TÍTULO: El modelo pedagógico y los principios de la aplicación de la Tecnología de la Información moderna para el desarrollo del entorno socioeducativo en la universidad contemporánea.

AUTORES:

1. Ph.D. Andrey I. Shutenko.

2. Ph.D. Elena N. Shutenko.

3. Ph.D. Galina A. Romanova.

4. Ph.D. Elena V. Tsareva.

5. Ph.D. Timofey S. Kupavtsev.

6. Ph.D. Vitalina A. Shvetsova.

RESUMEN: El estudio tuvo como objetivo desarrollar el desarrollo científico-pedagógico para el uso competente de la moderna tecnología de la información (TI) en la educación universitaria. Basado en un enfoque personal en educación, los autores aplican la idea de que la TI debe garantizar el desarrollo de las comunicaciones de aprendizaje. Este tipo de comunicaciones complejas son un conjunto acumulativo de métodos, canales, técnicas, modos y formatos para el transporte del conocimiento. Para la aplicación didáctica de la TI, los autores diseñaron un modelo pedagógico para introducir la TI moderna en el sistema de educación superior. Este modelo refleja signos atributivos de la autorrealización de los estudiantes, que pueden servir como criterios pedagógicos

para la aplicación exitosa de la TI moderna. Para apoyar las comunicaciones de aprendizaje, los autores proponen guiarse por ciertos principios pedagógicos de implementación de TI.

PALABRAS CLAVES: la escuela superior, TI modernas, comunicaciones educativas, modelo pedagógico, principios de introducción de TI.

TITLE: Pedagogical model and principles of applying modern IT for the development of social-educational environment in the contemporary university.

AUTHORS:

1. Ph.D. Andrey I. Shutenko.

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4. Ph.D. Elena V. Tsareva.

5. Ph.D. Timofey S. Kupavtsev.

6. Ph.D. Vitalina A. Shvetsova.

ABSTRACT: The study aimed to develop scientific-pedagogical providing for the competent using of modern Information Tecnology (IT) in university education. Based on a personal approach in education, the authors carry out the idea that IT should ensure the development of learning communications. This type of complex communications are a cumulative set of methods, channels, techniques, modes and formats for knowledge transportation. For the IT didactic application, the authors designed a pedagogical model of introducing modern IT into the higher education system. This model reflects attributive signs of students' self-realization, which can serve as pedagogical criteria for the successful application of modern IT. To support learning communications, the authors propose to be guided by certain pedagogical principles of IT implementation.

KEY WORDS: the higher school, modern IT, learning communications, pedagogical model, principles of IT introduction.

INTRODUCTION.

The development of modern teaching information technologies opens up the possibility for improving the quality of higher education. Indeed, pedagogically competent application of these technologies can provide a real breakthrough in the personification of the educational process; help to overcome the costs of the mass-reproductive system of training (Bartley & Golek, 2004; Bowen, 2013; Daniel, 2012; Bennett, Marsh & Killen, 2007; Thomas, 2011).

The mechanical and technocratic approach to the implementation of these technologies threatens to increase these costs, especially if the teaching still continues to rely on the explanatory- illustrative teaching methods. Then, the informatization of education will work in the opposite direction and will inevitably lead to a pedagogical collapse, when the teacher is removed from the educational space, distance and impersonality will become the norm of "pedagogical interaction", and information flows will overwhelm the cultural growth of the personality (Shutenko et al., 2018).

In humanitarian regard, the informatization of education is a serious challenge to modern higher education, serves as a kind of test of its pedagogical capacity (Phillips, 2005). The most significant transformations of education are associated with the use of interactive, virtual and network information technologies, high-power computers of the latest generations, as well as with the using of the Internet-technology (and in especially the "fast Internet") (Robert, 2007).

Today, modern IT have reached such a level that they represent an previously unthinkable tools of influencing on psyche and behavior of developing personalities (Castells & Himanen, 2002), and the key question is how to use this tools - for the benefit or to the detriment of the Education of Man? What destiny is prepared for a person in the informational future - will he retain himself as "Homo-sapience" (i.e., as a reasonable man, a thinking subject) or will he turn into "Homo-

informaticus" (i.e., technogenic human, information appendage)? This is the question, the answer to which depends on the efforts of modern education, its pedagogical resource and sociocultural potential (Cox et al., 2003; Hofkirchner & Burgin, 2017). The epicenter of the application of these efforts should be the personal dimension of education, which is set by the cultural and moral coordinates of the development of the learner.

In the current time, many scientists and specialists have high hopes for the modern IT in improving the quality and effectiveness of the system of training in higher education. However, do not should forget that by themselves these technologies are not a panacea for all troubles in the field of education, and their introduction into higher school is accompanied by their own difficulties (Collis, 2002; Markovic, 2010; Rab, 2009).

According to experts, various problems are associated with their use (Pelgrum, 2001; Keengwe, Onchwari, & Wachira, 2008). Most of these problems arise if the introduction of information technology in the educational process does not cause changes in the methodology and philosophy of learning (Becker, 2000; Bowen, 2013; Cox, et al., 2003). In particular, if informatization is carried out within the framework of the dominance of the former explanatory-illustrative model of learning. In this case, latest IT bring to the point of absurdity the flaws of this model.

Scientists warn that if we follow the path of universal individualization of learning using IT according to the traditional method, not caring to develop collective forms of study with rich possibilities of dialogical communication and interaction, we can miss the opportunity to form students' thinking (Mumtaz, 2002; Wozney et al., 2006). The danger of curtailing social contacts, the upbringing of individualism is also real (Becker, 2000). Hence the conclusion that can be made is that it is impossible to simply embed IT in the usual educational process and hope that they will carry out a revolution in education. It is necessary to change concept of the educational process, in which IT would organically fit in as a new learning tool.

The conditions created with help of IT should contribute to the formation of a holistic thinking and outlook of the student, focusing him on the search for systemic connections and patterns in the studied disciplines (Zakharova, 2005; Polat, 2007).

It should be borne in mind that informatization and computerization of learning does not mean a simple addition of a new tool to the already established learning model. Informatization requires a significant restructuring of the entire educational process (Romanova, 2015).

As the experience and research of many authors show, the informatization of education is accompanied by a series of serious misunderstandings for ingrained pedagogical theories and practices (Pelgrum, 2001; Cox et al., 2003; Thomas, 2011). Chief among them is the loss of the former monopoly on knowledge by the teaching community, the loss of control over educational information (Markovic, 2010).

Under these conditions, there is an urgent need to change educational paradigms. Instead of the former paradigm of a formal unidirectional subject-to-object education, a new paradigm of an open, developing subject-to-subject education should take over (Robert, 2007).

In this format, the student and teacher become active developing participants of learning process. In this paradigm, there are no conditions for a monopoly on knowledge, they are mined and comprehended in educational communication and interaction, in which the vices of information dependence are overcome through informatization of learning. At the same time, the informatization of higher education can no longer be carried out in a narrowly technical format and requires a transition to a new task: from the individualization of education to the personification of education and advancement to the personal-partner system of training.

DEVELOPMENT.

Methodology and method.

To build a full-fledged educational-informational environment in a modern university, the imperative of the ***personal approach*** of education is necessary. This approach, unlike other dominants of university construction (economic, professional, ideological, scientific, etc.), is presented as a set of values and priorities of students' personal development in the educational process. Personal approach is aimed at ensuring full-fledged self-determination and self-awareness, at expanding the sphere of competence and self-realization of students, developing their internal responsibility and creative position in the course of university training (Murray, 2011; Kupavtsev, 2015; Shutenko et al., 2017).

The successful application of new ITs in higher school education depends on the availability of a certain pedagogical system that can uncover the important advantages of these technologies and organically bind them to the current tasks of teaching students. To build such a system, it is necessary to have an initial project or model of the functioning of the educational process using IT.

In our study, we turned to the modeling method to determine the conditions and principles for introducing the latest IT as a means of developing learning communications in the system of university training.

It is known that scientific modeling of processes can be carried out on different bases: target, genetic, structural, functional, etc. When developing a functional aspect of modeling, one should keep in mind that scientific reflection as a whole performs two main functions – descriptive function and prescriptive function. If the first function is to provide a clear understanding and reflection of the essence of the process under study, then the second function is to develop the foundations for constructing measures for the implementation and practical building of this process, its maintenance, improvement, etc. Hence, all existing attempts to model the process of

informatization of education can be attributed to two types of models - descriptive and prescriptive. And if the first kind of models is rather well represented in the literature, then the second kind still requires detailed development (Zakharova, 2005).

In our research work, we built a version of the prescriptive model of the IT introduction in higher education, which aims to provide complete learning communications for the self-realization of students in the university educational environment. Such modeling method is aimed at an adequate presentation of possible approaches, mechanisms and forms for informatization of the learning process based on latest IT.

Results.

Learning communications as a sphere of applying modern IT in higher education.

The development of information pedagogy and the practice of media education in the logic of personal measurement require the updating of didactic approaches and concepts in the pedagogy of higher education (Robert, 1994; Robert, 2007; Zakharova, 2005). One of such new integral constructs may be the concept of "*learning communications*" (Shutenko, 2012). In a general sense, this term label an aggregate set of methods, channels, techniques, modes and formats for transferring the necessary educational, professional and socio-cultural information relating directly to the content of education and subordinate to the tasks of personal development of students in a university education. It's about organizing ways to transfer the content of education in the formats of scientifically methodical, illustrative, theoretical, reference, empirical, and other information.

Being a rather broad and capacious category, learning communications can be interpreted as certain channels and forces of the "transportation of knowledge" that form the information space of learning. They carry explanatory schemes, resources and models, as well as all the necessary information for the full training of students. If, speaking of communication, experts emphasize its

socially-creating function, then in relation to learning communications on base of IT, this function is multiplied (Robert, 1994; Robert, 2007).

The development of learning communications in the logic of the personal dimension should facilitate informational unloading of teaching and freeing up pedagogical resources for establishing interpersonal communication and interaction between teachers and students as actors in the educational process. It is interpersonal interaction and its pedagogical content that forms the basis of the educational process, its essence. Meanwhile, it is not a secret that the everyday traditional practice of university training is distinguished by the formal and poor educational communications. In fact, communication between the teacher and students is very limited and is of a formal role-playing nature during group classes, brief consultations, passing tests and exams. If looking at a university education through the eyes of a student, then at best you can count only isolated episodes of real dialogue, genuine interaction and meeting with a teacher (not to mention a professor or a leading expert) in the form of live personal communication, when there is a contact of consciousnesses, thoughts, exchange experience and positions. We especially emphasize the moment of the meeting, which should be pedagogically prepared, for which both the student and the teacher should be prepared. However, often students and teachers can not meet in personal communication, wandering in the darkness of the formal-disciplinary system of training.

It is known that in the conditions of traditional teaching, most of the teacher's work, effort, and time are occupied by informative work. In fact, the teacher in the classroom plays the role of "live monitor" in front of the students' eyes.

As a rule, during the regular lecture, the teacher sets out a new material, shows, explains, informs, gives examples, tells, gets attention, requires discipline, etc. And it requires considerable skill, effort and mental costs. The everyday practice of students training in our country is mainly continues to be based on the fundamental principles of an explanatory-illustrative method, in which

the training process is reduced to three main points: the presentation of the learning material, its assimilation and control.

At the same time, the implementation of modern information-communication technologies in training allows to carry out the same explanatory-illustrative work with much greater efficiency, deployment, speed, scale and depth. For example, the capabilities of Multimedia systems allow to integrate on computer screen any audiovisual information in various forms (video, text, graphics, animation, slides, music, etc.), including an interactive user dialogue with the system. In addition, the system provides the opportunity to select the desired line of development of the presented plot or situation according to the results of the analysis of user actions (Robert, 2007).

Modern IT can greatly facilitate the work of the teacher. And if we consider that certain functions of IT can be performed more efficiently than a teacher, then for him these technologies should simply become an indispensable professional tool. In fact, with the advent of IT in higher school, a teacher has a real chance to stop being just an informer and become a true teacher, that is, to devote his efforts to the functions of teaching, educating and developing students. It should also be noted that the unloading of the teacher through computerization from the burden of informative work opens up real prospects for solving the problems of *differentiation* and *individualization* of education, *personification* of the educational process and the implementation of a *personal approach* (Polat, 2007; Robert, 2007; Zakharova, 2005).

Under the conditions of the traditional subject-course system, these tasks are actually beyond the pedagogical capabilities of the teacher, and the stumbling block here is the complete fixation of his pedagogical efforts on explanatory-illustrative, information-transmitting teaching methods. The main reason for this situation is the preservation of the stream education system, with its insurmountable barriers to full-scale educational activities. First of all, it's about the fact that in this system, the teacher in relatively limited periods and discrete time periods of classes (lectures,

seminars, practical exercises, etc.) need to train a whole group, and even a stream of students, the number of which exceeds the limits of his physical abilities for the implementation of continuous and direct personal pedagogical contact. Naturally, in such conditions, there is no alternative to the explanatory-illustrative teaching method.

Informatization of training can largely reduce these obstacles through the internal unloading and restructuring of the content, mode and methods of interactions in the educational process (Gridchin et al., 2016 Ultimately, it's about the gradual departure from the explanatory-illustrative training paradigm. As practice shows, modern information technologies can significantly expand the didactic space and the time frame of classes due, for example, intensifying the informative part in the mode of addressing each student and releasing the teacher for perform other functions, such as: generating learning tasks, pedagogical monitoring, educational cooperation and support, adjustment of understanding and etc. And this is not all the prospects for transforming the learning process that arise using modern information technologies.

Pedagogical model of IT implementation for the development of learning communications.

The development of information technologies entails the emergence of a fundamentally new educational system that can provide modern youth with quality training. We believe that to achieve this quality of training, the use of modern ITs should be aimed at expanding the opportunities for students' self-realization in the educational process. The choice of self-realization as a target basis of informatization is not accidental. According to researches, the use of new IT can only be productive in education when they contribute to:

- The disclosure, preservation and development of individual abilities of students.

- The formation of trainees cognitive abilities, the desire for self-improvement.

- Ensuring the complexity of the study of phenomena of reality, the continuity of the relationship between natural science, technology, the humanities and art.

- Constant dynamic update of the content, forms and methods of the process of learning and socialization (Bowen, 2013; Robert, 2007; Gridchin et al., 2016).

In the logic of the development of learning communications, the introduction of new ITs in the educational process should be holistic in nature and provide a real basis for designing and implementing an individual learning path. For the successful achievement of this task, we consider it necessary to be guided by certain principles of organization and functioning of educational communications, which are summarized by us in the form of a prescriptive model. Below, in Figure 1, the basic logic of operation and the structure of this model are shown schematically.

Obviously, modern information technologies can not be directly transferred and integrated into the educational process. Moreover, not all of them and not always can be used in training (Boettcher & Conrad, 2010). For their application in education, they must go through a kind of "psychological-pedagogical filter", by which we mean adherence to a set of certain principles (see. Figure 1). In addition, for educational purposes, special training technologies and techniques can be created, which are developed with due accounts for and based on these principles.

On the basis of the implementation of these principles, a personal-developmental information-educational environment can be formed, which sets students on self-actualization in education and opens up significant opportunities for successfully mastering the chosen specialty (see Figure 1).
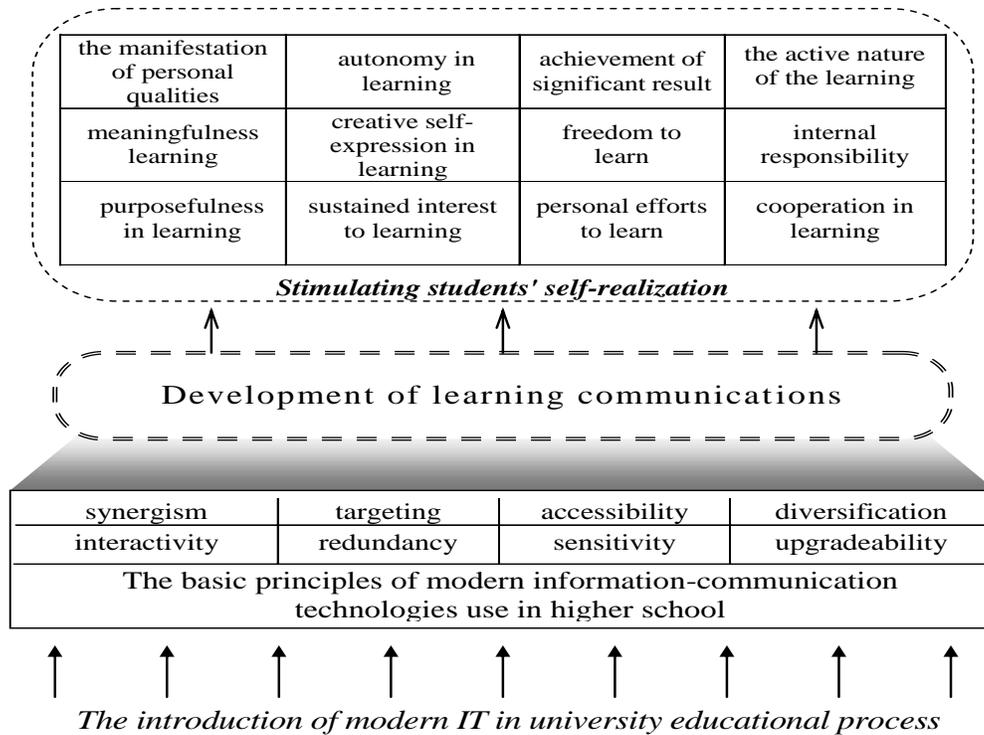
the manifestation of personal qualities	autonomy in learning	achievement of significant result	the active nature of the learning
meaningfulness learning	creative self-expression in learning	freedom to learn	internal responsibility
purposefulness in learning	sustained interest to learning	personal efforts to learn	cooperation in learning

Stimulating students' self-realization

Development of learning communications

synergism	targeting	accessibility	diversification
interactivity	redundancy	sensitivity	upgradeability

The basic principles of modern information-communication technologies use in higher school

The introduction of modern IT in university educational process

Figure 1. Pedagogical model of IT use for the development of learning communications.

In this model, the use of IT in higher education is aimed at the development of such learning communications that stimulate the process of students' self-realization. In order to understand how this process is expressed, we present in the model a number of ***attributive signs*** of self-realization, which were collected and summarized by us in the course of student surveys (Shutenko, 2015; Shutenko et al., 2017; Shutenko et al., 2018). Among the most significant were the following:

- The manifestation of personal qualities in training, the ability to express oneself, to reveal their strengths.

- Autonomy in learning, self-leadership and reliance on internal learning potential.

- The achievement of a subjectively significant result in learning, the desire and ability to be successful.

- The active nature of the learning, the manifestation of activity in the educational process.

- Meaningfulness learning, the implementation of value relationships in learning.

- Creative self-expression in learning, the ability to experiment and learn productively at the university.

- Freedom to learn, the voluntary nature and diversity of the forms of self-manifestation in the educational process.

- Intrinsic motivation, a responsible attitude to classes, self-control in learning.

- Purposefulness in learning, having a goal in life and approaching it through training at a university.

- Sustained interest to learning, personal interest in training, the desire to learn more.

- Personal efforts to learn, willingness to overcome difficulties and obstacles in training.

- Cooperation in learning, the dialogical nature of communication, the desire for harmony and trust, a culture of communication.

The key role in the development of the above signs of students' self-realization is played by the *principles of introducing information technologies* to the educational process, which we also reflected in the proposed model (see figure 1).

• *The principle of synergism* of learning communications requires their direct attitudes towards the educational system of the university, the culture of specialist training. This principle assumes direct conjugation and compliance of learning communications with the goals and content of vocational training at the university, as well as the construction of educational information based on interdisciplinary connections, connecting it into large problem-thematic cycles that combine related courses and disciplines into uniform educational modules. In addition, educational communications should not lead a person into the information abyss but should contribute to the formation of an independent creative thinking of the student, focus him on the search for systemic connections and relationships, involve the personality into the university community, into the culture.

• *The principle of targeting* learning communications implies the compliance of information support to the individual characteristics of students, their age-related cognitive abilities, level of training, professional specialization, and scientific interests. Learning communications should also take into account the complexity, volume and quality of the learning tasks for students of different courses that can be solved with their help. Naturally, the level and amount of information that a senior student needs, for example, when completing a thesis, is incomparable with the level and volume of the same kind of information needed by a first-year student. The addressing of the supplied information should also concern its accuracy, adequacy to the educational needs and demands of the students.

• *The principle of accessibility* of learning communications assumes a wide and large-scale informatization of the educational space of the university with the possibility of including each student in the process of free use of all information and resources available to the university. This principle also means the full-fledged provision of the students with the entire volume of educational, reference, scientific, theoretical, methodical, bibliographic, and other information.

• *The principle of diversification* of learning communications supposes the use of various information-communication educational technologies: electronic textbooks and manuals, hypertext blocks, electronic libraries, reference books, encyclopedias, educational websites and portals, electronic journals, research publications, interactive video, multimedia teaching systems, virtual simulators and environments, etc. There is no doubt that a modern university should be a whole complex of varied and diverse learning communications providing various training programs and technologies. Among other things, such diversity of learning communications should help students to choose the most appropriate for their competency method of handling information in the logic of building their educational path in university training.

• *The principle of interactivity* of learning communications considers the possibility of providing information support in the mode of interactive dialogue, exchange of actions and operations. The information educational system should provide the user (the student) with the opportunity to interact and select, based on the results of the analysis of actions, the necessary line of development of the project or situation presented or the pITure of reality. But above all, learning communications should open up the possibility of mutual communication and interaction of the students themselves through the Internet in the framework of educational information environments for the exchange of experience in comprehension of academic disciplines, as well as scientific problems.

• *The principle of redundancy* of learning communications provides for a certain measure of information, mastering of which does not directly lead to the achievement of the goals set (learning objectives), but allows broad orientation and gathering the necessary information (data, reference materials, etc.), allowing the learner to independently determine the set of conditions for solving a learning task and implementing him request. In this case, the redundancy of information should be governed by the requirement of its optimality for the corresponding request of the student. The information supplied to the student should not confuse him, but expand the range of orientation possibilities and clarify various nuances and aspects of the educational or scientific problem that interests him.

• *The principle of sensitivity* of learning communications is especially important from the point of view of providing feedback from students in terms of their advancement in the matter of information development of disciplines and courses of study. Learning communications should clearly respond to the requests and needs of trainees to make the appropriate changes on the part of the scientific and pedagogical staff of the university, adjust and improve the information support of the educational process in the framework of the disciplines and courses, and to perform research work by students.

• *The principle of upgradeability* of learning communications requires constant revision, correction, addition, updating of both the educational information and the methods of its presentation to the students. Today, in the conditions of an ever-increasing flow of new knowledge, technologies, discoveries, it inevitably arises the task of timely taking into account these changes in the educational process. And in this regard, information technologies show their significant advantages, which, unlike paper carriers (books, textbooks, manuals, etc.), make it possible in the shortest possible time to make appropriate changes and additions to the information support in the relevant sections of the courses, and in a matter of seconds transmit new information to the students. In this case, the student is already sufficiently insured against the need to "reopen the bicycle". It is important that these changes and innovations themselves do not break the very architecture of the educational process, the value-semantic and ethical foundations of vocational training at the university.

Discussions.

As shown in our study, the pedagogical capabilities of modern information technologies, as well as any teaching tool, are fully disclosed and realized if they serve as an organic tool for the development of learning communications in the logic of the personal dimension of the practice of university education.

The practice of informatization of education indicates that the development of educational communications on the basis of the newest ITs assumes not only a different philosophy and logic of handling and operating with information (constituting the content of education), but also a different communication model in the university.

From the organizational-didactic point of view, the main difference is that in the new paradigm all the necessary learning information may be presented in an open, expanded form and is given to students before the start of discipline studying in its entirety, and not in the course of its mastering

in dosed-step volumes. Equal access to information of both teachers and students allows ensuring their partnership, subject-to-subject relations in the comprehension of knowledge, allows bringing them to a real dialogue, to the exchange of generalized ways of thinking, meanings and values.

The development of IT-based learning communications can qualitatively change the very nature of teaching work; restructure its content, mode, rhythm, technology and philosophy in general. For the first time in the history of education, the prospect of a painless transfer of some of the teaching functions from a teacher to information technologies, namely the function of information support, opens up. The human resource released in this way can be aimed at strengthening the pedagogical and educational role of the teacher

CONCLUSIONS.

In general, our study examined didactic and psychological aspects of information technologies introduction in higher education in the logic of providing personal-centered training. In this regard, the main purpose of these technologies at the university is the development of learning communications, which should be applied in accordance with principles of personal dimension of training.

The result of pedagogical reflection of informatization of the educational space has become a prescriptive model of introducing modern IT into the system of higher education. In this model, the development of educational communications on the basis of IT is subordinated to the task of ensuring full-fledged self-realization of students in the educational environment of the university. The model also contains attributive signs of self-realization of students, which can serve as pedagogical criteria for the successful application of modern ITs in the logic of their incorporation into the network of learning communications of the university.

The prescriptive nature of the developed model is expressed in a set of principles for the use of IT in the educational process. These principles carry certain norms and guidelines for the pedagogically competent and psychologically correct implementation of IT in the process of students training.

BIBLIOGRAPHIC REFERENCES.

1. Bartley, S.J. & Golek, J.H. (2004). Evaluating the Cost Effectiveness of Online and Face-to-Face Instruction. Educational Technology & Society, 7(4), 167–175.

2. Becker, H. J. (2000). Pedagogical Motivations for Student Computer Use that Leads to Student Engagement. Education Technology. 40 (5), 5–17.

3. Bennett, S., Marsh, D. & Killen, C. (2007). Handbook of online education. Continuum International Publishing Group, Incorporated.

4. Boettcher, J. V., & Conrad, R.-M. (2010). The online teaching survival guide: Simple and practical pedagogical tips. San Francisco, CA: Jossey-Bass.

5. Bowen, W.G. (2013). Higher education in the digital age. Princeton University Press.

6. Castells M.& Himanen P. (2002). The Information Society and the Welfare State: The Finnish Model. Oxford University Press, Oxford.

7. Collis, B. (2002). Information technologies for education and training. In Adelsberger, H., Collis, B, & Pawlowski, J. (Eds.) Handbook on Technologies for Information and Training. Berlin: Springer Verlag.

8. Cox, M., Webb, M., Abbott, C., Blakeley, B., Beauchamp, T. & Rhades, V. (2003). IT and Pedagogy: a Review of the Research Literature. London.

9. Daniel, S.J. (2012). ITs in Global Learning/Teaching/Training. Policy Brief; Moscow; UNESCO: Institute for Information Technologies in Education.

10. Gridchin, A. M., Shutenko, E. N., Shutenko, A. I., Polyakov, V. M., & Ospishchev, P. I. (2016). The Use of Modern Information Technology as the Means Students Self-Realization in University Education, International Journal of Pharmacy & Technology, 8(4), 22687-22700.

11. Hofkirchner W., & Burgin M. (Ed.) (2017). The Future Information Society: Social and Technological Problems. World Scientific Series in Information Studies, Vol. 8.

12. Keengwe, J., Onchwari, G., & Wachira P. (2008). Computer Technology Integration and Student Learning: Barriers and Promise. Journal of Science Education and Technology, 17(6), 560-565.

13. Kupavtsev, T.S. (2015). Characteristics of the subject of self-improvement in the system of professional education of the Ministry of Internal Affairs of the Russian Federation. Higher education today, 1, 55-59.

14. Markovic, M. (2010). Avantages and disadvantaged of e-learning in comparison of traditional forms of learning. Annals of the University of Petrosani, Economics, 10(2), 289-298.

15. Mumtaz, S. (2002). Factors affecting teachers' use of information and communications technology: A review of the literature. Journal of Information Technology for Teacher Education, 9(3), 319-342.

16. Murray, P. (2011). The Sustainable Self: A Personal Approach to Sustainability Education. London, Washington, DC: Earthscan, 272p.

17. Pelgrum, W. J. (2001). Obstacles to the Integration of IT in Education: Results from a Worldwide Educational Assessment. Computers & Education, 37, 163- 178.

18. Phillips, R. (2005). Pedagogical, institutional and human factors influencing the widespread adoption of ET in higher education. Mendeley, 99(10), 541–549.

19. Polat, E. S. (2007). Modern Pedagogic and Information Technologies in the Education System. Moscow: Press Academy. 224 p.

20. Rab, A. (Ed.), (2009). Information Society Policies: Annual world report. Paris: UNESCO.

21. Robert, I. V. (1994). Modern Information Technologies in Education: Didactic Problems and Prospects of Use. Moscow: School Press. 187 p.

22. Robert, I.V. (2007). Theory and Methods of Education Informatization (Psycho-Pedagogical and Technological aspects). Moscow: IRO: RAE.

23. Romanova, G.A. (2015). The development of socio-cultural competence of students in the context of interaction. Initiatives of 21st Century, 4, 102-105.

24. Shutenko, A. I. (2012). Personal measurement as an imperative of information technologies implementation in the higher school. Alma mater (Vestnik vysshey shkoly). 10, 35–39.

25. Shutenko, E. N. (2015). Motivational and Conceptual Aspects of Student Self-fulfillment in University Education. Procedia – Social and Behavioral Sciences, 214(5), 325-331. doi: 10.1016/j.sbspro.2015.11.652

26. Shutenko A. I., Shutenko E. N., Sitarov V.A., Romaniuk L.V. (2017). Psychological possibilities and functions of modern information technologies as the means for students' self-realization in university training. International Journal of Pharmaceutical Research and Allied Sciences, 6(1):130-144.

27. Shutenko E., Shutenko A., Sergeev A., Ryzhkova I., Talysheva I., Tsareva E. (2018). The use of modern IT to provide students' self-realization in Russian higher school. Revista Espacios, 39(43).

28. Thomas, M. (2011). Digital education: Opportunities for social collaboration. Palgrave Macmillan.

29. Wozney, L., Venkatesh, V., & Abrami, P. (2006). Implementing computer technologies: teachers' perceptions and practices. Journal of Technology and Teacher Education, 14(1), 173-207.

30. Zakharova, I. G. (2005). Information Technology in Education. Moscow: Publishing Center "Academy". 192 p.

DATA OF THE AUTHORS.

1. Andrey I. Shutenko. Ph.D. of Pedagogical Sciences, Senior Scientific Fellow, Institute of Economics and Management, Belgorod State Technological University named after V.G. Shukhov, Russia. E-mail: avalonbel@mail.ru

2. Elena N. Shutenko. Ph.D. of Psychology, Associate Professor, Department of the General and Clinical Psychology, Belgorod National Research University, Russia. E-mail: shutenko@bsu.edu.ru

3. Galina A. Romanova. Ph.D. of Pedagogical Sciences, Associate Professor, Department of educational systems, Academy of Public Administration, Moscow Region, Russia, E-mail: galinaromanova3@rambler.ru

4. Elena V. Tsareva. Ph.D. of Philosophy, Associate Professor, Department of Psychology, Mordovian State Pedagogical Institute named after M.E. Evseviev; Saransk, Russia, E-mail: docent69@bk.ru

5. Timofey S. Kupavtsev. Ph.D. of Pedagogical Sciences, Professor, Academy of Management of the Ministry of Internal Affairs, Russia, E-mail: kupavzev22@yandex.ru

6. Vitalina A. Shvetsova. Ph.D. of Psychology, Associate Professor, Department of the General and Clinical Psychology, Belgorod National Research University, Russia. E-mail: khalanskaya@bsu.edu.ru