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Problems of Innovative Transformation of Russian Higher Education Developmental Education on the Example of Agrarian University

Abstract

The purpose of the article is to analyze the transformational processes in Russian higher education aimed at restructuring the educational environment based on developmental education technologies that contribute to the formation of students' systematic thinking and abilities for self-realization in the professional sphere. Following this agenda, the change in the content of education in the Kuzbass State Agricultural Academy and the use of innovative teaching methods (business games, integrator, storytelling, pedagogical design, etc.) modify the role of the teaching staff. They initiate it as not only a translator of knowledge, but also makes it a key element in creation of prerequisites for employment of graduates and their professional implementation. Advanced training and retraining of teachers and administrative and managerial personnel of the Kuzbass State Agricultural Academy in the profile of developmental education creates conditions for the transition to "systematic thought activity pedagogy", training on its basis highly qualified specialists who are able to form their own individual trajectory of professional and career growth at the request of the employer, providing with their labor stability of the functioning of the agro-economy of the region. The research used the system-dialectical, comparative and integrative methods.

Keywords: Developmental Training, Innovativeness, Systematic thought Activity Pedagogy.

Introduction

In the context of the acceleration of scientific and technological progress, economic, social and informational transformations carried out in the country and the world, the topic of training specialists of a new format, capable not only of effectively performing their professional functions, but also of being able to resolve problem situations at your workplace, possess creative, systemic thinking is possessed.

In response to the challenges of the time, there is a restructuring of the education sector in terms of updating the goals of pedagogical activity, issues of the content of the educational

environment and the educational process, personnel training, the development of new teaching methodologies for the system of continuous education and retraining throughout life (Decision No 1720/2006/EC of the European parliament and of the council, 2006; European Commission Call Proposals 2011 – EAC/49/10, 2010). Awareness of the existing difficulties in the processes of the pedagogical industry, created by the temporary "gap" between the existing standards of education and the requirements of the socio-industrial and cultural sphere, dictates the search for educational innovations, forms an order for developing forms

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of learning, thinking and activity. In the field of education, there are a number of aspects that require special treatment.

1. First of all, it is necessary to bring the life cycles of educational programs into correlation with the life cycles of social and working functions of modern specialties and professions. The fact is that the intensification of sociocultural processes has led to the fact that the worker needs to undergo retraining several times during his professional activity, and possibly change his profession. Anyone, who ignores or is deprived of the opportunity to fulfill this requirement, goes to the ranks of the marginalized or increases the number of "superfluous people".
2. In the context of globalization, the progressive processes of industrialization and specialization of human activity lead to the appropriation (subordination) of the individual to production, to the transformation of the employee into an associated producer, practically completely alienated from the "understanding" and "vision" of the whole in which he is included (Davydov, 1996). Mastering the skills of system thinking, which should be taught by innovative pedagogy, will allow solving the problem of industrial alienation of the worker through the meaningfulness of performing a partial working function within the whole.
3. In the changing socio-cultural structure, there are changes in the functions, place and status of pedagogical activity. With the transition to the digital economy and distance learning, the further existence of the teaching profession and pedagogical production as an independent industry is questionable.

From the perspective of the above aspects, two tendencies have emerged in modern Russian university education: on the one hand, the traditional lecture and seminar methods of teaching are preserved; on the other hand, there is a penetration of developmental forms of education. That is, in the spectrum of modernization ideology, traditional educational technologies and traditional didactics are transformed and supplemented with innovative communications and game methods. Such elements contribute to the formation of new ways of perceiving the world, socio-cultural organization, and obtaining professional competencies. All this helps graduates to solve the problems of effective professional implementation in the context of urbanization, digitalization, computerization, mass communication, etc.

Materials and Methods

The authors of the article relied on international and Russian strategic documents in the field of education and agricultural development, on research in the context of developmental education, innovative pedagogy in higher education, developments in the philosophy of education, pedagogical design and the systems-thinking approach of P.G. Shchedrovitsky and others.

In the present study, the authors used systemic-dialectical, comparative, integrative methods.

Literature Review

The origins of developmental education are psychologists and educators such as B.G. Ananiev, L.S. Vygotsky, P.Ya. Galperin, V.V. Davydov, L.V. Zankov, A.N. Leontiev, I.Ya. Lerner, S.L. Rubinstein, D.B. Elkonin et al.

Various aspects of improving the learning process in higher education, including those based on the principles of developing education, were studied by: N.A. Aitov, G.N. Alexandrov and V.I. Andreev, L.V. Andreeva, S.I. Arkhangalsky, E.L. Belkin and V.I. Zagvyazinsky, P.I. Pidkasisty, R.R. Mavlyutov, A.F. Menyaev et al. Questions of educational projects in developing education were investigated by Ye.N. Zemlyanskaya and others. Activities of P.G. Shchedrovitsky is devoted to the creation of "systematic thought activity pedagogy" within the framework of the theory of developmental education. However, so far in the Russian educational space, the idea of developing education in the theory and practice of higher education has received little development.

Purpose of the article: The purpose of the article is to analyze the transformation processes in Russian higher education aimed at restructuring the educational environment based on developmental education technologies that contribute to the formation of students' systemic thinking and abilities for self-realization in the professional sphere.

Objectives of the Article

1. To analyze the relationship between the development of agriculture in Kuzbass and the training of specialists in the Kuzbass State Agricultural Academy in the framework of the Strategy for the Development of Agriculture, Food and Processing Industry of the Kemerovo Region for the period up to 2035 and Russia.
2. To reveal the significance of the transition to "STA-pedagogy" in Russian education for

the sustainable socio-economic development of society. Analyze the factors influencing the transformation of the traditional education system in higher education towards innovative technologies of developing education.

3. To consider the experience of the Kuzbass State Agricultural Academy in the educational policy of the transition to "STA-pedagogy", the preparation of the teaching staff to work in the format of developmental education and in the direction of training specialists who meet the requirements of modern agricultural production.

Results

1. In the agro-industrial complex of Kuzbass, agriculture is one of the most important components of the region. The agricultural industry combines a system of functions that give the right to be recognized as a priority in the development of the economy of the Kemerovo region, since it acts as the basis for maintaining food security of the population at the level of strategic national security of the Russian Federation (Decree of the President of the Russian Federation No. 20, 2020; Kononova, Kharitonov, 2016). The organization of the effective work of the agro-economy of Kuzbass largely depends on the effective management system, which consists in the transition from traditional forms based on taking into account only financial performance indicators and production indices to innovative forms based on indicators such as accounting for investments, competitiveness, modernization of technologies and technical base, the use of resource-saving technologies, etc.

According to the Strategy for the Development of Agriculture, Food and Processing Industry of the Kemerovo Region for the period up to 2035, the Kuzbass agricultural sector faces the task of reaching higher rates of economic growth in order to fully provide the population with a high-quality assortment of basic food products of its own production, stable socio-economic development rural areas, achieving full employment of the rural population and raising its standard of living, creating new jobs, etc (Order of the Administration of the Kemerovo Region No. 143-r, 2019). The solution of this strategic task actualizes the problem of training personnel for the agricultural sector and attracting the population to work at the enterprises of the agricultural sector.

The Kuzbass State Agricultural Academy is one of the centers of agricultural science, which

faces specific tasks of training specialists and leaders of a new format, capable of solving the problems of the long-term development of the agro-industrial complex of the region at a high professional level. As part of the implementation of personnel policy, increased attention is aimed to the development of a system of additional vocational education, advanced training and retraining of workers in the agro-industrial complex of the Kemerovo region (managers, specialists, workers of mass professions), employment of young specialists in agricultural organizations and their stimulating support.

2. Modern education is the main source of generation, improvement and development of human capital, and, consequently, a resource for the socio-economic development of the country, the progress of Russian society and an increase in the well-being of an individual (Project "Key directions, 2020). The labor market makes demands on people with adaptability and stress-resistant psyche, flexibility and creativity of thinking, capable of organizing independent activities in various conditions, ready for teamwork with new standards and a variety of technological systems. The formation of a personal line of education and career in an environment of reengineering (radical redesign) of business processes, progressive integration and division of labor in Russia and abroad, makes cognitive, network and cross-cultural competences (understanding the culture of others), empathy skills (conscious empathy for emotional the state of others). In the context of the development of local production systems (mathematical models, microprocessors, simulators, remote controlled robots, 3D technologies, etc.), complex production chains are being transformed to minimized, desktop devices, which brings them closer to the end user.

In the spectrum of economic and socio-cultural needs of society in Russian universities, there is crystallization of the understanding that "it is necessary to organize such an education that has a developmental character" (Davydov, 1996), that the deep content of higher education is the problem of mastering systemic thinking and the skills of collective thinking.

The concept of thinking activity and the systematic thought activity approach (STA-approach) was developed in the 50-70s of the XX century by Georgy Petrovich Shchedrovitsky and members of the Moscow Methodological Circle. According to P.G. Shchedrovitsky, on the basis of the STA-approach, a specific concept of "STA-pedagogy" can be formed, within

the framework of which the formation of the mental-activity complex and the necessary mental functions of an individual student ("imagination-thinking", "perception-understanding", "memory-reflection"). This means that the goals of STA-pedagogy are addressed not so much to the individual as to the systems and metasystems of collective thinking activity, within which individual individuals are included in developing (creatively evolving) thinking activity (Schedrovitsky, 1993a). Systematic research forms the organizational and leadership qualities of students, helping future leaders and specialists to successfully develop and implement various project activities in a short time and with limited resources.

Since the existing educational concept of modern higher education does not provide for the required amount of such knowledge and skills, the issue on the agenda is the introduction of developmental learning technologies in the educational process of the university in order to form students' skills in systems thinking and understanding the essence of the organizational process. The main idea of pedagogical innovations contributing to the teaching of the skills of system thinking activity is to restructure the entire cycle of education and special training, including in it along with traditional and other forms of classes (play, integrative, reflexive, etc.).

As examples of developmental educational technologies and methods, there may be the following:

1. An integrator that promotes the development of creative thinking and the ability to give author's definitions to various concepts;
2. Business games that reproduce the solution of a problem situation and contribute to the acquisition of various skills in the professional sphere on the basis of collective system thought activity;
3. Exercises to develop lateral thinking;
4. Storytelling - an original method of consolidating the acquired knowledge and its application in the author's mental or virtual history;
5. Educational programs, trainings;
6. Pedagogical design, etc.

Educational practice shows that it is advisable to conduct 2-3 organizational and business games (OBG) in each term, and in total during the training to use 20-30 different types of business games and other developing methods in different disciplines. When conducting OBG, it is necessary to take into account that this is a rather complex, but effective pedagogical technology, which is recommended to be used in cases where the goals cannot be realized by simpler methods or traditional forms of

education. Active learning methods also include such forms as brainstorming, modeling, discussion, round table, case studies, projects, presentations, and others.

"STA-pedagogy" allows an educational institution to rationally manage study time in terms of the use of developmental education, innovative methods and new optional disciplines, to eliminate the mental and "digital divide" between students, regardless of social status and distance.

In the Kuzbass State Agricultural Academy, the transformation of the learning process to innovative "STA-pedagogy" is carried out in two directions:

1. Students are mastering of basic competencies on the basis of developmental education: a) by participation in project activities, b) by introduction to professional activities (performing specific tasks related to the agro-industry), c) by practical training in specialized organizations;
2. Teacher staff is mastering of the skills of the system-thinking-activity approach based on the development of methods and technologies of developmental education, their practical application in the educational process.

Within the framework of teaching students, the following forms of activity have been introduced: individual and group work.

The group form involves dividing into groups of 5-7 people and performing a specialized task. Students are given the right to independently determine their own roles and positions in the group, as well as formulate a problem that the group will solve within the framework of a specialized assignment.

Individual work includes both individual work (all students perform the same tasks) and individualized one (students perform specialized tasks within their individual trajectories).

Currently, work is underway on additional educational programs for first-year students: "Career start" - the program is aimed at creating an individual student trajectory from the first day of study in the horizon of 10 years; "Fundamentals of Social Entrepreneurship" - the program is aimed at diagnosing and developing students' entrepreneurial competencies in the social sphere.

From the perspective of the second direction, the tasks of innovative restructuring of the educational process are carried out. In particular, the Center for Continuing Professional Education and Career Planning of the Kuzbass State Agricultural Academy has developed the course "Developmental Education at the University: Theory and Practice", it was designed to improve the qualifications of the teaching staff

through mastering the skills of the systematic thought activity approach. Teachers and students are actively involved in project activities.

Currently, the work is underway on a project to create agro-classes in secondary educational institutions with the aim of teaching schoolchildren a variety of professions (tractor driver, livestock technician, landscape designer, milker, etc.). On the one hand, such work will help vocational guidance of students and increase the flow of applicants to the Kuzbass State Agricultural Academy. On the other hand, a school graduate will have a document on the profession he has received, which should help a person to find his/her own place in life. For the implementation of this project, it is planned to organize qualification retraining of teachers, giving them the right to conduct classes on teaching the profession.

The Kuzbass State Agricultural Academy is successfully solving the problem of the correlation between study time and the place of innovative forms of education in the curriculum with an increasing volume of new knowledge, the peculiarities of working in a multilingual and multicultural environment. The pedagogical efforts of the teaching staff of the Academy are aimed at teaching students to think creatively and apply the knowledge gained in practical life in the context of digitalization, automation, robotization and artificial intelligence.

The Academy understands that in the context of the rapid obsolescence of educational standards of traditional education and the role of narrowly subject knowledge, the progressive influence of the values of the network subculture on a person is growing. The proliferation of network practices forms new principles of interaction between subjects based on non-monetary logic and information communicative transparency. In the field of education, the so-called "self-organizing schools", working in the crowdsourcing format, are becoming popular, blurring the hard social lines between teachers and students. In these conditions, it becomes especially important continuous learning, periodic training and acquisition of new professional skills through distance learning. Therefore, the academy is taking measures to provide the educational process with teaching staff who are proficient in developmental teaching methods, digital competencies and strategic vision competencies, with high motivation for teamwork.

Discussions

Recently, attention has intensified to pedagogical design, with the aim of identifying and analyzing educational problems, the reasons

for their occurrence, defining tasks, value foundations and strategies, searching for methods and means of implementation. G.P. Shchedrovitsky identified two types of polar strategies in pedagogical design:

1. Environmental adaptation, adaptation to social conditions of life, in order to modernize the pedagogical process for a specific social and state order;
2. Transformation of the educational environment with the aim of the emergence of new types of educational activities in accordance with the values of the subject of the educational process (students, their parents, teachers) (Schedrovitsky, 1993b).

Within the framework of the first strategy, the orientation of educational institutions to the demands of the socio-economic development of society, the restructuring of educational programs based on the production requests of the employer, the formation of students' skills of team systematic thought activity and joint work on real projects becomes relevant.

Logic of the second strategy requires the formation of individual learning trajectories in order to obtain individualized educational products for the needs of customers in connection with the increase in the number of conscious students (autodidact) who are themselves able to formulate their learning goals and the necessary set of competencies. In the implementation of educational programs, the use of artificial intelligence and machine learning opens up wide opportunities for the selection of tasks at a motivating and developmental level.

Conclusions

Thus, reconstruction of education on the level of the higher education, including agricultural universities, on the basis of developmental teaching in accordance with the modern stage of scientific and technological revolution and the requirements of the digital economy, is one of the most important areas of pedagogical activity. Against the background of the rapid pace of change in information and other technologies, the system of higher education in the Russian Federation is being modified in order not only to obtain fundamental theoretical knowledge, but also to develop students' skills and competencies that allow effective professional implementation in a transforming socio-economic environment. From this perspective, the change in the content and methods of education in the Kuzbass State Agricultural Academy, which meets the needs of the time, modifies the role of the teaching staff, initiating it as not only a translator of knowledge, but also makes it a key figure in creating the prerequisites for employment of graduates and their career

growth. Advanced training, retraining of teachers and administrative and managerial personnel of the Academy in the profile of developmental education creates conditions for the transition to "STA-pedagogy", training on its basis of highly qualified specialists, ensuring the stability of the functioning of the agroecology.

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