



PROFESSIONAL SUSTAINABILITY DEVELOPMENT MODEL BASED ON DESIGN PROGRAMS OF FUTURE ENGINEERS

Mavlanov Sobirjon Pardabaevich

Tashkent University of Architecture and Civil Engineering
Senior Teacher of the "Digital Technologies" Department

Abstract

On the basis of the design programs of future engineers, different educational "directions" are presented depending on the complexity of learning the science and the multi-directionality of the tasks performed by students in the development of the stability of professional activity. The article describes the model of development of the stability of professional activity based on the design programs of future engineers.

Keywords: Activity, situation, stability, modeling, mechanism, construction, integration, innovation, transformation, competence.

Introduction

Modern society is actively looking for an effective system of continuous independent educational activity and formation of highly qualified specialists who are ready for professional creativity and can quickly adapt to the labor market due to the change of specialization in a certain higher education institution.

In the Strategy of Actions for further development of the Republic of Uzbekistan, the issues of "continuing the continuous improvement of the continuous education system, increasing the possibilities of quality education services, training highly qualified personnel in accordance with the modern needs of the labor market" are defined.

In this regard, the implementation of significant changes in the content, methods, tools and organizational forms of the educational environment, which meet the individual characteristics of future engineers and reflect the specific characteristics of professional activity, is of great importance.

Researches in the field of education were studied by domestic and foreign scientists, including F.D.Izbasarova, B.R.Djuraeva, B.S.Gershunsky, A.M.Novikov and others [5, 4, 3, 7].

Higher engineering education is one of the sources of economic growth in the region of our country. First, it makes each person's work more efficient. Secondly, it increases the ability of highly qualified personnel to perceive and use new scientific ideas, technical tools and methods in practice, that is, they not only work efficiently using





more complex labor tools, but also manage existing resources better. Thirdly, science and technology will not progress without highly qualified engineers who create new ideas and implement them.

According to Z.V. Bragina, M.K. Komarov, higher engineering education is a necessary element as one of the factors of accelerating scientific and technical progress and increasing social labor productivity [2].

S.A. Lebedev and others consider an engineer to be a subject of technical activity. Engineering activity is closely related to technique and technology, development and direct creation of technical systems, their operation and management. Therefore, an engineer is "a specialist who solves the problems of design, construction, use, practical application of techniques and technologies on a scientific basis" [6].

Focusing on expanding and activating the independent cognitive activity of future engineers, developing communication skills, and forming the ability to make conscious and responsible choices requires a partial exit from the traditional classroom-lesson system, mainly from the closed education system.

Therefore, as an option for improving the educational process, it is possible to consider the modular organization of the educational process, which allows designing the educational process as a system of modules specific to different levels of education. On the basis of the design programs of future engineers, different educational "directions" are presented depending on the complexity of learning the science and the multi-directionality of the tasks performed by students in the development of the stability of professional activity. In order for the educational system to show its creativity, it should show the student the ways of his professional development, the methods of acquiring knowledge.

The learning path should not be the single, predetermined one typical of deterministic traditional education. If the "direction" of education is not the only one, the student will have the right to choose the best, optimal learning for him. "There are several possible ways of developing a complex object," says A.L. Samarsky (1989), - the future is determined by the present. It is necessary to choose the optimal way of development, to calculate it, to manage it" [8].

It is very important to use models in a methodical sense in the development of professional activity stability based on the design programs of future engineers, because on the one hand, the model is a certain framework and a certain system of ideas, which always has a conceptual structure.

On the other hand, a model is "a form of scientific abstraction of a special kind, in which important relationships are perceived and expressive connections and relationships are visually strengthened...".





Scientifically, the word "model" has two meanings: on the one hand, close, on the other hand, separating.

First, a model in a broad sense means a mentally or practically created structure that reproduces reality in a simplified schematic and visual form.

Secondly, the model includes an element of fantasy, which is a product of creative imagination, as an integral element of the scientific view of the world. Based on the design programs of future engineers, the model of the development of the stability of professional activity can be expressed in the form of a block diagram consisting of four blocks.

These blocks consist of initial block, integration block, transformation block and final block. Between blocks and elements, the mode of operation of the model is activated.

Blocks include the following functions:

1. Initiation (initiation) - causes a reaction expressed in the voluntary regulation of the task (stimulation, influence) given to the student in his educational and professional activities, including the activation component.

2. Integration - the task, in accordance with the activation component, creates a psychological modeling of the self-control system, on the basis of which the mechanisms of overcoming resistance (in case of high activity anxiety) and self-building mechanisms (medium and low activity anxiety) are activated.

Then, the working procedure of the model transfers the accepted task (stimulation) to the level of the freedom system of self-regulation, in which an organized process of including the internal mental activity of the student in the construction and management of educational and professional activities takes place. related to the solution of the task (response to the stimulus) is carried out.

Depending on the student's attitude to the task, a situation (stability/instability) is created in educational and professional activities and the modeling construct changes the student's readiness to perform it. If the student is ready to do this, then the mechanism of "self-building" starts; if he is not ready, then the process of preparing for the task goes to the "modulating structure" element, where the state of instability requires external support and a mechanism to reach a new level, that is, to overcome the resistance and transfer to a new level of task implementation.

The mechanism of "self-building" is activated only after the student with high activity anxiety repeatedly passes the initial elements of the integration block (repetition of the task).

3. Transformations - in this block, the task rises to a new level of implementation and moves to a new mode of the model - "transformation", this system is turned on after



voluntary self-regulation of activity, where after a certain period of time, the usual aspiration allows to perform tasks without additional efforts gives

With the introduction of innovations, self-management structures are changed. In this block, changes in cognitive products of educational and professional activities and changes in personal characteristics are carried out.

The transformation block in the development model includes the performance function of educational and professional competences and raises it to a new level.

4. Final - in this block, the resilience potential receives developed competencies related to problem solving (motivation) and the student's psychological stability in educational and professional activities helps to develop problem-solving experience in the chosen field of professional activity.

In the operating mode, this model reflects the level of psychological stability of the student in his educational and professional activities, where the state of the regulatory systems ensures the psychological stability of the studied object.

An "activity concern" barrier is enabled between the blocks, which prevents the implementation of the development function that shapes the internal working state of the model.

The set of parameters of psychological characteristics determined by the subsystems of the personality (personality, perception, emotions, behavior) and the state of regulatory subsystems (self-control, self-control) create different low, medium and high performance modes in the model.

A high level creates internal tension in the model, meaning that a student's experience of high levels of activity anxiety leads to the need to engage support to reduce it.

Such a state of the student's psychological stability system in educational and professional activities disrupts the order of actions aimed at achieving the goal (assignment, project, exam).

The content of psychological stability is a single, dynamic, mental, systematic phenomenon, which is manifested in the integrated interaction of self-regulation, cognitive, self-control and behavior, which are its components.

Based on the design programs of future engineers, the model of development of the stability of professional activity is developed based on the definition of the main ideas of the course.

Each such idea corresponds to a module developed by the teacher. Their sum ensures the realization of the main goal of learning the entire academic subject.





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