Digitalization Challenges in Modeling Master's Education

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Abstract : The article presents the results of developing and testing the technology of enhancing the subject potential of Master's students in the conditions of digitalization of education. The authors substantiate the insufficient effectiveness of existing models of the magistracy and the need to model Master's education by means of facilitation in the context of a subject-oriented digital educational environment. The materials of the study show a low level of motivation of students of the master's level of preparation for the occupation of scientific, pedagogical, and research activities in the pre-pilot phase. As a result of the implementation of the experimental model, a noticeable increase in the undergraduate students' potential is observed. Based on the results of an experimental study, the potential of the technology of a subject-oriented digital educational environment is substantiated.

1. Introduction

Master's degree is a new phenomenon in Russian education. Accordingly, a magistracy model in the methodological field today is not sufficiently developed. This is proved by the functioning of many variants of the magistracy in the educational space, as well as the variability of the regulatory framework of the magistracy in the form of adopting the new Federal State Educational Standard.

2. Literature review

The controversial nature of the new model of the Russian higher education in recent years has been much discussed in the academic community. Most often, this raises questions of the effectiveness of the training of scientific and pedagogical personnel in graduate and postgraduate studies [1; 3; 4]. Undeveloped methodology of master's education produces numerous risks.

Firstly, these are risks in the level of training: a modern master does not have a necessary level of competence after completing a program. For a number of parameters, these competencies duplicate the Bachelor's level competencies. Secondly, there are risks of dispersion of the science-creating potential of Masters. As you know, the one of the main goals of a Master's degree is to train a specialist for the scientific and scientific-pedagogical fields; at the same time, in educational programs of higher education institutions, there is a clear focus on the practical professional component. Thirdly, this is the risk of unproductive expenditure of funds for the preparation of Masters, since their specialty employment in the future is difficult.

The delineated range of risks implies the need to develop a methodology. We believe that the methodological basis for the development of Master's education in a modern Russian university can be an integrated approach, which is based on a systematic, subject-oriented, and risk-based approach. In addition, in the aspect of digitalization in a postmodern society, we consider it expedient to supplement this approach with an environmental approach, within which the basic meaning is attached to the conditions of the environment in which the magistracy operates [6; 10]. The modeling of the magistracy in the framework of the systems approach is based on the integration of education and science, since the phenomenon of the magistracy itself provides for the transition of a student to the pedagogical and research types of professional activity. In the framework of the subject-activity approach, both an undergraduate and a teacher appear as active actors of the process, seeking to enhance their subject potential [9; 11; 12].

The introduction of innovative forms and methods of education of undergraduates provides for the activation of the students' subjective potential, and the digital environment is one of the main conditions [7; 14]. In the modern literature there is a number of studies emphasizing the passivity of the modern university students of the master's level of training [13, p. 128-139; 5, p. 79-82]. This means that undergraduates are weakly active in scientific, educational, and professional activities, do not seek to realize the potential of subjectivity, being understood as the development of an undergraduate as a subject of scientific, professional, and social activities [2-5; 13; 15]. Of course, this underlines the insufficiently functional nature of the current model of magistracy.

3. Methodology and research methods

The study relies on the principle of consistency, the principle of objectivity, the principle of the subject-subject approach. The principle of consistency allowed to consider the studied phenomenon of magistracy in the unity and integrity of its elements. The principle of objectivity allowed characterizing the state of the problem, regardless of the subjective position of individual scientists and researchers. The principle of the subject-subject approach is addressed to the study of undergraduates as subjects of education.

Research methods:

- Theoretical and methodological: theoretical and methodological analysis of sources and literature;
- Empirical: methods of observation, mass survey.
- Analytical: analysis of factors affecting the participation of undergraduates in research activities.

The empirical base of the research: the authors conducted a survey of undergraduates of the Institute of International Relations of Kazan Federal University (Volga Region, Russia), enrolled in the programs "Tourism," "Cultural Studies," "International Relations," and "History" (full-time, first and second years, Master's). The survey was conducted in two stages: at the first stage, undergraduates of the first year of study (N = 675) were polled in the period of the first two months of their Master's degree studies (2017). At the second stage, second-year undergraduates were polled (N = 661, 2018). The sample size was 1336 people. We conducted non-included observation in the study groups of undergraduates of the first year of study (N = 476, 2017). The survey period covered 2017-2018 In the course of the survey, the written consent of all the participants to generalized data processing was obtained, the survey was anonymous.

4. The main results of the study

In our opinion, the main criterion of an undergraduate subject in conditions of digitalization of the educational environment is an independent search for information, which makes it possible to fulfill his intellectual, educational, and professional needs. The current environment provides many opportunities to find such information. Conducting an independent search for information about conferences, opportunities for publishing materials, participating in contests and grants, additional educational resources is a key parameter in assessing the subjectivity of undergraduates; therefore, it can serve as a criterion for the innovativeness of the educational environment in the training of highly qualified specialists. However, according to the author's research, only 5% of undergraduates of a university possess such abilities. A survey conducted among students just enrolled on the Master's programs revealed that 60% of them did not participate in conferences over the past three years, 76% did not participate in competitions and olympiads during their studies at university, 88% of respondents did not have publications of their works. To the question whether students are engaged in searching for information on participation in conferences, contests, grants, and so on, only 4.6% answered positively; the rest answered negatively or found it difficult to answer.

Non-included observation showed similar results: the subject potential of undergraduates in the first year of study was low. This is expressed in such basic fixed signs as passivity to participate in scientific events (conferences, forums), unwillingness to prepare materials for publications (articles, theses), lack of desire to independently search for information about events (more than 90% of undergraduates in various surveyed groups showed these signs).

The study (diagnostic slice) showed that the subject potential of the students of the Master's level of

training at the initial stage of training in the magistracy was poorly developed. The overwhelming majority of first year undergraduates are passive students. In this regard, it is logical to assume that *facilitation support* is necessary to activate their potential [8; 9].

Activation of the subject potential of the Master's students involves the use of a motivational mechanism for the participation of students of the Master's level of training in the activities of various forms (scientific, professional, public) in the course of their training in high school. This mechanism is a system of practical and scientific activities aimed at students. The principles of the system are, first, the collaboration and social partnership of students from various universities and levels of training, students and teachers as mentors; second, the continuity of student participation; third, the formation of a system of mentoring among students; fourth, the use of digital technology.

In order to develop such a mechanism, our team has developed a technological model based on the criteria for research activities. The technology of creating a subject-oriented educational environment consists of two blocks, content and instrumental-methodical. It is assumed that this technology will be most effective in the conditions of digitalization of the educational environment.

Combining various activities into a single chain and building them on the basis of the principle of continuity and consistency is a technology to enhance the science-making potential of students of the Master's level of training. Mentoring is an important component of this chain of activities. Both tutors and undergraduates of senior courses act as mentors, and later, undergraduates of the first year of study themselves become tutors for Bachelors. The organization of such continuity will allow us to create a mechanism for the participation of students in events and to increase their information and communication literacy in matters of science creation. The system of these activities is *a mechanism for activating the subjectivity of undergraduates.* It affects students through realizable principles, forms, and methods of teaching, as well as through the creation of a subject-oriented educational environment as the main pedagogical condition for the development of subjectness.

The formation of a subject-oriented educational environment takes place in an interactive (electronic) platform, within which scientific events are organized and the exchange of ideological resources is made. Thus, an electronic interactive service is being designed, within which the content is filled by its moderator through the placement of basic information for its further interpretation and discussion by the Masters and their mentors. The service performs an informational and communicative role, allowing undergraduates to conduct a targeted search for information on the Internet about ongoing activities in the field of science, and at the same time acting as a resource for exchanging opinions and organizing discourse events, as well as to place on this site the author developed educational mini-courses that have passed the expert review.

Thus, digital education is both a condition and a means. The developed technology of masters training in the conditions of digitalization of the educational environment was tested as a pilot on a number of Masters from the Institute of International Relations of the Kazan (Volga Region) Federal University. A result of the experiment, the degree of subjectivity of the Masters increased significantly, which is reflected in their increased motivation to participate in science-making events, intensification of communications in an interactive service. According to repeated studies made a year after the implementation of this model, the share of undergraduates in conferences, seminars and forums increased from 40% to 65%, the proportion of magistrates who have published works in journals and collections of works increased from 12% to 34%. This allowed to reveal a high subject potential of students of the Master's level of training and to confirm the performance of the model.

5. The discussion of the results

The problem of modeling Master's courses in the conditions of digitalization of the educational environment acquires special significance. The digital environment resources can be used in accordance with the purpose of the subject-activity approach, namely: this environment can both motivate and de-motivate undergraduate students to update their subject potential. In the first case, the process of incorporating a graduate student into an interactive digital educational space (on specialized electronic educational platforms) reinforces his interest in search and creative activity, encourages an independent search and approval of himself as a subject of science creation. In the second case, an undergraduate student, on the contrary, shows passivity and, relying on interactive technologies, reduces his own participation in

science. It should be noted that one or another vector of directionality of events development is directly determined by the pedagogical and technological support of the educational process and depends on a properly structured method of working with undergraduates. It is necessary to understand that the digital educational environment provides only resources for the development of students' scientific potential, but it does not replace its content.

6. Findings

The development and testing of the technology of a subject-oriented educational environment in the conditions of digitalization of education takes us to the Master's program, which allows us to form a master-subject of scientific, pedagogical, and professional activities. Based on the results of experimental testing of technology, it is planned to develop recommendations for its widespread introduction into the practice of higher education at the Master's level, as well as to popularize the results of technology implementation among the scientific and pedagogical community. The technology is universal. Being tested on students of the Master's level of humanitarian studies, it can be successfully applied to students of other levels of training (undergraduate, specialty) and areas of training.

7. Conclusion

The innovativeness of the conditions implies the use of high technologies, which goes back to the need to digitize the educational environment. But the processes of digitalization of the environment entail a whole range of changes associated with the technologies of introducing the digital environment into the educational process, and with the pedagogical technologies of activating the scientific and educational potential of undergraduates, with changing the mentality of teachers included in traditional forms of organization of education, and so on. Obviously, the consequences of digitalization of education are much more long-term and complex than can be seen at first glance.

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