

Modern Education in the Context of Innovative Development: New Trends in Personality Development

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Abstract — This article is devoted to research into how the education system is involved in the formation of innovation component of a person involved in social and economic relations. Education is an important factor in social change and innovative development of Russia. The main task of contemporary education is formation and development of personal skills and competences that can assist the person in successfully resolving the challenges to innovative development of Russia.

Keywords — *educational system, personal innovative development, innovation component*

I. INTRODUCTION

Presently, it is possible to talk about the education priority role in creating conditions for innovative development of both the individual and society. It is related to the fact that the system of education at all its stages is focused on the formation and development of skills and competencies in a person. These skills and competences will allow a person to successfully confront further challenges to the innovative development of Russia and readily adapt themselves to rapid social changes [1].

The innovativeness of the society and its structural development as well as that of an individual are objectively predetermined by the existence of innovative potential in the institutional system of society, along with social practices containing social innovations.[2]. Social innovations in the societal institutional system are social phenomena generated by the situational needs of community in non-routine forms of organization and ways of activity ensuring the institutional functions optimization.

Accordingly, education while fulfilling its functional purpose in society by providing production, reproduction and development of knowledge and skills using routine practices, at

the same time aims at production of innovations as a social product necessary for the development of all components and strata of society.

Precisely the educational system exists at the sources, which allow generating a continual stream of innovations. Innovations are not purely a response to the dynamically changing societal demands, but also encourage their further development. The education system is in the most immediate way involved in the formation of an innovation component in a person included in social and economic relations. This component is becoming an important factor in social change and the innovative development of Russia.

II. MATERIALS AND METHODS

In this paper, a sociological survey was the main method of research covering quantitative and qualitative data.

III. RESULTS

As A. I. Prigogine notes, all people either voluntarily or involuntarily are becoming subjects of innovations [3]. The main characteristic of the innovation subject is his/her pragmatic consciousness. Moreover, they understand their initiative, as a subjectively reasonable and socially accepted basis for his/her individual existence [3]. At the same time, S.A. Ilynykh and E.V. Mikhailov wrote that, a person can simultaneously, have a desire to develop his/her innovative component, and possess internal resistance [4]. We should note that sociology within its framework is concerned with the issues of innovation susceptibility and resistance to innovation from the perspective of the human factor. It can be noted that the social characteristics may have a significant influence on the innovation process of the bearers of the innovative way of

thinking. These objective and subjective characteristics for the innovative way of thinking bearers in practice are embodied in an innovative manner of behavior.

The personal innovation component stirring innovation activity generates two dialectical processes. On the one hand, this component interferes with the habitual routine lifestyle of individuals. It implies the fact of the real innovation activity in one way or another entails possibly a significant risk and considerable uncertainty for a period in the person's life that can be a source of resistance to the innovation activity acceptance in and of itself. The main problem of managing the person's innovation component development is covered precisely in the resistance to the innovation activity, which can be considered as any personal behavior aimed at disrupting or discrediting the ongoing transformations.

On the other hand, the development of the innovative component of personality can lead to their substantial personal breakthrough, as well as considerable changes in quality of his/her life, in transforming their socio-economic, socio-cultural, social and other fields. Evaluation of the innovation component from this point of view causes the formation of innovative susceptibility. An individual becomes a supporter of innovation activity even in the case when he/she can assess the condition of the social environment adequately and predict his/her position in the context of the innovation process in terms of acquisition - loss of social advantages.

Accordingly, the person's innovative component can be feasibly described with the ratio of motivational sphere of a person (professional values, goals, self-assessment and level of aspirations, motives) and the operational fields (professional abilities, learning ability, techniques and technologies as components of professional skills and creativity, etc.) [5].

The education system makes the main contribution to the formation of innovation activity competences. The leading role in the innovation system development is assigned to universities, not only due to the fact they became the general institutions of knowledge production, and concentration, and ensuring its origination, actualization, distribution, and usage in the process of educational and research activities, but also because universities are forming an innovative component in the future specialist.

In connection with the relevance of the abovementioned, it is necessary to note the growing interest of Russian researchers to the problem of the person's innovation component of university students. The expert report on the implementation of the Strategy for the Innovative Development of the Russian Federation for the period up to 2020 indicates a low level of specialized training for university graduates who have found a job after graduation and are undergoing a lengthy adaptation. According to expert estimates, tens of thousands of advanced technological inventions remain not implemented, not introduced into production, and it takes approximately 200,000 specialists in the field of technological management and innovation for their successful promotion to Russian and foreign markets. [5].

The contradiction between the contemporary Russian social demands for an innovative personality of specialists and the

level of readiness of the universities graduates to innovate in the professional field leads to the necessity of searching ways and means to form the innovative component for an individual in the scientific and educational environment at the university [3-5].

To examine the idea that the formation of the student's personality innovative component is carrying out in the scientific and educational university environment, we have conducted a sociological survey of students in the City of Novosibirsk in May 2018. In total, there were 296 respondents. Sampling was two-stage, stratified.

Analysis of the sociological research data revealed that the majority of students possess a certain range the qualities of an innovative person. Thus about a quarter of respondents does not doubt that they have an active life position (25%), the same amount of respondents expressed willingness to take responsibility in a critical situation and possess such qualities as resourcefulness and ingenuity.

About a third of students (31%) can easily make contact with people. About half of the respondents possess these qualities not fully the extent of one's power. 52% doubt the existence of an active life position. 59% of respondents are not ready to say unequivocally about their readiness to assume responsibility in a critical situation. 44% of respondents have difficulty in communication.

The formation of an active life position as the essential component of a person's future innovation readiness was observed among the respondents even in school years. Only 13% of respondents did not attend additional classes and whereas some extent activity was inherent to the rest of the sampling participants. 70% of students were engaged in creativity, 50% - chose sports sections, and various types of elective classes and extra-classes activity at school. During the study at the University, students choose various extracurricular activities. First of all, in the scientific field, where they participating in scientific conferences and projects (55%).

To motivate participation in innovation activities, the students suggest inviting interesting people, scientists, politicians, authorities, businesspeople, professionals in their field as speakers for events (28%).

The rather high level of satisfaction of the survey respondents with their professional choice (60%) creates the basis for the successful formation of their professional competences and focus on self-improvement and indirectly indicates the presence as the essential characteristics of an innovative person.

Scientific research should play a huge role in the professional development of a specialist in the innovative society. It facilitates the manifestation of creativity as a rational basis for innovation in any field. Most of the respondents (63%) are confident that the student must necessarily participate in research activities during their studies.

As the survey results show, 13% of respondents take an active part in research; 38% of participates do it from time to time (sometimes); 24% have a desire to participate, but they have not actualized it yet. These data indicate the possibility and

necessity for further expansion of the students' research activities.

Most of the surveyed students (66%) are satisfied with the conditions arranged at the University for their creative and intellectual development. The majority of the surveyed students (61%) assures that the educational space of the University contributes to the formation of the creative and intellectual characteristics of the innovative personality. At the same time, 37% of respondents point out the shortcomings of traditional methods and means of pedagogical activity that do not always promote the formation of the most essential characteristics of the innovative person. They draw attention to the need to update the methods and forms of educational process and classroom activities (lectures, seminars).

At the University, it is necessary to create favorable conditions for the development of the innovation component of the individual under all types of educational and extracurricular activities, to expand innovative forms of the university scientific and educational environment and to perfect the motivational mechanisms of students' intellectual, self-improvement and creative ability and entrepreneurial activity. It is vital to form both professional competences significant in the development of innovations and creativity. The ability of future professionals to promote innovation is also essential.

It is known that following the requirements of the Russian Federal State Educational Standards of Higher Education, the student must have specific competences that should constitute his information culture (they are presented below).

1. General cultural:

1) The ability to analyze the main stages and patterns of the historical development of society for the formation of ideological positions.

2) Ability to communicate in oral and written forms in Russian and foreign languages for solving problems in interpersonal and intercultural interaction.

3) Ability to teamwork, tolerantly perceive social, ethnic, confessional and cultural differences.

4) Ability to self-organization and self-education.

2. General professional:

1) The ability to solve standard tasks of professional activity based on the information and bibliographic culture using information and communication technologies and taking into account the basic requirements of information security.

2) The ability for critical perception, synthesis, analysis of professional information; setting goals and choosing ways to achieve them.

3) The ability to analyze socially significant problems and processes with impartiality and scientific objectivity.

4) The ability to use the necessary provisions and methods of the humanities and social-economic sciences in solving professional problems.

5) The ability to use the fundamental laws of the natural sciences and humanities in professional activities [6].

Considering that the innovative component formation of a student's personality at an institution of higher education requires a certain level of his/her information culture, in the spring of 2018 sociological survey was conducted focused on students of the Social and Humanities specialties in the Novosibirsk State Technical University. The sample covered 150 respondents; 60% were first year students, 40% were third year students; 68% were female, 32% were male. The survey was performed through a questionnaire. Its results are presented below.

The survey data of the 1st-course students:

1. Frequency analysis

92.3% of respondents have the technical means to work with information resources. All respondents use the Internet in their information activities. 64.4% of respondents use various library resources in their information activities. 86.7% of respondents more often work with electronic information resources.

71.1% of respondents have made a preliminary plan for their information activities (70.7% rated this indicator as "sometimes" and "often").

17.8% of respondents need help in carrying out information activities at the University. Most often, respondents ask for help with searching, processing and structuring information.

81.2% of respondents received expected results to their search queries "often" or "sometimes."

44.5% of respondents studied sciences aimed at developing their information culture during the autumn semester of the 2017-2018 academic year, got from 80 to 100 in a 100-point evaluation system.

31.2% - of the respondents were about 80 to 90 points, and 13.3% - from 90 to 100.

76.7% of respondents feel a need to develop their own information culture. 60% of respondents identified their motivation for the information culture development as "good", and 25% - as "high". 11.7% marked it as "satisfactory"; and 3.3% of responses- as "low" levels, respectively. The largest group of respondents (42.2%) singled out their involvement in education as the main reason motivating the development of the individual information skills.

58.9% of respondents noted that during their studies at University, their information skills "improved to some extent," and 22.2% - "significantly improved." Among the competences, most frequently were indicated searching, processing and structuring of information.

2. Contingency tables (determination of relationships):

1) Main professional fields of students training.

Students majoring in "Sociology" and "Sociology of Advertising and Public Relations" often have a preliminary plan for the implementation of information activities, since they have comparatively fewer negative answers ("rarely" and "never").

Students at "Sociology of advertising and Public relations" are characterized as more self-reliant; none of them need

specialist assistance in performing information tasks at the University, while the rest of the respondents showed this indicator of about 20-25%. They also have the greatest need for the development of their own information culture (80%), while for students of the "Linguistics" department, this index is the lowest (55%). The similar data of the students' survey were obtained concerning training and the degree of motivation to develop their own information competencies.

Concerning the causes of the students' motivation to develop their information culture, for students of Sociology and Sociology of advertising and Public relations, professional reasons dominate, for students of the Philology field - educational ones, and students of the Linguistics direction indicated personal reasons.

2) Students' gender

The professional reasons for motivation to develop their information skills dominate both boys and girls. Young men need to develop their information culture almost two times more than girls and a higher degree of motivation for its development (more answers "high" and fewer answers "satisfactory" and "low").

The survey results showed that girls are less likely to use library resources in their activities (there are more "no" answers for young women than "yes"- answers). However, they often have a preliminary plan for their activities ("always" and "sometimes" answers in the percentage of the ratio girls more often than boys).

The survey data of the third year students:

1. Frequency analysis

Questions from #6 to #10 cover availability of personal technical equipment to perform information-related activities; Internet usage by the respondents in their information activities; the format of information resources that are the most preferable in respondents' works and the preliminary planning of their own information activities. For these questions, the results of the third year students surveyed are almost identical to those of the first year students (except for the eighth question: about the usage of library resources where the 3rd-year students show results 19.6% lower than those of first-year students).

Only 8.3% of respondents need assistance in performing information activities at the University. In this case, assistance is required only in finding information.

96.7% of respondents remarked the results of a search request "often" or "sometimes" correspond to their query.

For the 3rd-year students, the above indicators are slightly higher than for the 1st-year students, witnessing to a relatively high level of development of their information culture.

IV. DISCUSSION

Thus, a survey of students allowed to determine that most of students are aware of the importance of developing innovative component of the individual in the research and educational environment of the University. Almost a half of students show a high level of innovation activity already at the time of enrollment, willingly participating in research activities

and showing interest in various trajectories of personal development.

Summarizing the results of the study, we can draw the following conclusions:

1. The information culture of most students of the social and humanitarian profile of the NSTU meets the functional needs of the educational process.

2. The information culture of the students of the social and humanitarian profile of the NSTU is a reflection of the influence of the information society that manifests itself primarily in the increasing relevance of electronic information resources and quality skills for working with them at all stages (search, processing, transfer, structuring, storage) on which their learning activities depend on.

3. Modern GEF is directed, first of all, at the formation of students' competences that are relevant to the information society and directly reflect the features of its functioning and development.

Summarizing all the obtained results, we can conclude that the information culture of the majority (80%) of the 1st-year students is at the level necessary for the implementation of everyday information activities, including innovation. Most students cope with the necessary information work, and their information competencies is developed to the required level. However, 20% of the surveyed first-year students have difficulties in the qualitative implementation of information activities. At the same time, most of them (85%) are interested in the development of their information culture, which is necessary, first, for high-quality educational activities. Directly, the results of the survey on various professional fields of students' education lead the authors to state the following:

1. In the first year, the main reason for the motivation for the development of the information culture of students is that related to the direct process of studying at the University, then for the 3rd year, this main reason becomes related to their future professional activity.
2. Presently, the most developed informational culture is possessed by students of the Sociology of Advertising and Public Relations, while students of the Linguistics faculty have the lowest indicators.

Based on the analysis of secondary data, as well as the empirical sociological research presented above, and also taking into account that the University is the place where the present-day professional personality is formed, orienting both towards professional competence, innovation, personal responsibility and towards oneself, their relatives and society, we should emphasize the relevance of such a model of a contemporary university, as an integrated complex of education and science. One of the authors of this work has already paid attention to the relevance of this educational model.

Moreover, we should note that at present, this model of education and science integration is being successfully implemented in many Russian universities.

What are the real possibilities for the realization in practice of this inherent model potential under the circumstances in modern Russia?

While answering this question, it is necessary to clarify the following aspects. Firstly, to define the University as an integrated complex of education and science as an institutional phenomenon that performs one of the main functions in society (providing production, reproduction and the development of knowledge and skills).

Secondly, to fix that the final result "produced" by the University, as an institutional complex of education and science, is a product with the properties (qualities), determined its existence.

Since the institutional system of society ensures its reproduction functionally, each social institution is a functional system subordinate to the fulfillment of its function relative to society. Accordingly, each function prescribed to the social institution must be fulfilled at all hierarchical levels.

The statement mentioned above fully applies to the social institution. "Ensuring production, reproduction and development of knowledge and skills." In particular, this is characteristic of the University, which, due to its fractal nature (like any other institutional phenomenon), performs the desired institutional functions at its level. Namely, it carries out production, reproduction and development of knowledge and skills in the educational process. [7]

Defining the advantages of the systemic approaches of local domestic universities to the introduction into the everyday educational practice of the model in the form of an integrated education and science complex it is necessary to consider it from a marketing point of view. That means focusing on the final product that "produces" and offers in the market to consumers a university-integrated education and science complex.

In the context of university, it means that its potential consumers set the quality parameters of a product produced for a market. It is the social order of the community that university must fulfill to be in demand.

Based on the concept of new effects, a certain quality is a manifestation of a particular emergent effect. This nature of quality is also characteristic of education. The emergent effects are the consequences of interactions in society that manifest themselves in the form of specific properties (if they are socially significant, they are usually called quality). Their functional demand on the part of society is in the new property (quality) that has appeared in the system. It means that the system has something else that differs significantly from the individual properties existing or the arithmetic (additive) sum of the properties of participants in a specific set of interactions when performing a specified function (activity). Accordingly, the totality of all elements and complexes, functionally combined into one system, usually called the "education system" (the same applies to the institutional complex, as the University), as integrity is different from the sum of properties that its educational practices and innovations have.

So, a certain quality of a "produced" product in the education system is a manifestation of a specific emergent effect. Which, in turn, is a consequence of positive interactions being carried out. How are emergent properties (quality of the "produced" product) being formed in the education system?

Formally, individual elements of the education system may correspond to existing educational standards, but as a holistic, functionally demanded institutional education, the modern education system is imperfect. Not only is the imperfection of its separate elements but also the inconsistencies between its parts and complexes are the reasons of this state of affairs.

V. CONCLUSION

It is common knowledge that the existence of social entities is ensured by their ability to "produce" functionally significant emergent effects and, as a result, acquire specific new properties (quality). Accordingly, the functionality of any institutional education is determined by its ability to "produce" the emergent effects necessary for society.

The situation is the same for the education system.

What way does the necessary quality of a product "produced" by a university appear as an integrated institutional complex of education and science? As it is known, from a marketing point of view, quality integrates socially significant properties of an actual product, which becomes recognized in the market through its acquisition and customer's awareness.

Consequently, a university-integrated complex of education and science must "produce" specific properties (quality) of an educational product delivered to the market. Thanks to the integration in the unified educational system, the process of providing and mastering knowledge, as well as their practical implementation in applied activities, the professional competence of students will mostly meet the requirements of the market.

Moreover, one of the aspects of the professional competence of graduates of such a university is their mastery of the innovative technologies acquired in the process of scientific research combined with the educational process and the practical implementation of the results obtained. It is an indicator of excellent professional skills. The training of such professionals is in this the institutional purpose of modern universities.

The other side of high professional training of graduates of the higher educational institutions-integrated complex of education and science is their socially critical personal qualities. Thus, the implementation of an integrated complex of education and science is one of the essential ways of innovative development in all fields and at all levels of social development and the formation of a modern personality with innovative components represented by graduates of such universities.

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