

# Individual educational trajectory of future teachers' self-organization development

## Trayectoria educativa individual del desarrollo de la autoorganización de los futuros docentes

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### Abstract

The article reveals the features of building an individual educational trajectory in order to develop the level of future teachers' self-organization. For the purpose of conducting scientific research, we used the following methods: A. D. Ishkov's methodology "Diagnostics of the characteristics of self-organization", as well as the analysis of psychological and pedagogical literature on the issue of building an individual educational trajectory in order to develop the level of self-organization among students. As a result of diagnostics of the characteristics of the development of self-organization in future teachers, it was found that this level in students is not fully formed.

**Keywords:** individual educational trajectory, university training of teachers, self-organization, individualization of education.

### Resumen

El artículo revela las características de la construcción de una trayectoria educativa individual para desarrollar el nivel de autoorganización de los futuros docentes. Para la realización de la investigación científica se utilizaron los siguientes métodos: Metodología de AD Ishkov "Diagnóstico de las características de la autoorganización", así como el análisis de la literatura psicológica y pedagógica sobre el tema de la construcción de una trayectoria educativa individual con el fin de Desarrollar el nivel de autoorganización entre los estudiantes. Como resultado del diagnóstico de las características del desarrollo de la autoorganización en los futuros docentes, se encontró que este nivel en los estudiantes no está completamente formado.

**Palabras clave:** Trayectoria educativa individual, formación universitaria del profesorado, autoorganización, individualización de la educación.

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## 1. Introduction

One of the requirements for the planned results of mastering the educational program is the formation of universal competencies in future teachers in the context of the specifics of the educational environment of a higher educational institution. Of particular importance is the problem of forming a universal competence of self-organization in future teachers, which largely characterizes the possible prospects for building a trajectory of professional development, taking into account the conditions, means, personal capabilities and stages of career growth.

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The revealed relationship between the educational activity of students and their self-organization is reflected in the works of a number of researchers (V. A. Golneva, 1972; N. S. Kopeina, 1983; V. Ya. Laudis, 1991; B. G. Pushkin, 1971; A. D. Ishkov, 2004; S. N. Kapustin, 2005; V. E. Klochko, 2005; E. A. Uvarov, 2007; S. N. Kostromina, 2010; O. N. Knyazkova, 2012; L. V. Faleeva, 2012; T. E. Yanovskaya, 2013; N. A. Novikova, 2014, etc.). The analysis of studies showed that the term "self-organization" first appeared in 1947 in a scientific publication of the English psychiatrist William Ashby "Principles of the Self-Organizing Dynamic System" (W. R. Ashby). In subsequent years, the well-known physicists I. Prigogine and G. Haken began to use the term "self-organization" when describing the systemic signs of cognition of reality. Describing the dissipative structure, Nobel Prize laureate I. R. Prigogine notes the presence of dynamic self-organizing regimes, considered as thermodynamic stationary states, for which the principles of extreme nonequilibrium thermodynamics correspond.

Studying complex educational systems, G. Haken proposes a new direction of modern science, as synergetics, which determines the modern interpretation of the following phenomena: self-organization, self-oscillation and co-evolution. From the standpoint of the synergetic approach, the phenomenon of self-organization is the most complex process of spatial, temporal and spatio-temporal ordering in an open system of interaction of many elements of its components. As an analogy to the process of self-organization, reflecting the relationship between the formation of a system with the most ordered structures and the process, the following examples can be cited: laser, Rayleigh - Benard cells and the Belousov - Zhabotinsky reaction (brusselator).

The practical use of synergetic methods is also reflected in supramolecular chemistry, the founder of which is the French chemist, Nobel laureate Jean-Marie Lehn. Describing the phenomena of ordering in systems of high-molecular compounds under equilibrium conditions, the author introduces the terms "conservative self-organization" and "self-assembly". An example of conservative self-organization, which is characterized by equilibrium phase transitions without external influences, such as crystallization, DNA formation. These phenomena occur under conditions close to thermodynamic equilibrium, in contrast to the synergetic approach.

Considering the physical essence of the phenomenon of self-organization, Dr. Sciences, Professor A.P. Rudenko defines self-organization (non-equilibrium ordering) as self-development of a system, which occurs due to internal useful work against equilibrium (the concept of evolutionary catalysis). Depending on the process of ordering the equilibrium of systems, the following types of self-organization are distinguished: continuous (individual micro-systems) and coherent (collective macro-systems). For progressive evolution with natural selection, self-development of the continuous self-organization of individual systems is necessary.

Analysis of the research results made it possible to identify the main approaches to the study of systems: theoretical modeling of a physical, informational, social and other system, as well as an empirical study of a model of a real system. The study of the isomorphic structure and functioning of a system that is diverse in nature has led to the need to make an assumption about the existence of self-organization processes in living systems.

The definition of "self-organization", which was presented by scientists in the framework of a synergetic approach, was interdisciplinary in nature and gradually passed into psychological and pedagogical research. The variety of studies in the field of self-organization is explained by the lack of a single scientifically substantiated definition of the concept of "self-organization", its individual-personal orientation and variability (M. A. Vorobieva, 2012, O. N. Loginova, 2012, S. N. Mikhnevich, 2012, Hasan, S., Crocker, R., Rousseliere, D., Dumont, G., Hale, S., & Srinivas, H, 2010, Osteen, P., 2011). Studying the features of the self-organization process, the researchers emphasized the relationship with the systemic nature of the psyche, which manifests itself in the sensory-perceptual organization, individuality, human activity, etc.

Research related to the psychological and pedagogical aspects of self-organization began to appear in the 70s and 80s and consisted in the characterization of educational activities and professional knowledge, skills and

abilities that contribute to the optimization of the student's workload. Modern research in this area is presented by a description of the conditions necessary for the formation of a student's ability to self-organization. The authors pay special attention to the presentation of the activity aspect of self-organization, which serves as the basis for organization, success, performance, etc. The described features should be attributed to the characteristics of the self-organization of the subject's activities, the correctness of the actions performed, non-standard and creative approach to building the structure of actions.

The disagreements of scientists in the definition of the concept of "self-organization" lead us to the conclusion that for this category, different approaches are applied to the consideration of self-organization as a characteristic of a personality, personality ability, acmeological characteristics of a subject of activity.

The indicated approaches allow considering the process of self-organization in a complex manner, including several positions that complement each other in defining the concept: self-organization as the organization of the subject's activity and self-organization as a set of necessary personality qualities. Next, we present a comparative table of the concept of self-organization in psychological and pedagogical research.

**Table 1**  
Comparative analysis of the concept of self-organization  
in psychological and pedagogical research

No.	Author	Category	Concept
1.	M.A. Vorobieva, 2012	Setofproperties	Self-organization is an indicator of a person's personal maturity, a set of natural and socially acquired personality traits embodied in perceived features of will, intelligence, in motives of behavior and implemented in the organization of human activity.
2.	A. V. Kirillova, 2012	Personalitystructure	Self-organization is an ordered and dynamic structure of personality, characterized by an integrative set of functional and personal components and manifested in the conscious construction of activities to develop "competence to renew competencies .
3.	O. N. Loginova, 2012	System of methods and skills	Self-organization is a system of methods and skills for mobilizing the capabilities of an individual to achieve a personally or socially significant goal, which allows a student to be a subject of his own educational activity.
4.	S. N. Mikhnevich, 2012	Complexofpersonalactions	Self-organization skills are understood as a complex of personal actions (planning, organization, control, assessment) based on educational knowledge, the specifics of organizational activities and manifested through self-regulation, allowing effective sociocultural design.

Source: authoring

Considering the concept of "self-organization" in psychological and pedagogical research as an indicator of personal maturity, it is necessary to highlight the skills of professional self-organization, which are important components of the personality structure in activities to resolve professionally and personally significant tasks.

The skills of self-organization of professional activity are structural elements of the content of education, which are included in the structure of the key professional competencies of a bachelor. The process of forming professional self-organization is due to the dynamics of personality development during training in educational institutions of vocational education, in which the entire educational complex of the institution is aimed at building an individual educational trajectory. The possibilities of individualization of teaching as an effective technology for the development of a student's personality are revealed in the studies of G. F. Berseneva, 2014,

D. P. Zavodchikov, 2017, E. F. Zeer, 2017, L. A. Kabanova, 2018, O. I. Lazareva, 2016, E. V. Lebedeva, 2017, L. A. Nainish, 2016, E. E. Symaniuk, 2014, P. V. Sysoev, 2013, A. G. Furin, 2016, A. A. Shkunova, 2018 and others.

According to E. F. Zeer and E. E. Symaniuk, the design of an individual educational trajectory should be considered as a special meaning-generating activity of a person's forecasting of his future (E. F. Zeer and E. E. Symaniuk, 2014). P. V. Sysoev defines an individual educational trajectory as a personal way to achieve a set educational goal (or educational task) for a specific student, corresponding to his abilities, motives, interests and needs (P. V. Sysoev, 2013). E. A. Dziuba emphasizes the importance of the formation of individual educational trajectories among students, who have found the most significant differences in individual values and meanings of the studied content of education in a variable situation (E. A. Dziuba, 2010). Describing the functional capabilities of students, E. Yu. Valitova and V. A. Starodubtsev note that when designing an individual educational trajectory, it is necessary to take into account: the style of thinking, motives for raising the educational level, current interests, the need for self-development, progress in a specific area, cognitive activity and others (E. Yu. Valitova and V. A. Starodubtsev, 2016). N. S. Sytina, characterizing the process of accompanying student teachers in the context of individual educational trajectories, emphasizes the importance of development and the degree of expression of personal characteristics necessary for the implementation of various types of teacher activities (N. S. Sytina, 2012).

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## 2. Methodology

In order to substantiate the need to develop the level of self-organization in future teachers and the ability to create an individual educational trajectory, we conducted a scientific research from April 2020 to June 2020 on the basis of the South Ural State Humanitarian Pedagogical University.

The study involved 83 2nd year students enrolled in areas 44.03.05 Pedagogical education (with two training profiles), profiles "Primary education. English language", "Primary education. Preschool education"; 44.03.04 Vocational training (by industry), profiles "Informatics and Computer Engineering", "Transport".

The quantitative characteristic of the level of formation of self-organization of students is represented by the following criteria:

- the ability of future teachers to accept and maintain a goal;
- analyze and identify the circumstances necessary to achieve the goal;
- plan your own activities;
- determine the level of development of skills to control and evaluate their own actions;
- adjust the goals;
- regulate your own actions, mental process and states;

Taken together, these criteria make it possible to determine the level of development of skills in organizing a student's own activity process. For this purpose, we used the questionnaire of D. A. Ishkov "Diagnostics of the peculiarities of self-organization", developed on the basis of the Questionnaire for the diagnosis of style features of self-regulation of behavior "SSP-98" by V. I. Morosanova and E. M. Konoz; Questionnaire "Ability of Self-Government", developed under the guidance of N. M. Peisakhov; The LSQ Learning Styles Questionnaire by P. Honey and A. Mumford; The questionnaire of the reflexivity of VN Karandashev (D. A. Ishkov, 2004)

D. A. Ishkov's questionnaire "Diagnostics of self-organization features" includes 39 statements that form 5 scales: "Goal setting", "Situation analysis", "Planning", "Self-control", "Correction". Students' answers were assessed on

a 6-point scale: "I do not agree completely" - "- 3 points", "I partially disagree" - "- 2 points", "I rather disagree" - "- 1 point", "I rather agree" - "+ 1 point", "agree partially" - "+2 points", "agree completely" - "+ 3 points". The processing of the results was carried out by finding the average value of the level of self-organization development in future teachers on 5 scales, the range of accepted values is from 50 to 133 points. The interpretation of the scores received is based on the following indicators: low score; reduced rate; average low; increased rate; high rate.

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### 3. Results

**Table 2**  
The level of self-organization  
formation among future teachers

Self-organization level	The number of people studied	Share of subjects, %
Low rate	0	0%
Decreased rate	15	18%
Average low rate	31	37%
Increased rate	29	35%
High rate	8	10%

Source: authoring

According to the results of diagnostics, it can be stated that the majority of the subjects (65%) have a low or medium low level of development of self-organization skills, therefore, they will have difficulties in building and implementing an individual educational trajectory. We carried out a correlation analysis to determine the closeness of the relationship between the indicators of the USE results when entering a university and the level of self-organization of students. Correlation coefficient - 0.51 (noticeable relationship).

The results of the study showed that the problem of constructing an individual educational trajectory in order to develop the level of self-organization of future teachers is relevant.

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### 4. Conclusions

In order to substantiate the need to develop the level of self-organization in future teachers and the ability to create an individual educational trajectory, we conducted a study that revealed that most of the respondents have a reduced or medium low level of development of self-organization skills. The results of the study allow us to conclude that it is necessary to increase the level of self-organization, thanks to the formation of the ability to independently build an individual educational trajectory of future teachers.

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- Gratitude.* The study was carried out with the financial support of the Shadrinsk State Pedagogical University, the topic “Virtual educational environment as a means of implementing an individual educational trajectory in order to develop the level of self-organization of future teachers”, application ShK-20-04-15 / 1, 15.04.2020.