

The Structure and Content of the Module “Research and Experimental Activities of a Teacher”

Nadezhda N. Savina
Kazan Federal University, Kazan, Russia

Abstract: The study considers the problem of a future teacher preparation to a professional research. The focus is on the results of the following module structure and content development: “Research and experimental activity of a teacher”. The structure of the module includes the basic disciplines (“The research activity of a teacher” and “Experimental work in educational institution”) and divergent disciplines (“Organization of research activity among pupils”, “Educational diagnosis”, “Research culture and professional growth of a teacher”) as well as the program of educational and research practice, the implementation of which involves the network interaction of a university and a secondary school. The study experience of future teacher preparation practice for professional and research activities at a university shows that the structure and the disciplines of the module are designed for the first time, and differ by innovative nature in respect of the system, structural-operational and competence approaches for the module development, the introduction of teaching and research practices in it through a network interaction with secondary schools.

Key words: Module, a student, a bachelor, a teacher and a researcher, research, pedagogical diagnostics, students, pedagogical experiment, professional development, teaching and research practices, network interaction, school

INTRODUCTION

One way improving the quality of professional work among teachers is to involve teachers in research activities. The operation in this direction is performed in many countries. For example, Ioannidou-Koutselinia and Patsalidoua (2014) consider the research work of teachers as an effective activity for the realization of new ideas and practices, and more importantly for the development of self-awareness among teachers and school managers. For example, they write that a two-day workshop was held in Cyprus in the framework of the project funded by the European Commission. During this workshop teachers and school administrators were acquainted with the philosophy of research and development activity, its epistemological background and procedures. Therefore, it was revealed that organized case studies proved to be an effective method contributing to the changes in attitudes of researchers and teachers and the improvement of their professional level.

In Singapore, the encouragement of a practical teacher request with limited research skills to perform research on the problem that appeared during his activities is considered as an effective form of the educational process improvement and the implementation

of changes in it. Teachers may identify problematic issues and with the help of mentors, contribute to the change of practice. The request of a practitioner on the investigation may be defined as “the systematic form of joint, self-reflexive, critical team inquiry and the investigation may be conducted with research participants” (McCutcheon and Jung, 1990).

The Norwegian scientists Munthe and Rogne (2015) noting the special role of research in the preparation of future teachers acknowledge that it is still unclear in an undergraduate education. The methods of student involvement in the study, the covered topic January 2, 2016 and even the notion of student study varies depending on disciplines, colleges and universities. They examined the difference in terms of “research” and “query” and identified a number of research characteristics which do not necessarily appear in a query. In their opinion, these include the fact that the appropriate techniques and methods are used during the study, using the literature in the study area. It is the activity and knowledge available for review teachers receive such knowledge as the result of research. This knowledge may be applied in the work of other researchers. A request may meet these requirements sometimes but mostly it does not. It may be systematic.

The thing may be about the study of the literature on a corresponding subject but it is not designed to obtain the results for general public which may be checked and provided to others. In this sense, a request may be described as a practice based evidence or the evidences reported by practice. Munthe and Rogne pay attention to the fact that the difference between these concepts is important for the leaders of teacher education and the employers of teachers. It helps to establish the form of training in the field of obtained or studied pedagogical education and a teacher readiness for independent research (Munthe and Rogne, 2015).

The research aimed at the search of ways preparing future teachers for professional and research activities at the level of master's and doctoral theses have been carried out in Russia since, the late 70s of the XXth century. This is due to increasing awareness of a teacher research role to improve the quality of a teacher pedagogical practice. But, the system of future teachers preparation for professional and research activities at school is almost absent in Russia. This state of affairs reduces the autonomy of school teachers in dealing with many professional problems causes psychological barriers in their innovation activities, prevents the willingness to take risks, to take responsibility for the decision, etc. At the same time, a teacher meets constantly new demands. He often finds himself in situations of uncertainty, encouraging him to conduct an independent search for ways out which make the presentation of interest in professional and research activities not only by scientists but also by teachers and practitioners. Thus, we may talk about the contradiction between the need for pedagogical practice among teachers and researchers and the unavailability of higher vocational teacher education for their preparation.

MATERIALS AND METHODS

Research: The need of a comprehensive school for teachers and researchers is reflected in the documents governing the training of teaching staff in Russia (Anonymus, 2010, 2013, 2014; Belyaev, 2014).

Large-scale projects are developed due to the accepted decision to increase the quality of teacher education in the country. One of them is "Strengthening of training practical orientation for future teachers in the bachelor programs within an enlarged group of the profession "Education and Pedagogy" in the direction of "Teacher Education" (Teacher of general education) by organizing the network cooperation of educational

institutions implementing the programs of higher education and basic general education". This project developed the structure and content of the module "Research and experimental activity of a teacher". The purpose of the module is the formation of a teacher readiness to the subject-author research and experimental educational activities. The mastering of module disciplines by students should provide a solution to such problems as:

- The development of motivation among future teachers to professional and research activities
- The development of basic methods for scientific and pedagogical research, the methods of needs diagnosis and the capabilities of students in the field of education
- The development of skills and abilities necessary for a study program and a study plan development
- The development of research forms and methods and experimental work at school, taking into account professional and ethical standards in the activities of a teacher and others

In the course of module disciplines study, students should acquire the following competencies: the ability to independent organization and education; the awareness of a future profession social significance; the readiness for professional activity in accordance with the legal documents of education sphere, the ability to use modern methods and technologies of training and diagnosis, the willingness to use systematic theoretical and practical knowledge to formulate and solve research problems in the field of education and other fields. Besides, future teachers shall master such labor actions as the systematic analysis of studies and approaches to learning effectiveness; realization of educational opportunities in respect of various activities of a child (educational, game, work, sports, research, artistic, etc.); the use of diagnostic methods to assess the levels and dynamics of a child development, etc.

The structure of the module consists of two basic and three variative disciplines. The logic of module parts development by students includes the study as the first such a basic discipline as: "The research activity of a teacher" and completed by the study of another basic discipline named "Experimental work in educational institution". During the period between the study of these disciplines students are offered to choose two of three variative disciplines (in the process of a developing experiment students studied all variative disciplines). The

module also includes the program organized in parallel with the study of basic disciplines, diverse educational and research practices and educational events. Educational events were presented by meetings with practicing teachers and school directors who signed an agreement on network cooperation in the process of student preparation to research and experimental activities.

The module disciplines reflect historically related and established research activities of a teacher which allow to talk about the presence of systemic relations between them. The study of each discipline and educational and research practice involve two credits (36 class room and 36 of independent student work).

The aim of the first basic discipline development "The research activity of a teacher" is the development of a future teacher readiness to research activities in a secondary school. The discipline content is revealed by such topics as "Scientific and pedagogical research. Teaching science and pedagogical practice", "a teacher as a researcher", "Methodological bases of psychological and pedagogical research", "Research program development technology" and others.

In accordance with the professional standard of a teacher students shall develop the ability for independent work, including research. The purpose of variative development of the discipline "Organization of pupil research activity" is the readiness of a future teacher to the organization of pupil research activity in secondary schools. The thematic plan of this discipline includes the following topics: "Socio-economic and psycho-pedagogical preconditions of pupil research activity organization", "a teacher as the leader of schoolchildren research activity", "Pedagogical bases of pupil research activity organization", "Organization of a scientific society operation at a school", etc.

The next variative discipline is "Pedagogical diagnostics". The purpose of its teaching is the readiness of a future teacher to diagnose the problems of education in a secondary school and improve its quality. The content of this discipline is revealed in the following themes: "The essence and functions of pedagogical diagnostics", "Pedagogical diagnostics in the professional work of a teacher", "Diagnosis of schoolchildren education", "The methodology of a questionnaire development", "The methods of an observation program development", "Generalization, analysis, evaluation and the interpretation of diagnostic results", etc.

The third variative discipline is the "Research culture and professional growth of a teacher". The purpose of its

development by students is the readiness of a future teacher for the subject-author professional activity. The content of the discipline is reflected in the following topics: "The research culture and its importance in the professional and personal growth of a teacher", "The main trends of a teacher professionalism improvement in the process of research", "The study of teaching experience and the creation of a new one on its basis", "Conceptualization of a teacher professional activities by a teacher", "The methods of writing an article", "The forms of testing the results of a subject-author activity of a teacher", etc.

The second base discipline "Experimental work in educational institution" completes the module study. The purpose of its study is the development of future teacher readiness for the participation in large-scale experiments carried out by the Ministry of Education and Science of Russia and local experiments at the institutions of secondary education. The thematic plan of the discipline includes the following topics: "Modernization of the general secondary education and pedagogical experiment", "Experimental schools, their types and content of activity", "The structure of pedagogical experiment program", "Examination of pedagogical experiment program", "Pedagogical experiment planning and organization", "The criteria of pedagogical experiment effectiveness and diagnostic tools", etc.

Along with the teaching of considered disciplines, the educational and research practice of students is organized. Its main goal is the development of research activity primary experience in education. In the course of teaching and research practices, depending on individual and personal characteristics of students as well as on the nature and capacity of their assignments, students work individually or in small groups and master the diverse experience of research. This kind of practice provides a network cooperation of a university and a school and the practical trend of a future teacher preparation process which is one of the main conditions for its effectiveness increase.

Theoretical analysis and synthesis, the mental experiment. The module subjects underwent an experimental testing. Total 70 students of III and IV courses from Elabuzhsky Institute of Kazan Federal University took part in this testing. An ascertaining experiment was conducted prior to a forming experiment using the method of questioning.

In order to determine preliminary, the effectiveness of experimental and research activity the qualitative research methods that do not require the quantitative processing

of obtained data (active observation, the analysis of essays, the analysis of student research products and a conversation) were used mainly.

RESULTS AND DISCUSSION

The effectiveness of an experimental research on the testing of module disciplines was determined by such criteria as motivational, cognitive, gnostic, technological and reflexive one. Due to the limitations of this article scope, we focused only on a motivational criterion.

The survey results of students at the beginning of the experiment revealed that 20% of respondents believed that teachers are engaged in research activities forcing the school administration. About 71% believed that a teacher should perform this type of professional work at will. In general, 5.71% of the students corresponded to high levels of motivation to research and experimental activities, 58.57% of the students corresponded to average levels and 35.71% of the students corresponded to low levels.

At the end of the experiment, the majority of students (87%) have become aware that the research activity of a teacher is the requirement of time, aimed at the quality of the educational process improvement at school. In their written papers (the review about school attendance, essay) they appreciated positively the experimental process of their preparation for professional and research activities at school. They liked the meetings with a director and school teachers. A strong emotional response was shown by them after the student observance according to their developed programs. Students showed a particular interest to the preparation and conduct of interviews with teachers and students questioning.

In the essay on the theme "Research activity includes a reward" the students, for example, wrote: "Research is one of the most powerful tools for a teacher to achieve good results, to develop the competitive advantages for a teacher and individual students which creates the prerequisites for an efficient solutions of many educational problems". They call the development of creative potential, the formation of research competence, independence, commitment, persistence, mobility, etc. as the reward for research activities.

The preliminary results show that students have a gradual decrease of a negative attitude to the professional research manifested in the beginning of an experiment, and inner motives to it are developed. A special role in this is played by a variety of tasks (search, problem,

intellectual, creative and research ones) offered to students and their implementation on the basis of a secondary school.

At the end of the experiment to a high level of motivation development to research and experimental activity one may attribute 23.19% of the students, to the average level 63.77% of students, to the lowest level 13.04% of students. As the result of purposeful work on student motivation development to research activity of a teacher the evidence about its effectiveness were obtained.

Summary: Based on the modular approach an innovative practice system of future teachers training is developed, including all areas of professional and research activity of teachers at school. Its implementation in the practice of future teachers preparation at high school may significantly improve the quality of their professional activities.

During the experiment, it was found out that the organization of network interaction and higher and secondary school impresses students and enhances their motivation for professional and research activities at school but also the efficiency of a new system implementation concerning the training of a future teacher to the research work as a whole.

CONCLUSION

The discipline module structure and content presented in the article may be used as one of the possible options for the preparation of students to professional and research activities in the system of general secondary education. An experimental and research verification concerning, the module discipline effectiveness showed their efficiency.

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