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Development of the research potential of a student's personality: domestic and foreign experience

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Abstract. The paper considers the need to develop the research and creative potential of students in the conditions of a dynamically developing modern society and the job market, which necessarily require new approaches to the education of young people. It is noted that this work should be carried out from an early age. The driving force for the implementation of society's demands and challenges in solving life and professional tasks can be the presence of a formed and developed scientific and creative opportunities of each person. The study of domestic and foreign psychological and pedagogic practices, empirical pedagogical experience has allowed to draw conclusions that structural-genetic approach as a methodological basis for studying the problems of development of students' research potential allows to see the "evolution of ideas about children's intellectual and creative giftedness", it is shown that the development of software and scientific and methodological support for the development of the research and creative potential of students under the conditions of basic and additional education contributes to the mastery of universal and other methods of educational actions. Effective models and forms of developing the creative potential of students at different levels of education in different types of educational institutions, both in Russia and in foreign countries, are shown. The author emphasizes that the implementation of these models improves the quality of educational services. The research study aims to classify the teaching experience of domestic and foreign educational institutions for the development of student's research and creative performance. It must be done as the development of society is characterized by dynamism, the new types of creativity in living environment, the need to solve creative tasks in life and in the career. Therefore, from the very childhood we should develop the willingness of the individual to explore the surrounding reality, create original strategies of activity and behavior.
Keywords: research potential of the individual; professional self-determination of students; life strategies of students.

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Развитие научного потенциала личности обучающегося: отечественный и зарубежный опыт

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Аннотация. В статье обосновывается необходимость развития научного потенциала личности обучающегося в условиях динамично развивающегося современного общества, рынка труда, которые с необходимостью требуют новых подходов к образованию молодежи. Показано, что эту работу необходимо осуществлять с раннего возраста. Движущей силой реализации запросов общества и вызовов современности в решении жизненных и профессиональных задач может стать наличие сформированного и развитого научного и творческого потенциала личности каждого человека. Изучение и анализ отечественной и зарубежной психолого-педагогической и специальной литературы, эмпирического педагогического опыта позволил сделать выводы о том, что конструктивно-генетический подход как методологическая основа исследования проблемы развития научного потенциала личности ребенка позволяет увидеть «эволюцию представлений о детской интеллектуально-творческой одаренности», а интегративный подход обеспечивает рассмотрение креативности и интеллекта как целостности, отражающей их внутреннее единство. Показано, что разработка программного и научно-методического сопровождения процесса развития научного и творческого потенциала обучающихся в условиях базового и дополнительного образования содействует овладению универсальными и другими способами учебных действий. Показаны эффективные модели и формы развития творческого потенциала обучающихся на разных ступенях образования в разных типах образовательных организаций, как в России, так и в зарубежных странах. Автор показывает, что реализация указанных моделей поднимает качество образовательных услуг на новый уровень, обеспечивающий социализацию обучающихся и адаптацию образовательного процесса к потребностям современного рынка труда и индивидуальным потребностям обучающихся. Целью исследования является систематизация накопленного опыта педагогической деятельности отечественных и зарубежных образовательных организаций по развитию научного потенциала личности обучающегося. Это необходимо сделать, поскольку развитие общества характеризуется динамичностью, возникновением новых видов творчества в сферах жизнедеятельности, необходимостью решения творческих задач в жизни и в профессии. Поэтому стремление личности творчески исследовать окружающую действительность, создавать оригинальные стратегии деятельности и поведения необходимо формировать с детства.

Ключевые слова: научные возможности личности; профессиональное самоопределение студентов; жизненные стратегии студентов.

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Introduction. The current socio-cultural situation is characterized by rapid dynamics of development and serious changes in different fields − economy, technique, technology and information. Therefore, both the Russian and foreign scholars are trying to find answers to the challenges of our time: the search for new ways, values, mechanisms for intellectual development, and the harmonization of human personality. This requires "modern ideas about knowledge, human, culture, science, and education" (Rozin, 2007).

The ongoing processes of knowledge generation in culture (M.M. Bakhtin, V.S. Bibler, Yu.M. Lotman, etc.) lead to the opinion that a person needs to possess the methods of scientific knowledge, mechanisms for using personal opportunities, and the ability to generate new knowledge independently in a creative way. The rapid development of new knowledge encourages the development of research potential of each child. In this sense, there is a need for active creativity of the individual.

Russian scientists (G.A. Argunova, E.V. Bondarevskaya, S.A. Kulikova, N.D. Nikandrov, Z.I. Ravkin, I.I. Shatilova, etc.) give a suggestion to create conditions for productive activity of the individual, which contributes to the understanding of themselves and their own choices; the development of critical thinking and personal opportunities. According to domestic and foreign psychological theories (G. Aizenk, A.R. Kettel, A.N. Leontiev, A.R. Luria, A.Maslow, G. Allport, K.K. Platonov, P.V. Simonov, Z. Freud, etc.) the obtained characteristics of the personality structure can become the leading ones for the development of research opportunities. It is evident that with the increase of significant experience in the successful guidance and execution of behavior in real life situation, the maturation of cognitive mechanisms, and the development of self-learning processes increases the possibility of more targeted mediation of self-determination process, self-organization behavior of the student's personality, and creative self.

The study of the theoretical discourse of the problem has helped to identify a contradiction: the development of society, science, breakthrough technologies in various sectors of the economy, production, scientific knowledge has necessitated the development of research potential of the individual, however, the dominance of the rational approach and the conservatism in education inhibit the pace of construction and realization of individual trajectories of the development of research potential of the individual and the level of "new scientific developments within the scope of scientific traditions" (Makotrova, 2007).

The problem of this study: to justify the need to systematize the accumulated scientific and empirical experience of domestic and foreign scientists and practitioners in developing the research potential of the student's personality.

Solving the problem of systematization of knowledge on the development of research potential of the individual will contribute to the construction of a coherent system of pedagogical and educational activities; the development and implementation of educational innovations that arise in science and practice, in accordance with the dynamics of society's needs.

Main Part. The analysis and classification of the experience of educational institutions both abroad and in Russia have helped to identify the main approaches to the development of professionally efficient personal traits in the educational and cognitive activities of schoolchildren and students. A positive experience of developing mental and creative performance of the child's personality by means of artistic activity is revealed in schools no. 1611, no. 1669 in Moscow. The project scope is based on the strategies that consider the creative and mental performance of the child's personality as a whole, revealing ways to increase educational, cognitive, and professional activities. The methodological reference point here is: 1) a constructive-genetic approach (allows to see the evolution of ideas about children's intelligence and creative gifts and talents);

2) an integrative approach (provides consideration of creativity and intelligence as an integrity that reflects their internal unity (system, structure, stability, etc.) (Safonova, 2001). As part of the study, some methods were developed for diagnosing the level of development of mental and creative abilities in younger students. The author reveals the specific features, content and forms of artistic activity of younger students as a means of developing their intelligence and creativity.

The implementation of diagnostic, praximetric and experimental methods has proved that the criteria for the development of mental abilities are motivation of cognitive activity, the ability to convergent thinking and divergent productivity. The author has developed a special set of artistic activities, contributing to the development components of mental activity of the individual. The author has also developed a number of forms and methods for diagnosing creativity in younger students (training sessions with elements of testing intelligence and creativity). The study of the given experience allows to identify the specifics of the development of creative abilities of younger students by means of artistic activity (Safonova, 2001).

The scholars of M.V. Lomonosov Moscow State University (MSU) studied the age dynamics of research initiative development in children. As a result, didactic tools have been developed to stimulate a students' research initiative in independent cognition of complex objects and phenomena. The practical significance of the experience is in the implementation of a system of didactic tools of various complexity to form the research initiative of students at all levels of education. Computer games developed by the association “Computer and childhood” are used in educational institutions in Moscow. The materials form the core of a special course “Research behavior and cognitive development”, a workshop on educational psychology for students of the faculty of psychology of Moscow State University.

Russia has obtained pedagogical experience in the development of research qualities of the individual in schools of different types. In Maikop and in the Nizhny Novgorod region, the researches have worked out the software and methodical support for the development of creative opportunities of students in terms of basic and further education to develop research competence of students in conditions of subject oriented instruction. The teachers tested the forms and methods of activity that contributed to the development of students ' creative opportunities: organization of project activities, design of illustrations for the works the students had read, etc.

In the educational institutions of Orenburg, on the basis of a dialectical cognitive theory there has been developed and tested a model of the process of development of student’s creative opportunities; the conditions that help to develop student’s creative opportunities in educational and training activities: an insight into the age characteristics and capabilities of high school students, the stream of creative opportunities of teachers, dialogic interaction between subjects of learning process.

The study of the development of creative opportunities of schoolchildren has been carried out in Udmurtia. It examines the issues of formation and development of the creative opportunities of a village school individual as an integral quality that contributes to the successful formation of the competitiveness of a village school leaver. The empiric research methods include observation, self-assessment, the study of best pedagogical practice, review of school documentation, review of students' creative activity products (inventions, results of experimental work, creative competitions of students). These methods allow to identify the necessary and sufficient conditions for the successful development of the research potential of village school students in the process of productive efforts. The teachers picked up appropriate forms and methods of creative self-development of students in agricultural work, developed criteria for the development of the creative potential of village schoolchildren, a model of developing productive labor in village educational institutions, and identified the dynamics of its development. In the Kurgan region, in the process of solving the problems of developing the research potential of students,

teachers have developed and tested the technology for developing the creative and research potential of students in village schools.

The experience of educational institutions in the Irkutsk region shows that the specific character of an innovative educational institution is to create conditions for the students who are inclined to creative activity; to establish a creative educational environment that contributes to the creative self-realization of school graduates. Special aspects of the creative activity of high school students in an innovative school imply that in high school age this activity has a complex structured nature. The pedagogical conditions for successful research activities of high school students in an innovative school are revealed: the system organization of research activities of students in the scientific school society environment.

The research study of the problem of developing research potential of a student's personality in engineering education, which was carried out in educational institutions in the Lipetsk region, is of great interest. In the process, a model for developing the creative potential of a student's personality in the conditions of technological education was created. This pedagogical model presents a concept, a modularity of a set of conceptual, resource (procedural, subject, environmental), criteria, and results. In this experience there were identified some organizational and pedagogical conditions, developed guidelines for the implementation of the technology of development of student's creative potential in the creative environment and its research and methodological support.

The research activity of high school students as a factor of professional self-determination is considered in the educational institutions in the Belgorod region. V.N. Kormakova, G.V. Makotrova and colleagues found out the conditions and developed a model of the organization of research activities of high school students as a factor of their professional self-determination (Kormakova, 2018; Kormakova, 2015; Makotrova, 2007). The practical significance of the experience lies in the development of organizational and methodological support for research activities of schoolchildren, methodological sharing for ensuring professional self-determination of high school students. The developed complex method of research guidelines for high school students can be implemented as a career guidance in a general education organization to develop a willingness for life and professional self-determination (Kormakova, Klepikova, Musaelian, Baybikowa, Lapina, 2019; Makotrova, 2007).

The research study of educational institutions of St. Petersburg on pedagogical support of professional self-determination of students with intellectual and personal characteristics and social and family situation of development (M.V. Danilova) identified indicators of professional self-determination (life strategies, educational and educational-professional interests, professional prospects and professional orientation). The study confirmed the view of Belgorod scientists that professional self-determination is manifested in the professional orientation of the student's personality (Danilova, 2008; Kormakova, 2018). The study of the features of professional self-determination was carried out using the map of interests (A.E. Golomshtok), the questionnaire of professional willingness (D. Holland's method) (Holland, 2002), aimed at self-diagnosis, and the test of the structure of intelligence (R. Amthauer) were used (Amthauer, 1981; Danilova, 2008). The results of this study can be useful in professionally aimed courses of psychological counseling and pedagogical support for professional and life self-determination of students. It was found that mature professional self-determination is demonstrated by teenagers in nuclear and one- parent families, as well as by those who attend specialized schools. Professional self-determination components are poorly integrated in children's homes (Danilova, 2008), as well as in private schools. The study confirms the dependence of the effectiveness of students' professional self-determination on social and family reasons. The ambiguity of the influence of intelligence on the professional self-determination of a teenager's personality, on the intellectual de-

velopment as the basis of self-determination is shown.

The Stavropol territory experienced the development of the ability to scientific foresight of students in their youth. Empirically (methods of biographical research, mathematical statistics, etc.), the social and biological nature of the student's ability to scientific foresight was tested (Shvetsova, 2011), the stages of scientific creativity, neuropsychological components of the ability to scientific foresight were described, and the relationship between the components of the ability to scientific foresight was studied by the method of correlation analysis. Exercises that are aimed at developing intuition were worked out and implemented (Dej, 2000).

In the educational institutions of Kursk, psychological and pedagogical conditions for the development of the self-concept of gifted and talented students were determined (Nikitina, 2008). The applied research design of creative thinking (E.E. Tunik tests based on the concept note of Gilford and E. Torrens (Guilford, 1988; Torrance, 1984); a cognitive component ("Who Am I?" M. Kuhn and A.T. Jersild personal questionnaire (Jersild, 2004) allowed us to determine the specific manifestation of self-concept of gifted high school students, the uneven development of its components was noticed. The study expanded views on the preconditions of the study of standardized subjects, and the dependency of the development of self-concept components of gifted high school students from the level of reflection, adequate self-assessment, formation of social and ethical values (Nikitina, 2008).

Aside from the existing techniques there were worked out the methods for developing the creative opportunities of students in further educational institutions in Saratov. The teachers implement complex diagnostic techniques to study the activity of creative teams; observation, interview, and also the diagnostics of creative opportunities of a teenager. All these allow to determine the special capabilities of further education establishments for the development of creative opportunities of students. Criteria and levels of development of students 'creative opportunities in further education establishments were found out and justified. Expanded programs and special courses aimed at developing the creative opportunities of the individual were developed.

As we can see, there is an increase in the general education establishments to engage students in creative cognitive and research activities with the aim to develop the research and creative opportunities. Nowadays, schools require teachers who possess diagnostic tools for personal development, who realize and are able to use meanings in the content of education, and who know how to teach to think and act creatively. It is necessary to note the great importance of research work in the development of professionally important qualities of the future specialist: professional manner and competence, independence and creative approach to business, etc.

In vocational education and training, the research activity is a component of the learning process, a means of increasing students' interest and motivation to master the future profession. Research work as a type of creative activity of teachers and students is a focal area for development of educational institutions of vocational education and training. The development of the economy necessarily demands the following professionally sufficient qualities: professional competence, pedagogical culture, scientific thinking, self-determination skills, self-organization, creative self-realization, the need to acquire new knowledge, motivational willingness for research activity, professional and personal responsibility. The formation of research qualities among college graduates is the basis for further engagement in scientific work, a motive for improving the qualification level and professional competence. By initiating the learner's need for knowledge and creative self-realization, research activities help pass the acquired experience to any field of professional activity.

For example, the Don Teachers' Training College arranged organizational structures to coordinate research activities, defined the powers, rights, responsibilities of each substructure, worked out legal and methodological support in

the manner of research and experimental work regulations, chair, laboratory. The educational institution has created a long-term program for the development of the educational institution, there is a fund of ideas, methodological and didactic developments, and pedagogical technologies. This system allowed to create a new approach to the activity in the Teachers' Training college – research work of students and teachers, which includes the new tasks: scientific and methodological facilities of the learning environment; development of the research focus of all subjects of the learning process; scientific analysis of ways and results of implementing the requirements of state standards for training specialists in advanced academic programs; sharing for improving the educational process in the Teachers training College; monitoring the quality of education. The research potential of the Don Teachers' Training College specialists is implemented in college courses, programmers, curricula, guidelines, in working out a model for educational environment at the college.

The educational institution has worked out a system for students' engagement in research activities from the first year of study. The students are provided with educational courses "The basics of educational and research activities", "Pre-research work", psychological and pedagogical workshops. Scientific and practical conferences have become a traditional event. Annually, pedagogical readings on various problems are held.

The development of a system of educational monitoring in the Don Teachers Training college has made it possible to switch to a new technology for managing the quality of professional pedagogical education in the college. In order to implement this promising direction of development, a scientific and practical laboratory for educational monitoring has been established. Its main tasks are to develop the conceptual framework for managing the quality of education in the college; testing of an integrative model for monitoring the quality of professional pedagogical education in the college through monitoring studies of educational quality indicators; picking up objective monitoring methods for scientific and methodological support for monitoring studies; developing a system of assistance services in mastering the technology of diagnostics of educational achievements of future teachers who have independent critical thinking.

The Rostov baseload medical college (RBMK) has 12 scientific student societies (SSC) under the guidance of experienced teachers. A new kind of activity of the SSC is problem sessions that are accompanied by an active discussion on the part of the student and teachers' comments. Society work is a school of active development of professionally important skills of the future specialist. All students perform coursework, the Department of Medical and Preventive Care provides diploma design with participation of the most creative students (4-5 theses are defended annually).

In Engineering School no. 14 in Moscow, experimental and innovative activities have become a key to the effective development of the educational institution. Each product that is made by the students is a creative output. The importance of this activity is that the students develop analytical thinking, independence in solving scientific and life problems, and the ability to predict the possible consequences of their decision. It activates the personal position of students in the learning process, heightens their interest in the future profession.

The project activities of college students are often joint, sometimes individual, and have an educational, cognitive, and creative nature. This activity is further developed within the framework of the student scientific society (SSC). Research skills that they get contribute to the development of professional status.

Nowadays, professional and personal development of a specialist is in high demand. The research work that is carried out in colleges to train a creative specialist requires further development and improvement: it is necessary to carry out long-term planning of the problems of the SSC activities taking into account the needs of the region; to involve teachers with academic degrees more widely in counseling and mentoring the student research works. The role of higher education institutions in the de-

velopment of the national economy is increasing. The participation of University students in scientific research is one of the main tasks of higher education. Great attention is drawn to the problem of integrating science and production in the multiversity. Modern multiversity is an educational corporation that develops the creative opportunities of society, innovative thinking, and innovative culture in science and education (Taganova, 2007). The validity of the use of the concept of "scientific and pedagogical opportunities" in relation to universities is due to the interrelated functions of higher education: training of specialists and carrying out scientific research. Therefore, in the structure of scientific and pedagogical opportunities, the most important fact is scientific and pedagogical personnel (personnel opportunities, their quantitative and qualitative characteristics).

In the multiversity, the experience of revealing the content of innovations has been developed, as well as the development and justification of theoretical and methodological support for evaluating the innovative opportunities of the multiversity. In some countries, higher education and science acquire the status of dynamically developing conjugate systems (Carvalho, 2019; Rugelj, 2019; Savec, 2019, etc.). There are general trends, problems, and guidelines in these areas of life – sustaining activity of society. The research system is differentiated and closely related to higher education. For example, in Australia, universities and research centers are combined into a well-functioning professional consortium. In the United States, universities with a rich research potential predominate. In Western Europe, functional differentiation between different types of establishments is even deeper (Carvalho, 2019; Rugelj, 2019; Savec, 2019, etc.). There is no universal model of a research University, and there are various national modifications (Taganova, 2007).

The development of information technologies and the Internet creates new challenges for the education system. It is planned to increase the opportunities for distance education technologies significantly and use actively the portals that are being created and developed as means of student-teacher interaction. Information technologies will allow educational institutions to "move with the times", to develop competencies for University graduates to be in demand in the world of work (Rugelj, 2019).

In May 2019, at the International conference on pedagogical research in the field of information technology "Innovative approaches to the use of digital technologies in education and research" (Russia, Stavropol; Slovenia, Ljubljana), head of the Chair of Computer Science and Didactics of the University of Ljubljana (Slovenia) Dr. Jože Rugel stressed the importance of knowledge sharing without any barriers and boundaries. The professor emphasized that not only technologies, but also approaches to teaching are subject to updating. Today, students expect from teachers an immediate response to their questions, they don't want to be passive recipients, and they expect some feedback. Our school doesn't match that. The most effective active training, according to Y. Rugel, is a project work, when students themselves find a solution to a problem, learn to cooperate, work in a team, correct self-presentation. In this regard, information technologies provide better access to data, information visualization, its storage, as well as greater freedom to share knowledge: "Technologies alone do not make the education process and life better. But how they are used and how well they are implemented with the help of people who know how to integrate them correctly determines the quality of education" (Rugelj, 2019). Dr. Carvalho C., Professor of the Polytechnic Institute (g. Porto, Portugal) stated that "a modern teacher should have competencies, including willingness for active learning, creativity, the desire to learn something new and constantly learn, the use of all information technologies in work, providing feedback to students" (Carvalho, 2019). Dr. Vesna Ferk Savec from the University of Ljubljana (Slovenia) drew attention to the fact that "information and communication technologies have great opportunities for developing the creative opportunities of students for effective training in the STEM format. The main advantage of using them is that they allow you

to use data regardless of time and place" (Savec, 2019).

Conclusions. The reflection exercise of empirical experience of the development of research potential of students' personality includes the development of program based, scientific and methodological support for the development of scientific and creative opportunities of students in the conditions of basic and further education; development of effective models and forms of the development of students' personal opportunities at different levels of education in different types of educational institutions, revealed the need to apply constructive genetic and integrative approaches to the development of creative and intellectual opportunities of the child's personality as an integrity that reflects the internal unity of creativity and intelligence. The criteria for the development of intellectual abilities are motivation for cognitive activity, the ability to converge thinking and divergent productivity. It is understood that with increasing significant experience of successful positioning and behavior in specific situations, the maturation of cognitive mechanisms, development of self-learning processes increases the possibility of sighting the mediating processes of student's self-determination, self-organization and creative personal fulfillment.

A system view on the process of developing the research potential of the individual by creating the meanings of scientific and research activities includes building a kind of positioning map of a reality fragment, in which the student wants to act; personal self-determination in this map of reality, determining the place of their self in each life fragment; designing a life strategy, and in it the choice of actions for personal fulfillment, creates unique opportunities for students to understand their own intellectual resource as a source and basis for self-efficacy, subjectification of themselves and new valuable knowledge.

The added practice of educational institutions, organizations of secondary professional and higher education in Russia and abroad tend to the development of young people's scientific and creative opportunities with scientific societies, social partnership of educational institutions, the use of modern information technology; scientific schools that engage the youth in the development, creation, and creativity.

Viewing the organization of the research activity of students (both schoolchildren and students) through assessing the degree of its effectiveness, we confirm the need for its further improvement. The problem of developing the research potential for children who are inclined to study certain subjects, children in orphanages, as well as children with disabilities needs to be developed. The study of ways to implement the links between education, research and professional activities will create opportunities for the formation and socialization of personality in terms of general educational institutions, educational institutions of secondary technical education, higher education institutions in proportion to the changing requirements of the state, economy at the world level.

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