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REVISITING PEDAGOGICAL MODELING IN UNIVERSITY EDUCATIONAL SPACE

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Abstract

The paper describes the problem of pedagogical modeling in the university educational space. The author defines the semantic field of the concepts of educational space and pedagogical modeling, describes technological algorithm of pedagogical design of the educational space, and defines the tasks necessary for the implementation of pedagogical modeling. Besides, the author identifies the components of the educational space that make up the core of the model, and outlines operating conditions of the model of the university educational space. As a research method, the paper presents a flow chart describing pedagogical design of the educational and professional space of the university based on the development of the model. Moreover, the following developed models are given in the paper: a model of the educational and professional space of the university as a pedagogical condition for the development of competitiveness of students' personalities, a model for the development of personal and professional values of students in the educational university space, a model of student's creative competency development.

Keywords: Pedagogical modelling, model, competitiveness, creative competence, professional values.

1. Introduction

Nowadays Russian higher education system is undergoing radical changes, which are caused by social changes in the country and the world community. The educational space of Russia is being integrated into the global educational space, which requires scientists to conduct basic and applied research on the study of various aspects of educational spaces.

The emerging interest in the phenomenon of space in the pedagogical sciences is also largely due to the development of problems of personality-oriented education. Personal development and pedagogical interaction is carried out not only through objective activity, but also through the creation of a certain interaction space where vital situations and events occur. The problem of pedagogical modeling of educational spaces in the education occupies the minds of many researchers. At present, it has become obvious that the quality of modern higher education, the development of competencies and demanded personality traits depends on the arrangement of the educational space in which a holistic pedagogical process is implemented.

To understand the essence of the processes and phenomena under consideration, let us turn to the definitions of the educational space and pedagogical modeling.

In modern scientific pedagogical literature, the semantic field of the concept of educational space is quite wide. Slobodchikov (2003) defines the educational space as "the totality of material and informational objects and subjects of education in cooperation with which the development of the personality takes place" (p. 28). Burukhina (2009) considers the objectivity and subjectivity of the educational space, believing that on the objective side the educational space acts as:

> An area of implementation for leading activities of schoolchildren, students, teachers, and other subjects of society, performs an important integrative function. On the subjective side, as a factor in the arrangement of the interaction between the individual and other subjects of the formation of this territory, the educational space performs the function of developing a certain level of education and social services in a particular territory. (p. 93)

According to Bondyreva (2003), the educational space is structurally a part of social space where the society carries out standardized educational activities. The researchers distinguish the features of the educational space, i.e. organization, structuring, and content.

By the structure of the educational space, we understand the system, which includes the application of various types of work, the implementation of methods and technologies, as well as the management of the structural components of this system. The analysis of various aspects of the educational space makes it possible to state that the educational space is organized as a system, cluster, population, a multitude of educational systems, and each one has a specific place due to the composition and functions of the educational system itself. The transformation of the educational spaces is possible based on pedagogical design and modeling.

Bezrukov (1993) identifies three stages of pedagogical design, i.e. stage 1 – modeling, stage 2 – engineering, stage 3 – design. Simonenko (2006) in the technology of pedagogical design also distinguishes three stages. According to the technology of pedagogical design developed by Simonenko (2006), when designing the educational space of the university, at the first stage we develop a model (an ideal image of designed object) and then present it descriptively and graphically. At the second stage, we

create a project (we bring the model to the level of its application in the subject-subject interaction) and at the third stage, we model in details, bringing it closer to the real conditions for goal implementation.

Pedagogical modeling makes it possible to fill the content of the university educational space using necessary means to form certain traits and features of student's personality (competitiveness, creative competence, personal and professional values, etc.).

2. Problem Statement

The study was aimed at modeling (developing models) of the university educational space, i.e. the structural transformation and substantive filling of university educational space presented as a combination of material and informational objects and subjects of education in cooperation with which the development of competitiveness, creative competence and the development of personal and professional values of student occur.

3. Research Questions

There was developed an algorithm for pedagogical design of educational space, which involves the following steps:

1. Development of a model of the university educational space in accordance with the goal.

2. Development of cooperation bases (substantive and organizational) of all subjects of the educational process included in the process of development of qualities and traits of personality.

3. Making changes to the university educational space (innovations that contribute to the development of personality of students).

4. Effectiveness analysis of the model of the educational space based on the developed criteria, indicators and levels of development of qualities and traits of students' personalities.

To develop models in the university educational space, a number of problems have to be solved:

1. Organizational, i.e. the improvement of the content of subjects, search for in-depth interdisciplinary connections and involvement of potential employers in the educational process.

2. Methodological, i.e. the inclusion of all subjects of the educational process in the process of development the personality qualities of a student based on scientific and methodological approaches and principles.

3. Didactic, i.e. the implementation of a new role of subjects (tutor, facilitator, etc.) in the learning process.

The educational space, in our opinion, should include the following components ensuring its multifunctionality:

1. Educational component: content, technologies, methods, forms and means of teaching and educating students (professional interaction context: student – teacher – employer involves potential employers as experts, advisers, analysts, reviewers in the training process; joint drafting of programs, the development and implementation of training courses, supervision of work experience internship, etc.).

2. Research component: problem-searching and experimental activities of students (professional interaction context: student – teacher – employer involves the implementation of research projects, term papers and final qualification works at the request of potential employers).

3. The financial and economic component: the material base, the use of material resources by teachers and students (professional interaction context: student – teacher – employer involves raising funds from organizations and enterprises in the training process: investing in projects, sponsoring trips to participate in competitions, provision of publishing activities, etc.).

4. Management component: management of the institution, the presence of highly qualified personnel (professional interaction context: student – teacher – employer involves delivering the basics of effective management in the enterprises and organizations, demonstrating corporate culture and of delegation principles, etc.).

5. Practice-based component: the availability of effective internship bases, prolonged internships, professional and educational internships abroad (professional interaction context: student – teacher – employer involves the creation of favorable conditions for the interaction, advisory assistance, assistance in finding employment, etc.);

6. Professional component: interaction with institutions and organizations, integration of students into institutions and the reverse process, i.e. the involvement of professionals in the educational process (professional interaction context: student – teacher – employer involves potential employers to create a partnership cooperation system, analyze professional traits, conferences, master classes, forums aimed at the study of vocational and pedagogical problems).

These components are the core of the model of the university educational space. They are continuous and interconnected. The development of the core of the model makes it possible to fill with the content all its components and adapt it for the application in the pedagogical process of the university (to distribute where and when these or those means of developing the qualities of student's personality will be used), i.e. to develop a project activity. The development of the project completes the second stage of pedagogical design of the educational and professional space of the university, i.e. the presented model can be introduced into the pedagogical process. The final stage of pedagogical design is to specify the conditions for the developed model of the university educational space.

The conditions for the operation of the model of the university educational space, in our opinion, are as follows:

1. Dynamic structural and substantial components.

2. Openness to the external influences and adaptability to internal changes.

3. Priority setting for the development of the declared qualities and characteristics of student's personality.

4. Application of innovative means and teaching methods.

5. Involvement of student's personality (subject) into the professional context of subject-subject interaction, i.e. the student – teacher – employer.

4.   Purpose of the Study

The purpose of the study was the theoretical justification, development and implementation of models in the educational space of the university, allowing to develop various qualities and personality features of students that are in demand in modern society, such as competitiveness, creative competence and to develop student's personal and professional values.

5.   Research Methods

A flow chart of pedagogical design of the university educational space based on the model was developed (Table 01).

Table 01. Flow chart of pedagogical design of university educational space based on the model

Goal	Tasks	Principles	Components	Model conditions	Design stages	Performance criteria
Development of a model of the university educational space as a pedagogical condition for the development of student competitiveness	1.Organizational, i.e. the improvement of the content of subjects, search for in-depth interdisciplinary connections and involvement of potential employers in the educational process. 2.Methodological i.e. the inclusion of all subjects of the educational process in the process of development the personality qualities of a student based on scientific and methodological approaches and principles. 3.Didactic, i.e. the implementation of a new role of subjects (tutor, facilitator, etc.) in the learning process.	1.Integrity. 2.Integration. 3.Anthropocentrism.	1.Educational component. 2.Professional component. 3.Practical component. 4.Management component. 5.Financial and economic component. 6.Research component.	1.Dynamic structural and substantial components. 2.Openness to the external influences and adaptability to internal changes. 3.Priority setting for the development of the declared qualities and characteristics of student's personality. 4.Application of innovative means and teaching methods. 5.Involvement of student's personality (subject) into the professional context of subject-subject interaction, i.e. the student – teacher – employer.	1.Planning including value-targeted aspect; 2.Implementation including the substantive procedural aspect; 3.Evaluation with the inclusion of corrective and reconstruction aspect.	Competitiveness of student personality by level: high, medium, low.
Development of a model for the development of personal and	1.Organizational, i.e. involvement of practice-based forms of student training.	1.System-based approach. 2.Active personality. 3.Value-based attitude to the	1.Organizational component: Student Center for Psychological Assistance of	1.Organizational and pedagogical (content, forms and methods of	1.Development of professional activity, in the process of which professional	Development of professional values – authenticity, empathy, tolerance, lack

professional values of students in the university educational space	2.Methodological, i.e. the implementation of training, educational, formative and socializing functions. 3.Didactic, i.e. the development of professional values in the process of different types of activities in various organizations.	profession. 4.Personal transformation in the process of development of personal and professional values.	IRNITU, Research Institute of Psychology, Psychological Service of Main Directorate of the Federal Penitentiary Service, Psychodiagnostic Laboratory of Digital Graphology of IRNITU, Psychological School of IRNITU. 2.Functional: students' areas of work – prevention, counseling, correction. 3. Substantive: forms of students' work – lectures, discussions, research, trainings, business games, consultations, development of corrective measures, programs. 4.Evaluative-effective component – development of authenticity, empathy, tolerance, lack of value.	holistic pedagogical process). 2.Didactic (targeted selection and application of elements of the content of methods and organizational forms of training). 3. Psychological and pedagogical (personality development in educational relations).	values are, developed (Center for Scientific and Technical Education and Research institute of Phycology). 2.Development of professional activity in the process of which personal and professional values are developed (Research Institute of Psychology, Psychological Service of Main Directorate of the Federal Penitentiary Service, in the Irkutsk Region and in the Laboratory of Experimental Psychodiagnostics in Digital Graphology, Department of Sociology and Psychology, IRNITU. 3.Development of professional activity, in the process of which professional values are developed (students receive at LLC Psychological School of IRNITU).	of value by levels: high, medium, low.
Development of a model for the development of creative competence of future teacher in the scientific co-creation	1.Organizational, i.e. the development of personality (subjects) in joint activities carried out systematically and based on principles. 2.Methodological, i.e. implementation of scientific co-creation as the	1. Openness. 2. Flexibility. 3. Continuity. 4. Other dominance. 5. Dialogue-based. 6.Understanding. 7.Metaphoricity. 8.Reflexivity.	1.Target. 2.Methodological (approaches and principles for the development of creative competence of future teacher). 3.Substantive (research activity). 4.Organizational (scientific co-creation as a	1.Application of set of methods, techniques, creative tasks for the development of creative competence based on scientific co-creation. 2.Introduction of personality of student	1.Establishment of level indicators of structural components of the creative competence of future teacher in scientific co-creation; 2.Development of a "tree" of possible combinations of level indicators	Creative competency of student personality by levels: high, medium, low.

leading method of developing the creative competence of future teacher. 3.Didactic, i.e. implementation in the subject-subject interaction, in scientific co-creation, expressed in the following formats: "teacher-student", "student-student (s)", and "student-teacher".		method of interaction of the subjects of pedagogical process in the framework of research activities). 5.Modular (disciplinary, training, extracurricular, course modules).	(subject) in the context of subject-subject interaction in the following forms: "teacher-student", "student-student (s)", "student-teacher".	of future teacher's creative competence in scientific co-creation, development and implementation of methods for creating creative competence in scientific co-creation; 3.Development of diagnostic tools and identification of the levels of development of creative competence of future teacher in scientific co-creation.	

6. Findings

The models described in the paper (the model of the educational and professional space of the university as a pedagogical condition for students' competitiveness development; the development model of personal and professional values of students in the educational space of the university; the model of the creative competence of future teacher in scientific co-creation) proved to be effective during their implementation (Larionova, 2019; Shumovskaya, 2013; Zhdanko, 2012; Zhdanko, 2018).

Our studies made it possible to conclude that the development and implementation of various models of the university's educational space effectively develop the qualities and characteristics of a person that are in demand by modern society, and this, in turn, provides training for professionals who are ready for professional activities in changing conditions in the modern labor market. This is also confirmed by monitoring results in the field of graduate employment for the period of five years. According to the monitoring results, 90% of graduates are employed (10% are young mothers and young people drafted into the Russian army), approximately 60% of graduates work in state institutions, and about 40% in non-state institutions. 50 to 75% out of all employed graduates (data on different areas of training) work in the field of their study.

7. Conclusion

According to Perkin (1996), in the conditions of the third professional revolution global competition singles out highly educated people in free-lance jobs. Perkin (1996) calls such people transprofessionals, due to the way they think and the way they organize their activities. Apparently, they are able to work in various professional environments. Transprofessionals are described by the ability to use a variety of methods to solve creative tasks, ability to get away from formal standards, and ability to

think creatively. Competitiveness, creative competence as well as personal and professional values play a significant role in professional live.

Nowadays, the elaboration of various models for the development of popular traits and personality characteristics in the university educational space is designed to ensure the growth of transprofessionalism, which meets new requirements of the labor market. It is necessary to take into account the fact that the labor market is changing dynamically; therefore, some structural components of the models (tasks, approaches, principles of activity) can and should change in order to correspond to the priority areas of higher education in modern conditions.

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