

THE TUTOR SUPPORT TO THE BEGINNING MATH TEACHERS

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Abstract: The relevance of the problem is due to the fact that the system solution of the problems of training and adaptation of beginning teachers of mathematics is necessary. In the early years of professional development of young teachers, it is desirable to provide them a high-quality methodical support – the tutor help. The purpose of the study is to improve the professional training of future teachers of mathematics on the results of the tutor support for young teachers. The tutor support is aimed to identify the main errors and difficulties, faced by young specialists and their causes; and to aim the results on the adjustment of methodical training of future teachers, promoting competitiveness, ensuring success in a chosen profession. Monographic study of young teachers' activity at school №165 of Kazan was conducted by the experts of the Department of theory and technology of teaching mathematics and computer science of the Institute of mathematics and mechanics named after N. I. Lobachevsky of Kazan Federal University. The conducted research allowed to see the main shortcomings of the training of young teachers, namely, ignorance of age-specific psychology and pedagogical techniques; the inability to work out ways of working and to teach the solution of mathematical problems etc. In accordance with this designed an individual trajectories of professional development of young teachers were worked out, as well as the ways of improving the content of training of future teachers of mathematics.

Key words: training of future teachers, the beginning teacher of mathematics, the adaptation of the beginning teachers, tutor, tutor support.

1 Introduction

School teacher lays the foundations of quality mathematics education, on which the welfare and safety of any state depends. On his competence, literacy, professionalism depend the welfare, the future of our country.

In 2013 the Concept of development of mathematical education in Russia was adopted, in which the HR problem was named as one of the main: "there is not enough teachers who can teach mathematics effectively. Most of the graduates do not meet the qualification requirements, professional standards, have little experience of teaching activities and application of pedagogical knowledge" (The concept of development of mathematical education in the Russian Federation,2017).

The Tatarstan Republic is experiencing a high demand for teachers of mathematics, their average weekly load is 25-29 hours. The average age of the teachers in refresher courses is 50 years, and the courses involve teachers of geography, chemistry, graduates of other institutions. Despite the grant system, we have to acknowledge the bad placement of young teachers in the school. The reasons for this are the lack of serious guidance to the beginning teachers, their biggest weekly load, the distribution of classes according to the residual principle. The spaces in a special, psycho-pedagogical and methodical training of future teachers also affect.

Hence, the need for a systemic solution to the problems of selection, training, certification and employment of teachers-mathematicians exists. Of particular importance are the early years of professional formation, which need to provide high-quality methodological support – tutor help. The problems of tutor support to young teachers are engaged in foreign and domestic researchers. Their works are devoted to study the effectiveness of remote forms of such supervision (Agnaldo et al,

2016); including online learning (Kao Tai-Chien Chen et al, 2015) ; work under the guidance of a university mentor (Sarah Bansilal,2015); programs of targeted training in the professional development system (Zhizhina,2014; Ignatieva,2009).

In this regard, we consider the purpose of the study in the improvement of professional training of future teachers of mathematics (FTM), as a result of the tutor support for young teachers.

Objectives of the study:

- the identification of main difficulties and mistakes of young teachers;
- the determination of their causes;
- the development of individual trajectories for the professional development of young teachers;
- the adjustment of special, psychological-pedagogical and methodical training of BOOM (young teachers).

Currently the Professional standard for teachers of mathematics is been developing, which is based on the idea of the Concept of mathematical education: "The main task of the math teacher is the formation of students' skills and readiness to formulate and solve new, not previously encountered, tasks in the respective areas. At the same time ... he will teach students but not just give them the finished mathematical knowledge in the form of a system of definitions, proofs, and recipes" (The concept of development of mathematical education in the Russian Federation,2017).

You need to rebuild the training system for BOOM: to move from "knowledge" paradigm to a competence one. At the Department of theory and technology of teaching mathematics and computer science of the Institute of mathematics and mechanics by N. I. Lobachevsky of Kazan Federal University are constantly searching for new ways to improve the effectiveness of special and methodical training of BOOM. The communication with teachers on courses of improvement of qualification and retraining plays an important role, when reviewing creative work, while the implementation of scientific management in schools, joint teaching practices. The first years, a period of adaptation are of particular importance in the professional development, retention of personnel in the school. Universities should maintain the contact with graduates, which often occurs formally, and directly receive feedback, as a rule, fails. The Department has carried out systematic observation and tutor assistance to the beginning teachers during their adaptation in high school № 165 in Kazan. It should be noted that such forms of interaction of University teachers with beginning teachers are also implemented abroad (Paivi Perkkilä, Paivi Valli,2013; Janet,2015).

Tutor (supervisor) is translated from English literally as "teacher-mentor". Tutor – mentor – facilitator has the position, accompanying and supporting the process of self-education, individual educational route (Erofeeva ,2015). Accordingly, for the successful establishment of the young teacher in his professional activity, the following techniques, methods and forms the tutor support were used: conversations, pair and group tutor consultations; joint planning of lessons; visits and analysis of lessons; master classes; work with students in the class.

The purpose of this activity was to identify the main errors and difficulties faced with young professionals; analysis of the reasons; work to overcome them; and, consequently, the adjustment of methodical training of BOOM, contributing to increase the competitiveness of graduates, to ensure success in a chosen profession.

The observations revealed the inconsistencies that hinder success in their professional activities:

- between the theoretical knowledge of young teachers and the ability to apply them in practice;
- between the notions of pedagogical work, "a success situation" in the period of teaching practice while studying at the University under the guidance of experienced supervisors and independent work after graduation.

2 Methods

For the solution of research tasks the following methods were used:

theoretical (analysis of pedagogical, psychological, methodological literature);

experiential (interviews, observations, review of school documentation in 2015-2017).

We present data from the monographic research of young teachers' activities.

Graduates Z. and L. graduated from the Pedagogical faculty of mathematics and mechanics of Kazan Federal University with honors. The weekly load of each is 25 hours. Experts visited and analyzed for 30 lessons.

Graduate Z works at the school the first year in 5-th grades. The teacher is motivated for a job, but inert, not active. Conducts lessons according to plan, sometimes takes into account the characteristics of the class. Increasingly she is good at the lessons in classes where there are no discipline problems, and she can implement the plans. Z believes that raising the voice is the main means of disciplining the group.

The following causes of difficulties arising were revealed:

- subjective - personal, including the underdevelopment of the emotional sphere (conducts lessons monotonously, ordinary, not always able to interest the class);
- objective – lack of experience, a large weekly load.

A graduate L is motivated for the work of a teacher, has strong organizational and mobilizing skills. Has been working in this school from the last year at the university. Work experience is 2.5 years. Has big weekly load, inability and lack of time for self-analysis and self-education hinder professional growth. L feels the need in professional communication.

Teacher E (a graduate of the mechanic and mathematical faculty). Experience of work in this school is 3 years. 20 lessons were visited and analyzed. The teacher uses their potential (mathematical and methodological) not fully. Not always properly prepared for the lessons, not able to formulate clearly the purpose of the lesson, which does not allow to the correct selection of content and teaching methods. Often gives complicated home work, which was not studied in the classroom.

3 Results and discussion

Visiting lessons of the graduates of the mathematical and pedagogical departments of IMM provides a unique opportunity to obtain feedback that allows you to see the main disadvantages of the methods of professional training: lack of knowledge of age psychology and pedagogical techniques; the inability to refine the methods of mathematical actions, and to teach problem solving and etc. It is worth noting that the beginning teachers have the theoretical knowledge (all of them are honored students), but the appropriate level of skills to work with these knowledge is not achieved. They "sink" the following functions: organizational, motivational, communicative, constructive, mobilization. The gnostic function especially suffers. A young teacher is not yet able to provide better learning of mathematical concepts, algorithms, properties and ways of action. Emotional state of the teachers under control is desired to be better: they

experience feelings of confusion, frustration, anxiety, stress. Often need psychological assistance from a senior mentor.

Such assistance is organized by our Tutors. Accordingly, an individual trajectory of professional development is built for every young teacher. As the initial recommendations to the teacher Z is suggested:

- to conduct lessons in parallel classes in one day on the same topic, which is convenient from the standpoint of Scientific Labor Organizing (SLO) of teachers and self-improvement;
- to formulate the lesson goals better and to select the content of the lesson and teaching methods according to them;
- to implement the method of working with the concepts, tasks. To pay special attention to the methods of training of individual ways of mathematical actions;
- to improve pedagogical technique. Use feedback, or this, for example, the lesson should be finished by conducting independent work, which includes exercises from previous homework.

To the teacher L is recommended:

- to improve the quality of students' knowledge;
- to improve pedagogical technique. To learn how to install a friendly, but demanding relationships with students;
- to organize an independent educational-cognitive activity of pupils in the lessons;
- to continue working on formation of cognitive interest of students;
- to study and try to implement the technology of cooperation with students in the classroom, showing her attitude to mathematics;
- to apply active forms and methods of teaching.

Recommendations to the teacher E:

- to consider the forms and methods of work, allowing to increase the level of knowledge, skills and abilities of students. Accordingly, to apply the collective learning method (CSR), integration of didactic units (UD);
- not to transfer knowledge in finished form, and to organize UPDO for obtaining new knowledge (to create problem situations, to rely on the subjective experience of learners, to use the "appropriate tasks" methodic, etc.);
- to pay more attention to independent work of pupils in the classroom;
- to work with not one student but with the whole class in the lesson;
- to consider the content of the work in class and at home;
- to achieve awareness and strength of knowledge. To read special literature on the design of the lesson (Manvelov, 2005).
- to increase the interest of students in mathematics using different methods of stimulation.

In addition to the individual recommendations, the general guidelines to all the teachers were developed:

- to manage the activity of students throughout the lesson, to use various activities to achieve a positive motivation (through evaluation, oral approval, etc.). To instill students with love and interest to mathematics by the personal example of the teacher;
- to implement requirements of the new Standard while the introduction of new concepts, relying on the subjective experiences of students, to pay more attention to independent and research work in the lesson, to carry out an individual approach;
- in order to take into account the specifics of the pupils of the 5th classes, to study the special literature on the psychology of educational activity of younger pupils. To attend math lessons of primary school teachers;
- when selecting the content for the classroom and at home to pay attention to a variety of tasks, to consider priority tasks for development of cognitive interest of students;

- to consider carefully the method of training students to solving word problems. To pay special attention to methods of testing individual methods of mathematical actions;
- to pay attention to the emotional component of the lesson, positive emotions must prevail with the teacher and students. The optimistic component of the pedagogical activity should become the main;
- it is necessary to conduct and analyze the results of the reflection at the end of the lesson;
- to use different methods of disciplining students;
- to use the health saving technologies (physical flexing, positive emotions, etc.).

4 Insights

Observation of professional activities of the beginning teachers showed a need to increase the amount of practical training, to improve the methods of their performance and to bring the teaching methods in the University closer to school methods. With the aim of increasing competitiveness, promoting success in their chosen profession, reducing the period of adaptation, it is proposed to apply an innovative treatment technology to future teachers. We consider the method of "learning in reverse" to be promising for the actualization of knowledge in elementary mathematics and methods of teaching mathematics. First, students are offered a task, which they perform at home themselves, then in the classroom together with the teacher they discuss possible solutions of tasks or problems.

It is also necessary to improve the content of training of bachelors. For this to include into curriculum the courses on "Pedagogical mastering and technique" (where methods of disciplining students and maintaining their interest and attention in math class are taught), and on the final course - "Actual problems of methodology of teaching mathematics" (the use of didactic games, entertaining tasks, methods of projects and modelling in the teaching of algebra, geometry, etc.).

You should pay special attention to the psychological component of training future math teachers, namely:

- development of motivational aspects (to consider not only the attractive side of the profession of a teacher, but also to recognize the importance of its public mission);
- development of volitional sphere (of duty, responsibility, discipline);
- development of the emotional sphere (feelings of satisfaction and enjoyment from working with children, feelings of joy from achievement of psychological well-being, and hence a successful end result). Emotional stability is a professionally important quality of the teacher (Rudenko, 2008);
- development of personal qualities (confident in necessity of chosen profession, pride for the future generation, etc.).

5 Conclusion

On the basis of the studies the difficulties in training of young teachers were revealed, related to:

- the contents of the subject "Mathematics" (insufficient level of generality and systematization of mathematical knowledge, the insufficient techniques and methods of actions, algorithms);
- the means and methods of pedagogical influence on students (the difficulty of formulating and solving pedagogical problems, the inability to consider past mistakes, lack of flexibility to modify tasks in the course of a lesson, the inability to organize the UPDO, poor managing of the discipline);
- the individual psychological characteristics of teachers (temperament, volitional qualities, emotional sphere, etc.);
- the lack of reflection and a low criticality in relation to themselves. Young teachers do not see themselves as the cause of the failures, the shortcomings in their own work.

Based on the foregoing, recommendations for the young teachers of mathematics for the preparation and conduct of lessons were worked out:

- to create pedagogical conditions for self-obtaining of knowledge by the students, as they can not be transferred in a ready kind;
- to enable students to search, study and solution of significant problems, primarily, the problems of the environment, the solution of which is directly related to the real (environmental and economic) situation in their lives to motivate learning;
- to design the content of training, based on systematic knowledge and integrative abilities of students;
- to stimulate future teachers of mathematics, encouraging their activity in solving mathematical problems and organizing a constructive dialogue;
- to choose methods and forms of education, allowing students to express themselves, to defend their own point of view, to solve problems, to anticipate situations, to develop their intuition.

However, it is necessary to carry out the reflection of professional activities (introspection, self-evaluation, self-improvement), allowing to assess adequately the level of professional skills, the causes of failures and mistakes, and also the ways of their elimination.

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