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DIGITAL INFORMATIONAL AND EDUCATIONAL ENVIRONMENT AS A MEANS OF EDUCATING A COMPETITIVE GRADUATE OF A TECHNICAL UNIVERSITY (ON THE EXAMPLE OF PENZA STATE TECHNOLOGICAL UNIVERSITY)

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Abstract

The problem of this study is the implementation of a competence-based approach to the information support of the educational work of a technical university, by introducing into practice a complex of elements of the digital informational and educational environment (DIEE), which serve as a systematic methodological support of the educational process, which is a single information professional field for teachers, an individual educational space for students, and a means of assessing the educational level of graduates by future employers. The purpose of this study is to improve the complex of methods, forms, and means of education, which allow to compare the results of the development of the personality of students (personal growth) with their achievements in educational and practical activities with the level of competence formation. From the point of view of a scientific approach, the research is aimed at identifying and disclosing contradictions between: the high demands of employers to the quality of competitive graduates of technical universities, who possess not only professional, but also general cultural competencies that ensure successful social activity in society, on the one hand, and the imperfection of information technology applied in education, on the other. To assess the results of the study, the following methods were used: diagnostics, comparison of standard and current indicators, analysis of the relationship of quantitative and qualitative indicators. The study involved 3,500 students annually. The practical significance of the study lies in the developed set of DIEE elements, which are a set of information, educational, telecommunication resources and technologies that form a single educational system of the university.

Keywords

Elements of the digital educational environment – Methods of analysis – Competencies

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Introduction

The need to educate competent specialists who meet the requirements of modern industry and society is declared in the “National Doctrine of Education of the Russian Federation till 2025”. The urgency of the problem results from the need to educate competent specialists who meet the requirements of modern industry and society; it is the tasks of the state and the prospects for the development of society that determine the need to study the problem of educating competitive technical school graduates with the general cultural and professional competencies adapted to the conditions of the modern labor market. Technical education occupies a special place in the higher education system, providing specialists to the industrial sectors of the country's economy. The demand for high-quality vocational training of graduates, their social activity and competitiveness in the labor market requires special attention to raising the level of their general culture based on general cultural competencies. At the same time, technical education has a number of features:

- *educational:* technical university has acquired a new specificity of the educational process, in which special attention is paid to the combination of training with work experience, the study of technical and exact sciences, aimed mainly at the formation of students' professional competencies, while the humanitarian component in the educational process, most fully ensuring the successful formation of socio-cultural personality, has weakened;
- *staffing:* teaching activities in a technical university are mainly carried out by non-pedagogical specialists, i.e. not having specialized pedagogical training. As a result, each teacher of a technical university understands and implements the system of education of students on the basis of his/her subjective experience in the absence of a common understanding of the tasks of education;
- *the academic focus of students:* a high predisposition of technical university students to the mastery of exact sciences, related to the wide use of electronic means of training and communication. These conditions imply the need for a purposeful formation and development of the students' general cultural competencies.

Based on these features, guided not only by the multilevel training of applicants in the field of knowledge and proficiency in academic disciplines, but also by different levels of education, different attitudes of students to general cultural and universal values, we believe that the main direction of educational work of a technical university should be the individualization of the education process, which is to build an individual route for the development of students, which will contribute to the enhancement of personal results of students, their personal growth in the spiritual and general cultural plane. As a methodological prerequisite for this study, a number of basic positions are considered: firstly, the methodological basis of educational technologies is the psychological theory of personal development and the determining role of activity in personal development (B. G. Ananiev, A. G. Asmolov, L. S. Vygotsky, A. G. Zdravomyslov, D.I. Feldstein, et al.), secondly, educational technologies should be based on the concept of poly-subject education, the essence of which is to construct a socio-pedagogical reality and pedagogical integration (N.L. Selivanova, et al.), the third is the use of the digital information and educational environment as part of the informational, training and educational space of students (E.V. Trubitsyna, A.N. Rubenko, E.V. Komelina, A. A. Andreev, et al.), fourthly, the digital information and educational environment is presented in the context of the environment-centered approach, as a special functional system (P. Bourdieu, Y. G. Volkov, V. S. Polikarpov, A. V. Mudrik, V.G. Bocharova, B.N. Yusov, L.P. Buyeva, E.V. Bondarevskaya, D.G. Medvedev, et al.)

The relevance of the use of information technology in the educational activities of a technical university is also confirmed by the globalization of the information sphere of public life, which directly affects the sphere of education. The inclusion of a priority project to create a digital educational environment in the portfolio of the Government of the Russian Federation demonstrates the importance of the task of developing new educational technologies. The priority project "Modern Digital Educational Environment in Russia" is aimed at creating opportunities for citizens of different ages and social status to receive quality education using modern information technologies[1].

The study of the development of the digital information-educational environment of educational organizations by scientists, researchers, and engineering personnel has been under scrutiny for a sufficiently long period. This issue has been studied by M.I. Bashmakov, G.Yu. Belyaev, S.G. Grigoriev, O.A. Ilchenko, A.A. Kuznetsov, S.V. Panyukova, S.N. Pozdnyakov, E.S. Polat, I.V. Robert, A.P. Tryapitsyna , et al.

The developed scientific theories are of scientific and research interest for the author of the present paper. The the next section of the paper contains a detailed review of the theoretical and methodological findings of scientists on this subject, but the study of scientific literature allows the author to conclude that DIEE has not been studied by scientists in terms of systematization of educational work of technical universities. This fact has given rise to the study of this problem and the development of projects and elements of DIEE. The presented research may be of interest to heads of educational institutions of higher education, scientists and practitioners in the educational sphere of activity.

Materials and methods

To reveal the essence of the theoretical and methodological foundations of the present study, a review of scientific studies on the topics in question has been carried out. The review of the scientific literature has allowed the author to conclude that studies of the digital (electronic) educational environment are widely presented in terms of defining the essence of the concept by M.I.Bashmakov, G.Yu.Belyaev, S.G.Grigoriev, O.A.Ilchenko, A.A.Kuznetsov, S.V.Panyukova, S.N.Pozdnyakov, E.S.Polat, I.V.Robert, A.P.Tryapitsyna, et al., who point to the effectiveness of the informational and educational environment as a system in which the model of the educational process is builtallowing to use the possibilities of ICT, which can effectively organize both the individual work of the student and collective work, and integrate various forms and strategies for mastering the knowledge of the subject[2], the applied software and hardware and the content of the subject (E.V. Trubitsyna, E.V. Komelina, A.A. Andreev and others, et al.). E.I. Rakitina, argues that IEE is a part of the information space, which includes the nearest to the individual external information environment, as well as a set of conditions in which the individual's activities take place

[1] Priority project "Modern Digital Educational Environment in the Russian Federation." Retrieved 12.02.2019 from: google.com/projects/selective/643/

[2] S. L. Atanasyan; S. G. Grigoriev & V. V. Grinshkun, "The theoretical basis for the formation of the information educational environment of a pedagogical university", Informational educational environment. Theory and practice. Bulletin of the Center for Informatics and Information Technologies in Education ISMO RAO, vol: 2 (2007): 5 -14; S. L. Atanasyan; S. G. Grigoriev & V. V. Grinskun, "Theoretical foundations of the formation of the information educational environment of a pedagogical university". Bulletin of the Center for Informatics and Information Technologies in Education ISMO RAO, Vol: 2 (2007): 5 -14 y S. R. Khablieva, "Information educational environment in various educational systems". Modern scientific research and innovation, num 12 (2015). Retrieved 15.11.2018 from: http://web.snauka.ru/issues/2015/12/60716

directly, and the socio-educational component[3] (S. Atanasyan, G.A. Bordovskiy, S.G. Grigoriev, V.V. Grinshkun, S.A. Zhdanov, I.G. Zakharova, S.V. Zenkina, Y.I. Kapustin, A.A. Kuznetsov, M. P. Lapchik, N.S. Prokopova, et al.). The research in this area is analyzed below in more detail. A.N. Rubenko, in the article "Educational environment as an object of pedagogical research"[4], presented in detail a review of scientific interpretations related to the study of the components of the information and educational environment from the standpoint of a social and pedagogical approach. So, according to E.V. Trubitsyna, "the fundamental feature of the IEE is the interaction of parts of the structure of the informational and educational environment, which includes spiritual, subjective and informative components". The notions of "personality", "pedagogical system", "activity", "reality", "environment"[5], "environment-centered" (P. Bourdieu, Yu.G. Volkov, V.S. Polikarpov, A. V. Mudrik, V.G. Bocharova, B.N. Yusov, L.P. Bueva, E.V. Bondarevskaya, D.G. Medvedev, et al.) are the basic concepts here. The "environment" acts as an integral socio-cultural system conducive to the spread of new cultural values, stimulating group interests, activating interaction (P. Bourdieu, Yu.G. Volkov, V.S. Polikarpov)[6], it acts as a way of transforming external relations into the inner environment (A.V.Mudrik, V.G. Bocharova)[7], gives a way to live and develop, creates the world anew, it has power and action (B.N. Yusov)[8]; it forms the attitude to the basic values, contributes to the assimilation of social experience and the acquisition of new qualities necessary for a person to live (L. P. Buyev). The inner world of a person can also be considered as a special environment - "microcosm" (E.V. Bondarevskaya)[9] , and from the point of view of competence-based approach (V.I. Baydenko, V.A. Dolyatovsky, I.A. Zimnyaya, O.A. Mazur, E.N. Meleshko, N.A. Selezneva, A.I. Subetto, B.Yu.Tatur, Z.V. Yakimova, et al.)[10]. A.V. Khutorskoy believes that competences are a set of interrelated personal qualities (knowledge, skills, abilities, ways of activity), defined in relation to a certain range of objects and processes and required to act efficiently in relation to them. Khutorskoy defines them as professional competency, and the degree of mastering of a competency, that is the possession of a competency, including the person's attitude to it and the object of activity, is called competence[11]. The author shares this opinion and believes that competencies can be described in terms of knowledge, skills, abilities, experience, aptitudes, etc. In the context of vocational training of a graduate of a technical university, the most acceptable definition of competence is the definition given by academician I. A. Zimnyaya, it defines "competence" as a parameter of the social role, a

[3] E. A. Rakitina, "Information fields in educational activities". Informatics and education, num 1 (1999). Retrieved 20.12.2018 from CyberLeninka: https://cyberleninka.ru/article/n/informatsionno-obrazovatelnaya-sreda-kak-obekt-pedagogicheskih-issledovaniy

[4] A. N. Rubenko, "Informational and educational environment as an object of pedagogical research", Bulletin of the Taganrog State Pedagogical Institute named after A.P. Chekhov (2017): 106-110.

[5] E. V. Trubitsyna, Two approaches to the definition of the information-educational environment. ITO-2009 Congress of Conferences. Retrieved 20.12.2018 from: http://ito.edu.ru/2009/MariyEl/I/I-0-13.html

[6] A. A. Osipova, General psychocorrection (Moscow: Sphere, 2007).

[7] S. L. Atanasyan; S. G. Grigoriev & V. V. Grinshkun, "The theoretical basis for the formation of the information educational environment of a pedagogical university", Informational educational environment. Theory and practice. Bulletin of the Center for Informatics and Information Technologies in Education ISMO RAO, Vol: 2 (2007): 5 -14.

[8] V. A. Yasvin, Educational environment: from modeling to design (Moscow, 1997).

[9] A. P. Anoshkin, Theories, systems, technologies of education: outline-guide (Omsk: Publishing house OmGPU, 2001).

[10] N. N. Bogdan & M. G. Masilova, "Interaction of the State, Employers and the University in Ensuring the Quality of Bachelor Training", Modern high technologies, num 8 (2016): 96–100.

[11] A. V. Khutorskoy, "Key competencies as a component of the personality-oriented education paradigm", Public Education, num 2 (2003): 58 - 64.

person's appropriateness for the place occupied at a certain "time", the ability to carry out activities in accordance with social requirements and expectations[12].

The author of the present article shares the opinions of the researchers, who believe that, from the point of view of the environmental approach, education and upbringing are represented by concepts whose content overlaps, and the environmental approach in education is integrative, since it systematizes ideas about the meaning of the environment for education and formulates the principles of education based on these ideas. Proceeding from the above, the author considers DIEE in the context of an environment-centered approach, presenting DIEE as a single informational professional space in which competence-based, personality-activity and practice-centered approaches to the education and upbringing of students are implemented. The author considers the competence-based approach in connection with the formation of general cultural competencies in university students, ensuring the effective functioning of a person in society and being the value result of higher education (V.I. Boydenko, I.A. Zimnyaya, A.V. Khutorskoy,et al.). Competence-based approach involves comprehensive training and education of students not only as specialists, and professionals in their field, but also as individuals and members of a team and society, while the project approach is connected with the design of students' activities, based on the interrelation of theory and practice, a systematic approach to solving problems in connection with the use of structural components of common cultural competencies of students in their interrelation, interdependence, development and movement (V.V. Kraevsky, E.G. Yudin, et al.), the integrated presentation of such processes as modeling, forecasting, planning, creativity (W.H. Kilpatrick, H. Parkhurst, S.T. Shatsky, V.S. Bezrukova, V.V. Kraevsky, P.P. Blonsky, L.E. Levina, et al.)[13]. The practical application of the presented approaches makes it possible to build up educational work on the basis of a variety of educational practices and personal activities, on the one hand, and, on the other hand, to talk about the transformation of the educational process into a self-educational one. In the process of upbringing, a person forms the need and ability for self-developmentas a subject of activity, communication, and relationships.

Representing DIEE as a means of educating a competitive graduate, it is necessary to elaborate in more detail on the disclosure of the essence of the concepts "competitiveness" and "competitive graduate". Important in this respect are the studies of scientists associated with the development of competitiveness of the future specialist (G.V. Belaya, O.V. Dushkina, N.A. Zhuranova, A.K. Markova, A.V. Morozov, N.M. Mukhamedzhanova, B.P. Parygin, R.A. Fatkhutdinov), and works devoted to the problem of training a competitive specialist in a higher educational institution (V.A. Adolf, V.A. Oganesov, E.P. Pecherskaya, O.I.Polkina, N.P. Puchkov). In particular, N.P. Puchkov elaborated on the problems of preparing a competitive graduate of a technical university, which is close to the topic of research of the present paper, and we agree with the author that the quality of professional training for a specialist in a university should be considered as the ability of the educational system to meet, on the one hand, the needs of the labor market for specialists with relevant qualifications and, on the other hand, the needs of the individual in obtaining competitive knowledge[14].

[12] I. A. Zimnyaya, "Competence approach. What is its place in the system of modern approaches to the problem of education?" (theoretical and methodological aspect), Higher education today, num 85 (2006): 20 - 26.
[13] I. P. Podlasy, Pedagogy. Vol.1-I (Moscow, 1999).
[14] N. P. Puchkov, Formation of a quality assurance system for specialist training in a technical college. Ph. D. thesis (2004) Retrieved 27.11.2018 from: http://www.dissercat.com/content/stanovlenie-

Expanding the essence of the concept of “competitiveness”, the author of the present paper analyzed the approaches of psychologiststo this problem, and in this connection the author will rely on the formulation given by a Russian philosopher and psychologist B.D. Parygin, who reveals the concept of "competitiveness" "as a complex property that has its own resources (psychophysical health, age, appearance, abilities, talent, intelligence, energy) and moral aspects (a hierarchy of values, a system of beliefs, the presence of prohibitions and personal limitations)" [15], and the scientist D.I. Antropov, who notes that "the competitiveness of a specialist depends on the compliance of his personal qualities and professional competence with the requirements and demands of modern society. However, it is worth to pay attention to the fact that even with a high level of professional competence, a specialist is not always in demand on the labor market, consequently, he or she does not have sufficiently developed personal characteristics.” The author of the present paper agrees with Antropov that at present the formation of students' competitiveness has an unsystematic and fragmented nature. This happens for a number of reasons, including the fact that the future specialist often does not have the knowledge of the labor market, the requirements and demand for specialists, does not know how to apply professional knowledge in future practice. Therefore, an important stage in the reform of education is the establishment of student interaction with the subjects of its competitiveness: with the university, employers and the state[16].

Continuing to reveal the essence of the scientific concepts used in the study, let us dwell on the review of scientific research on the individual development of students, their personal achievements and personal growth. Analyzing the psychological and pedagogical literature (S.L. Rubinstein, A.H. Maslow, N.I. Kozlov and others)[17], it can be noted that there is no unambiguous interpretation and understanding of the term “personal growth” in the scientific literature but it is obvious that this is a multifaceted, multi-level, continuous process affecting various aspects of the personality, the result of which is an increase in the personality's potential, its adaptive capabilities; improvement of various skills and abilities, the development of the person’s qualities, the formation of a system of life values and worldviews, the awareness, understanding and acceptance of oneself and other people, solving existential issues and crises. In some cases (but not always), this result can be recorded in the form of quantitative or qualitative changes in indicators. The multiplication of personal results and indicators can serve as a criterion of the formation of general cultural and professional competencies of students[18]. The topic of the present study required a detailed analysis of scientific sources to determine the essence of understanding of the psychological and pedagogical concepts used in the paper and to determine the main goals and components of DIEE.

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[15] Workshop on socio-psychological training. S.P. Beznosov et al. B.D. Parygin (ed.) 3rd Edition (Saint Petersburg: Publishing house Mikhailov V.A., 2000)

[16] D. I. Antropov, “FACTORS OF DEVELOPMENT OF THE COMPETITIVENESS OF FUTURE SPECIALISTS”, Izvestia Saratovskogo University. New series. Acmeology Education Series. Developmental psychology, Vol: 4 (2016): 293.

[17] A. Maslow, New Frontiers of Human Nature.G.A. Balla, A.N. Leontiev et al. (eds) (Moscow: Smysl, 1999)

S.L. Rubinstein, Basics of general psychology (Saint Petersburg: Peter, 2013) Retrieved 27.10.2018 from: http://yanko.lib.ru/books/psycho/rubinshteyn%3Dosnovu_obzhey_psc.pdf

[18] N. N. Bogdan & M. G. Masilova, “Interaction of the State, Employers and the University in Ensuring the Quality of Bachelor Training”, Modern high technologies, num 8 (2016): 96–100.

For the education of competitive graduates in the educational process of the university, it is necessary to use an integrated approach that increases the degree of social comfort and growth of students, which leads to personal success. Personal success is expressed in the individual achievements of a person, his/her personal growth and the ability to achieve recognition of others on his own. The results of the students' personal success or “personal growth” can serve as a criterion of the formation of common cultural competencies[19]. Below are presented the research methods used in practical work in the process of educational work of Penza State Technological University (PenzSTU), which served as the basis for the development of DIEE elements.

Materials and methods

To analyze the individual development of students and assess the level of competence formation, the author uses the following *empirical and theoretical research methods*: analysis and synthesis; abstraction and specification; analogy; simulation and observation; comparison; measurement; experiment. All presented methods are included in research and analytical activities.

Research and analytical work makes it possible to build educational work on a predictible basis; according to the results of diagnostics, the main forms, methods and means of education are adjusted. On the basis of diagnostics and monitoring, psychological and pedagogical support of students and the educational process at the university are organized, in addition, research and analytical activities make it possible to build an individual route for the development of students. To determine the assessment of the results of the educational process, the university monitors the quality of educational work annually, which includes: a study of the socio-psychological situation at the university, as well as its dynamics; the effectiveness of the activities; the degree of influence of educational activities on positive changes in the personality of students (level of education), electronic questioning of students on satisfaction with the quality of educational work at the university, monitoring the level of adaptation of first-year students to the educational process at the university.

For the effective organization of work with first-year students and the planning of work on adaptation, the following studies are conducted annually: “First-year student at the university” survey aimed at identifying social attitudes and value orientations among first-year students; social study “Be healthy!” aimed at identifying the attitude of first-year students to the distribution and use of psychoactive substances (PAS) and the determination of differences in attitudes towards PAS among first-year students of previous years. To identify the trends in attitudes towards tobacco smoking in the youth environment of PenzSTU, a blitz survey “Problems of smoking in the youth environment” is conducted. To determine the level of adaptation of first-year students, primary and repeated testing is carried out according to the following methods: “Adaptive strategies of behavior” (ASB - 2, option for adults) (by N.N. Melnikova); “Adaptation of students in high school” (authors T.D. Dubovitskaya, A.V. Krylova). In order to study the characteristics of manifestation of tolerance among first-year students and determine the dynamics of changes in the

[19] N. V. Kozlova & A. I. Serebryakova, “Improving educational work with students at the university through the use of modern educational technologies in practice (using the example of Penza State Technological University)”. Scientific and Methodological Journal "XXI Century: Results of the Past and Problems of the Present Plus": Periodical scientific publication. Series: social and pedagogical sciences, num 04 (20) (2014): 165 - 169. Retriever 27.10.2018 from: https://docplayer.ru/26125270-Xxi-vek-itogi-proshlogo-i-problemy-nastoyashchego-plyus.html

characteristics of manifestation of tolerance in the learning process, monitoring of the characteristics of tolerance among students is carried out, the task of which is: diagnosis of the general level of tolerance; diagnosis of ethnic identity and its transformation; analysis of changes in the level of tolerance and the type of ethnic consciousness in the learning process ("The Index of Tolerance" by G.U. Sodatova, O.A. Kravtsova, O.E. Khukhlayeva, and L.A. Shaigerova; "Types of Ethnic Tolerance" by G.U. Sodatova , S.V. Ryzhov). To identify the propensity for deviant behavior using the method of E.V.Leus and A.G.Solovyov (TDB test (tendency to deviant behavior)), the degree of maladaptation in adolescents with different types of deviant behavior is determined.

In order to study the assessment of students' satisfaction with the quality of the organization of the educational process and extracurricular work at the university, an electronic survey is conducted annually. Students evaluate the following performance indicators:

1) organization and conduct of extracurricular activities in an educational institution;
2) the influence of the views of students on the preparation of a plan for organizing extracurricular activities;
3) fairness of the system of encouraging students for active participation in extracurricular activities;
4) special preventive work;
5) the work of the socio-psychological service;
6) students' readiness for life and work in modern conditions;
7) organization and conduct of extracurricular activities;
8) the material and technical base used in extracurricular time;
9) the work of student public organizations;
10) the work of a mentor / class teacher;
11) level of information support for the organization and conduct of extracurricular work.

	2013 – 2014 acad. year	2014 – 2015 acad. year	2015 – 2016 acad. year	2016 – 2017 acad. year	2017 – 2018 acad. year
1	8	8	9	8	9
2	6	7	8	7	9
3	7	8	8	8	8
4	8	8	8	9	9
5	8	8	8	8	8
6	7	7	7	7	9
7	8	8	8	7	8
8	7	8	8	7	8
9	8	8	7	8	9
10	9	9	8	8	8
11	8	8	8	8	9
Average grade	7.6	7.9	7.9	7.7	8.5

Average grade of educational work assessment at PenzSTU as a whole.

Table 1

The specific results of the electronic questioning of students over five years are presented

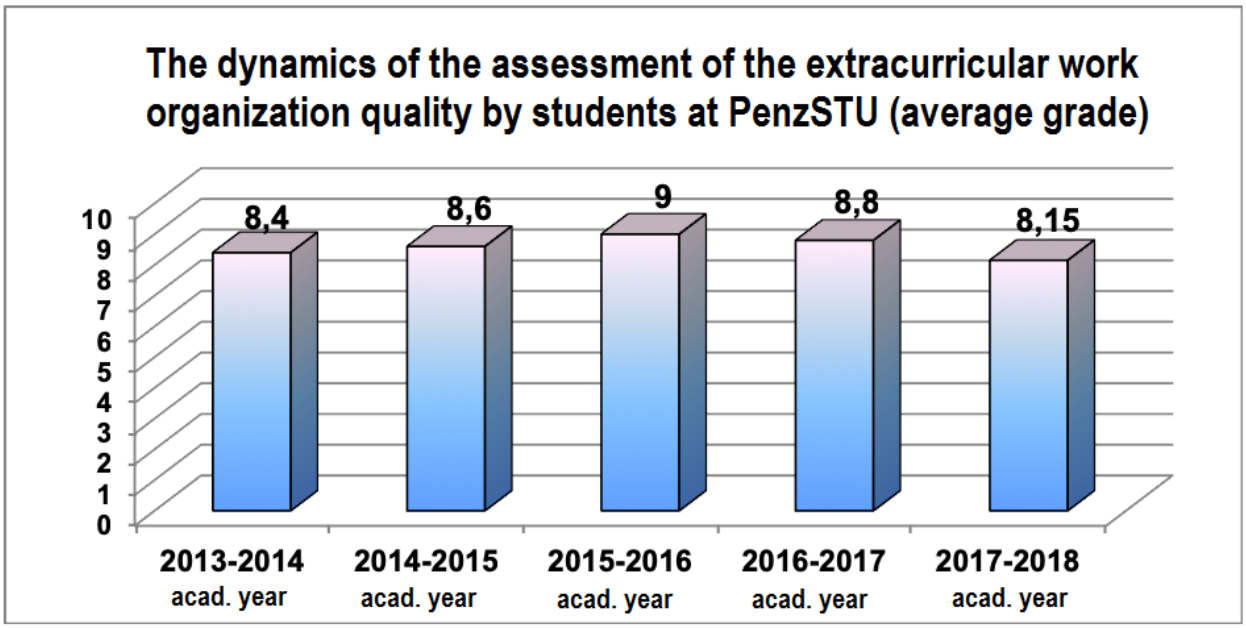


Fig. 1
The dynamics of the assessment of the extracurricular work organization quality by students at PenzSTU (average grade)

Criteria for evaluation

- 5 - Work is conducted at a relatively acceptable level. There are some disadvantages.
- 6 - Work is conducted at a fairly good level. The disadvantages are not significant.
- 7 - Good rating. Work is conducted at a fairly good level. Disadvantages are few, insignificant and easily fixable.
- 8 - High enough. The work almost completely meets the requirements.
- 9 - High. Fully compliant.
- 10 - Very high. Fully compliant.

This study allows to determine the effectiveness of educational work in the whole university and individual areas of educational work. All the structural units of the university take part in the electronic survey. All research and analytical work implies feedback. The results of the presented research confirm that the elements of the DIEE introduced into the educational system contribute to the improvement of the educational system as a whole.

The study of such a question as the upbringing of a person is based on the methods and approaches of pedagogical science, which are characterized by reliability and validity. Despite the fact that pedagogy is an independent science, it uses the methods of related sciences - philosophy, political science, psychology, ethics, sociology, history, and others. Being educated is one of the most important axiological components that is part of the social structure of the individual. The combination of methods and techniques aimed at studying the level of education, the formation of those features and personal properties of a person, which are manifested in the relationship between people, is called diagnosis of education.

Below is a detailed description of the application of the technique “Diagnostic monitoring of the upbringing process in school” by D. V. Grigoriev, I. V. Kuleshov, P. V. Stepanov modified by the author of the present article to match the conditions of PenzSTU to assess the level of students' upbringing, since this study is the main criterion for assessing the quality of the organization of educational work.

Monitoring is conducted annually for all first-year students, then for the second and third courses in order to determine the dynamics of changes in the level of education of students in the process of education at PenzSTU, to identify resources of the organization of the educational process and assess the effectiveness of the education system in the university as a whole. This method allows to identify the dynamics of personal development as the main indicator of the effectiveness of the process of education. According to the answers to the questions, the level of formation of general cultural competencies can be determined. These relationships are direct indicators of the emotional-sensual component of general cultural competencies. The statements contained in the questionnaire encourage the respondent to demonstrate his/her attitude to the world, to other people, to him(her)self. An anonymous survey makes it possible to avoid conformal behavior. In the opinion of the author, the value of the technique also lies in the fact that it allows the researcher to diagnose the level of development of various personality traits at a time.

The questionnaire "Diagnostic monitoring of the process of education in school" consists of 91 statements which the student can express his/her attitude to. For this, the student must decide how much he/she agrees (or disagrees) with the statements contained in the questionnaire, and assess the degree of agreement (or disagreement) in points (from +4 to -4). For each of the 13 values (more precisely, the objects of evaluation), the authors of the questionnaire have developed 7 statements that reveal the student’s attitude to these values. The answers are distributed on 13 scales, they correspond to 13 lines in the form filled in by the respondent for answers. Results are obtained by adding points on each scale. The maximum respondent can score is 28 points, the minimum is minus 28. These are the indicators of the value and anti-value relationship of the individual to those values by which we can judge the formation or non-formation of the general cultural competencies.

The present research, development and implementation of projects were carried out in several stages:

Stage 1 (2011 - 2013) – the stage of search. The degree of elaboration of the problem in the scientific literature and the actual state of the process under study in the educational systems of technical universities were studied, the theoretical material was accumulated and generalized, which allowed to identify problems in the formation and development of students' general cultural competencies in the educational system of a technical university and led to the need to create the projects presented in the article. They are built on personal-developmental principles aimed at self-development, the formation of students as individuals, based on psychological and pedagogical research. At this stage, the following elements of DIEE were developed: “Unified Information System”, “Individual Student Development Card”.

Stage 2 (2013 - 2015) - at the second stage, the development and experimental verification of projects was carried out: the interface “Mentor's Workplace”, “Electronic diary on-line”, the effectiveness of educational tools and methods developed by the author were identified and justified, the problems of educational work were determined. This resulted in the development and implementation of the following projects: “Electronic calendar plan of educational work”, “Electronic portfolio”.

Stage 3 (2015 - 2018) - the stage of generalizing. The analysis of the results of experimental work and the statistical processing of the obtained data were carried out, as well as their generalization and systematization.

Results

Below, a detailed overview of the developed and tested components of the DIEE of Penza State Technological University (PenzSTU) is presented.

III.I. "Individual Student Development Card"

To determine the level of development of each student, an electronic program “Individual Student Development Card” has been developed. It is compiled on the basis of evaluation and mathematical methods by comparing the standard, rating and current indicators of each student. Table 1 shows the methodology for analyzing the individual development of students and the criteria for performance indicators. The individual trajectory of education is built according to the results of the rating assessment of students. The results are filled in the table (Table 2).

<table>
<tr><td>Quality, standard value</td><td><u>The calculation of the quantitative assessment of quality</u></td></tr>
<tr><td>1. Performance
$X_1 = 4$</td><td>$X_1 = \frac{\sum_{i=1}^{n} x_i}{n}$, were $n -$ number of certifications (exam, course work, practice, etc.), $x_i -$ assessment based on results of i certification</td></tr>
<tr><td>2. Participation in competitions, conferences, seminars ,
$X_2 = 3$</td><td>$X_2 = \sum_{i=1}^{n} x_i$, где $n -$ number of events
<table>
<tr><td rowspan="2">Event level</td><td colspan="4">Number of points , x_i</td></tr>
<tr><td>For participation</td><td colspan="3">For a prize-winning rank</td></tr>
<tr><td></td><td></td><td>1 place</td><td>2 place</td><td>3 place</td></tr>
<tr><td>university</td><td>2</td><td>5</td><td>4</td><td>3</td></tr>
<tr><td>county (oblast)</td><td>3</td><td>6</td><td>5</td><td>4</td></tr>
<tr><td>regional</td><td>5</td><td>8</td><td>7</td><td>6</td></tr>
<tr><td>international</td><td>7</td><td>10</td><td>9</td><td>8</td></tr>
</table></td></tr>
<tr><td>3. Participation as a representative of the group in joint creative activity .
$X_3 = 10$</td><td>$X_3 = \sum_{i=1}^{n} x_i$, were $n -$ number of events
<table>
<tr><td rowspan="2">Event level</td><td colspan="4">Number of points , x_i</td></tr>
<tr><td>For participation</td><td colspan="3">For a prize-winning rank</td></tr>
<tr><td></td><td></td><td>1 place</td><td>2 place</td><td>3 place</td></tr>
<tr><td>university</td><td>2</td><td>5</td><td>4</td><td>3</td></tr>
<tr><td>county (oblast)</td><td>3</td><td>6</td><td>5</td><td>4</td></tr>
</table></td></tr>
</table>

	regional	4	7	6	5
	international	5	8	7	6

4. Organizing work in a group
$X_4 = 2$

Type of organizational activity	Number of points , X_4
Class monitor	$X_4 = \begin{cases} -1, \text{no work done} \\ 1, \text{work is not performedregularly} \\ 3, \text{work is done regularly} \end{cases}$
Head of student government sector	$X_4 = \begin{cases} 0, \text{no work done} \\ 1, \text{work is not performedregularly} \\ 2, \text{work is done regularly} \end{cases}$
Event organizer	$X_4 = \begin{cases} 0, \text{did not organize events} \\ 1, \text{good organization of the event} \end{cases}$

5. Publications
$X_5 = 3$

$X_5 = \sum_{i=1}^{n} x_i$, were $n-$ number of publications

Type of publication	Number of points , x_i
Local, University newspaper "Optimist"	1
Theses of a scientific report	2
Scientific article in a regional edition	3
Scientific article in a central journal	10

6. Additional classes in creative associations
$X_6 = 1$

$X_6 = \sum_{i=1}^{n} x_i$, were $x_i = 1$, $n-$ number of associations visited.

7. Assessment of the level of education
$X_7 = 5$

$X_7 = \frac{\sum_{i=1}^{4} x_i}{4}$, were x_i - assessment of qualities included in the level of education $x_i = \begin{cases} 0, \text{no quality} \\ 1, \text{quality is extremelyrare} \\ 2, \text{quality is rare} \\ 3, \text{quality is not systematically manifested} \\ 4, \text{quality is often manifested} \\ 5, \text{quality is present} \end{cases}$

8. Social work of students $X_8 = 4$	$X_8 = \sum_{i=1}^{n} x_i$, were $x_i = 1$, $n -$ number of events

Table 2
Methods for analyzing the trajectory of the individual development of students

After comparing the results in automatic mode, a radar chart is built. Figure 2 shows a sample of student achievement results.

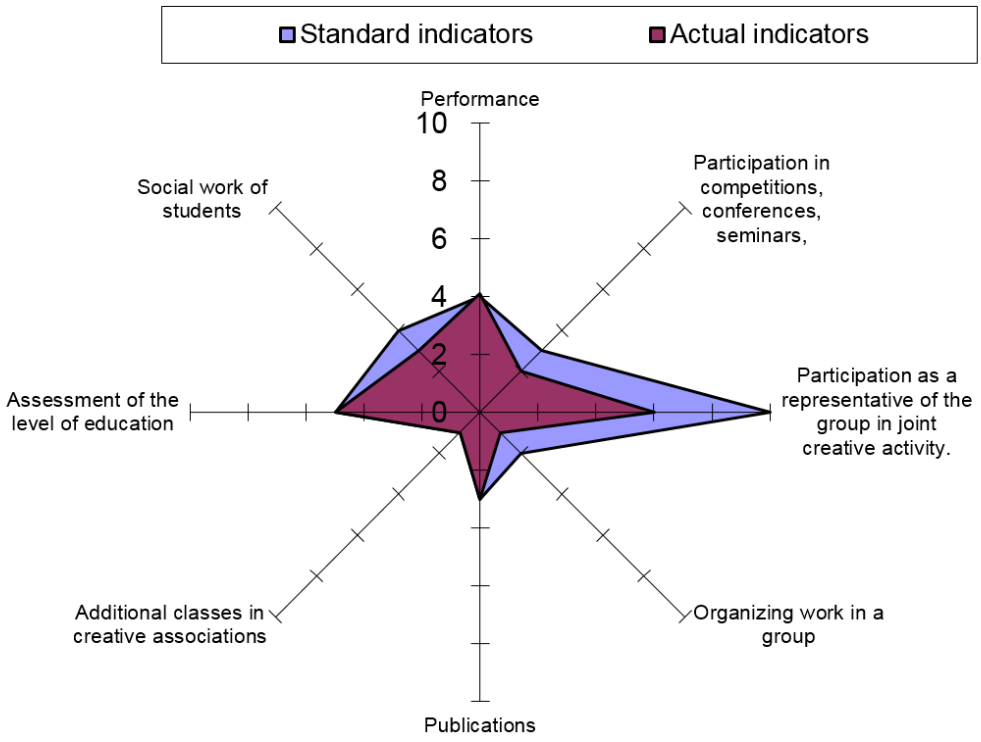


Fig. 2
A sample of student achievement results

Thus, we clearly see the personal results of each student, his regressive or progressive development. On the basis of the data obtained, the mentor of the student academic group / the class teacher of the secondary vocational education (SVE) corrects individual work.

The need to build an individual route for the development of students is explained in the introduction of this study. To build the students' individual route, in addition to the actual results expressed in numerical values for assessing the level of development of students, the author included the results of psychological and pedagogical research, including an assessment of the level of education. The program allows students themselves to compare their own results, i.e. observe one's own personal development or personal growth.

Another indisputable advantage of the implementation of this program is the quality control of teachers' work, since the results of their teaching activities are directly related to the results of students' achievements, which significantly increases the teacher's motivation to actively engage in extracurricular activities with students.

III.II. "Electronic Portfolio" project

Special attention should be paid to the project “Electronic Portfolio” being implemented at PenzGTU (further referred to as the Project).

The project “Electronic Portfolio” at PenzSTU is presented as an element of the University DIEE representing a set of information, educational, telecommunication resources and technologies, relevant technical means necessary and sufficient for organizing the interaction of university students with pedagogical, educational support, administrative and economic personnel, as well as with each other. The “Electronic Portfolio” project at PenzSTU is organized on the course management system platform (LMS) Moodle PenzSTU - “Results of mastering the EP (educational program). Portfolio”, Moodle PenzSTU - “Course Management System of PenzSTU” (Figure 3).

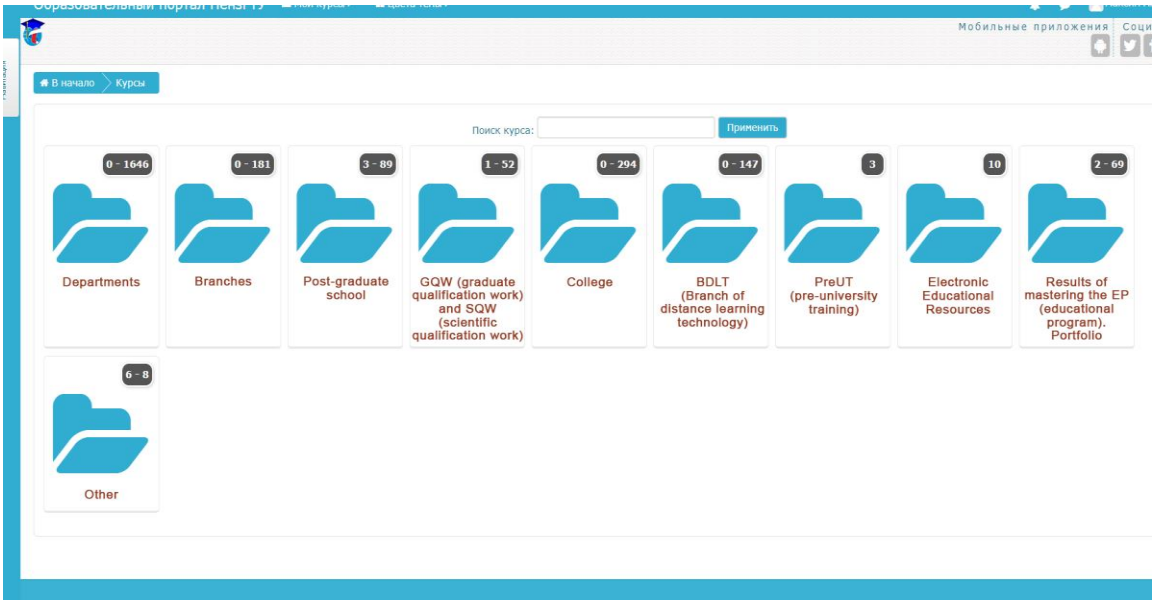


Fig. 3
Course Management System of PenzTU

The project was implemented with the purpose of individualization (personalization) and differentiation of the process of training and education, checking the development of general cultural and professional competencies, forming motivation to achieve certain results in mastering the educational program and is an essential element of the competence-based, personal-activity and practice-oriented approach to education and upbringing.

The project consists in monitoring the process of evaluating the stages of formation of competencies, of the dynamics of individual development and personal growth, in addition, the project is a tool to support educational and professional activity of students and their independence.

Access to the electronic portfolio, to edit individual elements of the portfolio, is provided to students, mentors of the student academic group, employees of the dean's office, employees of relevant departments, and of the information service (technical

support). The student in the process of forming an electronic portfolio collects information and regularly fills up the relevant sections of the portfolio with the necessary materials. The mentor of the student academic group provides information and consulting support to the student on the formation of an electronic portfolio, monitors the content and accuracy of the information posted. Employees of the dean's office update personal data in the information system, control the filling of the electronic portfolio with the help of mentors. The portfolio includes, in addition to a set of traditional information (documents - certificates, diplomas, certificates, the copies of orders, photographic documents, recommendations), the results of educational activities (the results of the rating of knowledge (performance), diagnostic works, evaluation sheets, research, design works, abstracts, the results of independent work, etc.), achievements in research and development, the results of extracurricular activities (creative works, presentations, photographic materials, etc.).

The project includes the Electronic Diagnostics Program (further referred to as the Program) for students. The main purpose of the Program is to automate the collection and processing of research and analytical information (data). The results of research and analytical activities allow us to build educational work on a predictive basis. According to the results of diagnostics, the main forms, methods and means of education are corrected. Psychological and pedagogical support of students is organized on the basis of diagnostics and monitoring. Research and analytical activity makes it possible to trace the personal growth of each student and helps to build an individual route of the student's development. In preventive work, this line of activity makes it possible to identify the students of "the risk group", to determine their social attitudes, health status, and life values. In addition, to determine the level of effectiveness of the educational work of the university, the dynamics of the education level of students is determined. The rules for filling in the forms and scoring are developed for each direction and are presented in the appendices in the "Electronic Portfolio"[20].

The electronic portfolio is successfully used for external analysis of the effectiveness and quality assessment of a student's educational, research and creative activities; it serves as a supporting base for submitting documents for the purpose of getting increased scholarships, participation in youth contests, meetings, competitions, forums, and also as input information for potential employers.

The electronic portfolio of students of PenzTU is formed from the moment of enrollment of the student until graduation. Upon completion of training, the student can upload information about his/her achievements and the results of the development of the educational program to his/her personal electronic storage device.

Thus, the project "Electronic Portfolio" contributes to the process of self-actualization of studentsand forms an individual educational space. "Portfolio" makes it possible to automatically create a CV from the data presented in it, which can contribute to the graduate's successful employment.

III.III. "Electronic calendar plan of educational work"

The task of the long-term and calendar scheduling (further the plan) is to ensure the continuity of today's and tomorrow's actions, as well as streamline the flow of the training

[20] Normative document on "Electronic Portfolio". Retrieved from: http://docs.psta.ru/Pages/PenzGTU.aspx

and education processes. Planning largely determines the results and effectiveness of the system of educational work, provided that it is not of a formal nature. Planning is an important prerequisite for success in the educational process in the case when it is the result of joint creativity, when it takes into account the interests of students, their age and individual characteristics, social status, conditions and specifics of the educational institution. The author of the present article believes that the plan should contribute to the following functions: the guiding function, i.e. defining specific areas and activities; the predictive function, reflecting the main idea, presenting the results through concrete actions; the coordinating function, organizing and determining the educational means, subject-object relations, indicating the order of activities and interaction of various types of activities, as well as determining their place and time; the control function, (monitoring the implementation of goals); the reproducing function implying that after any period of time according to the plan, you can restore the content and volume of the work performed.

An important condition for improving the quality of the educational process is a well-organized internal university control, the purpose of which is the constant perfection of the educational process. Improving the efficiency of educational work is impossible without analytical work and a control system. Control is also a source of information for the successful functioning of the educational process management system and allows improving the quality of the organization of the educational process. For this purpose, the university uses a rating assessment of teachers' activities, which includes the following indicators: results of educational, scientific, and methodical work with students; organization of extracurricular activities and the results of educational work[21].

The draft plan is developed separately for each of the structures of the university, including the work plan for the mentors of student academic groups / the class teacher of SVE. For making changes and additions to the plans, a special login and a password are provided. To confirm the organization of events, the scanned pages from the site, photo and video reports are attached. The plan includes “Electronic integrated plan of educational work of the university”, “Electronic calendar plan of educational work of structural units,“ and “Electronic calendar plan of educational work of the department.”

For all plans, a unified fill-in form is developed (Table 3).

№	**name**	**date**	**person in charge**	**fulfilled / not fulfilled**
Methodical work				
1				CONFIRM POSTPONED TO _____ NOT FULFILLED
2				
	ADD			
	ADD			

Table 3
Fill-in form in the electronic calendar plan

[21] The project “Electronic diary on-line”. Retrieved from: www.stinfo.penzgtu.ru

Based on the results of the monthly monitoring, the final indicators of the plan fulfillment (in %) for the 1st and 2nd terms and for the whole academic year (Table 4) are calculated for each department.

period	fulfillment (%)
Department of educational work	
August	
September	
total for the semester	
Faculty of Information and Educational Technologies, etc.	

Table 4
Calculation of the results of the calendar plan fulfillment by terms

At the end of the year the percentage of the performed work is determined in the automatic mode. On the basis of the data obtained, the work of mentors of student academic groups is paid. All data on the results of the planned work is accumulated in the quality management department.

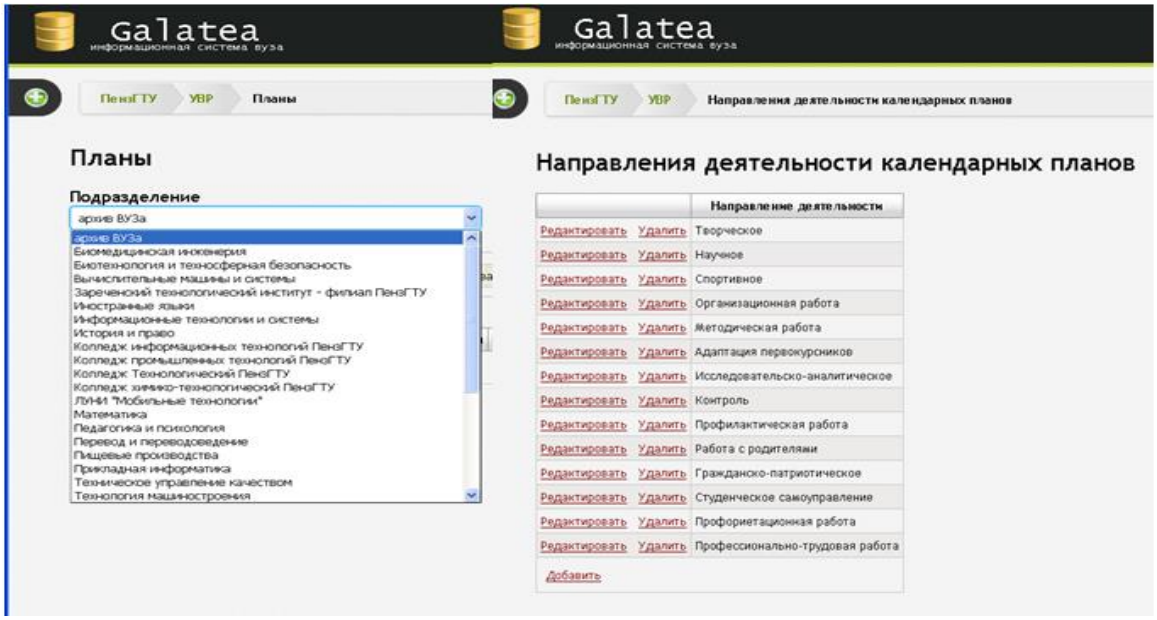


Fig. 4
Example of filling out a plan in the Galatea system

Without a competent methodological support of the educational process, it is impossible to present uniform requirements to the quality of the organization of educational work with students, ensuring the functional literacy of mentors and class teachers and uniting into a single educational system of all developing areas of university work. To optimize the interaction of subjects of training and educational processes, monitoring and evaluating the

performance of teachers, managing educational work, adjusting the forms and methods of work used, applying assessment methods that determine the degree of formation of general cultural and professional competencies, the level of individual development of students, and improving the quality of teachers' work, PenzGTU has developed the "Mentor's Workplace" Interface.

III.IV. "Mentor's Workplace" Interface

The “Mentor's Workplace” interface is a unified professional information field for the implementation of a competence-based approach to the information support of educational activities. It also provides easier access to information resources for individual use. The Mentor's Workplace interface consists of a series of active buttons: quick access to information resources, the Internet, regulatory documents; individual mentor information; scientific and educational materials on the support of mentors’ activities (internal local acts that govern the organization and conduct of educational work at the university, information about students); department meetings; orders and instructions; single window of access to educational resources; timetable; collection of methodical materials; plan of events; rating of student academic groups and “Mentor of the year” contest; archive of events.

Some of the features of the mentor’s workplace are analyzed below. The section “Normative and local acts” presents not only the concept of educational work of PenzSTU, regulations, and programs, but also a list of necessary documents, which should form the basis of the mentor’s report for the term (more than 30 documents are available). For example, a report can be presented in the form of a table and / or textual description, which includes information about the students’ participation in educational activities, their leisure, active lifestyle, information about students from other cities, information about the employment of graduates, lists of most active students, the accounting of providing material (financial) assistance to students, taking into account the payment of scholarships to students, the level of education, etc.

The section "Exercises and business games" contains methodological materials on business games aimed at training the ability to work in a team, team building, getting to know each other, diagnostic games, group interaction games, trust-building exercises, etc. “The collection of methodical materials” contains materials for seminars, recommendations, plans for special classes conducted by mentors, event and parent meeting scenarios, diagnostic materials, etc. To carry out preventive work with students, the collection of methodical materials includes an electronic educational resource “Forming Students’ Health Care Competence”, which includes the developed regulations and guidelines, scenarios of events, diagnostic material for monitoring changes and trends in the youth subculture, photos and video materials, which is both an illustrative description and information for problem discussion.

The database collected by each mentor on the results of educational activities is accumulated on the basis of the local information network of the university. This allows you to quickly coordinate the educational work of each mentor / class teacher of SVE, and the teaching staff of the university as a whole.

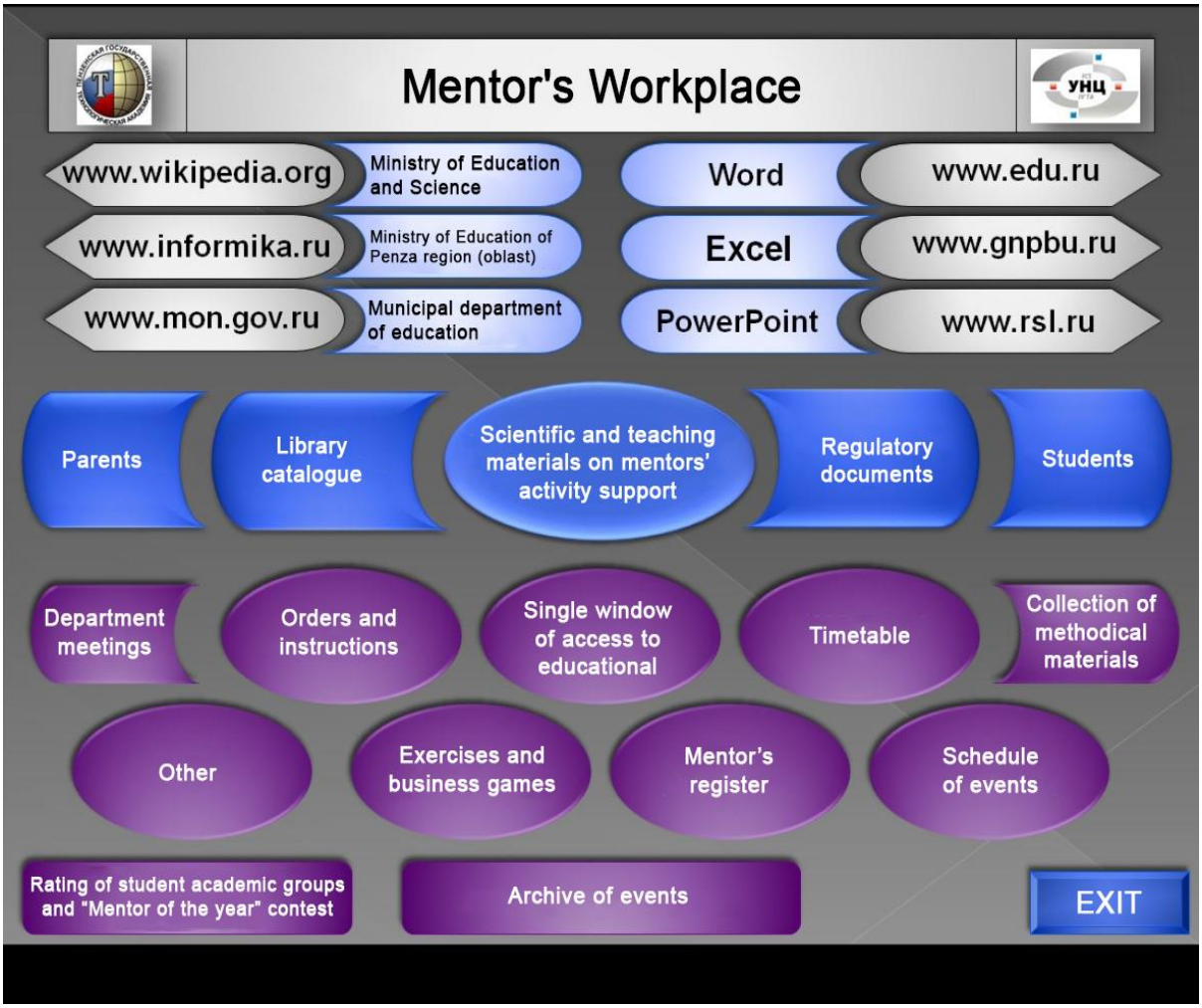


Fig. 5
"Mentor's Workplace" Interface

III.V. "Electronic diary on-line"

The organization of pedagogical support for working with parents includes both the traditional forms of work (parent meetings, individual counseling), and interaction in the digital educational environment of the university.

Using the "Electronic on-line report card" service, parents can quickly and confidentially receive information about the educational results and achievements of their children in extracurricular activities, thereby taking an active part in shaping their professional knowledge and skills[22].

[22] N. P. Puchkov, Formation of a quality assurance system for specialist training in a technical college. Ph. D. thesis (2004) Retrieved 27.11.2018 from: http://www.dissercat.com/content/stanovlenie-konkurentosposobnosti-budushchikh-spetsialistov-v-uchrezhdeniyakh-srednego-profe#ixzz5Y215MvBG

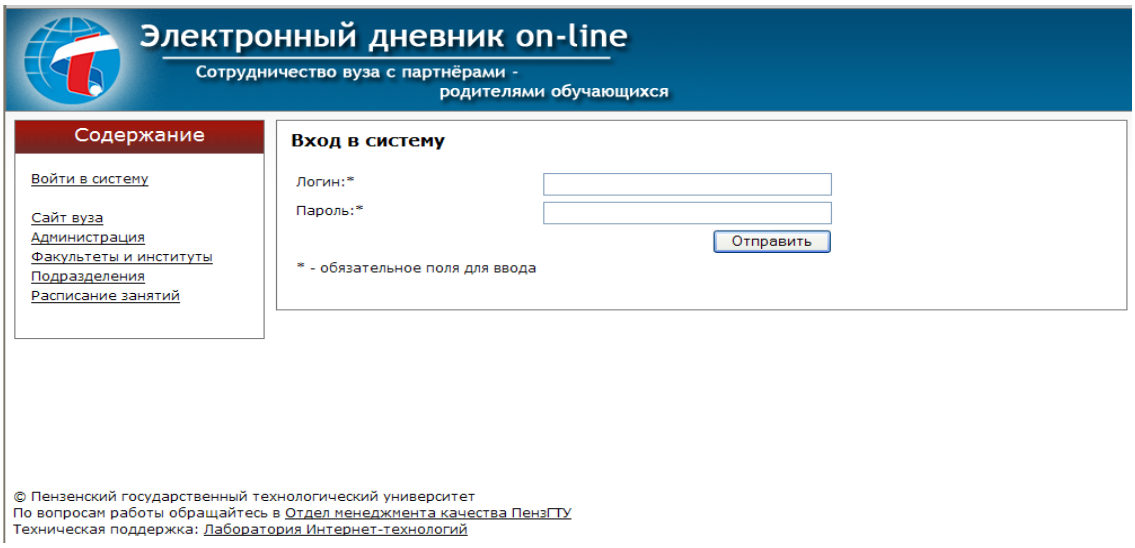
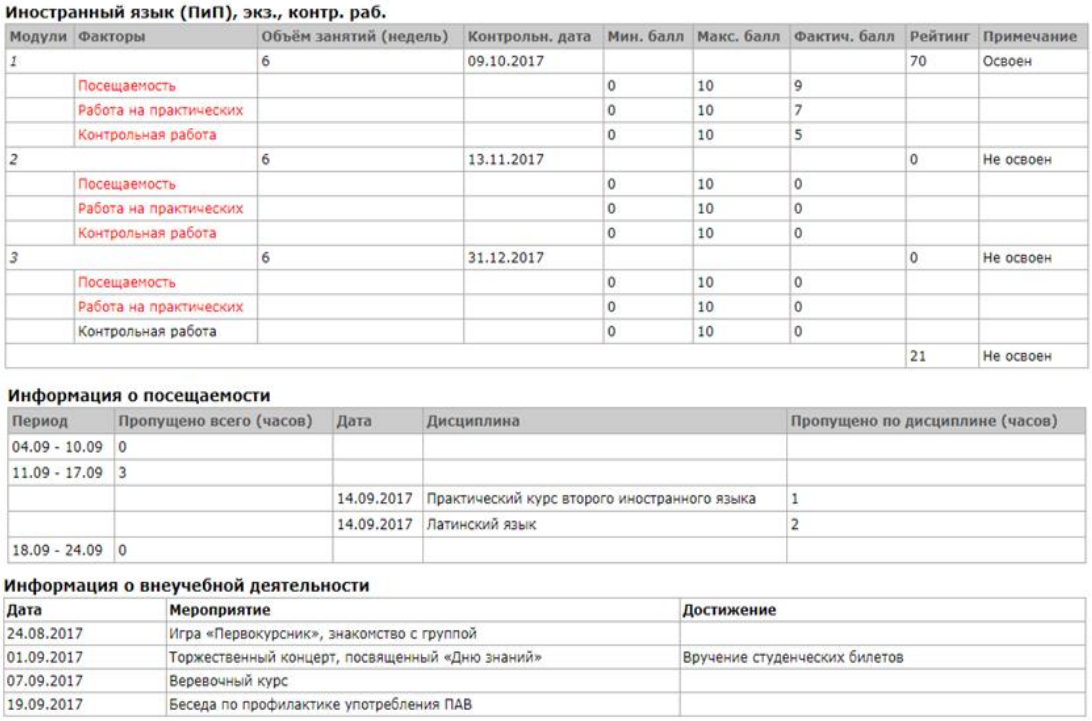


Fig. 6
"Electronic diary on-line" Login window



Иностранный язык (ПиП), экз., контр. раб.

Модули	Факторы	Объём занятий (недель)	Контрольн. дата	Мин. балл	Макс. балл	Фактич. балл	Рейтинг	Примечание
1		6	09.10.2017				70	Освоен
	Посещаемость			0	10	9		
	Работа на практических			0	10	7		
	Контрольная работа			0	10	5		
2		6	13.11.2017				0	Не освоен
	Посещаемость			0	10	0		
	Работа на практических			0	10	0		
	Контрольная работа			0	10	0		
3		6	31.12.2017				0	Не освоен
	Посещаемость			0	10	0		
	Работа на практических			0	10	0		
	Контрольная работа			0	10	0		
							21	Не освоен

Информация о посещаемости

Период	Пропущено всего (часов)	Дата	Дисциплина	Пропущено по дисциплине (часов)
04.09 - 10.09	0			
11.09 - 17.09	3			
		14.09.2017	Практический курс второго иностранного языка	1
		14.09.2017	Латинский язык	2
18.09 - 24.09	0			

Информация о внеучебной деятельности

Дата	Мероприятие	Достижение
24.08.2017	Игра «Первокурсник», знакомство с группой	
01.09.2017	Торжественный концерт, посвященный «Дню знаний»	Вручение студенческих билетов
07.09.2017	Веревочный курс	
19.09.2017	Беседа по профилактике употребления ПАВ	

Fig. 7
"Electronic diary on-line" Student Information window

Unified reference information system of PenzSTU

All information about the activities of the university is presented in the Unified Reference Information System, which is a touch monitor that makes it possible to use the necessary information even to a person who does not know how to use a computer. Here the information is presented in the form of video, audio and text files.

For example, in the section “Say no to drugs”, the PenzSTU preventive work system is presented, counseling by a psychologist for mentors of student academic groups / class teachers of SVE, parents and students, telephone hotlines, addresses of narcologists, psychotherapists and videos of students on a given topic, statistics of interdepartmental structures of the Penza region and much more. The login window for the Unified *reference information* system is shown in Figure 8.

Fig. 8
The login window for the Unified *reference information* system of PenzSTU

Discussion

In general, the vocational education system should be focused on the professional training of students as future specialists who are socially active and competitive on the labor market. And the quality of training at universities is measured by the competitiveness of graduates. In the conditions of modern industry a specialist should be competent not only within the framework of his profession, but also in the issues of interpersonal, political and legal relations, in the issues of the organization of productive life. For a technical college, the pedagogical aspect of educational activity is especially important. Traditionally, it is considered that the main subject of activity of an engineer, and, in general, of a technical specialist, is engineering and technology. However, numerous man-made disasters of recent years indicate that for technical specialists, the development of a valuable attitude to their profession – engineering – is perhaps even more important than for specialists of other profiles. Therefore, at present, university education consists not only in the transfer of knowledge, but also serves as the formation of the personal qualities of future specialists. And this reinforces the importance of educational work in universities. the author believes that the new socio-economic situation that has developed in the country in recent years, dictates the need to form a new thinking in both an individual and a whole team. In this regard, the new educational standards introduced in 2011 not only open up new opportunities for universities to train competent specialists, but also create certain problems. New Federal State Educational Standards (FSES) proclaim the formation of not only professional competencies of future specialists (which has always been the case), but also the formation of a whole complex of general cultural competencies.

Moreover, the FSES in various areas of training identify and formulate the competencies on different bases. Because of this, in practice, university professors and extracurricular specialists are often not sure how to combine different general cultural competencies from different FSES in a unified educational and pedagogical process of a university.

In accordance with the FSES, DIEE is understood as an open pedagogical system formed on the basis of various informational educational resources, modern information and telecommunication means and pedagogical technologies aimed at forming general cultural and professional competencies, developing a creative and socially active individual[23]. Based on FSES requirements, each educational organization creates its own digital informational educational environment (DIEE), which should reflect the specifics of the educational process of the university. Working on the topic of this study, the author analyzed the DIEE of educational institutions of higher education and came to the following conclusions that the presented informational developments mainly provide: access to curricula, work programs of disciplines (modules), practices, electronic library systems and electronic educational resources ; fixing the progress of the educational process, the results of intermediate certification and the results of mastering the main professional educational program; conducting all kinds of classes, procedures for assessing educational results, which are implemented using e-learning technologies; the listed characteristics of DIEE are standard characteristics and do not reflect the specifics of the educational process of the university. This study may be of interest, as it presents not only scientific approaches to the problem of individualization of the upbringing process in educational institutions of higher education of technical profile, but also the elements of DIEE of PenzSTU developed and implemented in practical work, which include not only an educational portal, a unified information system, official website, electronic database of students, electronic document management, but also systematic methodological support of the education process with a set of methods for analyzing students' individual development: “Unified Information System”, “Mentor's Workplace” interface, “Electronic Timetable for Educational Work”, “Electronic Portfolio”, “Individual Student Development Card”, and “Electronic on-line report card” for pedagogical interaction with parents.

The author considers the DIEE of PenzSTU in the context of environment-centered approach, which makes it possible to talk about the new direction of the upbringing process, based on the variability of educational practices, personal-activity orientation of educational work and the transformation of the educational process into a self-educational process, in which the individual develops the need and ability for independent development of him(her)self as a subject of activity, communication, and relationships. In addition, the environment-centered approach in the educational activities of the university makes it possible to build DIEE as a personal, individual educational space, contributing to the development of students with professional and general cultural competencies, based on targeted and effective organization of interactions, transferring and reproduction of social and cultural experience of the university, as well as in creating conditions for the personal development of the student in the process of active work. DIEE represents an integrative complex of pedagogical factors and conditions, means, methods and forms determining successful social adaptation of students in their life activity, a set of information, educational, telecommunication resources and technologies that form a unified educational system of the university.

[23] N. N. Tavtilova, “To the problem of personal growth”, Young scientist, num 10 (2012): 294-296. Retrieved 27.10.2018 from: https://moluch.ru/archive/45/5560/

In this study, the author tried to identify invariants of the educational system of the university, which ensures the formation of general cultural competencies of a competitive specialist. We believe that in modern conditions, building an educational system in institutions of higher vocational education should potentially ensure a successful integration of an individual into professional activity, its full socialization and successful professional adaptation, as well as meet the growing needs of society and the economy in educating successful citizens and training highly qualified specialists. Therefore, the developed methodological complex of elements of the digital informational educational environment (DIEE), representing a systematic methodological support of the educational process, is relevant.

The author is grateful to the doctor of pedagogical sciences, professor, honored worker of higher education Moiseyev Vasily Borisovich, who headed the Penza State Technological University for 25 years. The possibility of developing and implementing DIEE in the educational activities of the university was realized due to the direct participation and leadership of the rector.

Conclusion

Summarizing the presented elements of DIEE of PenzSTU, it can be stated that DIEE at PenzSTU not only provides educational activities of the university, but also allows to optimize the interaction of subjects of educational and pedagogical processes, monitor and evaluate the results of activities, manage educational work, adjust the forms and methods of work used, apply assessment methods that determine the degree of formation of general cultural and professional competencies, determine the level of individual development of students, their personal growth, improve the quality of teachers work through continuous improvement, as well as maximizes the interests of the students correlated with education objectives. Thus, DIEE contributes to the formation of a unified system of educational work of the university, based on planning, forecasting, decision-making, and scientific research. The reliability and validity of the scientific results and conclusions of the study are ensured by the theoretical significance of the original methodological positions, by the diversity of research methods adequate to the objectives of the study, by the personal participation of the author in the experimental work as the head of the educational department of PenzSTU and the implementation of results in practice, by qualitative and quantitative analysis of experimental data obtained in the process of research.

The presented system of work allows to draw the following conclusions:

1. The digital information and educational environment of a higher education institution is a unified informational professional space for the implementation of a competence-based, personal, activity- and practice-centered approach to the education and upbringing of a competitive graduate.
2. Digital information and educational environment of the university contributes to the individualization (personalization) and differentiation of the process of training and education, the process of self-actualization of students, and forms the individual educational space.
3. Digital information and educational environment of the university makes it possible to implement assessment methods, increase the degree of formation of general cultural and professional competencies, the level of individual development of students, and their personal growth.

4. Digital information and educational environment of the university is a means of monitoring the quality of educational work and is a combination of information, educational, telecommunication resources and technologies, and the relevant technical means.

5. Digital information and educational environment of the university forms a unified system of educational work of the university.

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