

## COMPUTER NETWORKS IN THE WORK OF HIGH SCHOOL TEACHERS

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One of the most urgent problems of the development of the educational process is the formation of educational networks. The modern goal of the state policy of education is, first of all, increasing the accessibility of quality education, corresponding to the current needs of society and every citizen, in the concept of long-term socio-economic development of the Russian Federation for the period until 2020. On the basis of this, let us outline the following principles for the implementation of network interaction: Information technology, which will allow higher education institutions to develop more rapidly. Partnership and cooperation, allowing the exchange of developments and new materials. Development and implementation of joint programs. Networks in the educational process can be represented: as a set of interacting educational institutions, and technology for communication between teachers of various levels of training. To date, only a few higher education institutions have joint training programs for bachelors, specialists and masters. There are several problems in the implementation of network interaction, which are discussed in the article: A small work experience of teachers in the field of information technology; Lack of knowledge on the use of Internet resources in the educational process; Insufficient formation of professional competencies. The article examines examples of network interaction between teachers of higher educational institutions, as well as problems of networked pedagogical interaction.

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Pedagogical interaction is a universal characteristic of the pedagogical process. Even without experience in the pedagogical sphere, you can clearly see several forms of pedagogical interaction: "student-student", "student-collective", "student-teacher", "students – the object of assimilation", etc. The main thing in this diversity is the relationship "pedagogical activity – student activities". But ultimately determining is the attitude of "student – the object of assimilation". This is the very specific nature of pedagogical tasks.

The pedagogical process expresses the interaction of two subjects, mediated by the object of assimilation, i.e. content of education.

From the scientific point of view, we distinguish such types of pedagogical interaction as: pedagogical (the relations of teachers and students); mutual (relations with teachers, peers, juniors); subject (the relationship of students with objects of material culture); relations to oneself.

Pedagogical interactions can differ among themselves. For example, direct and indirect effects. No less diverse and the response to these effects. For example, ignoring, ecstasy, indifference, acceptance of information, processing, memorization, action, etc.

### Network pedagogical interaction

Informatization, widespread use of information technology in everyday life has an impact on education in the Russian Federation. These criteria became a condition for fulfilling the state order for the development of education.

GEF 4 th generation forms a request for the renewal of the information and educational

environment of higher education and for the qualitative use of its resources, which is unrealistic without the development of the professionalism of VET teachers.

What is network interaction?

The teacher's network interaction is a technology that makes it possible to realize the opportunities for developing the teacher's competence through the activation of his personal characteristics, interests and opportunities.

What are the goals of networking between teachers?

They are quite understandable to any person, because in the age of information technology, every third qualified employee deals with a computer.

The objectives of networking are: to increase the level of professional knowledge of teachers, the practical development of innovative methods and technologies of the educational process, and, consequently, to improve the effectiveness of the pedagogical process.

Of course, the teacher can not be immediately ready for network interaction. This process goes through several stages:

1. Introduction and study of network services (software that handle different types of information).

2. Introduction of network technologies in the educational process (the introduction of projectors, electronic diaries, performance matrix, etc.).

3. Use of networks as an environment for the exchange of information between teachers.

4. Formation of own network service (teacher's website).

5. Use of personal information space (transfer of experience in network groups).

One can note the advantages of network interaction between teachers.

First, networked pedagogical interaction does not limit or establish a temporary, territorial framework for participants in the process. Teachers of different regions, and different countries, without obstacles can “cross” thousands of kilometers in just 1 second. And most importantly, it’s availability!

Secondly, networked pedagogical interaction is focused on the individual needs of each teacher. This can be the transfer and acquisition of experience, participation in scientific webinars, online training, etc.

Thirdly, it is economy. Reducing the cost of transportation costs for going to the training centers.

Thus, network communities or teacher associations are a new form of professional activity organization available in a computer network. But, unfortunately, it was this effective innovation that was not sufficiently developed adequately among university professors. It is professional network associations that can give teachers the opportunity to communicate with each other, solve pedagogical issues, realize themselves and improve their professional level.

#### **Network communities as a method of development of the educational process**

An excellent option for continuous professional development, constant communication and exchange of knowledge with colleagues, presentation of their own experience are – network professional communities of teachers.

Teachers who participate in online communities acquire the skills to post information on the Internet, and also transmit and receive invaluable experience of their colleagues. All together, teachers create a semblance of an archive of methodological and didactic materials, which is necessary for the next generation of teachers and methodologists.

These groups have great advantages: space for information exchange between teachers, professional growth, incentive for creative development.

#### **Examples of network pedagogical communities**

So let’s start with websites where university teachers can officially publish their works, articles, etc.

The first of such sites can be called the All-Russian site “For the Teacher” (<https://dlyapedagoga.ru/>). This is a web-based publication designed to publish author’s developments of

educators, teachers, teachers, as well as organizing and holding all-Russian competitions, quizzes and olympiads. The publication of the material on the website “For the teacher” is confirmed by the issuance of an electronic certificate, participation in an all-Russian event – an electronic diploma [1].

All-Russian site “For Teacher” allows teachers: participate in express competitions; publish articles; participate in conferences; publish reports; to pass distance learning; participate in webinars; create your own personal sites.

Also, the site divides all publications into preschool, primary, basic general, secondary (full), secondary (professional), higher and additional education. Such a structure allows teachers of any category to easily determine the direction of their activities, their potential competitors, etc.

The electronic educational journal “Teacher” (<https://zhurnalpedagog.ru/>) also has a number of advantages [2]. At first glance, this magazine in its structure is very similar to the All-Russian site “For the Teacher”, but he also has differences.

Consider the differences:

1. The structure of the site also includes publications on pre-school, primary, basic general, secondary (full), secondary (professional), higher and additional education. But here one more item has been added – All-Russian conferences.

2. In the journal can be tested not only teachers, but also students with the curator.

3. If necessary, you can get a review of the work of the teacher.

4. The teacher can check the issued document on the website of the magazine “Teacher” on the series and number.

5. All the teachers who posted the publication on the website of the publication, or who participated in one of the events of the site, can download a letter of gratitude from the editorial staff. Is free!

6. The teacher can also take part in the expert activity.

All-Russian educational “Portal of the teacher” (<https://portalpedagoga.ru/>) [3].

This portal is also similar and almost exactly copies the previous one. Here teachers can also publish their articles, participate in online conferences, go through distance learning and refresher courses.

We examined three electronic platforms for VO teachers. Already now we can say that the All-Russian site “For the Teacher”, and the Electronic Educational Journal “Teacher”,

and the All-Russian Educational “Portal of the Teacher” have only paid publications.

Consider, as an example, several free sites for communication between teachers.

One of these sites is the Sotsobraz network community (<http://wiki.iot.ru/index.php/>) [4].

Networked social and pedagogical community created within the project “Creation and development of social and pedagogical communities in the Internet (teachers, methodologists, social educators, psychologists, specialists in additional education and parents). Here teachers can participate in consultations, in training, in educational developments, write an article. “SotsObraz” is an interactive platform for the exchange of experience of teachers, methodologists, social educators, class teachers, teachers of additional education, school psychologists, and the network community where parents can receive counseling and necessary recommendations on the issues of education, upbringing and development of schoolchildren.

Of course, there is no section for teachers of higher education institutions, but to raise their level of knowledge of pedagogical psychology, social pedagogy will not hurt the teacher of the university.

A professional community of teachers “Methodist.ru” (<http://metodisty.ru/m/groups/home/>) [5] will really help to feel the network pedagogical communication. It is designed to meet the needs of teachers precisely in the exchange of information, communication and self-realization. The site has a forum, the teacher can create a group, blog, chat. There is a library of teachers’ works, where you can contribute your work. The community contains more than 30 groups (different subjects and directions – administration, class leaders, subject matter, etc.). Presentations, programs, development of lessons within each group. Everything can be downloaded! Each development contains an author’s comment with a description. There is an opportunity to discuss work within the group, evaluate it or communicate with the author. Many audio and video files are freely available. You can publish your own materials, and even create a group. The advantage of this pedagogical community is that you do not have to register for downloading the material. In fact, even a student of a pedagogical higher educational institution can find a lot of useful information for himself.

Faculty “Education Reform” of the educational portal “My University”. Club of teachers (<http://edu-reforma.ru/index/0-23>) [6].

Provides a platform for communication and exchange of experience, as well as extensive opportunities for all those who are engaged and interested in teaching children and reforming education. There is a dedicated subject (thematic focus) – for the experts of the contest “Active teaching methods”.

A member of the Club can be any person who has fulfilled the conditions of joining the Club, which deals with teaching students or reforming education.

Conditions for joining the Club as a member:

1. It is necessary to accept the conditions of participation in the Club.
2. Follow the Club Rules
3. Fill in the application form for joining the Club

Opportunities for Club members:

1. The possibility of communication among professionals, involvement in the professional community.
2. The possibility of obtaining useful information on educational reform and pedagogy.
3. The possibility of finding partners for the development and implementation of their educational projects, the acquisition of useful links.
4. Help, professional advice of colleagues.

These are just a few examples of e-portals for teachers. That’s just missing a highly specialized site for university teachers in a certain area.

Thus, in the Internet space there is a sufficient number of sites for communication and exchange of experience between teachers. Another question is whether university professors are ready to participate in the activities of these sites?

#### **Peculiarities of network interaction of higher educational institutions**

The development of the economy of the Russian Federation assumes the introduction of new organizational forms of interaction between domestic and foreign educational institutions, in particular, higher education institutions.

Not only network pedagogical communities, but also networked communities of higher educational institutions should undergo modernization.

It is not necessary to concentrate in education all attention on the vertical system of VO (bachelor’s-master’s degree-postgraduate study, specialty-postgraduate study). In the 21st century, it is necessary to provide an opportunity to expand the range of professional opportunities for students at the undergraduate

or specialist level (horizontal system). Now there are very few examples of a horizontal system for training future professionals. One such example is the USU project – joint programs for the preparation of bachelors in economics of the State University – Higher School of Economics (SU-HSE) and Ural State University (USU). Thus, students receive two diplomas of a bachelor's degree – a native university and a diploma of SU-HSE. This project is set up as an experiment, the inter-university agreement is the normative basis, which sets the conditions for the selection of students of the USU for simultaneous training at SU-HSE, as well as the mode, terms, and cost of training.

This example proves that now, in the ever-changing conditions of the Russian vocational education system, the trainee can be given opportunities to increase the mobility of his education.

But not only the student wins on the basis of a networked university association. The teacher also has the opportunity to upgrade his skills and expand his professional experience, through communication and consultation with other university teachers and staff.

The only drawback of the USU program is that the competences of graduates do not increase.

The solution to this shortcoming was the joint educational program for the preparation of bachelors of the Academy of National Economy under the Government of the Russian Federation (ANE) and the Moscow Institute of Physics and Technology (MIPT). Here the program is designed in such a way that students study the full course on economics at the Academy of National Economy and on one of the directions at MIPT. Among these directions, MIPT presented applied mathematics and physics, as well as systems analysis and management. At the exit, graduates receive two diplomas from MIPT and ANE.

As for the specific networked pedagogical interaction within several higher educational institutions, a striking example is the network association – “Pedagogical Staff of Russia”. This association of educational institutions is created with the purpose of raising both pedagogical quality of teaching and increasing the activity of teaching staff in different regions of Russia.

It should be noted that this is the largest network of universities in Russia. This includes more than 19 state educational institutions of higher education of the Russian Federation. And almost all of them are

located in different cities and regions of our country. The main objectives of the network association “Pedagogical cadres of Russia” include: providing a higher quality of professional training of teachers; joint preparation and implementation by teachers of different institutions of programs of higher, secondary and postgraduate education; creation of a clear system of training and retraining of qualified professional teaching staff; creation of a unified database of information resources of teachers; analysis and forecasting of the development of the modern market of pedagogical work (including for graduates); creation and development of interuniversity mobility of students and teachers; creation of a common educational space for higher educational institutions through the implementation of joint educational programs (exchange of teachers in different regions); organization of international cooperation; exchange of technology and teaching methods, etc.

### Conclusions

On the basis of the conducted research it is evident that the network interaction of VO teachers is undoubtedly a positive factor in influencing the quality of the educational process. On how often the teacher will “update” his knowledge depends on the relevance of the knowledge of students currently.

In the 21st century, with constantly changing economic conditions, with an ever-changing information environment, first of all, it is necessary to understand the teacher of VO in this environment. After all, it is the quality of knowledge, the reliability of information transmitted to learners that will determine the future of not only graduates, but also of Russia as a whole. The general welfare of our country depends on the degree of qualification of the employee.

Computer networks, especially the Internet – the main source of information now! From this point of view, the teacher simply needs to have network communication with other educators.

The network interaction of teachers solves, perhaps, the most important problem of our country – the fast transfer of information over long distances. And since Russia occupies more than 17 million km<sup>2</sup> the need for network communication is unambiguous.

### References

1. Petrushkevich A.V. Network interaction as a factor in the development of an educational institution: article / A.V. Petrushkevich, L.V. Voronina. – Moscow: GBOU SPO Polytechnic College № 2, 2011.

2. Yakovleva A.V. Development of network interaction between universities: article / A.V. Yakovlev, I. Bondyeva. – SPb.: NIU, 2015.
3. Ivanko A.F., Ivanko M.A., Kulikova E.V., Vinokur A.I. Internet Journalism in Russia Today. International Journal of Engineering Science Technology And Research (IJESTR). Volume – 2, Issue – 2, March – April – 2017, P. 71–78. ISSN: 2456 – 0464 .
4. Shultz, ON Prospects for the introduction of network interaction in the professional pedagogical university: article. – Ekaterinburg: the Russian State Pedagogical University, 2015.
5. Ivanko A.F., Ivanko M.A., Vinokur A.I. Game Technologies in Teaching. International Journal of Engineering Science Technology And Research (IJESTR). Volume – 2, Issue – 6, November – December – 2017, P. 41–47. ISSN: 2456 – 0464.
6. Ivanko A.F., Ivanko M.A., Kulikova E.V., Sultanova Yu. (2018). Motivation of studying with the help of information systems // International Journal of Research – Granthaalayah, 6(3), 8-14. ISSN- 2350-0530(O), ISSN-2394-3629(P).
7. Ivanko A.F., Ivanko M.A., Romanchuk E.E. modern it-technologies in schools of Russia // Scientific Review. Pedagogical sciences. – 2019. – № 1. – P. 25-28; URL: <https://science-pedagogy.ru/ru/article/view?id=1792> (access date: 03/19/2019).
8. Ivanko A.F., Ivanko M.A., Sizova Yu.A. Neural networks: general technological characteristics // Scientific Review. Technical science. – 2019. – № 2. – P. 17-23; URL: <https://science-engineering.ru/ru/issue/view?id=20> (access date: 04.17.2019), ISSN 2500-0799.