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Joint Activity of Autonomous Actors in an Open Educational Environment

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Abstract

Recently, a considerable literature has grown up around the theme of the transition to the digital economy, the increasing value of the individual with unique features and the ability for self-conscious activity. In order to improve the quality of teaching, it is necessary to develop a methodology of targeted application in the education of jointly distributed activities, characteristic of modern youth.

In this regard, this article aims at the development of the assessment criteria and identification of actor's autonomy levels and their joint activities in the educational process, and definition of methods for organizing jointly distributed activities of autonomous actors in the education.

The leading methods in the study were monitoring the activities of teachers and students in social networks, especially on educational communication platforms, identifying and comparing the characteristics of these activities; analysis of the products of educational activities of students interacting in educational networks; expert assessments to determine the level of quality of the achieved results.

The article justifies the criteria of assessment of the levels of the educational actors' autonomy and their activities, developed the methods of organizing jointly distributed activities of autonomous actors of the educational process and revealed the possibility of changing their functional roles depending on the type of their interaction.

The materials presented in the article allow creating the organizational and methodological conditions for the formation of virtual training groups, taking into account the level of preparedness of autonomous actors for joint educational activities in order to improve the quality of teaching.

Keywords: jointly distributed activities, educational actors, actor's autonomy, digitalization of education, educational network, online class.

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Introduction

In the Russian Federation, there is a great shortage of teaching staff and educators. Thus, in the Volgograd region of Russia, 680 municipal general education schools, 32 state general education organizations (including 27 corrective general education schools), 14 private general education organizations, 55 secondary vocational education institutions and 201 additional education institutions for children are in high demand of pedagogical personnel. The total number of teachers in the Volgograd region is 24 077, including 19 029 teachers of general education organizations, 2 465 teachers of additional education and 2 583 teachers of professional educational organizations.

According to the data of the Analytical reference on the results of the forecast of the needs of the regional labor market in specialists required by the sectors of the economy of the Volgograd region for 2019-2025 (Committee on Labor and Employment of the Volgograd Region, 2019), the greatest need for qualified personnel will be felt by employers carrying out the main activities, including the field of education and science (3 000 people, or 4.3% of the total staffing requirements). The greatest need is observed in teachers in the following subjects: mathematics, physics, informatics, Russian, foreign languages, and biology.

The analysis of the age composition of teachers of the Volgograd region showed that the number of teachers over 60 years of age is 2 165 (12.45% of the total number of teachers employed), and between 50 and 60 years of age – 5 073 (29.18%) The largest number of teachers over 60 years of age in the following subjects: Russian language and literature, mathematics, foreign languages, labor training (technology), physics, history, social science, and physical education.

Thus, the number of teachers of pre-retirement and retirement age is almost 42% (7 238), which causes an increase in the need for pedagogical personnel in the region in the near future. An additional argument is that the number of young teachers under 30 years of age is about 2 thousand (11.53% of the total number of teachers in the region).

The additional need for pedagogical personnel is also due to the large-scale work on the renewal of educational infrastructure carried out in the region. Since 2016, three new schools have been built, in which 2 340 new places have been created for students. In 2019, 14 kindergartens for 2 220 places were built. By the end of 2021, 16 more kindergartens will be built, and by the end of 2022 it is planned to build three more new general education organizations and create 2 550 new places.

It is important to understand that the system of higher pedagogical education and post-graduate training of teachers should ensure not only the necessary number of teachers, but also their high professional skills. In

particular, teachers should be able to actively take advantage of the opportunities offered to them by modern communication technologies. Teachers have new perspectives for interaction with students, while "good old" time-tested methods are increasingly losing their effectiveness. However, the modern system of teacher training is built for the most part on the study of these "good old" methods, which requires a rethinking of methodology in accordance with modern realities.

Current trends

It would seem that in modern school there is everything for education to be effective. There are motivated, bright teachers and curious schoolchildren. Schools are well equipped, and according to the national project "Education" continue to be equipped with modern equipment. For the most part, both teachers and children actively use digital technologies in their lives. However, quality leap in the results of education has not happened. One of the key reasons for this situation is the attempts to transfer to the new digital educational environment the old scheme of interaction between the actors of the educational process. As a result, the low level of autonomy of educational actors, characteristic of traditional education, is supplemented by a significant decrease in the level of theirs cooperation.

Autonomy is one of the basic properties of the person, characterizing his or her readiness and ability to act independently, regardless of external settings, on the basis of personal significant targeting. In studying the phenomenon of autonomy, researchers highlighted various aspects of it, in one way or another stressing the importance of this characteristic for personal development. Jung (1933) considers the desire for an "autonomous spiritual complex" as the basis of personality development. Murray (1938) emphasizes that a person's desire for autonomy as an exemption from bonds and restrictions, associated with resistance to coercion, the desire to act according to his motives, is his natural need. According to Maslow (1993), the autonomy of man is identical to the self-actualization of the individual to the full use of his talents, abilities, capabilities; thus autonomy is a natural property of a self-actualized personality. On the other hand, Fromm (1994) argues that personality never achieves absolute autonomy, although it is in constant search of ways to achieve it; and according to Frankl (1978), autonomy is not the denial of any external dependencies but the management of them by means of personal settings, i.e. the ability of an individual to make a choice corresponding to the realization of his personal goals. Thus, it can be concluded that an autonomous person, existing in the midst of other autonomous individuals, is forced to reckon with their autonomy, in something limiting their own autonomy. Andreev (2015) considers autonomy to be a systemically important quality of "self-sufficient personality," whom is also inherent in "a high level of moral culture and citizenship, (…) high levels of development of abilities for self-determination, self-realization and self-restriction combined with sufficiently high levels of creativity and sensible practicality." (p. 61). Andreev

(2015) emphasizes such qualities of personality as necessary for existence in society: moral culture, citizenship, ability to self-restriction.

Therefore, along with autonomy, the most important quality of the person is the ability to interact with the surrounding actors, readiness to cooperation. In fact, one of the most important tasks of education is to help the individual find a balance between autonomy and cooperation that would contribute to the harmonious development and most complete self-realization of the individual. It is, therefore, essential for the education system itself to strike a balance between the autonomous and collaborative activities of educational actors.

Literature Review

First of all, it is necessary to think about the very basics of the organization of the educational process and environment, to which the graduate of the pedagogical university should be prepared. The processes taking place today in the field of education, including digitalization, lead to the ageing of many didactic techniques, forcing the search for new methods and solutions adequate to modern conditions.

The educational system that was created and developed during the era of industrial revolution and mass production, was founding this balance in increasing the degree of cooperation, to the detriment of the personality autonomy. In those circumstances, this was justified: education was supposed to be massive, and the educational technologies that existed at the time did not allow to effectively combining mass with individual educational paths. In addition, the main goal of mass education was to prepare students to be elements of a whole to work together (for example, in industrial production). That is why the education system of the industrial era reproduced the system of industrial production, as pointed out, for example, by Foucault (1975).

Today, during the post-industrial era, this scheme does not work. The realities of the modern society are such that, on the one hand, the peculiarities of the individual, its individual values, goals, and tendencies are given extremely high importance, and on the other hand, new technologies provide more and more opportunities for personalization of the educational process, selection of individual educational paths. Today the methods and tools are widely available, which were yesterday the property of elitist education. However, most teachers have yet to learn how to use these methods and tools.

Therefore, today, the educational system should both provide actors of educational process with the necessary conditions and resources for joint activities, and at the same time, guarantee the actors a sufficiently high degree of autonomy.

In established educational practice, since the Industrial Revolution, the purpose of interaction, as well as the form, the structure of ties is determined only by one of the actors, i.e. the teacher. It is the teacher who determines the incentive, motive of the students' activities. At the same time, the interests of the students, their individual peculiarities, tendencies, needs, clearly not in the first place. Most often, these are not taken into account at all. In general, the system is strictly hierarchical, without changing throughout its existence. The roles of educational actors are strictly defined. All functioning of the structure is aimed at achieving the collective goal set from outside, without taking into account the interests and objectives of each of the actors.

On the other hand, it is extremely unlikely that a single, fully autonomous actor, even placed in a favorable environment, will be able to achieve any goals. In this sense, joining any system, even overwhelming, allows (if the imposed goal is accepted as personally significant) to join forces with other actors, gives an incentive (even negative) to development, and provides some opportunities for movement and achievement.

However, the autonomous actor will prefer to enter a system that allows him/her to achieve his/her own, personally significant goal than to enter a system that imposes on him/her an external, obscure, personally insignificant goal for him/her. Also, the autonomous actor will prefer to enter the system that leaves him/her the right to make decisions than the system that requires unconditional subordination.

However, in fact, we are still trying to move to a new environment the old principles of educational actors' interaction. Should we spend our strength and time on it? Or should we focus on making education adequate to the challenges of our time, and the real needs of the present young generation? Is it not what we are trying to achieve through the national project "Education", and its federal projects "Success of every child", "New opportunities for every one", "Social elevators for every one"? If the answer is yes, first of all it is necessary to change the role and functions of the teacher as a key figure. Thus, one of the most important competences of the teacher accordance to the national project "Education" is the "participation in the creation of a modern and safe digital educational environment and carrying out in it the professional activity" (Ministry of Education of Russia, 2018).

Therefore, successful implementation of the federal project "Teacher of the Future" is extremely important. One of the main objectives of this project is the professional development of the teacher, i.e. a continuous process carried out in the close cooperation of teachers in a single educational environment of regional, federal, and world levels.

Methodology

Looking at the process of education from a systemic perspective, we can highlight three interrelated elements of the system: (1) the environment conducive to the existence and development of the system; (2) the actors that make up the system; and (3) the incentive that triggers the development processes in the system.

The environment includes what ensures the interaction of actors before all resources and infrastructure were applied. Actors of the system are children and adults at various stages of life and in various educational roles: schoolchild, university entrant, university student, teacher, graduate student, educational researcher. The incentive is a motive for actors in the system to interact.

Thus, education is the joint activity of autonomous actors in the appropriate environment taking into account the peculiarities and needs of each actor and aimed at achieving educational goals. In order for interaction to begin between the actors, a combination of three conditions is necessary: (1) readiness of the actors to interact, (2) one-time presence of the actors in a favorable environment, (3) presence of an incentive for the actors to work together.

Creation of the educational environment is a difficult process which demands implementation of a complex of the interconnected and interdependent measures of administrative and organizational and scientific and methodological character. Among these we will name:

- Legal and regulatory support for the implementation of the principle of continuing education. This is particularly relevant in connection with the specifics of pedagogical work.

- Preservation of the unified space of pedagogical education in Russia.

- Creation in Russia of a network of regional support pedagogical universities (one in each federal district) as resource centers, which solve the tasks of reflection of the status of an educational system, development and testing of innovations in the field of pedagogical education, coordination of the whole system of training, advanced training and retraining of personnel for the education system, scientific research of educational problems. The leading pedagogical universities of federal districts at which 80-90% of students study according to the "Education and Pedagogical Sciences" program (code 44.00.00) naturally have to undertake this role.

- Significant increase in standards of financing of pedagogical universities. At present, there is a serious gap between the level of material, technical and resource support of teacher training universities and the corresponding level of other educational organizations in the context of the National Project "Education". Equipping and financing of schools and other organizations of education (Quantoriums, the centers of work with exceptional children, the centers of work with children with limited opportunities of health, the centers of work with children with special educational requirements, etc.) now many times surpasses equipping and financing of the pedagogical universities. At the current educational and material base of most pedagogical universities, it is impossible to train "teachers of the future."

However, all these measures to ensure financing, infrastructure and legal regulation, which fall within the competence of State authorities and education administration, will be adequately effective only if combined with deep theoretical development and scientific justification of processes of changing the structure, content and methods of teacher training in accordance with the current requirements of the modern educational environment. In other words, not only the formation of the environment but also the provision of appropriate training for its actors, and the availability of adequate incentives for organizing their joint educational activities, should not be overlooked. It is on these aspects, as directly dependent on the activities of the scientific and pedagogical community, that we will focus our attention. The incentive for joint activities of autonomous actors may be, for example, a common goal that is understandable, engrossing, and acceptable that is in the interest of all actors.

Equally important is the attractiveness of the environment in which actors will interact. In this regard, the process of digitalization, which significantly changes the appearance of modern education, has great possibilities. Digitalization is not only about saturation of the educational environment with technological tools and digital resources. It is primarily about the possibility and prospects for organizing interaction between educational actors in accordance with the principles of modern open society.

For example, the development of network technologies brings joint activities in the information environment to a fundamentally new level. In particular, social networks are a unique phenomenon that demonstrates the readiness of autonomous actors to interact by organizing mobile, volatile, living structures that can carry out effective joint activities.

Similar principles can be used to design educational networks that:

- provide access to information and methodological resources that are unique in educational capacity;

- enable educational actors to interact in any direction and at any level;

- ensure that each actor achieves educational goals.

Thus, today, the prospect of education is in a new way to structure the system of relations between the educational actors. And we see the prospect in the jointly distributed activities of autonomous actors in the open information space. We define jointly distributed activities as a system of actions comprising:

- autonomous activity of actors: transformation, modeling, control and evaluation of the way to solve the problem;

- the system of joint actions of the actors: incorporation of different models of action into the activities and their mutual coordination; joint development of joint activity models; communication in the process of cooperation and search for new ways of working together.

Results

In the implementation of the whole system of joint actions, activities based on interaction of role groups and between participants in the same role group become effective for individual development. Participants of joint activities need to be purposefully prepared for it. They should not only know and be able to do their part of the job (high level of autonomy), but also understand its place in the overall solution strategy (high level of jointness). They should be able to see and implement the links of the work performed with other elements in the process of solving, determine its dependence on common ideas, goals, etc. They should be able to communicate with interacting actors (Shtyrov, 2012).

Mastering modern methods of intellectual activity is a powerful incentive for self-development of students: the range of tasks available to them is significantly expanded, which allows the teacher to put more complex and significant problems before them. Students are able to build and analyze models, conduct thought, virtual (using computer simulators) and natural experiments, use new sources of information, interpersonal communication in computer networks. Jointly distributed activity in an open information environment manifests the actor's autonomy as an awareness of a common goal and own role in achieving it, the ability to understand others, to behave with them on an equal footing, the ability to represent and defend their original ideas, their own positions, comparing them with those of others. This process is in line with the general transformation of the "I-Other" opposition in the context of the transition to the information society, as its reflection in the field of education (Kazanova & Shtyrov, 2014).

In joint activities, new forms of community, substantive and meaningful communication and business cooperation with other actors are being developed. The emergence of common goals intensifies the desire to exchange activities, master and transform the ways and means of interaction themselves. It encourages the development of processes of mutual understanding and communication, overcoming egocentrism and building the ability to cooperate.

Autonomous and collaborative forms of activity in an open information environment include:

- distribution of initial actions and operations among the actors;

- exchange of modes of action due to the need to include autonomous actors in joint activities;

- mutual understanding among actors to incorporate different models of action into the overall modus operandi (mutual understanding establishes correspondence of action of each autonomous actor with actions of other actors of joint activity);

- communication to ensure processes of distribution, exchange and mutual understanding;

- planning and harmonization of general working methods;

- reflection which provides overcoming limitations of each autonomous actor's own action relative to general scheme of joint activity (reflection establishes the attitude of the actor to his own action, thus, ensuring its conformity with the content and form of joint activity).

Autonomous and joint activity in an open information environment implies unity of space of operations, consistency of approaches, and unity of conceptual apparatus and formal language of communication and is usually implemented in one of the following forms:

- autonomous: each actor works independently, exchanging with others information about his/her own activity;

- joint-autonomous: the final product is shared;

- joint-coordinated: the actors work independently but agree on goals, strategy and means of action (the final product is not necessarily shared);

- joint-cooperative: activities of each actor are distributed and coordinated in autonomous activity;

- joint-consistent: autonomous activity of one actor is continuation of activity of another actor;

- joint: actions of individual actors are not always possible to separate (Korotkov et al., 2009).

In carrying out autonomous activities, students independently solve tasks that seem to them to be the most interesting and promising (i.e. have subjective high personal importance). In such activities, students independently search for the necessary information, choose options to solve emerging problems, which gives them the opportunity to effectively manage their own activities, orients them to continuous self-development, encouraging them to creative self-realization.

In carrying out joint activities, students can be both in the position of performers and in the position of initiators, able to predict and adjust the work on the general project and the processes of their creative self-development. It follows that the form of organization of educational activities in an open information environment does not in itself determine the level of actors' autonomy, i.e. it is determined by the level of culture of activity and the power of interaction of the environment with the field of universal human values.

Naturally, in order to organize such joint and distributed activities of students who interact according to the network principle, it is necessary to fundamentally change the structure of competences of the teacher, as a key figure of the educational process who will have to become the organizer and coordinator of this activity.

Although competences related to the organization of joint network activities occupy an increasingly significant place in the system of professional competences of the teacher, effective practice remains very rare. However, only such approach allows building an educational network, which not only will provide access to information and methodological resources unique in educational potential, but also organizes interaction of educational subjects in any direction, at any level, in accordance with the goals of each subject.

Discussions

Researchers of our university have long been actively studying joint-distributed networking educational activities (Korotkov et al., 2009; Shtyrov, 2012; Shtyrov, Korotkov, Zemlyakov, & Ivanov, 2014; Zemlyakov, Korotkov, & Shtyrov, 2016; Voronina, Korotkov, & Smykovskaya, 2017; Korotkov, Saharchuk, & Sergeev, 2019). As a result, several online educational projects were implemented, combining a high degree of autonomy of educational actors with a high degree of compatibility of their activities. The distinctive features of these projects are:

- Openness – the opportunity of each entity to engage in activities through joining the network;

- Allocation of resources, especially information and methodological resources, for their sharing;

- Online – the continuous interaction of actors in the network;

- Continuity – both temporal, through the conduct of activities by the actors throughout the existence of the project, and spatial, i.e., ensuring connectivity between all the actors, regardless of geographical and other factors;

- Immersion – close connection of autonomous activity of each actor with joint activity of the whole virtual team.

On the initiative of the Volgograd State Socio-Pedagogical University, a prototype educational network was created in the Volgograd region, which brought together more than sixty resource centers of the system of continuous pedagogical education and innovation sites operating on the basis of pedagogical and socio-pedagogical colleges of Volgograd, Kamyshin, Mikhailovka, Zhirnovsky and Dubovka, advanced grammar schools and lycées of Volgograd, institutions of additional education of children and additional vocational education. An important feature of the work of this network is the direct interaction of the Volgograd State Socio-Pedagogical University, as its kernel, with the management bodies of education systems of municipal districts of the Volgograd region. This makes it possible to make the most effective use of the methodological and human resources of the educational system in each district, as well as to organize the interaction of university specialists with administrators, educators and teachers on the districts in the form and scope most adequate to each particular case.

Considerable practical experience of interaction of subjects of educational process within the framework of the network has been accumulated. For example, thanks to the cooperation of the University with the administration of the Novonikolayevsky municipal district of the Volgograd region in 2013-14, the so-called "Novonikolayevsky Experiment" was carried out. It became a prototype of organizing network joint and distributed educational activities in other municipal districts of the Volgograd region. The essence of the experiment is to implement a model of a virtual distributed class, or "online class," in which the autonomous activities of each actor are closely combined with joint activities, both directly in small groups and with all members of the class, through computer communication channels. This model ensures constant active interaction of university specialists, university students whom undergoing pedagogical practice, school teachers on the ground and high school students. At the same time, the active professional orientation of schoolchildren towards pedagogical activity is provided, as they get a real opportunity to try

themselves (under the constant patronage of teachers) in the role of leaders of the children's collective. And school teachers improve own skills in the field of the organization of extracurricular activities of pupils, and do it on the job, in real conditions, but not on ideal theoretical model as in usual advanced training courses – both internal, and distant.

Thus, we can carry out continuous training of the teacher at all stages of his/her professional formation: training in the high school of general education; primary vocational education (secondary special in colleges and higher in university) and postgraduate advanced training. However, even in the conditions of the university network, it becomes increasingly difficult to carry out systemic interaction between subjects of continuous pedagogical education at the proper level. There are a number of reasons, among which the main one is the very structure of such interaction, when the university is a hierarchical center, closing all ties, which contradicts the idea of the network itself. Therefore, the next step is to create an open educational network that will ensure a higher degree of connectivity of its components, not only "vertically," but also at horizontal levels. In this case, the University plays the role of interaction initiator, coordinator, consultant, and sets the incentive for interaction. But the interaction of actors can also be carried out directly through the connections established between them.

In this environment, actors create temporary collectives, substructures that contribute to the achievement of the goals they set for themselves. The educational network allows them to interact with other actors with the same or similar goals, coordinate actions, and allocate roles and responsibilities, access and share resources. At the same time, the jointness of actions does not interfere with the autonomy of the actors: everyone selects partners, the form and duration of interaction, sets criteria for achieving their own goal.

It is very important that depending on the form of the activity carried out, the goals and ways of interaction and other factors, each actor can "try" on various educational and professional roles: in some situations he/she can act as "a student," in others – "a teacher," "an expert," "a mentor." In the model adopted by us, it turns out that each actor distributes its own activities depending on the purpose he/she wants to achieve, the situation in which he/she is located at the moment, and the functional role defined by these purpose and situation, as well as other personal motives.

Conclusion

Thus, being included in joint activities according to our methodology, the actor gets an opportunity and ways to fully realize his own autonomy, achieve a personal significant goal and develop his personal, professional and other potential.

In conclusion, it should be noted that only saturation of the educational environment with resources, only "digitalization" of educational and methodological materials is not enough for a qualitative breakthrough in the field of education and achievement goals of the national project "Education." For this purpose, it is necessary to change the structure of interaction between the actors of the educational process. The structure that was created in another era in accordance with the realities of that era does not work in today's "digital" realities, and increasingly prevents educational stakeholders from meaningful activities.

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