

THEORETICAL ASPECTS OF THE EDUCATIONAL SYSTEM ORGANIZATION IN A TECHNICAL UNIVERSITY

Elena N. Sorokina ¹

Alena Y. Gura ²

¹Candidate of pedagogical science, associate professor, Kuban State Technological University

karpanina.elena@yandex.ru

²Candidate of philosophical science, associate professor, Kuban State Technological University

alena-gura85@yandex.ru

ABSTRACT

The most important aspect of activities in a modern technical university in the course of implementation of a pedagogic process is the formation and ensuring sustainable development of a complex structured pedagogic system with a goal. Relying on a theoretical concept, a pedagogic system model in a technical university structures the goals, the formulated tasks, the supporting principles, the basic concepts and ideas, and also theory and effective practical experience of pedagogical science. Designing and constructing such a system involves the coordination of scientific principles, the presence in the realization of the freedom of creativity, and the skill of implanting a project into reality.

Keywords: technical university, upbringing, model, pedagogic process, students, pedagogic system, concept, self-development, personality.

1.INTRODUCTION

The main task of higher education today is to provide students with the opportunity to develop professional, intellectual, cultural and spiritual and moral sides of their character, since it is here, in the conditions of the university, where future professionals overcome one of the most critical periods of socialization, rising on its fundamentally important stage and perceiving, comprehending or rejecting the values indicated by society (Karpanina & Ron, 2016). The pedagogic process in a significant number of technical universities has long been aimed at helping students to cope exclusively with difficulties of a socio-psychological nature, as well as developing responsible attitude, determination, emotional stability, stimulating overcoming lack of self-trust and creative passivity. Higher education pedagogy actively contributes to the advancement of modern methods and means of upbringing in the practical activities of universities, but in fact this line, especially in technical universities, is not always taken into account, and continues to be secondary (Shumskaya, 2000).

This is due to the fact that economic and social deformations with their static and dynamic component of ambiguous development subjected society and all spheres of its life to qualitative and quantitative transformations that ensured the change of aspirations and characteristic properties of professional labour, fundamental personal goals and components, as well as conceptual positions of social and human values (Sorokina, 2019). The transformation and reassessment of sociocultural conditions provided relevance and priority to the search for alternatives in the issues of upbringing students during the period of university education.

The urgent need to establish the pre-emptive right of socially important values, personal freedom of choice, the ability to realize oneself and act in completely different state-legal and socio-economic processes of society, while ensuring the maximum degree of professional culture, including education, intellectual development, intelligence and professional competence, is quite active, even aggressively designated at the moment (Gulyakin, 2012). This in an absolute way justifies the relevance of the search and organization of a holistic systematic approach to the issues of upbringing students of technical universities with the conditions for further social advancement along the economic and social ladder at this stage of the country's development, putting forward thus modern goals and conditions for organizing upbringing of future specialists for a technical university. The task of these goals and conditions, namely, upbringing of highly qualified engineers, is clearly a common one. In this case, it is important to consider: what type of new engineer are they? How the personal and professional orientations are measured in them, how to develop them, who and what can contribute to this development? To answer these and other questions, a complex structured pedagogic system for a modern technical university is necessary, which corresponds to requirements of nowadays (Karpanina & Ron, 2016).

2.METHODS

The components of the system (its subsystems) in the organizational plan are: the pedagogic process as the mutual functioning of subjects and objects of upbringing, directly embodying the goals and objectives of upbringing; pedagogic work as a function of a professional teacher, focused on creating the conditions for the development and self-development of students which are future engineers, actively promoting and rationally fitting them into the format of professional culture, contributing to their subjective and strategic self-manifestation in life (Gulyakin, 2012). The most important aspect of the activities of a modern technical university in the implementation of the pedagogic process is the formation and ensuring sustainable development of a complex structured pedagogic system having its goal.

The interconnection between a “pedagogic process” and a “pedagogic system” as concepts is obvious: in the conditions of a university, a pedagogic system is being formed and is steadily improving, while being a key aspect of effectiveness in realizing the goals and objectives of upbringing. Hence, the pedagogical use of various, including promising, methods, means and technologies of upbringing often does not lead to proper efficiency or predicted parameters, since they are not an integral part of the pedagogic system (Karpanina et al., 2018).

The idea of the system is reduced to the understanding that certain components are synthesized or combined into a common, forming a single integral one. The Philosophical Encyclopaedic Dictionary formulates that the system is “a set of elements

that are in relationship and connected with each other and forming integrity, unity". The application of this formulation to the pedagogic system of a technical university makes it possible to determine that this is the same set of elements such as pedagogic relationships, pedagogic process management technologies, forms of organizing activities, training and education tools and methods interconnected into a single whole, generating processes developing and shaping personality. Such popular concepts for pedagogical science as "structure", "component", "development", "personality", "relations", "integrity", "interconnection", "effectiveness" do not contradict each other, but rather fill the essential characteristic of the concept "Pedagogic system" (Bayborodova et al., 2012).

Pedagogical theory and practice consider various types of pedagogic systems, including multifunctional and complexly organized ones. For example, the main task of a "focused" [(Bayborodova et al., 2012) pedagogic system is to realize the goal of upbringing. A "self-organizing" system [7], in the conditions of carrying out its activities, can undergo structural and substantial changes. Thus, a **pedagogic system** is understood as an integral social psychology and upbringing mechanism which "functions provided a relationship between main pedagogic components", such as subjects, purposes, contents and methods of activity having integrative characteristics (team image, its psychological climate et al.), and which is self-regulating and controllable (Sorokina, 2019). The system occupies the entire pedagogical space, including in the classroom and extracurricular activities of students, making their activities and communication more versatile.

Relying on a theoretical concept, the pedagogic system model of a technical university structures the goal sets and formulated tasks, supporting principles, basic ideas and concepts, theory and effective practical experience of pedagogical science (Bayborodova et al., 2012). The function of the theoretical concept of such a pedagogic system is preconditioned, in turn, by determining its essence and structure, a combination of several components: management, content, organization and communication (Bayborodova, 2018).

The first component, the pedagogic system management, is the ability to set a goal, to build strategically a trajectory of movement toward it, and to organize work tactically; its prerequisite is inspection and evaluation of results. Management activity in the functioning mode may also include: analysis of the psychological and pedagogical state of the pedagogic process and the actions of its subjects; support for the unity of pedagogic conditions (common goals, meaningful components, tools and techniques); building up solidified, coordinated, creative, development-promoting actions; close interaction between a student, a university and society; expansion of humanistic tendencies in relations between teachers and students (Bayborodova et al., 2012). The second component is a content of the pedagogic system of a modern technical university, which is characterized by us as a synthesis of science, information space, cultural and value systems, including consistent work to comprehend and realize practical knowledge and experience of professional and socio-cultural activities, as well as stimulating and improving creative and personal potential.

The embodiment of the theoretical concept in the educational and pedagogic process of a technical university constitutes the third component of the pedagogic system, its organization, providing for targeted and meaningful coherence, including ensuring the unity of means, techniques and related aspects focused on effective achievements. The fourth component of the pedagogic system of a technical university is

communication, which could exist in the form of a combination of informative, interactive, and perceptual (mutual understanding, perception of each other) elements (Gulyakin, 2012).

In general, the effective result of the pedagogic system functioning of a modern technical university can be characterized by the relations that have developed between teachers and students during the implementation of joint actions; these are: humanistic tendencies and the atmosphere of solidarity, interaction, joint disposition, attention to oneself and others, and well-established communications. The integrity characterizing the pedagogic system of a technical university is ensured not only by the general interconnection of its components, but also by active integration into the life activity of society (Karpanina & Gura, 2018).

3.RESULTS

The theoretical justification for the formation, substantial development and management of the pedagogic system of a modern technical university allows us to conclude that it is adequately useful rationality:

- Functionally and meaningfully implementing a systematic approach to the education of students under the conditions of a technical university, the activity of all subjects involved in the pedagogic activity is consolidated, the coordination of the target, substantive, organizational and activity, technological, and evaluative and effective components of the pedagogical process is strengthened. It should be noted that only a "holistic pedagogic process" is guaranteed to contribute to the realization of the personal and professional growth of a student, being a future engineer, in a technical university (Bayborodova et al., 2012);

- Designing and constructing such a complex structured pedagogic system in a technical university, which will combine a detailed social-natural and professional-oriented environment, increasing the range of prospects for the impact of upbringing on the student's personal movement (Kolesnikova & Gorchakova-Sibirskaya, 2005);

- It is the pedagogic system that allows reducing the functionality and duration of participation in various activities and processes in a technical university, based on the integration of basic values during its creation; and also, systemic stability and resilience are ensured;

- The pedagogic system model of a modern technical university provides in the process of its creation to design in a certain way the conditions focused on personal self-realization and self-affirmation, while ensuring "self-development", "self-expression", and disclosure of "individuality", "humanization of business and interpersonal relationships in a team" Bayborodova, 2018).

The rational, adequately useful pedagogic system of a modern technical university can be considered as the "pedagogical centre" in a university and the public environment, it allows the university to cover, penetrate and occupy a significant space of the outside world (Bayborodova et al., 2012). Undoubtedly, the public control must be present in matters of upbringing students. A modern technical university, not being an absolute mirror of social and professional life, must design and create models (Kolesnikova & Gorchakova-Sibirskaya, 2005), while idealizing social relations schemes, building a model range of interactions based on life realities (Gura, 2018; Gura, A2018; Khakuz & Gora, 2012).

The design and construction of a pedagogic system of a modern technical university presupposes the consistency of scientific principles, the existence of freedom of creativity, and the skill of implanting a project into reality (Bayborodova, 2018). The synthesis of the interconnection between all the components of the pedagogic system from the position of joint work and the determined concept of interaction forms a special climate in the university, a certain spiritual beginning, which as a result of the work is impressive at first, and then gradually lends itself to reasonable perception. The construction of a pedagogic system for a modern technical university is associated with constant movement, at different stages of which parameters and results are recorded (Bayborodova et al., 2012). Exceptionally, such circumstances may, in accordance with the current goals and objectives, allow them to adjust the conditions of a given pedagogic system (Ryashentseva, A2011; Ryashentseva, 2008).

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