

Digital technologies in business-oriented training for bachelors of pedagogical education

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Abstract — The relevance of the study is due to the fact that in the modern development strategy of the Russian Federation, digital education plays a special role as an engine of innovative changes in the economy and society. One of the strategic documents for the development of Russia is the program «The Digital Economy of the Russian Federation, approved by the decree of the Government of the Russian Federation dated July 28, 2017 No. 1632». «The program is aimed at creating conditions for the development of the knowledge society in the Russian Federation, improving the welfare and quality of life of citizens of our country by improving the availability and quality of goods and services produced in the digital economy using modern digital technologies, raising awareness and digital literacy, improving the availability and quality of public services for citizens, as well as security both within the country and abroad». The implementation of the ambitious goals and objectives of the program «Digital Economy of the Russian Federation» puts forward certain requirements for the education system. Currently, many universities have determined the vector of their development, through providing the economy with personnel possessing digital technologies. To ensure a high level of digital literacy, it becomes necessary to change the forms, methods, technologies of education, introduce new approaches in the education system.

In this regard, this article is aimed at identifying, developing and experimental verification of pedagogical conditions for the application of digital technologies in business-oriented training of future bachelors of pedagogical education through business-oriented entrepreneurial structures (business incubators, educational technology centers, technology parks).

The leading approach to the study of this problem is a technological approach in the framework of economic and entrepreneurial training of bachelors of pedagogical education (profiles: technology and economics).

The main results of the study were obtained by comparing and grouping; the study analyzed observations

and polls of 375 people (260 students, 25 practicing entrepreneurs, 30 teachers, 60 schoolchildren).

The materials of the article are of practical value for managers of educational institutions, for teachers who use the digital educational environment in their professional activities.

Keywords — *digital education, digital pedagogy, business-oriented training, complex-activity model, business-oriented business structures, pedagogical conditions, innovative educational space of the university.*

I. INTRODUCTION

Global trends in the development of education, the situation in the Russian system of higher education, urgently require a deep and comprehensive update of the structure and content of higher education, consistent and immediate introduction of digital learning technologies, modernization of the entire state educational policy, revision of not only the legislative framework of higher education, but also rethinking the mission of higher education, its goal-setting and strategic objectives.

Digital education is an objective transformation of the system of General education in the formation of a new digital civilization. We stand on the threshold of changes and participate in the processes of formation of a new system of education in the world - digital education. It is possible to observe this process as a challenge of time, and it is possible to be the designer of digital education as the order of information society for changes in social institutions - one of which is the university. [1,2,3].

The formation of new educational standards, taking into account the new realities, the development and testing of methods for their use in educational activities, updating the competences of teachers is engaged in digital pedagogy. Digital pedagogy integrates new educational technologies [4]: open educational resources, mass open online courses, training platforms (Learning Management System/ LMS), electronic textbooks (smart book/e-book), electronic libraries, open licenses (for example, CC licenses), mobile learning, cloud

education systems and Internet services (Web 3.0), digital video communications, global media, automated management systems for educational organizations (for example, Automated Control Systems, «smart systems»), electronic portfolios and personal electronic classrooms.

The concept of digital technologies in business-oriented training has arisen abroad (USA, Canada, England, Western European countries), in Russia the idea of digital business education has appeared recently, but it is already actively spreading, adapting to various learning technologies. Digital technology in business-oriented training is a set of software and hardware and equipment that allows you to combine various types of information (text, drawn graphics, slides, music, realistic images, moving images, sound) and realize the interactive dialogue of the user with the system.

The use of video computer systems, Multimedia systems provides the implementation of intensive forms and methods of training, the organization of independent learning activities, promotes motivation through the use of modern means of integrated presentation and manipulation of audiovisual information, increasing the level of emotional perception of information at the stage of professional development of bachelor of pedagogical education.

Business-oriented training of bachelor of pedagogical education is the integration of economic and entrepreneurial training and is aimed at obtaining entrepreneurial knowledge, the development of professionally significant qualities, the formation of professional competence in the practical training of small business.

Using the capabilities of artificial intelligence systems creates strong prerequisites for the organization of the process of self-learning, forms the ability of independent representation and extraction of knowledge; promotes intellectualization of educational activities, initiates the development of analytical and synthetic forms of thinking, the formation of elements of theoretical thinking. All this is the basis for the intensification of the processes of business-oriented training of the student.

The result of the business-oriented training of future teachers is a willingness to implement business-oriented activities in the digital economy, formed through the use of digital technologies.

II. RESEARCH METHODOLOGY

The methodological basis of the study consists of: the main ideas of pedagogical modeling of the educational process in

the context of the interrelation of the structural and functional components of digital pedagogy (S.I Arkhangelsky, V.P Bepalko, V.V Kraevsky, and others); competence-based approach to education (B.G Ananyev, A.V Khutorsky, V.D Shadrikov, etc.).

The study to identify the pedagogical conditions for the application of digital technologies in business-oriented training of bachelors of pedagogical education was carried out in several stages:

The first stage included the definition of a scientific problem, the study and analysis of philosophical, psychological, pedagogical and methodical literature, the analysis of practical training of future teachers, the accumulation of empirical experience, the development of a program of experimental work. The main methods of pedagogical research at this stage were: theoretical analysis and synthesis, modeling, questioning, interviewing, interviewing, observation, etc.

At the second stage, the essence, content and structure of the business-oriented training of future teachers in the digital educational space of the university was determined, the development of a complex-activity model of business-oriented training of future teachers was carried out, the pedagogical conditions for the implementation of the model in practice were substantiated. At this stage, within the framework of the ascertaining experiment, the initial level of business-oriented training of future teachers was identified, the pedagogical conditions for the use of digital technologies were tested and substantiated during the formative experiment, the readiness level of future teachers in the innovative educational space of the university was determined.

The third stage of the research was aimed at analyzing and theoretical generalization of the results of experimental work, clarification of the main provisions, preparation of methodical recommendations on the research topic.

The use of telecommunications facilities that implement information exchange at the level of communication via computer networks (local or global) allows determining the business-oriented activity of the future teacher through the synthesis of interconnected structural components. These include *scientific-theoretical*, *moral-psychological* and *experimental-practical* (Fig. 1).

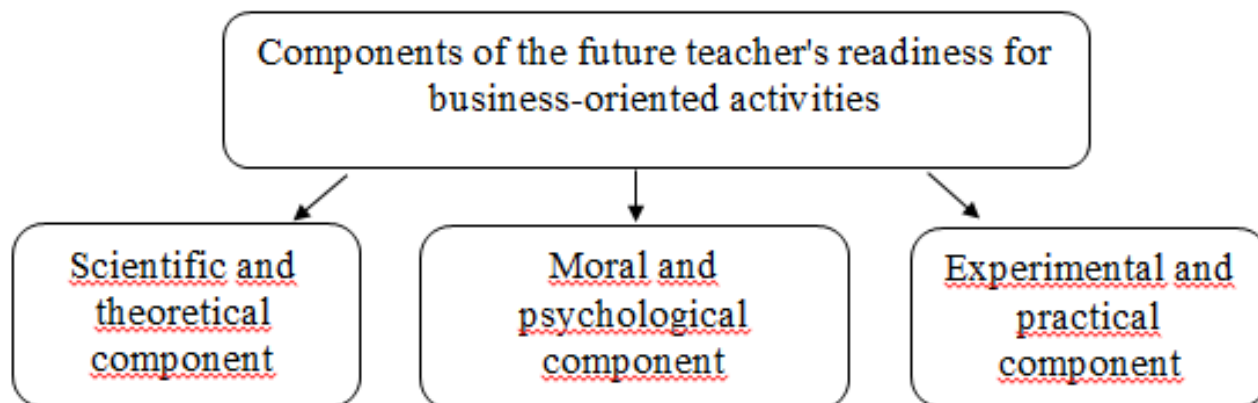


Fig. 1. Structure of the future teacher's readiness for business-oriented activities in the digital economy

The main digital technologies of business education and upbringing is the technology of non-contact information interaction, realizing the illusion of direct entry and presence in real time in the stereoscopic and presented «screen world» - the system «Virtual Reality». The use of this system allows for audiovisual and tactile contact between the user and stereoscopically represented objects of virtual reality in the presence of feedback and the use of controls. It is necessary to note the essentially unique experience of organizing digital education, which formed the basis for the opening and successful operation of the Center for Business Administration in many cities of Russia, including Moscow, Tula, Vladivostok, and Transbaikalia.

The experience of involving students in practical work by modeling the company is interesting. Such firms were called «training», «educational», «modeling» or «practical». Work in a practical firm enriches the main theoretical work [5,6]. The training company functions as a real business association. The use of the method of virtual firms in the business preparation system facilitates familiarity with the laws of business functioning «from the inside», in conditions as close as possible to the real market situation. This contributes to the development of students' initiative, creativity, responsibility and willingness to work in a team.

Thus, familiarizing students with the basics of business organization is a multifaceted process. Basically, with business-oriented training in various universities, much attention is paid to the use of innovative approaches and digital learning technologies. At the same time, the significance of traditional forms of education, such as lectures, seminars, practical tasks, is not in the least denied. They are necessary for the formation of strong knowledge in the field of business organization. But at the same time, it should be noted that business-oriented training should be carried out in such a digital educational space, where the system of «knowledge-skills» is formed through a rational combination of traditional and e – learning, through the creation of an activating digital

environment for the development of professionally significant qualities of the individual, professional competencies, the formation of positive motivation for future teaching activities, obtaining practical experience in business organization [10].

Studies of business-oriented training of bachelors of pedagogical education allow us to present business-oriented training as one of the structural elements of the digital educational space.

The content and structure of business-oriented training of bachelors of pedagogical education by means of digital technologies are presented in a complex-activity model of business-oriented training of teachers (Fig. 2)

The existing experience in the use of digital technologies in the economic and entrepreneurial training of technology and entrepreneurship teachers (A.F. Amend, P.R. Atutov, M.I. Melikhova, I.A. Sasova, and others) indicates that it is business-oriented training through digital technologies is currently in need of development, improvement and active implementation [9,11].

The result of the use of digital technologies in business-oriented training of future teachers is the upbringing and development of an initiative, creative person motivated to gain entrepreneurial knowledge and skills, to form her internal readiness for the potential organization and implementation of the business.

III. RESEARCH RESULTS

The experimental base of the study was 375 people. Of these, 260 students, 25 practicing entrepreneurs, 30 teachers of technology and entrepreneurship, 60 students.

The study was conducted in Federal State Budgetary Educational Institution of Higher Education "Orel State University named after I.S. Turgenev" on the basis of the faculty of technology, business and service.

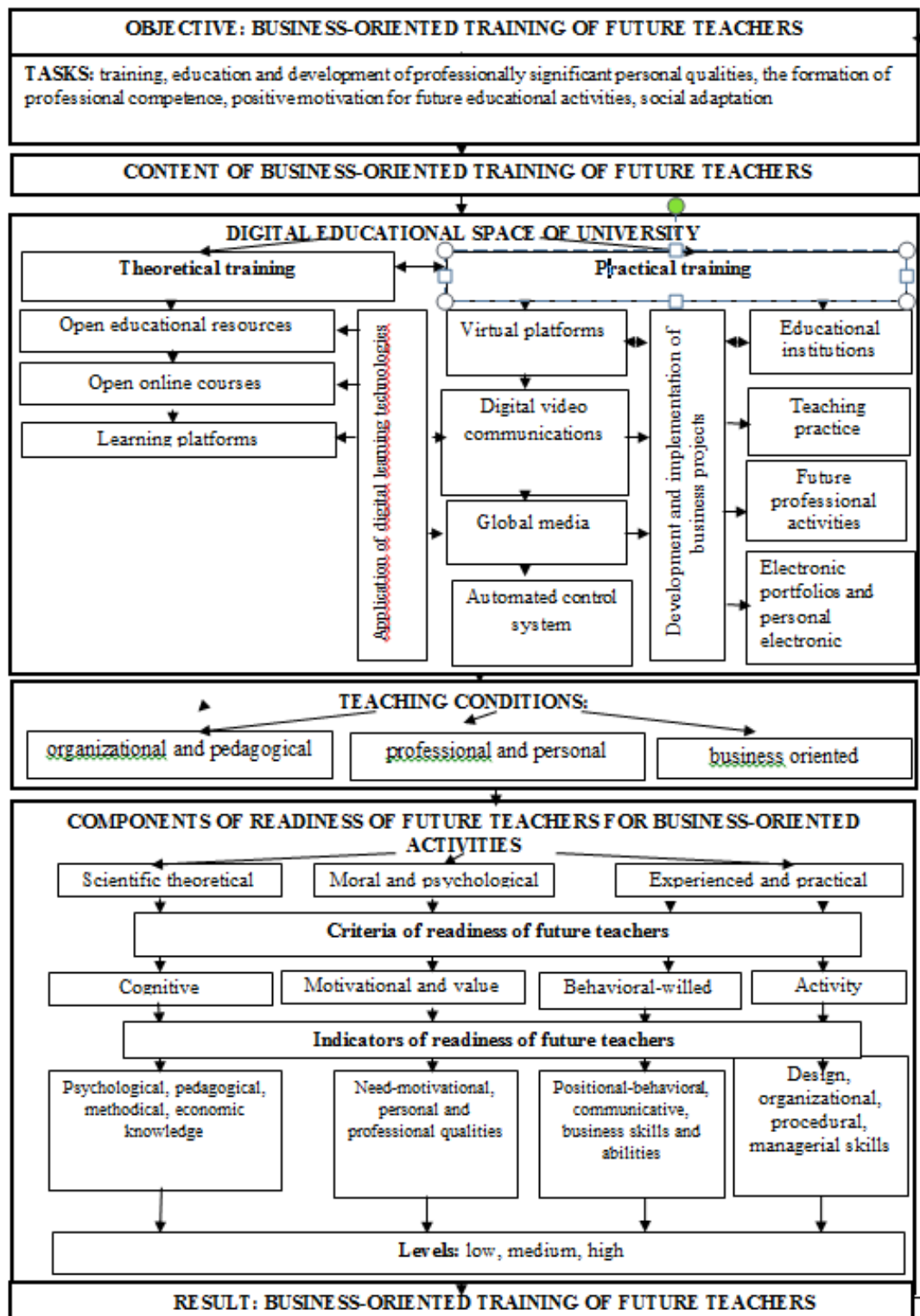


Fig. 2.- Complex-activity model of business-oriented teacher training

The results of experimental work showed the following:

Diagnostics of the future teachers' readiness level for business-oriented activities through the use of digital technologies was carried out comprehensively according to all criteria and had three stages: ascertaining, intermediate and final. The results of the experimental work are presented in Fig. 3.

The ascertaining stage of the experiment included an analysis of the existing business-oriented training of future teachers, the determination of the level of readiness for business-oriented activities. The results of the ascertaining experiment showed that the majority of future teachers have a low level of readiness for business-oriented activities (CG-62.5%; EG1-60.9%; EG2-62.2%) and confirmed the need for

comprehensive business-oriented training through the use of digital technologies, including theoretical and practical components.

In the course of the intermediate experiment in EG1 and EG2, the best ways and means of business-oriented training of future teachers in the digital educational space of the university were identified. For this, in the process of theoretical training, open learning platforms were used, and practical training was

carried out within the framework of a virtual student business incubator. The results of the intermediate stage showed that the number of students who are at a low level of readiness has significantly decreased, which amounted to -45.6% in EG1, and 40.0% in EG2. Thus, the results of the intermediate experiment confirmed the need for the use of digital learning technologies, the inclusion of virtual business incubators in the educational practice.

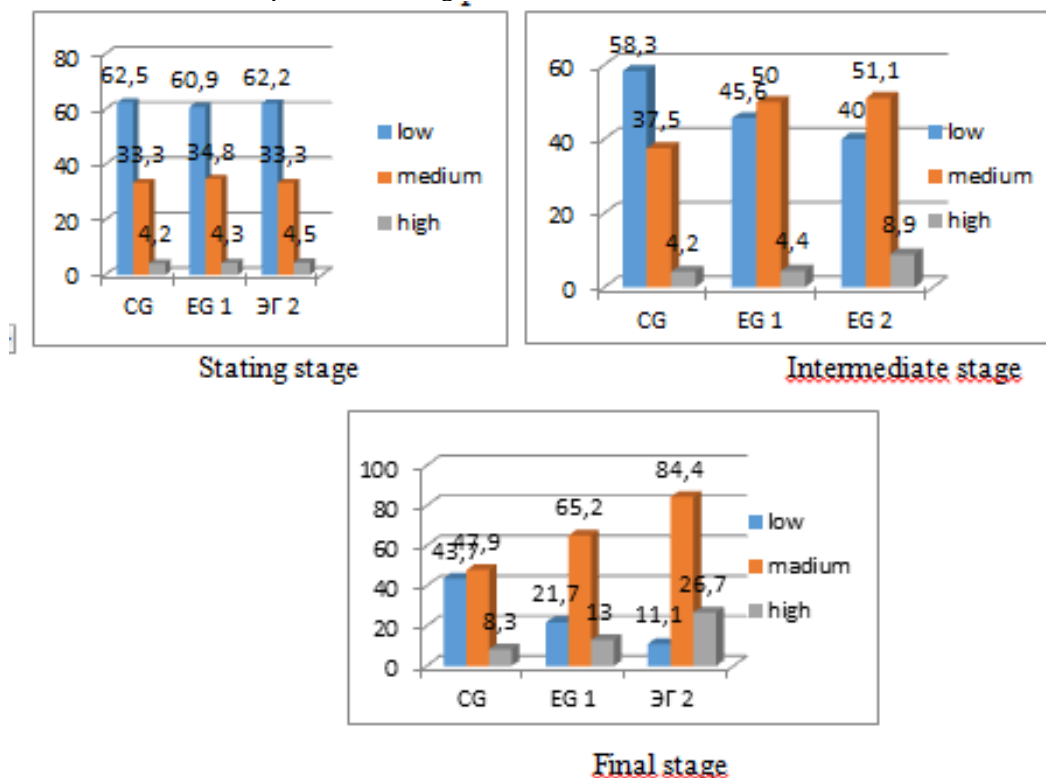


Fig.3 - Dynamics of changes in the level of readiness of future teachers for business-oriented activities in the course of experimental work

The results of the final experiment confirmed the previous indicators and demonstrated an increase in the level of readiness in relation to the intermediate stage. The number of future teachers with a low level of training in EG1 decreased from 45.6% to 21.7%, in EG2 from 40.0% to 11.1%. Also in the experimental groups there was an increase in the number of students with an average level of readiness. In EG1 this indicator was 65.2%, in EG2 84.4%. A high level of readiness for business-oriented activities in EG1 was 13%, in EG2-26.7%.

To assess the effectiveness of business-oriented training of future teachers, various forms of control were carried out. At the same time, they met the following requirements: objectivity, validity; ease of use; authenticity.

IV. CONCLUSIONS

The reliability of the results and the validity of the scientific findings of the study is provided by the methodological and methodological tools of the study, adequate to its purpose, subject and objectives; based on the methodological principles of research and the fundamental principles of philosophy, pedagogy, and psychology concerning the subject of the study; a combination of quantitative and qualitative analysis; the use of a set of

research methods adequate to its subject and research objectives; representativeness of experimental data, their quantitative and qualitative analysis; experimental confirmation of the hypothesis; a set of results confirming the theoretical conclusions and the practical work done; the representativeness of the sample size; using the mathematical apparatus of processing the data [8,12].

The main results of the research, their scientific novelty of the research is that the pedagogical conditions for the application of digital technologies for business-oriented training of future teachers are determined; the content of the concepts "digital educational space of a higher education institution", "business-oriented training of future teachers", "business-oriented activities of future teachers", "student business incubator" has been clarified and specified; designed and scientifically grounded complex activity model of business-oriented training of future teachers in the digital educational space of the university; defined criteria, indicators and levels of preparedness for business-oriented activities of future teachers [7].

The theoretical significance of the study lies in the fact that the theoretical foundations of the development of the digital educational space of the university are revealed and

substantiated, which allows developing new conceptual provisions for the organization of the educational process in higher education, reveals the essence, content and specificity of business-oriented training of future teachers, allowing to clarify and specify concepts of "business-oriented training of future teachers", "business-oriented activities of future teachers", "student business incubator" to enrich the scientific understanding of the professional training of teachers in universities; designed and tested a comprehensive activity model of business-oriented training of future teachers, developed and justified the criteria, indicators and levels of readiness, identified and experimentally confirmed a set of pedagogical conditions. The presented results contribute to the theory and methodology of vocational education, in the digital pedagogy section.

In the course of the experimental work, the effectiveness of business-oriented training of future teachers in the digital educational space of the university was confirmed, and a set of pedagogical conditions, such as organizational and pedagogical, conditions of professional and personal development, business-oriented, was identified and confirmed.

V. THE DISCUSSION OF THE RESULTS

Discussion of the research results was carried out at meetings of the departments of vocational training, technology and entrepreneurship of the faculty of technology, business and service. The main theoretical and practical results of the study are reflected in teaching and methodological manuals, methodical recommendations, program materials, scientific articles, reports, theses at international, all-Russian, regional, intercollegiate, correspondence Internet conferences and seminars in Orel, Moscow, Taganrog, Belgorod, Mozyr and others, as well as during the exploratory research work on the basis of the Bryansk State University. Academician I.G. Petrovsky, Belgorod State University. The research topic is reflected in 27 publications.

The developed model of business-oriented training of future teachers was tested on the basis of the faculty of technology, entrepreneurship and service of Orel State University.

The practical significance of the study lies in the fact that the theoretical provisions contained in it allow to study, plan and effectively implement the process of business-oriented training of future teachers in the digital educational space of the university; The identified set of pedagogical conditions can be taken into account when developing curricula, programs, educational and methodical complexes.

This study has not exhausted all the problems of a complex and multifaceted process of business-oriented training of future teachers in the digital educational space of the university. This study is only a definite step towards the improvement of the theory and practice of digital education at the university. First of all, it is the development of didactic tools through digital technologies for business-oriented training of future teachers, informatization of the preparation process, the impact of participation in the organization of business on the teacher's personality (changing mentality, qualitative professional changes, etc.), transition to a multi-level system training in high school, the formation of competencies of the future teacher.

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