1), 77-97.

Tarman, B., Baytak, A., & Duman, H. (2015). Teachers' views on an ICT reform in education for social justice. *Eurasia Journal of Mathematics, Science and Technology Education, 11*(4), 865-874. 10.12973/eurasia.2015.1445a

Thomas, S, Kearney, J. (2008). Teachers working in culturally diverse classrooms: implications for the development of professional standards and for teacher education. *Asia-Pacific Journal of Teacher Education* [serial online]. 36(2). 105-120. http://dx.doi.org/10.1080/13598660801971625/.

Valeeva R.A., Aitov V.F., Bulatbayeva A.A. (2016). The levels of English language acquisition on the basis of problem-solving and product-oriented tasks in the multilingual social medium. *IEJME: Mathematics Education, 11*(1). pp. 255-262.

Yiğit, M. F., & Tarman, B. (2016). How do different ethnicities approach to the education system and differences in turkey? *Italian Sociological Review, 6*(3), 339-353. 10.13136/isr.v6i3.119

Zaripova I. M., Ivanov V. N., Zaripova Z. F., Khataeva R.S., Ershova I.G., Merlina N.I., Ganeeva A.R., Pavlova E.V. (2015). Modern Requirements to the Content Selection of Teaching

Physics and Mathematics, Aimed at the Development of Design and Technical Competence of Technical University Students. *Journal of Sustainable Development*. 8(6), 104-110. DOI: 10.5539/jsd.v8n6p104.