



Design-Oriented Education Environment as a Means of Improving the Quality of Undergraduate Education in Terms of the Competency-Based Approach

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Abstract

With the modernization of higher education, the pedagogical environment, both internal and external, assumes a major significance in training programs including a creative component. The objective of the study is to provide a theoretical and methodological substantiation of the design-oriented education environment as one of the means of improving the quality of undergraduate education. As part of the theoretical analysis of the methodological framework of the issue reflected in 40 academic sources, different interpretations of the notion “education environment” are given within the context of the environmental approach to education. Organizational and conceptual, socio-psychological, discipline-based and spatial resources are shown among the most significant ones. The questionnaire study conducted among seventy-six 1st, 2nd and 3rd-year students revealed a positive trend in all measures of student satisfaction with their learning activities: satisfaction with educational content, the educational process, interactions with fellow students and teachers as well as satisfaction in terms of daily life and health. Analysis of the results of students’ and teachers’ activities showed a positive trend in the impact of the quality of the design-oriented education environment on indicators of success. This study resulted in improved quality of training of prospective teachers and their adaptation in the educational context.

Keywords: environmental resources, environmental conditions, environmental personology, pedagogical design, pedagogical environment, socio-cultural environment.

1 Introduction

With the ongoing shift to new educational standards in which focus is placed on the competency-based approach and the main thrust is moving towards professional competence development while less attention is given to the personal component of the prospective teacher, attention should be paid to the environmental component of teacher training programs.

The main objective of new-generation federal educational standards is to create an educational environment that would open up opportunities for every student to carry out creative activities and to fulfil his potential to the most. One of the requirements for quality training is to design the educational environment taking into consideration professional standards.

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Unfortunately, in view of innovative transformations taking place in higher education, little research has been done on the educational environment as a means of quality training in the professional preparation of students. New national projects, notably Science (41) and Education (40) have been developed as part of the modernization of higher education. The Education National Project specifies two primary objectives: 1) provision of global competitiveness and admission of Russian general education into the world's top ten education systems; 2) development of the harmonious personality based on Russian traditions, notably cultural ones (33).

Relevant resources and conditions are needed to achieve the above objectives, and here reference should be made to what academician A. G. Asmolov said in this regard: "If the educational environment is the program's target area, this program shall focus on the general and professional education of the individual in a specific educational institution (a kindergarten, a school, a vocational institution, a university and so on)" (1). The authors suggest the design-oriented education environment as one of the resources. In this regard, the subject of the present research study has been the education environment as a means of training prospective professionals in terms of the competency-based approach. The main aim of the present article is to provide a theoretical substantiation of the development of strategic areas of the formation of the design-oriented education environment as one of the means of quality training in higher education.

The objectives of the study are as follows:

1. To analyze academic reference materials on the research topic.
2. To identify the research methods and methodology.
3. To detect and analyze conditions for setting up and operating the design-oriented education environment.
4. To determine areas for developing the design-oriented education environment.
5. To substantiate the components of and possibilities for developing their professional competencies in the context of the design-oriented education environment.

In this regard, it is necessary to adopt the environmental approach to organizing education, which has been traditional in teaching studies to describe human development. The adoption of the environmental approach requires a clear definition of categories such as "environment" and "educational environment". The notion of "environment" is fundamental in relation to that of "educational environment" which has become widespread in contemporary teacher studies. Researchers have not yet come to a consensus as to the interpretation of this notion. A Russian dictionary defines "environment" (*sreda*) as social and living conditions/circumstances in which human beings exist as well as a group of people sharing these conditions (32, 26). In other words, taken in its general sense, the "environment" refers to human beings, the surrounding nature and the situation as a whole. In philosophy, the notion of "environment" is regarded, in a narrow sense, as "a combination of natural conditions in which the activities of human society and organisms take place" (36) and, in a broad sense, as "social, material and spiritual conditions for human existence" (36). From a sociological perspective, the environment plays a major role in the personal formation and development. Thus, philosophy and sociology perceive the environment as a combination of

various (natural, economic, social, political and spiritual) conditions for the existence of the individual, under which personal development takes place. D. Zh. Markovich is of the same view (18). Psychology, too, regards the notion of "environment" in its different aspects: 1) a characteristic of "what opposes the human being in the world around him (in contrast to the human being, this world is what is called the "environment")" (30) 3) "what is different from human consciousness and psyche and lies beyond them" (30) 4) "a combination of natural conditions" divided into the natural environment and the social one, 4) "a combination of conditions around the human being and interacting with him as an organism and a personality. There are internal and external environments" (30). Based on the above, L. V. Maksimova defines "the environment as an intricate formation that comprises a whole range of interconnected components of natural and social character" (17).

What N. B. Krylova means by the environment is "a part of the sociocultural space, a zone of interacting educational systems, their elements, educational material and subjects of educational processes" (15). This said, among the main environment parameters are relationships, values, symbols, effects and objects (10). To sum up, the educational environment is a combination of material factors of the educational process and interpersonal relationships established by education stakeholders during their interactions.

2 Materials and methods

Analysis of the examined categories has suggested the urgency of research on the topic under investigation. The availability of environmental resources is of great importance for the formation of the educational environment. Different researchers have different perspectives on the environment as a resource of education. As an example, S. G. Zheltova highlights the importance of the educational environment for personal development (9). According to Zheltova, "to assimilate the environment in pedagogical terms meant to integrate its educational and developmental potential into educational relationships and activities of both teachers and learners" (9). The same researchers considers that "the educational environment is a universal resource for developing and perfecting educational processes, which allows educational institutions, regardless of their material resources and infrastructure development, to cope with its challenges and tasks during the ongoing shift to new educational standards". She identifies the following three components of the educational environment: informational, social and technological ones (9). Based on these ideas in relation to the undergraduate education system using the example of a specific higher education institution, the informational component can be regarded as the entire information space and a possibility of obtaining information from various sources with a view of acquiring professional knowledge and skills.

The social component can be defined as a sociocultural environment contributing to the development of the would-be professional. The technological component includes teachers' activities directed at shaping students' professional skills. Design-oriented creative activity can be identified as a part of this component. V. A. Yasvin proposed (39) to specify the spatial and architectural, social and psycho-didactic components of the educational environment. The architectural component defines learning setting, including the specifics of

buildings, equipment and special attributes. The object environment exerts a powerful impact on learning outcomes.

The social component is defined as a community form peculiar to this type of culture. Importantly, the teacher and the learner have to be the single poly-subject of development; they have to establish a cooperative relationship; learning activities have to be distributed among the community and daily life has to be saturated with communication. The psycho-didactic component refers to the content of the educational process.

Yu. P. Shapran and O. I. Shapran divide the higher education environment into the material and technical, technological as well as subjective and social components, which all conform to the structure of the professional competence of prospective teachers (37). The material and technical component of the higher education environment implies the presence of a certain innovative infrastructure that comprises modern IT educational resources. Computer technology in education considerably modify the teaching and educational process in that they influence the content of education and the formation of professional competence in terms of motivation and values (12,3).

New possible uses of information resources are emerging nowadays, including the setup of local and international educational networks, the conceptual launch of open education systems, implementation of efficient distance learning models and the development and application of the latest learning tools, e-libraries, multimedia, software systems and project activities (37). The technological component of the higher education environment ensures the formation of the professional competence of the graduating student based on scholarly achievements of modern teacher studies and the integration of the best practices of other academic disciplines into the higher education process with a view of improving education. Traditional teaching methods (conversation, explanation, experiments, discussions and so on) and innovative ones (work on portfolios, projects, creative assignments, case studies and challenges) are used to develop this component. The subjective and social component of the higher education environment implies interactive relationships and modalities aimed to have the student reflect upon his own learning activities and to develop his personal professionally significant qualities. The experiment was carried out in the 2016-2019 academic year at the I. G. Petrovsky Bryansk State University, a federal state budgetary higher educational institution, with the participation of students from the Department of Technology and Design. The experiment involved the following stages: pilot/research, ascertaining, development and assessment. The pilot/research stage defined the research goal, objectives, object, subject and hypothesis as well as the pedagogical framework for forming the design-oriented educational environment. The ascertaining stage identified the original level of the components of the design-oriented educational environment contributing to the formation of professional components. The educational environment is regarded as a part of the sociocultural space in which various educational systems, their elements and educational stakeholders interact. The development stage of the experiment was carried out, based on the above-mentioned components.

3 Results

What follows is the study base in terms of the specifications of the main groups of environmental resources that are traditionally divided into discipline-based, spatial, organizational and conceptual and socio-psychological ones.

Examples of discipline-based resources are auditoriums and workshops equipped with specialized furniture, materials and tools. The design of educational space must be thematic, meet hygienic and ergonomic requirements and be arranged according to a specific pattern. In that respect, auditoriums are equipped with multimedia projectors, screens, teacher desks, liquid crystal panels, with thematic boards installed on the walls. In auditoriums there are cases and open stands containing visual aids and instructional materials. The interior design of educational institutions aims to create a business-like yet positive atmosphere. Colors, items of furniture and room layouts have to dispose students towards knowledge acquisition and professional competence development. The research outcomes of the organizational culture at the faculty contributed to the formation of an innovative type of culture focused on innovations and experimentation (29).

In higher education institutions, the educational process is implemented through a wide range of material and technical equipment such as auditoriums equipped with traditional boards, tables, lecturing desks, multimedia projectors and televisions intended for lectures and tutorials. Also worth mentioning are specialized study rooms and computer rooms equipped with modern technology; specialized laboratories for courses on drawing, painting, composition, plastic anatomy, sculpture and applied arts; machine and mechanism design and modelling and the artistic treatment of construction materials; resource rooms with additional research literature; and a media library of teaching e-materials accompanying the core curriculum. Students working on their research projects use the resource room; the library with a reading room supplied with literary works, teaching and learning materials, scientific and literary journals and e-textbooks; an educational website providing information about educational resources, examinations, materials for in-depth study of various disciplines, assignments (with answer keys) for academic competitions, statutes and regulations. Students are also given the opportunity to submit their questions to teachers online (35).

Auditoriums equipped with weaving machines and other specialized tools are used to provide students with practical professional (technological) experience. Auditoriums equipped with modern computers and licensed software are used to provide students with practical professional (design) experience.

The working conditions of teachers involved in the implementation of core professional educational programs and training of students meet sanitary and hygienic standards. Each classroom has to contain information boards listing health and safety regulations, and computer laboratories have to be provided with fire extinguishers and first aid kits.

According to T. K. Murmantseva, improvements made to the artistic and esthetic education systems go hand in hand with the process of making all spheres of life more esthetic. Owing to such improvements, students acquire active artistic and social experience, including related knowledge and skills, experience in creativity and the development of personal views on esthetic values: creativity, practical and artistic individual

initiative, acquisition of generalizing notions during specific art classes; esthetic familiarization with the main spheres of creativity, classic and contemporary artwork (19). Organizational and conceptual resources are aimed at restoring and improving health, enhancing capacity for work and treatment compliance; class schedules; dosage of visual, tactile, auditory, intellectual and physical activity; adherence to internal regulations directed at regulating relations with people around us. During the implementation of the core professional educational program, learning conditions were created for persons with disabilities, taking into consideration their psychological and physical peculiarities, individual features and health.

Promotion of a friendly and positive environment and the possibility to interact and engage in common activities are of great importance for the learning process at the Department and in groups with students with disabilities. When working on project assignments in a number of academic disciplines, they learn how to adapt to their environment, to new time-related realities and, thus, to feel their own significance in society (27). A social and learning support system has been developed to ensure a successful learning environment for students with disabilities at the Department. This system includes the following:

- Case-by-case study of the learning potential of students suffering from various diseases (interviews, different tests, joint work assignments and so on);
- Development of a joint-action program for all education stakeholders (involvement of student volunteers, parents, custodians and other interested parties);
- Feedback between all the participants in the collaborative process (monitoring the implementation of the curriculum and adjusting the actions of teaching staff);
- Individual coaching for students with disabilities with a view of providing them necessary assistance (6).

Socio-psychological resources are, along with organizational and conceptual ones, of great importance. Socio-psychological resources reveal how satisfied students are with the educational process and how well protected they feel in psychological terms. They develop students' personal qualities/competencies, which results in improvements in their systematic thinking, law-abiding behavior, teamwork skills, tolerance, aspiration towards self-knowledge and self-development, high professional commitment, organization and leadership skills, resistance to constantly changing social, psychological and economic factors, flexibility and creative thinking and the ability to present their professional and personal qualities (21,5). The following are the priority areas of social, extracurricular and awareness-raising work that are necessary for the comprehensive personal development of undergraduate students in the design-oriented educational environment:

- promotion of patriotic civic education of students (28);
- development of the pedagogical worldview among students and that of personal qualities contributing to their self-education, creative activity, universal cultural growth, social mobility as well as the development of universal cultural and socio-personal competencies;
- holding cultural, sportive, scientific and awareness-raising events aimed at universal general competence development;
- promotion of student social associations, organizations and clubs;

- maintenance, development and multiplication of university-related traditions;
- creation and organization of the work of creative, sports and research teams, assistance with students' secondary employment;
- launch of support programs targeting young families; and
- promotion of physical education and healthy lifestyles.

Design of the spatial and educational environment ensures and facilitates a shift from theory to practice. The educational process is different depending on the equipment of laboratories and workshops. All of the above shows specific functional peculiarities of the Department's spatial and educational environment, which, in its turn, defines learning objectives and development, given the specific educational situation at the Department. Within the educational environment, these objectives are pursued in two manners: purposefully, as part of events held at the Department, and spontaneously, when new environmental resources emerge. Therefore, the proposed description of environmental resources makes it possible to separate them from a specific educational situation and to examine them as phenomena having their own value, which reveals their functional possibilities in terms of transmission of social experiences and intensification of activities directed at acquiring them. Environmental influences and conditions constitute the educational environment. Among the psychological and pedagogical conditions for shaping the design-oriented educational environment are the following:

- organization of the learning process based on the environmental approach;
- organization of the learning process based on the common system of values and, in particular, of esthetic values;
- development of the professional competencies of undergraduate students;
- perfection of the artistic and esthetic educational system.

The principle of pedagogical rationale should guide the choice of evaluation criteria. The general criterion for evaluating the pilot testing is to create the conditions uncovering each student's potential and corresponding to his individual features, interests and possibilities while maintaining his health and preparing him for a healthy lifestyle today.

The following are the pilot testing indicators for measuring the established educational environment's performance that confirmed the correctness of the conditions highlighted:

- development indicators: proficiency, the degree of development of emotions and will;
- social aspects revealing the extent to which the participants in the educational process are satisfied with various aspects of life at the Department and, more generally, at the university; with the schedule, living environment, the creation of conditions for independent academic, research and creative work and the implementation of innovative technology;
- nature of interactions between participants in the learning process; learners' ease of interaction with teachers; socio-psychological climate;
- space-subject conditions.

The following outcomes were obtained at the ascertaining stage:

- the conducted research study on the socio-psychological adaptation of first-year students at the Department revealed the following:
 - most first-year students show an average (51%) and high (49%) adaptation level, which is indicative of their

relatively good adaptability to the university's social environment and of their satisfaction with their position and their relations with their fellow students.

- in most cases, students have an intermediate level in terms of self-acceptance and acceptance of others, emotional comfort and propensity for self-control (internality), which is a positive trend pointing to a relatively low level of conflict, anxiety and emotional discomfort among first-year students.

- 5% of students (2 persons) reveal inner tension and low emotional state. Another 3% (1 person) show propensity for intra- and interpersonal conflicts.

A questionnaire on student satisfaction with their studies, developed by L. V. Mishchenko, was used to investigate the satisfaction of students attending the I. G. Petrovsky Bryansk State University with the content, organization and quality of the educational process. The aim of this methodology is to

examine the students' emotional and evaluative attitude towards their university studies.

First-, second- and third-year students enrolled in the Department of Technology and Design took part in the study. The total number of the respondents was 76 (44 men and 32 women); 37 people live in student residences and 39 respondents live at home. Analysis of the students' emotional and evaluative attitude towards the content and organization of the educational process at the Department of Technology and Design revealed that learning activities of most surveyed students are within normal parameters. Students show a positive trend in all learning satisfaction indicators: satisfaction with the learning content, the learning process, relations with fellow students, interactions with teachers and with daily life and health. Table 1 and Figure 1 show the results of student satisfaction with the learning process (% of all respondents).

Table 2: Results of student satisfaction with the content, organization and quality of their educational process

Study Satisfaction Scales	Levels		
	<i>Low</i> (studies are not going smoothly)	<i>Average</i> (studies are going well)	<i>High</i> (studies are going very well and the student is satisfied with the entire educational process)
<i>Satisfaction with learning content</i>	0	87	13
<i>Satisfaction with the educational process</i>	0	89.5	10.5
<i>Satisfaction with the selected career path</i>	0	92.1	7.9
<i>Satisfaction with peer interactions</i>	0	88.2	11.8
<i>Satisfaction with student/teacher interactions</i>	0	94.8	5.2
<i>Satisfaction with daily life, budget, leisure activities and health</i>	0	96	4

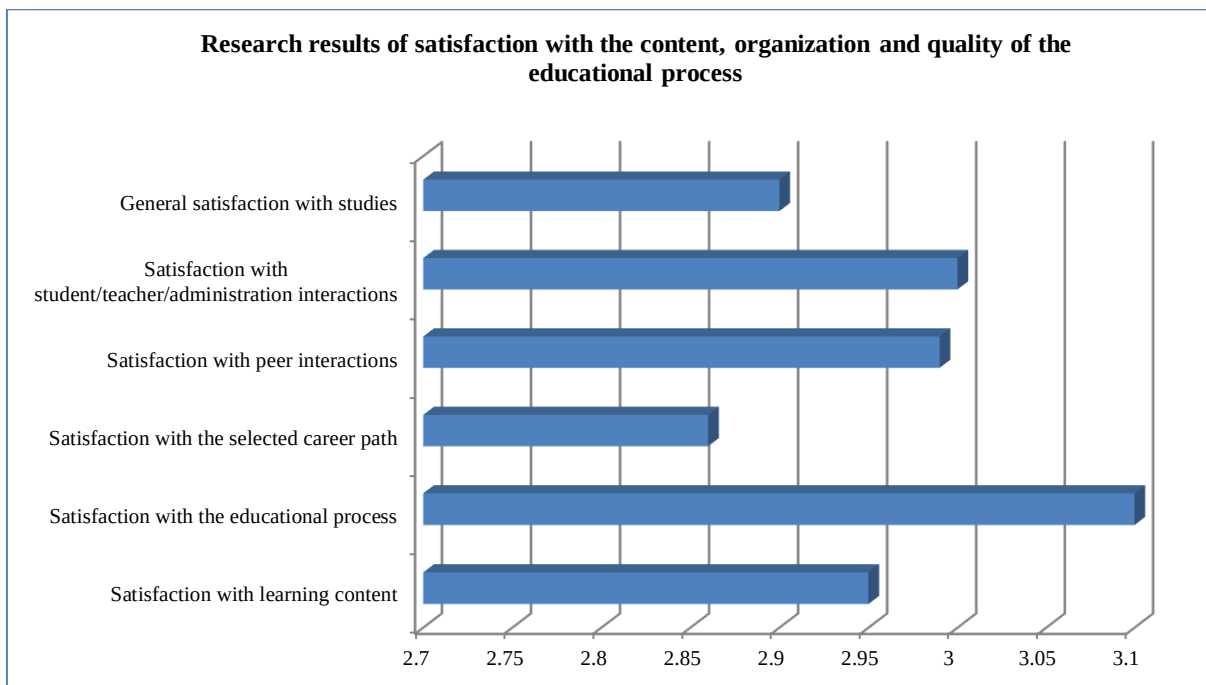


Figure 1: Research results of satisfaction with the content, organization and quality of the educational process of the students enrolled in the Department of Technology and Design (average values on all scales)

Analysis of satisfaction with the content, organization and quality of the educational process of the students enrolled in the Department of Technology and Design revealed that the academic studies of most students enrolled at the Department are satisfactory (average student satisfaction with their academic studies is 2.9 points). A more in-depth analysis showed that students are most satisfied with the organization of the educational process at the Department (average of 3,1 points) and with the quality of student/teacher interactions (average of 3 points). Students are satisfied with interactions with their fellow students as well as daily life, budget, leisure activities and health.

Students are not altogether satisfied only in certain areas of their academic and professional activities: 11% of the respondents are not sure they will be in demand on the job market in the future (the lowest point in terms of satisfaction with the selected career path is 2.86), which may be related to the lack of desire or the absence of opportunities to reach their full potential (Table 2, Figure 1). Furthermore, Figures 2-4 show the students' academic performance by year of study from 2016 to 2019. Figure 5 shows the overall academic performance of the students enrolled at the Department.

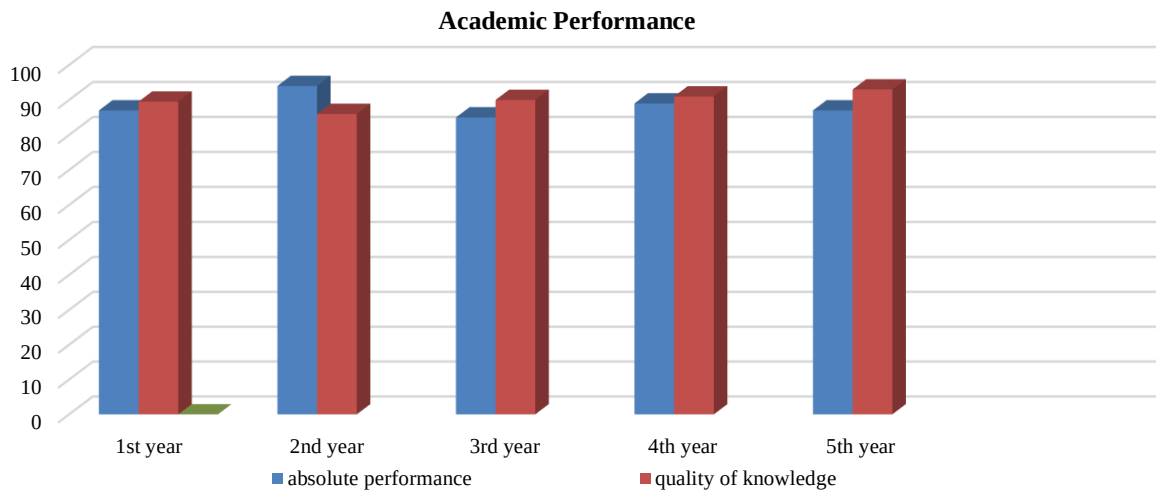


Figure 2: Academic performance by year of study in the 2016-2017 Winter Term

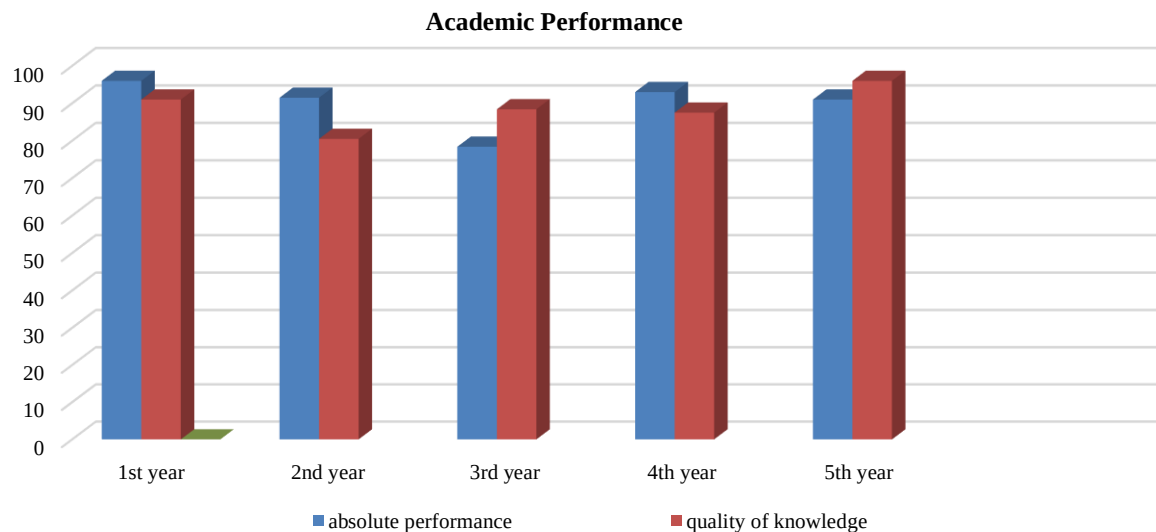


Figure 3: Academic performance by year of study in the 2017-2018 Winter Term

Academic Performance

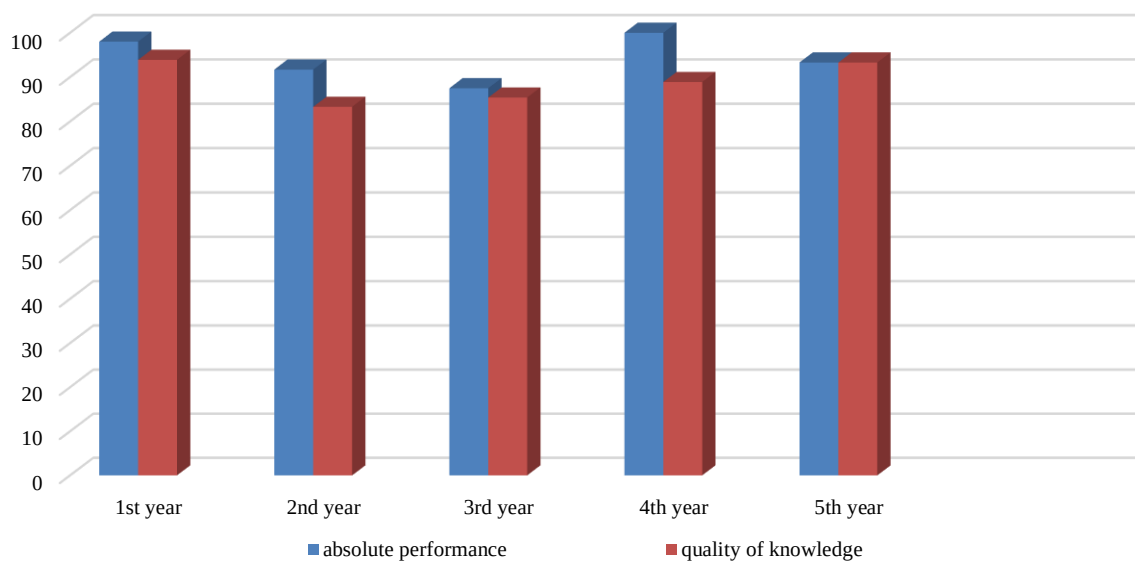


Figure 4: Academic performance by year of study in the 2018-2018 Winter Term

Academic Performance of the Students at the Department

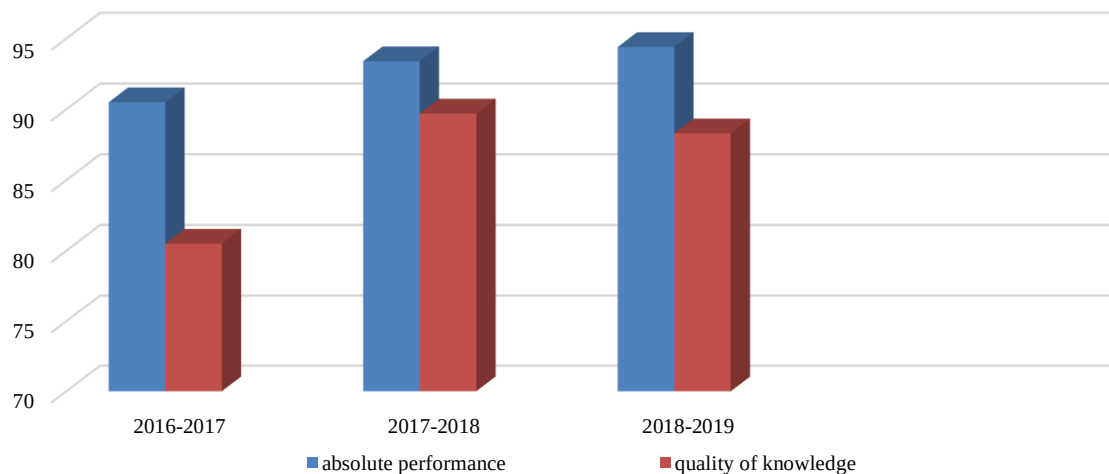


Figure 5: Academic performance of students enrolled at the Department from 2016 to 2019.

The above results show that the students' absolute academic performance has increased since 2016, being 94.6% during the 2018-2019 academic year whereas it was only 90% in 2016. The quality of knowledge as of 2018-2019 equals 87% as compared to 80% in 2016, which is indicative of the positive impact of the design-oriented educational environment as a means of improving the quality of undergraduate education in terms of the competency-based approach.

Figure 6 shows presents the outcomes of the 2018-2019 Winter Term reflecting the above conclusions.

The above results support the conclusion that the design-oriented educational environment has improved the quality of

professional training of prospective teachers and their adaptation to university life.

4 Discussion

Analysis of the definitions of the educational environment found in psychological and pedagogical research literature shows that it is regarded as a combination of influences and conditions assuring the implementation of the educational process (see N. B. Krylova, A. Kurakin, L. I. Novikova, V. I. Panov and V. A. Levin).

Academic performance and attendance

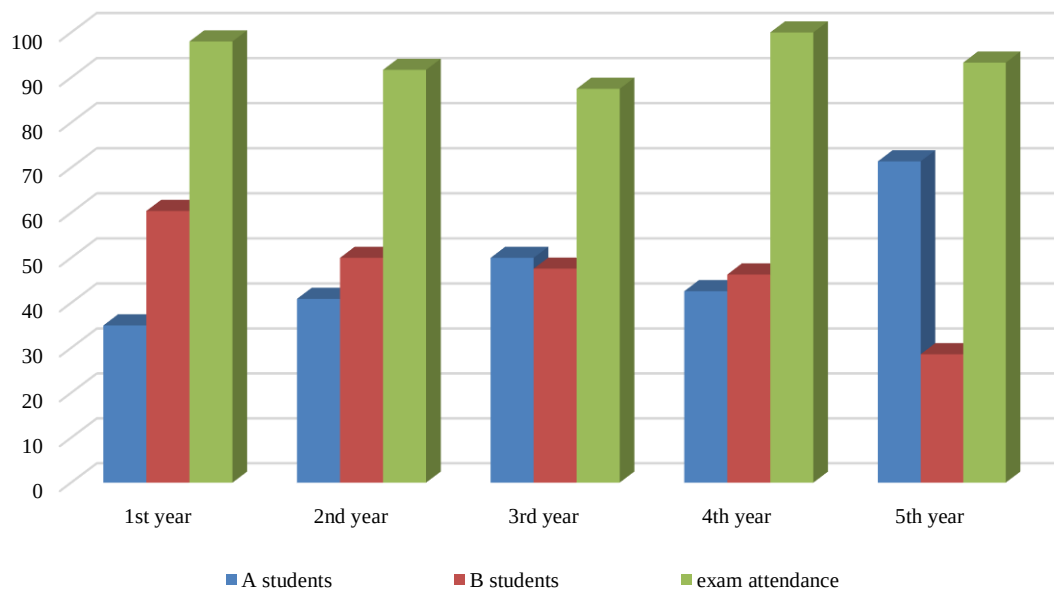


Figure 6: Number of “A” and “B” undergraduate students based on the outcomes of the 2018-2019 Winter Term

Today, the notion of “educational environment” is used from different perspectives, hence numerous research studies on these of those components, factors and properties of the educational environment.

Contemporary research studies on the educational environment carried out by A. V. Erofeyeva, M. I. Korneva, L. M. Luzina, I. M. Remorenko, V. M. Stepanov and G. A. Ferapontov, among others, reveal the variety and an exceptional potential of this phenomenon. As an example, the educational environment is investigated as a factor in personality development as a basis for the humanization of the educational environment; as a system for promoting values among students; as testing of the environment and the implementation of unconventional learning tools, etc. This kind of research is related, in the first place to activities taking place in innovative educational institutions (8, 16).

Russian pedagogics has always attached great importance to the milieu/environment in the upbringing of children (K. D. Ushinsky, L. N. Tolstoy, A. F. Lazursky, N. I. Pirogov, P. F. Lesgaft and others). P. F. Lesgaft authored a new concept on the environmental typology of children and a doctrine about influences of the environment.

Soviet pedagogics highlighted the dependence of learning and upbringing on the nature of social relationships, as echoed in the principle based on the teaching-life link (N. K. Krupskaya, A. V. Lunacharsky and A. S. Makarenko) (38).

Ya. Korchak conducted research on the development of the educational environment. He mentions several types of “raising environment”: a dogmatic environment based on customs, traditions, authority and rituals; an ideological environment in which “strength is not in the firm spirit but in an impetus, an upsurge or a movement. One does not work but joyfully creates”; a placid consumption environment (“inner peace, carelessness, sensitivity, friendliness, kindness,

relevant sobriety and effortless self-consciousness”; and an environment of accomplishments and careerism (14).

Research by S. M. Golovleva, V. V. Yudina, V. I. Slobodchikova, V. A. Yasvin and A. G. Asmolov provided the methodological framework for the study.

Speaking about the modernization of education, academician A. G. Asmolov brings to the fore ideas promoting the educational environment and highlights that, in this case, education “acts as a leading social activity, developing people’s civic identity, mentality, values, behavioral social patterns, big and small social groups” (1).

Research by V. A. Yasvin focuses on the fundamental theoretical aspects of the topic under investigation. Yasvin defined the notion of educational environment analyzed its prospects and examined modeling and design of the educational environment as prerequisites for enhancing the quality of the educational process.

S. M. Golovneva examines the structure and components of the educational environment.

V. I. Slobodchikov proposed the anthropological and psychological model of the educational environment in which “the joint activity of education stakeholders” (30) is a basic component.

As emphasized by V. I. Slobodchikov, the educational environment cannot be regarded as something unequivocal and pre-defined. An environment emerges at the meeting point of what forms and what is formed and where they jointly plan and construct something. Such an environment can be perceived both as the subject and the resource of personality development (30).

In his research study, V. V. Yudin investigates the essence and stages of the technological planning of the educational environment aimed at improving the quality of FES (Federal Educational Standard) implementation.

Present-day psychological and pedagogical research deals with many types of educational environment such as traditional, social, academic, informational, humanitarian, natural, creative, ludic, technological, integrated, communicative and so on (37).

Numerous research studies have focused on setting up an information and educational environment (see M. I. Bashmakov, S. G. Grigoryev, A. A. Kuznetsov, S. V. Panyukova, S. N. Pozdnyakov, E. S. Polat, I. V. Robert and A. P. Tryapitsya, among others).

Researchers give special attention to the study of the innovative (see G. Belyaev, M. Didenko, Yu. Karpova, N. Razina, etc.) and health-saving (M. Sentizova, N. Rylova, G. Tushina) environments.

Despite the existence of various approaches to understanding the essence and structure of the environment, all research studies divide the components of the learning environment into two categories: subjects and objects (11).

According to a number of researchers, activities of subjects are of special significance in the educational process, and the teacher is assigned a special role in his quality of the focal point, organizer, inspirer and coordinator of the educational process. In assessing the present-day activities of the teacher, the authors concluded that, in teacher training programs, it is of utmost importance to develop students' professional competencies by focusing on and developing core values while taking into consideration both inner, emotionally invested values and external, influencing ones.

In a research study, T. K. Murmantseva defines as environmental personology one of the research areas of the issue under investigation. The aim of personology is to identify a common field and to analyze the relationship between personality, its inner world and the space or environment where the subject is (19).

The material component is one of the main objects of the environment.

Among researchers who investigated the influence of the environment on the human being are Sigmund Freud and Carl Jung. Freud highlighted the significance of the milieu's influence on the human being, especially, at a young age. Jung emphasized the special role of culture in the formation of the individual's character.

The educational environment can differ in terms of structure, content and system of relations between education stakeholders, and it can be regarded as a context of the educational process and an educational tool.

In the present-day sociocultural development of the Russian society, many researchers focus on prospects in Russian education. In particular, V. I. Slobodchikov and V. Gromyko deal with the new type of education and propose its three major interpretations:

1) education as a totally independent kind of social practice;

2) education as an ideal meeting point of the individual and society, which, on one hand, ensures the integrity of the social organism and, on the other hand, is a powerful resource of its historical development;

3) education as a universal means of transferring cultural and historical experiences, as one generation's gift to another; a social succession mechanism, a mechanism for joining the human community to their lifestyle, for transferring and maintaining the norms and values of their common life for a

specific period; education as a universal cultural and historical form, the emergence and development of the human being's main forces and, in history and in the cultural environment, that of the person who is able to self-teach and, thus, to self-develop (2,31).

S. Tarasov defines the types of educational environments by the following features: interacting style within the environment (competitive/cooperative, humanistic/technocratic and so on); attitude towards social experiences and their transmission (traditional/innovative, national/universal and so on); level of creative activity (creative/regulated); interaction with the external environment (open/closed) (37,41).

International research often replaces the notion of "educational environment" with several others such as "design of learning", "pedagogical design", "classroom climate" or "school culture".

Pedagogical design is a systematic use of knowledge (principles) about effective education (learning and teaching) in planning, developing, assessing and applying learning materials to a specific year of study (22).

Pedagogical design contributes to the emergence of a special educational environment within the same educational system, the same educational institution or the same educational material.

The aim of pedagogical design is to plan and create situations that provide more learning opportunities to individual learners. This means that education should be planned in such a way as to be effective and systematic.

The study and implementation of the design-oriented educational environment as a means for providing quality undergraduate training is a scientific and practice-oriented basis for devising an integral system in the pedagogical planning of objects of the educational process. This being said, there are many problems related to psychological and pedagogical pre-conditions for the creation an educational environment, the interaction of its objects, its functioning and development. Both objective and subjective factors influence the quality of the design-oriented educational environment. Therefore, of special importance are an in-depth sociocultural analysis of the available opportunities, the qualitative composition of interacting subjects and the presence of a strategic goal in training highly qualified specialists while considering this educational environment's qualitatively changing components.

An investigation of different types of the educational environment leads to the conclusion that each of them is autonomous and independent, but, at the same time, it is possible to examine the distinct yet interacting components of the same integral system, including the social, learning, ludic, creative, integrated, technological and communicative ones.

The evolution of views on and attitudes towards the identification of priorities and values in creating a comprehensive design-oriented system is related to the views and attitudes of a number of researchers (M. I. Bashmakov, S. G. Grigoryev, A. A. Kuznetsov, S. V. Pankova and others). Many of them, however, highlight the interaction of these components as subjects and objects.

The creation and formation of the design-oriented educational environment as a means for improving the quality of undergraduate education in terms of the competency-based approach has been investigated in terms of its definition, key

notions, analysis of the meanings of present-day views, theories about the essence and structure of the environment and the role of the teacher as the process organizer and coordinator within the educational environment.

The investigation has paid great attention to the viewpoint expressed by academician S. K. Bondareva on the setup of the interactive environment and its resources: “the characteristics of the ongoing interpersonal and intercultural dialogue, - the ability to engage into an effective, well thought-out and pedagogically pertinent, psychological interaction, i.e. taking into consideration the situation” (22,4), in which the focus shifts to the use of discipline-based and spatial resources, organizational and conceptual and socio-psychological resources.

Further research, however, is required on the creation of the design-oriented educational environment as a means for improving the quality of undergraduate education.

5 Conclusion

The theoretical study of the design-oriented educational environment as a means for improving the quality of undergraduate education has revealed the conditions necessary for its emergence and functioning as well as a list of interacting components, subjects and resources. Today, university graduates are expected to be highly qualified and professionally competent and to show cultural and technical knowledge, the ability to acquire IT culture, which is constantly growing in importance and implies search for new solutions and quality approaches to organizing, modeling and planning vocational education. When adopting the competence-based approach to teach students, the authors concluded that, to improve the quality of educational activities and to carry out the professional curriculum, it is necessary to create and to perfect the design-oriented educational environment, taking into consideration the learners’ interests, inclinations as well as their psychological and physiological capabilities. To do this, electronic versions of theoretical materials, methodological guidelines, assignments for practical work and numerous tests have been incorporated into the learning process. Students have been provided with the right to participate in a wide range of exhibitions and competitions to realize their full potential. Today, the Department has a good resource base that uses integrated computer programs to enhance the learners’ design and technological knowledge, to perfect their mastery and to model their creations on the plane and in 3D. All of the above leads to the conclusion that the establishment of the design-oriented educational environment and its functioning should be regarded as an educational activity model system that comprises innovative educational technologies and the quality approaches to the educational process, which increases the effectiveness of education, boosts learners’ activity and independence as interacting subjects.

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The importance of the study lies in its investigation on how to improve the quality of higher education in terms of the establishment of the educational environment as a system comprising various interacting components and resources. The design-oriented educational environment exerts a manifest influence on the quality of undergraduate education, and it

cannot be established without an in-depth sociocultural analysis, a study of material and human resources, the learners’ possibilities and the interaction of various educational structures and subjects.

The articles presents the areas of functioning and development of the educational process within the same department, which does not provide a comprehensive idea about the integrity of undergraduate education in the vocational education system of the university as a whole.

The article can be interesting and useful to vocational education organizers. It proposes the main notions and mechanisms for ensuring cooperation and sets the methodological requirements for improved pedagogical activity.

References

1. Asmolov, A. G. *Strategiya I metodologiya sotsiokulturnoy modernizatsii obrazovaniya* (Strategy and Methodology of the Sociocultural Modernization of Education) // *Problemy sovremennogo obrazovaniya v, gody No. 4:* NPB im. K. D. Ushinsky. 2010;107.
2. Astashova, N. A., Bondyrev, S. K., Malkina, O. V. *Strategicheskiye orientiry obrazovatelnoy interaktivnoy sredy v kachestve osnovy dlya razrabotki aksiosfery budushcheg ouchitelya* (Strategic benchmarks of the educational interactive environment as a basis for the development of the axiosphere of prospective teachers). *J. Fundament. Appl. Sci.* 2017;9(7S): 1392-1418.
3. Bednash, V. A., Ivanova, N. A., Salankova, S. E. *Realizatsiya sovremennoy kontseptualnoy modeli issledovaniya zadach v oblasti prikladnykh internet-tekhnologiy* (The implementation of the conceptual model for researching challenges in applied Internet technology) // *Sovremennye naukoemkie tekhnologii.* 2018;10:22-26; URL: <http://www.top-technologies.ru/ru/article/view?id=37188> Digital object identifier assigned. Identifier number: 10.17513/snt.37188.
4. Bondyrev, S. K. *Kommunikatsiya: ot dialoga mezhluchnostno k dialogumezh kulturnomy: Ucheb. Posobie* (Communication: from interpersonal to intercultural dialogue: A textbook) / S. K. Bondyrev, A. A. Murashov. – M.: Izdatelstvo MPSI; Voronezh: Izdatelstvo NPO MODEK. 2007; 384.
5. *Vozmozhnosti ispolzovaniya zarubezhnogo opyta sotsialnogo partnerstva v otechestvennoy sisteme obrazovaniya* (Using international expertise with social partnership in the Russian education system) / Serkova E. I., Krupskaya, Yu. V. // *DUMskiy vestnik: teoriya i praktika dopolnitelnogo obrazovaniya.* 2016;1 (7):76-78.
6. Voronin, A. M., Muravyova, S. B., Yaskova, L. N. *Sistema nastavnichestva v bazovoy professionalnoy organizatsii dlya lits s OVZ i invalidnostyu i yeyo rol v formirovani grahdansko-patrioticheskikh kachestv lichnosti* (The mentoring system in basic vocational organizations for people with disabilities and its role in the promotion of civic patriotism. – *Materialy mezhdunarodnoy nauchno-prakticheskoy konferentsii*, 16-18 May 2018. Bryansk: RISO BGU, 2018;184.
7. Egorova, T. G. *Obrazovatelnaya sreda kak pedagogicheskiy fenomen* (Education environment as a pedagogical phenomenon). URL: <http://docplayer.ru/28434450-Obrazovatelnaya-sreda-kak-pedagogicheskiy-fenomen.html> (Accessed: 10.01.2019).
8. Erofeev, A. V., Perfileva, E. I. *Pedagogicheskoye obshcheniye v universitete: teoriya, positsiya, praktika* (Pedagogical communication in the university: theory, position and practice. Monografiya / A. V. Erofeev, E. I. Perfileva. – N. Novgorod. 2012;135.
9. Zheltova, S. G. *Obrazovatelnaya sreda kak resurs razvitiya lichnosti shkolnika* (Educational environment as a means for developing the school child’s personality) / Zheltova, S. G. // *Innovatsionnye protsessy v obrazovanii: strategiya, teoriya i*

- praktika razvitiya: materialy VI Vserossiyskoy nauchno-prakticheskoy konferentsii – Yekaterinburg. 2013;2:13-15. http://elar.rsvpu.ru/handle/123456789/529URL:http://elar.rsvpu.ru/bitstream/123456789/529/1/ipo_2013_005.pdf (Accessed: 11.01.2019).
10. Innovatsionnye protsessy v obrazovanii (Innovative processes in education) http://www.rsvpu.ru/filedirectory/3468/Innovation_process_t_2.pdf
 11. Informatsionno-obrazovatel'naya sreda kak faktor povysheniya kachestva obrazovaniya (Information and educational environment as a factor in the improvement of quality of education (Online): conference proceedings. – URL: <http://pandia.org/text/78/025/5849.php>
 12. Ispolzovanie resursov seti internet v formirovani kompetentsiy pedagogov professionalnogo obucheniya (Using online resources to develop the competences of vocational teachers / N. A. Afanasyeva, S. E. Salankova, L. V. Sidorova // *Uspekhi sovremennoy nauk i obrazovaniya*. Belgorod. – 2017. – Vol. 2, No. 6. – Pp. 170-173.
 13. Krasikov, S. V. Psikhologo-pedagogicheskiye i organizatsionnye usloviya sozdaniya adaptivnoy obrazovatel'noy sredy v shkole (Psychological, pedagogical and organizational conditions for creating an adaptive education environment in general education schools: Dis. ...kand. ped. nauk: 13.00.01: Moscow. 2000;151. RGB OD, 61:01-13/151-3.
 14. Korchak, Ya. Kak lubit detey (How children are to be loved) – Minsk: Narodnaya asveta. 1980.
 15. Krylova, N. B. et al. Otkrytoe obrazovanie (Open education). *Novye tsennosti obrazovaniya*. 2006;3(27).
 16. Luzina, L. M. V klasse (priglaseniye k dialogu) (In the classroom: an invitation to dialogue). – Pskov: PGPI im. S. M. Kirova. 2009;244.
 17. Maksimova, L. V. Upravleniye personalom: osnovy teorii i delovoy praktikum (Staff management: theoretical foundations and business practice). 2012.
 18. Markovich, D. Zh. Sotsialnaya ekologiya (Social ecology). – M., 1991.
 19. Murmatseva, T. K. Sozdaniye kulturno-esteticheskoy sredy v obrazovatel'noy sisteme "Shkola s uglublennym izucheniem predmetov khudozhestvenno-esteticheskogo tsikla" (Creating a cultural and esthetic environment in the educational system known as "Schools with enhanced coverage of artistic and esthetic disciplines": Dis. ...kand. ped. nauk: 13.00.01: Saratov, 1998; 194. RGB OD, 61:98-13/845-2
 20. Opisaniye osnovnoy obrazovatel'noy programmy (Description of the main educational program). Kursk. 2017. URL: http://www.kgti.ru/images/documents/och/opis_rad.PDF
 21. OPOP, Karachayevsk, 2016 <http://xn--c1an2ao.xn--p1ai/wp-content/uploads/2016/07/OOP-PO-44.03.01.GEografiya-1.doc> - 13
 22. Osnovy razrabotki elektronnykh obrazovatel'nykh resursov (Foundations of the development of online educational resources) https://www.book.ru/book/917942_35
 23. Vasilyeva, Olga. Devyat zadaniy ministra Vasilyeva (Nine assignments developed by the Minister Vasilyeva). URL: <https://rg.ru/2018/07/31/olga-vasileva-raskryla-podrobnosti-nacproekta-obrazovanie.html>
 24. Organizatsiya obrazovatel'noy sredy dlya detey s osobennostyami psikhofizicheskogo razvitiya v usloviyakh integrirovannogo obucheniya (The establishment of the educational environment for children with special developmental needs as part of integrated learning): ucheb.-metod. posobie / S. E. Gaydukevich, T. A. Grigoryeva, N. N. Bal, I. V. Zygmantova, I. N. Minenkova; pod obsh. red. S. E. Gaydukevich, V. V. Chechet. – Mn: BGPU. 2005;98. URL: http://elib.bspu.by/bitstream/doc/20140/1/Organizatsiya-obrazovatel'noy-sredy-dlya-detey-s-OIPF-v-usloviyakh-integrirovannogo-obucheniya_2005.pdf
 25. Psikhologo-pedagogicheskiye i organizatsionnye usloviya sozdaniya adaptivnoy obrazovatel'noy sredy v shkole (Psychological, pedagogical and organizational conditions for establishing an adaptive educational environment in general education schools) <http://www.dslib.net/obw-pedagogika/psihologo-pedagogicheskie-i-organizatsionnye-usloviya-sozdaniya-adaptivnoj.html>
 26. Psikhologicheskaya adaptatsiya k usloviyam obrazovatel'noy sredy (Psychological adaptations to the educational environment). URL: http://e.lanbook.com/books/element.php?pl1_id=61429.
 27. Retivikh, M. V., Matyash, N. V., Voronin, A. M. Tekhnologicheskoye obrazovaniye shkolnikov: sostoyaniye i problemy sovershenstvovaniya (Technical education of schoolchildren: the current state and improvements) / *Shkolaiproduktstvo*. 2017;8:3-8.
 28. Salankova, S. E., Bychkova, N. V., Massarova, T. L. Formirovaniye dukhovno-nravstvennykh tsennostey u uchashchysya molodezhi posredstvom izucheniya istorii, vospriyatiya i sozdaniya proizvedeniy izobrazitel'nogo iskusstva na pravoslavnuyu tematiku (Fostering spiritual and moral values among students through the study of art, the perception and creation of Orthodox visual artworks) // *Sovremennye nauchnye issledovaniya*. Vypusk 2 – Kontsept. – 2014. - ART 54349. - URL: <http://e-koncept.ru/2014/54349.htm> - Gos. reg. El No. FS 77- 49965. - ISSN 2304-120X.
 29. Serkova, E. I. Usloviya formirovaniya organizatsionnoy kultury vypusnikov fakulteta tekhnologii i dizayna (Developing the organizational culture of graduates from the Department of Technology and Design). Modernizatsiya obrazovaniya: problemy i perspektivy. Sbornik nauchnykh trudov Mezhdunarodnoy nauchno-prakticheskoy konferentsii, posvyashchennoy 75-letiyu doktora pedagogicheskikh nauk, professora S. F. Petrushkina. – Bryansk: Izd-vo GK Desyatokha. 2012;576.
 30. Slobodchikov, V. I. Psikhologiya obrazovaniya cheloveka (Psychology of human education). 2003.
 31. Slobodchikov, V. I. O ponyatii obrazovatel'noy sredy v kontseptsii razvivayushchego obrazovaniya (On the notion of educational environment within the framework of evolving education) (Text) / V. I. Slobodchikov // 2-ya Rossiyskaya konferentsiya po ekologicheskoy psikhologii: materialy. – M.; Samara. 2001;172-176.
 32. Slovar russkogo yazyka (Russian dictionary). Vol. 4. – M., 1984.
 33. Stenogramma Zasedaniya presidiuma Soveta pri Prezidente Rossiyskoy Federatsii po strategicheskomu razvitiyu i natsionalnym proyektam, 3 sentyabrya 2018 goda (Minutes of the Meeting of the Council of the President of the Russia Federation for the strategic development and national projects, 3 September 2018). URL: <http://government.ru/news/33829/> (Accessed: 18.01.2019).
 34. Tarasov, S. V. Obrazovatel'naya sreda: ponyatie, struktura, tipologiya (Educational environment: definition, structure and typology) / S. B. Tarasov // *Vestnik Leningradskogo gos. un-ta im. A. S. Pushkina*. 2011;3(3):133.
 35. Kharakteristika professional'noy deyatel'nosti vypusnika bakalavriata po napravleniyu podgotovki 221700 Standardizatsiya i metrologiya (Description of the professional activity of graduates from the undergraduate program No 221700, Standardization and metrology) URL: <http://kurs.znate.ru/docs/index-164691.html?page=4>
 36. Filosofskiy slovar (Dictionary of philosophy) / Pod red. Frolova I. T. M. Respublika. 2001;719.
 37. Shapran, Yu. P., Shapran, O. I. Obrazovatel'naya sreda vuza: tipologiya, funktsii, struktura (The university educational environment: typology, functions and structure) // *Molodoy ucheny*. 2015;7:881-885. – URL: <https://moluch.ru/archive/87/16910/> (Accessed: 13.02.2019).
 38. Shcherbakova, T. N. K voprosu o strukture obrazovatel'noy sredy uchebnykh uchrezhdeniy (On the structure of the educational environment of educational institutions). *Molodoy ucheny / Ezheimesyachny nauchny zhurnal*. 2012;5(40). URL:

- <http://moluch.ru/archive/40/pdf/661/#18>
39. Yasvin, V. A. Obrazovatel'nay sreda: ot modelirovaniya k proyektirovaniyu (Educational environment: from modeling to planning). – M.: Smysl. 2001;14.
 40. URL:<http://www.econom22.ru/pnp/natsionalnye-proekty-programmy/Образование.pdf> (Accessed: 18.01.2019).
 41. URL:http://www.sbras.ru/files/news/docs/natsproekt_nauka_hohlov.pdf (Accessed: 18.01.2019).