

Formation of Scientific Culture in the Process of Preparation of Would be Masters

V.N. Pravdyuk, N.G. Khmyzova, A.M. Mityeva, E.N. Koveshnikova and M.I. Suganova
FSBEI HE, Orel State University named after I.S. Turgenev, Oryol, Russia

Abstract: In the study, the aspects of professional preparation of would be Masters who are ready for teaching activities are considered. Attention is paid to the activation of individuals by involving them in research. It contributes to systematic formation of scientific competencies, mastering of scientific knowledge, forming of knowledge in making research and valuable personal characteristics of a would be scientist through increasing cognitive activity and development of creative skills. In a learning environment, scientific culture for would be Masters is forming intensively thanks to the use of basic pedagogical approaches system, activity, personal, learner-centered, self-organization and development. It's necessary to notice that the development of information culture takes place at the same time. The introduction of information technologies allows for the activation of individual work of Masters from the holistic view of the subject to creative activity.

Key words: Scientific culture, informational culture, master, research work, approaches learner-centered

INTRODUCTION

The modern transition of the unified European education system sets task in front of pedagogical science of forming and developing scientific knowledge of a pedagogue-researcher who masters a technology of doing a research work in the upbringing and educational process.

Thus, the demands on preparation of a master-pedagogue of professional education are increasing: forming of skills in writing a research work due to individual activities in planning and pedagogical designing of educational process, taking into account an introduction of innovate technologies: attraction to participation in mastering innovative educational environment of an institution; involvement in scientific and pedagogical cooperation; teaching of methods in conducting a pedagogical experiment and introduction of scientific achievements into theory and practice of educational process; development of one's independent scientific and occupational qualities (Mityeva, 2011).

To solve the preset tasks, we have analyzed the pedagogical researches in which the system of forming research culture of students in an educational environment is considered and learnt (Khmyzova, 2013). In connection with the realization of federal standards of higher education, it's necessary to introduce new approaches and technologies to form professional competencies which are provides for preparation of masters of vocational training (by industries) (Nikulnikov *et al.*, 2015).

Exploring the relevance of the topic is carried out within the research program of the school of sciences in the process of which the following methods are used: theoretical analysis of scientific literature, analysis and synthesis); empirical (questionnaires, interviews, testing and cross-sectional method); statistical (processing the studies, primary statistical analysis, correlation analysis and analysis of the results of experimentation).

MATERIALS AND METHODS

The system of professional education in Russia is an independent branch which provides the training of teaching personnel on a specialty "vocational education", including >50 specialties for multi-professional and multi-level educational institutions. Significant transformations in higher education due to the changes in social and economic conditions in the country demand the training of a competent and enterprising teach who can rationally use the potential of his scientific knowledge. Orel State University named after I.S. Turgenev provides a training for masters of professional education (by industries). In the process of their preparation, the teachers at the university pay attention to the student's active participation in the educational process in the magistracy. It allows would be Masters to adapt quickly in the growing flow of scientific information, focus on a specific research and on the implementation of the plan of their research work. Information and computer technologies help them to find solutions for the objectives (Nikulnikov *et al.*, 2015; Pravdyuk and Derepasko, 2014; Slastenin and

Podyumova, 1997; Khmyzova and Pravdyuk, 2011). At present, the intermediate vocational institutions are interested not only in competent and qualified masters of professional education who are ready to accomplish the following types of professional occupations: educational and vocational, research, pedagogical and design, organizational and technological and apprenticeships.

In the context of this research, it's necessary to analyse the new federal standard of higher education in which it's defined that a graduate who has completed the master's degree program should have the following competencies for his research work: ability and willingness to explore qualitative and quantitative needs in the labor force (specialists) for the branches of the region's economy (municipalities) (PC-8), (PC-Professional Competencies); ability and willingness to explore the needs in educational services of the students of various categories (PC-9); ability and willingness to identify employer's requirements on the level of worker's training (specialists) (PC-10); ability and willingness to organize a research work in the educational organization (PC-11); ability and willingness to formulate a research task in the field of professional activity and to solve them through modern technologies and to use Russian and foreign experience (PC-12); ability and willingness to make scientific documents, reports and articles (PC-13) (MESRF, 2015).

In the development and realization of the master's degree program, the university focuses on the particular professional activity to which a master is preparing on the basis of needs of the labor market, research and logistical resources.

We have observed that individual scientific and cognitive activity of would be masters-teachers of professional education has a problematic and practical nature. The success of his following activity depends on the depth of knowledge and skills in making an individual research (Mityeva, 2010, 2011). A vigorous individual scientific and finding activity is an element of the research process: collecting of scientific material, its analyses; preparation of reports, papers and representation of them at the conferences; participation in the development of educational projects, survey, experiments, etc.

As part of the training in the magistracy, scientific culture of would be Masters is formed. The efficiency of it depends on the level of formation of necessary competencies for making a research activity. A research competence-is a readiness of the pedagogue's personality that characterizes by acquisition of skills and ways of a research activity on the level of technology in the search for new knowledge for solving educational and industrial problems, forming of pedagogical process in accordance

with introduction of innovative technologies taking into account the changing pace of development of modern society (Mityeva, 2014; Ovsyannikova *et al.*, 2014).

The Master's timely involvement in the research work, their familiarization with the research methods, skills to find material in the flow of information, to store it and use it to help them adapt quickly in the scientific environment of the university. The academic adviser as well as an example of scientific activity of the faculty members have an impact on the formation of magistrate's activation of individual activity.

It must be noted that the magistrate's academic advisor plays a special role in the forming of views and pedagogical position. Educational cooperation between teachers and students helps in the following in accomplishing the objective of the research: master modern methods of finding scientific information, formalize theoretical chapters of the thesis; organize an experiment and approbation of methodologies in the educational institution; organize a project based on the results of the work carried out; master methods of processing of mathematical data; acquire a higher level of personal social activity, etc.

Therefore, the method of pedagogical cooperation which results in a formed identity of an amateur researcher can be formed by a number of indicators:

- Timely application in the results of science works of Russian and foreign scientists in the educational process and the ways to integrate them in practice
- Particpance of the academic advisor in giving consultative and methodical help, in monitoring the writing of a research of would be Masters and in obtaining scientific results
- Integration of informational technologies in forming scientific knowledge
- Example of personal traits of an academic advisor and other teachers (discipline, responsibility, dedication, assiduity, etc.)
- Integration of pedagogical conditions in the master's studying process for the student's successful perception of the purpose of research and the attainment of the objectives.

The scientific culture of an amateur researcher in the pedagogical field is considered to be a necessary process of the would be Master's professional teaching in which the following aspects are coupled in an integrated unity: motivational, substantive-processual, professional-personal willingness to generate scientific knowledge, abilities, skills and creativity. At the same time, attention should be paid to pedagogical approaches

of the would be Master's formation of scientific culture: system, activity, personal, learner-centered, self-organization and self-development.

In the context of studying an issue under consideration it should be identified that an approach-is orientation of academic adviser's actions which encourages to use a certain set of notions, ideas and ways of scientific and pedagogical activity. An approach, as a comprehensive pedagogical tool, includes three main components:

- Basic concepts which are used in the scientific research in management and conversion of a research work
- Principles as assumptions or general rules of implementing scientific-cognitive, scientific-project and scientific-methodological activity (scientific development, perspectiveness, connection between theory and practice on the basis of inter-subject connection and other principles)
- Techniques and methods of the building process of scientific knowledge

Let us consider some of the most important and widespread approaches (Khmyzova and Pravdyuk, 2011). The system approach is a methodological orientation in the scientific study of a would be Master, in which an object of cognition or transformation is considered as a system. The usefulness of its application should include the following:

- It's necessary to use it because a personality of a would be Master develops in the integral pedagogical process
- It helps to unite the efforts of an academic adviser and a would be Master
- The educational system at the university helps to save time and energy of the teachers in forming scientific culture of would be Masters
- It helps to stimulate pedagogical conditions for scientific self-realization and self-expression of would be Master's personalities

In a system approach, the process of forming competencies for accomplishing would be Master's research activities at the university presupposes two planes of educational cooperation: educational system of the university where the maximal quantity of pedagogical cooperation takes place; individual plane of young scientist's developing. They all develop individually or together, for example, in the process of studying methods of surveys and scientific experiments.

Action-related approach is an organization of purposeful and various work of would be Masters and its management. The point is that not only the activity is in the center of attention but also cooperation of teachers and students in realization of jointly identified purpose of the research and methods of attainment of the objectives. At the same time, the teaching process in the preparation of Masters is aimed at designing, constructing and creating situations which educates a Master as a scientist. In the process of forming would be Master's scientific culture, the action-related approach takes into account character and laws of changing a type of the leading activity.

Person-oriented approach in the formation of would be Master's scientific culture presupposes methodological orientation of educational activity which develops abilities of self-knowledge, self-realization and creative abilities through the system of interconnected scientific concepts. The major characteristics of the person-oriented approach in this case are: orientation of educational activity which is connected with the commitment of an academic adviser to help a Master to develop his individuality and his subjective qualities. In the frames of a person-oriented approach, the educational activity is carried out on the basis of interconnection of the principles of self-actualization, personality, subjectivity, scientific creativity, trust and support.

RESULTS AND DISCUSSION

The adherence to the principle of self-organization and self-development in the scientific activity aims the subjects at the detailed examination of the processes; self-monitoring, communication and relationships in the educational sphere, identifying trends, internal mechanisms and reserves of the system's development. A dialogue of the views, motives and values of the students, teachers and academic advisers helps to form favorable scientific environments, to develop and discover individuality of its members.

During the examination of the levels of formation of the competencies, for implementation of would be Master's research, we oriented at the didactic system of their preparation for scientific activity and found that the personality of a would be Master should be formed in the conditions of a combination of the methods of studying proces's organization with substantive-targeted, procedural, methodological and practical-productive aspects.

The substantive-targeted aspect is reflected in specially designed curriculum. This aspect includes the

methods of scientific knowledge of the students, their development in scientific and creative activity and intellectual abilities.

The procedural aspect demonstrates organizational and constructional decisions of teachers and an academic adviser. The forms, methods and means chosen by teachers, allow the would be Masters to broaden their individual scientific activity. At the same time, the cooperation with other educational and scientific institutions is of vital importance.

Methodological aspect reflects the level of would be Master's readiness for educational activity. The urgent side of this aspect, in our view, is improving the methods of activating scientific and cognitive work.

Besides, we have identified criteria and indicators of the formation of competencies for accomplishing the would be Master's research activity; Motivational criterion and its indicators: sustainability in the interest of scientific and pedagogical activity; interest at in-depth formation of scientific competencies; confidence in the high importance of science and pedagogical practice; certainty that scientific and pedagogical activities correspond to the social attitudes and have values of life.

Social-oriented criterion and its indicators: the awareness of the peculiarities of pedagogical work; clear definition of the professional strategy; the ability to work in a team; possession of innovational technologies and tools.

Reflective-assessment criterion and its indicators: assessment of one's scientific knowledge; scientific accuracy, a will to achieve the purpose of research; psychological stability; confidence in the right choice of scientific and pedagogical activity.

The final element in forming the competencies for accomplishing would be Master's research works is the results which can be assessed on three levels: high, average and low.

A high level-implementation of tasks on a high level, according to the plan of Master's preparation which are aimed at the achievement of educational goals in the magistracy; active participation in scientific conferences and competitions; publications of the results of the research; showing the manuscript of the Master's thesis within the set turn; high personal contribution to the scientific research.

An average level-implementation of tasks on a satisfactory level, according to the plan of Master's preparation which are aimed at the achievement of educational goals in magistracy; showing the manuscript of the Master's thesis within the set turn; incomplete personal contribution to the scientific research; analysis of the scientific literature was not deep enough or the experiment wasn't made sufficiently.

A low level-scores in the subjects of the Master's are satisfactory; motivation and interest in scientific activity isn't formed; a student hesitates in the need of individual participation in the development of scientific and experimental skills.

The division into these levels allows to identify the reasons of formation of would be Master's scientific culture and to change the situation in time, starting with the first year of magistracy.

As well as the above, a high level of scientific preparation of would be Masters depends on the formation of the quality of a research work during Baccalaureate. In addition to the above, a high level of scientific training of would be Masters in many respects, depends on the formation of the quality of research work of students at the Baccalaureate stage. To this end, the Bachelor's curriculum includes vocational training discipline "Basics of Scientific Research". The aim of the discipline is to acquaint with the basics of theoretical and experimental research, formation and development of personal qualities of the researcher, web-surfing skills, analysis and synthesis of scientific and technical information, development of student's creative thinking in the course of their vocational and educational activities (Pravdyuk and Derepask, 2014).

In the studying process, they have formed a system view of methodology and methods of scientific research in vocational education. The content of the discipline. "The Basics of Scientific Research" is done under the educational standard. Mastering this discipline implies the success of the whole graduate's activity as the depth of scientific knowledge and the strength of making a pedagogical experiment forms here as well as the ability to gather information, its storage and processing of experimental data using computer programs.

Working on this question, we compared the process of preparing would be Bachelors and Masters of vocational training and the following questions remain: what should their science training be, what basis of a scientific research should be laid during preparation of a Bachelor to pedagogical work in professional training institution in accordance with the requirements of the future and also if he is ready to continue his studies in Magistracy. We therefore defined; The role and place of information technologies in the educational process that allows to move the process of the Bachelor's and Master's training on a new level.

The value of innovative forms and methods of teaching which remain relevant with a view to the development of cognitive activity of students (conferences, research, binary, using internet resources, creative design, lectures, conversations, computer and

Blitz Games, etc). In the course of the study, we allocated reserves of improving student's studying process in Magistracy which contribute to the development of their independent scientific activity:

- Development of scientific interest, mastering the methods of self-education; formation of creative thinking in the process of their independent scientific activity
- Formation of readiness for rapid perception and understanding the need for knowing a foreign language and using modern methods of activation in training
- The development of personal qualities: common culture, scientific culture, moral, aesthetic and other qualities
- Development of the mental reaction of the students, who are engaged in research work
- Development of the motivation for interest in intellectual labor
- Introduction in the Master's educational process complementary forms of studying (science clubs, advanced courses and electives) that facilitate the development of scientific education and professionalism

CONCLUSION

In our view, the application of informational technologies in the process of preparing would be Masters allows them to rationally develop their scientific and creative potential (Khmyzova and Pravdyuk, 2012; Mityeva, 2008). At the same time, there is a development of information culture the ability to gather information from various sources, process it and purposefully work with it. In order to develop competencies for research activity of would be Masters, it's necessary to introduce innovative technologies in an educational process. These technologies make it possible to activate independent work of students from a holistic understanding of the subject to creative activity. In this regard, creative teaching is very important. Creativity is treated today as an ability to create as one of the psychic abilities which is necessary to develop. Creative education demands from the teacher to improve the content of the program-methodical complex of the discipline.

In general, our studies on the formation of competencies for active research of would be Masters of vocational training revealed that the intensification and the personal contribution made by students in the course of research on the topic of the thesis, pedagogical collaboration between an academic adviser and

undergraduates, introduction of innovative technologies, the continuity of scientific training of Bachelors and Masters. The reliance on basic approaches and principles of teaching contributes to the development of their professional interest, allows to realize one's scientific potential to be sure in one's choice of future profession and to be competitive.

The results are widely used in an educational environment but they don't pretend to be a final review of all aspects of the formation of competencies for the research activities of would be Masters. This study may serve as a methodological basis for further scientific research in the direction of improving syntactic-technological fundamentals of research competencies in terms of an innovative environment of the university for Masters, students of extramural and distance education and advanced training for teachers.

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