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Research Paper

The aspect of self-organization in the formation of an effective educational system in college

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Abstract

The urgency of the problem under investigation is determined by the need to identify and develop the basic theoretical and methodological foundations of the process of self-organization aimed at developing the mechanism of self-development and achieving the desired result (goal) of college educational system in the current socio-economic situation. The purpose of the article is to scientifically substantiate the theoretical and methodological foundations of the process of self-organization of the educational system of college aimed at developing a mechanism for self-development and achieving the desired result in the preparation of highly qualified specialists for professional adaptation and career growth in the labor market. The leading method of research is the analysis and generalization of scientific provisions on this topic. The article substantiates scientific, methodological and technological tools, develops a conceptual model and algorithm for the process of self-organization of college educational system capable of forming a mechanism of self-development, of responding promptly to changes in the current social and economic situation and of achieving the desired result in the preparation of competitive specialists in demand on the labor market. The developed conceptual model, scientific-methodical and technological tools are aimed at solving practical problems of increasing the effectiveness of educational systems, identifying and forecasting the key factors of their self-development in the changing social and economic situation and in the external environment.

Keywords: *Conceptual Model; Self-Organization; Effective College Educational System; Self-Development; Competitive Specialists; Professional Adaptation*

1. Introduction

In the 21st-century Russia about 90% of enterprises changed their form of ownership, becoming non-state. Employers of a new type came to manage enterprises, which put higher demands on the quality of workers and specialists training. The principles of organizing economy and its infrastructure are changing; new problems arise, including those between employers and professional educational organizations (VET) in the conditions of the emerging labor market and the market of educational services.

At present, there are several problems in Russian vocational education, among which the main ones are as follows:

1) The gap between the content of professional education and the needs of the country, of the labor market and of world economic development trends, which not only causes dissatisfaction of domestic employers and gives rise to unemployment, but, most importantly, makes the educational system, and therefore the economy of the country uncompetitive;
2) Sharp deformations in the structure and volume of training, which clearly do not correspond to the needs of the labor market and the market of educational services;
3) Inefficiency in the use of budgetary resources due to excessive training of specialists in low-cost and non-profile specialties for this VET;
4) The lack of a systematic interaction of VET with employers and of their involvement in the development of professional standards that have their own specifics for each profession and the national system of qualifications;
5) The unformed thinking of the new employer, far from always being able to assess the role of system training of highly qualified personnel, including with their participation.

It is obvious that without serious changes in the traditional approaches to the professional training of qualified personnel, these problems cannot be solved.

The shortage of highly skilled workers and mid-level professionals is becoming real and is growing annually. The quantitative and qualitative state of the labor potential, the volume and structure of personnel training can be assessed as factors slowing down the country's economic development. This is in fact expressed by the concern of the President of the Russian Federation, who noted that "in the country the share of workers and highly skilled professionals is no more than 5% of the total number of the employed... We do not have the required number of mid-level specialists".

It is necessary to find ways to achieve this goal. A realistic forecast is that only external measures of the state aimed at supporting and improving the educational systems of VET will not be enough. Governmental decisions identified many priority areas for the development of education, all of them important, but also different. Priorities are not indicated, so there is no clarity in the timing and completeness of their implementation [1-5]. The main drawback also lies in the fact that the mechanisms of interaction between the educational systems of VET, the labor market and public institutions have not been developed. Therefore, along with the adoption of external measures, it is necessary to create self-

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organizing VET educational systems able to respond quickly to changes in the social and economic situation, the demands of society and the modern labor market. Vocational education needs to be freed from social exclusion, acquiring the ability to self-development on the basis of new principles of organization, oriented to the labor market and social partnership. Therefore, the innovative activity of VET for the coming years will be largely determined by the development of such a direction as organizing and activating interaction with employers, their involvement in the development of professional standards on the basis of competence approach for each profession and of the national system of qualifications [6]

The key contradiction in solving the problem of achieving high efficiency of VET educational systems is the contradiction between the increased demands of the society and the modern labor market and the insufficient scientific justification for the process of creating self-organizing educational systems that can meet these requirements and achieve the desired results in the preparation of competitive labor market workers and specialists of high qualification, capable of professional adaptation and career growth.

2. Literature review

The study of psychological and pedagogical literature reveals the absence of special research devoted to the problem of self-organization in the formation of effective educational systems. At the same time, the processes of self-organization in the works of various authors were considered at several levels [7-10]

the level of application of the synergetic paradigm to the design of the educational systems development. The works are devoted to the problem of transferring the basic concepts of synergetics from the field of natural science to humanitarian and synergetic strategies in education.

Noting the unconditional value of these works, it is necessary to emphasize that the theoretical foundations of self-organization of effective educational systems of VET in the conditions of the current socio-economic situation have not yet been developed sufficiently. Scientific pedagogical research does not take full account of the fact that VET educational systems are an integral part of the country's economy, that the ways of their modernization and increasing effectiveness should be determined, first of all, by the orientation to the demands of the labor market and public institutions.

3. Methodological framework

3.1. Research methods

In the process of research, the following methods were used: analysis of philosophical, pedagogical, psychological, managerial and methodological literature on the problem; generalization and systematization of scientific provisions on the research topic; pedagogical observation, generalization of advanced domestic and foreign experience; modeling; diagnostic methods; method of expert evaluation.

3.2. Methodological basis of the research

The logic of the research is built taking into account the works of [11], reflecting the multilevel methodology and methodology of scientific research.

In determining the values and objectives of the educational systems of VET in the current socio-economic situation, works in the field of philosophy and educational strategies were used [1].

The development of a set of basic principles of the process of self-organization was carried out using the domestic concepts laid down in the works on the general theory of professional education development.

The theoretical justification for the formation of the mechanism of self-development of the educational system was based on works in the field of the organization and management of vocational education, of general pedagogical and professional integration of teacher training for the vocational education system.

At systematization and concretization of scientific, methodological and technological tools of self-organization of the effective educational system of VET, works in the field of designing pedagogical technologies, of theoretical foundations of training specialists in the system of secondary vocational education, of creative thinking and of personality-oriented and personality-developing education and others were used.

In developing the concept and establishing the regularities of the process of self-organization of the effective educational system of the college in the conditions of the current socio-economic situation, emphasis is placed on the work devoted to the application of the synergetic paradigm to the design and management of the development of educational systems, as well as on the work of foreign authors in the field of organizational and strategic management.

3.3. Stages of research

The study of the problem was carried out in four stages:

- At the first stage, the state of the investigated problem was purposefully studied in the theory and practice of the work of domestic and foreign VETs, and initial assumptions, the conceptual apparatus, methodology and theoretical bases of the research were determined..
- At the second stage, the conceptual model and algorithm of the process of self-organization of the effective educational system was developed, and the scientific-methodological and technological tools were rationalized.
- At the third stage, the structure of the model and algorithm was specified, and the methodological and technological tools were specified and systematized.
- At the fourth stage, work was carried out to improve and correct the conceptual model of the process of self-organization of the effective educational system of the college, and the results of the study were summed up.

4. Results

4.1. Scientific-methodological and technological tools for self-organization of effective educational system

The leading idea, the idea of the concept developed in the research is that the process of self-organization of an effective educational system is based on its external and internal openness, feedback and communication with the labor market, the ability for strategic management, modern scientific, methodological and technological tools, including reengineering of the organization of educational activity, self-organization of the success of professional training of students, adaptive knowledge management system, motivation and personal development of students' learning abilities.

Internal openness implies an optimal, flexible combination in the process of education and training of all existing pedagogical technologies and models, none of which can claim absolute completeness. External openness is ensured by the rapid response of the educational system to changes in social and economic conditions, timely fulfillment of the social needs and a broad access to the world information space.

Analyzing the degree of social openness of the Russian vocational education system, it can be noted that in this direction there are only isolated actions of a local nature in relation to the situation on the labor market.

The study made it possible to establish that an open-type educational system is characterized by a self-organized process of performance management with feedback and self-adjustment elements. To do this, it is necessary to organize the collection, analysis and storage of information on the results of specific students' education, the effectiveness of teachers' pedagogical activity, the

degree of mission fulfillment, of targets and specific programs for their implementation. In addition, it is necessary to constantly monitor changes in the labor market, identifying the demanded specialties or individual areas that directly affect the competitiveness of the specialists produced. Based on the information received, monitoring is carried out by comparing the desired and actual results, assessing the effectiveness of the educational system and, if necessary, adjusting and changing the goals, strategies, programs to achieve the desired results and organizational management structure. This solves the problem of increasing the effectiveness. The professional-personal model of a graduate corresponding to the educational and professional standard acts as a kind of analyzer of the level of the desired result of education. The process of self-organization of the effective educational system is based on the corresponding scientific-methodological and technological tools (Table 1)

4.2. Basic principles of self-organization of effective educational system

The results of the research work allowed to systematize the basic principles corresponding to the process of self-organization of the effective educational system: openness as a necessary condition for the functioning and development of the modern college educational system; the orientation of the educational system on the result; ensuring communication with the labor market; synergetics in the construction of the educational process; sustainable attraction of all types of resources necessary for the functioning and development of the educational system; flexible educational schemes; close relationship with employers; constant quality control of training specialists.

4.3. Conceptual model of the process of self-organization of an effective educational system

Principles, key competencies, necessary conditions, scientific, methodological and technological tools which form the basis of the conceptu-al model of the process of self-organization of the effective college educational system are given in Table 2.

Table 1: Scientific-Methodological and Technological Tools for Self-Organization of Effective Educational System

Scientific-methodological and technological tools			
Reengineering of the organization of educational activity	Self-organization of the success of students' professional training	Adaptive knowledge management system	Formation of motivation and development of students' personal abilities for training
Marketing support of educational activity Introduction of modern teaching technologies and advanced development of the educational and material base The organization of social partnership with the sphere of labor	Pedagogical conditions for the success of professional training of students Self-organization management of the educational system Integrated quality management system	Organization of pedagogical interaction in the process of constructing knowledge Knowledge management system in an open information and educational environment Managing students' independent work	Motivation of students in the context of education informatization- Forming information culture Self-monitoring of students' learning activities

Table 2: Conceptual Model of the Process of Self-Organization of the Effective College Educational System

No	Basic principles of self-organization of effective educational system	Key competencies generating the dynamic capabilities necessary to implement the basic principles	Necessary conditions, scientific-methodical and technological tools
1	Openness of the modern educational system of VET	Ability to constantly interact with the external environment, foreseeing the future and coordinating with it one's actions	Accounting for the requirements of the labor market and the market of educational services to the modern educational systemCreating an open information and educational environment for VETMarketing support of educational activity
2	Orientation of the educational system to obtaining the desired result	Ability to achieve a given pedagogical result	Determining the desired outcome (goal) of the educational system (mission, graduate model) Identifying factors of the educational system effectivenessThe VET management system aimed at achieving the desired result
3	Ensuring communication with the labor market	Ability to strategically manage the educational system	Analysis of the specific educational situation of VET in modern socio-economic conditions (pedagogical SWOT-analysis)Strategy and tactics of the formation of self-development mechanism of the educational system Creation of pedagogical conditions for the success of students' professional training
4	Synergetics in the construction of the educational process	Ability to internal self-organization of the educational system	Self-organization management of the educational systemSelf-monitoring of students' learning activitiesFeedback and self-adjustment (self-organization) of the educational system, depending on the requirements of the labor market (employers)
5	Steady attraction of all types of resources necessary for the functioning and self-development of the educational system	Ability to obtain the necessary resources from the external environment	Construction and implementation of the matrix 'educational services → market'Realization of the program of attracting material and technical resources and of advanced development of the educational-material basisSystem of working with personnel
6	Flexible educational schemes	Ability to build educational programs in accordance with individual needs and the requirements of the labor market	Introduction of modern teaching technologiesKnowledge management system in an open information and educational environmentOrganization of pedagogical interaction in the process of constructing knowledgeStudents' motivation in the context of education informatization Forming the information culture
7	Close contact with employers	Ability to build partnerships with the subjects of the external environment	Organization of social partnership with the sphere of labor
8	Continuous quality control of training specialists	Ability to carry out systemic quality control of training specialists	Integrated quality management systemMonitoring and analysis of actual results of education

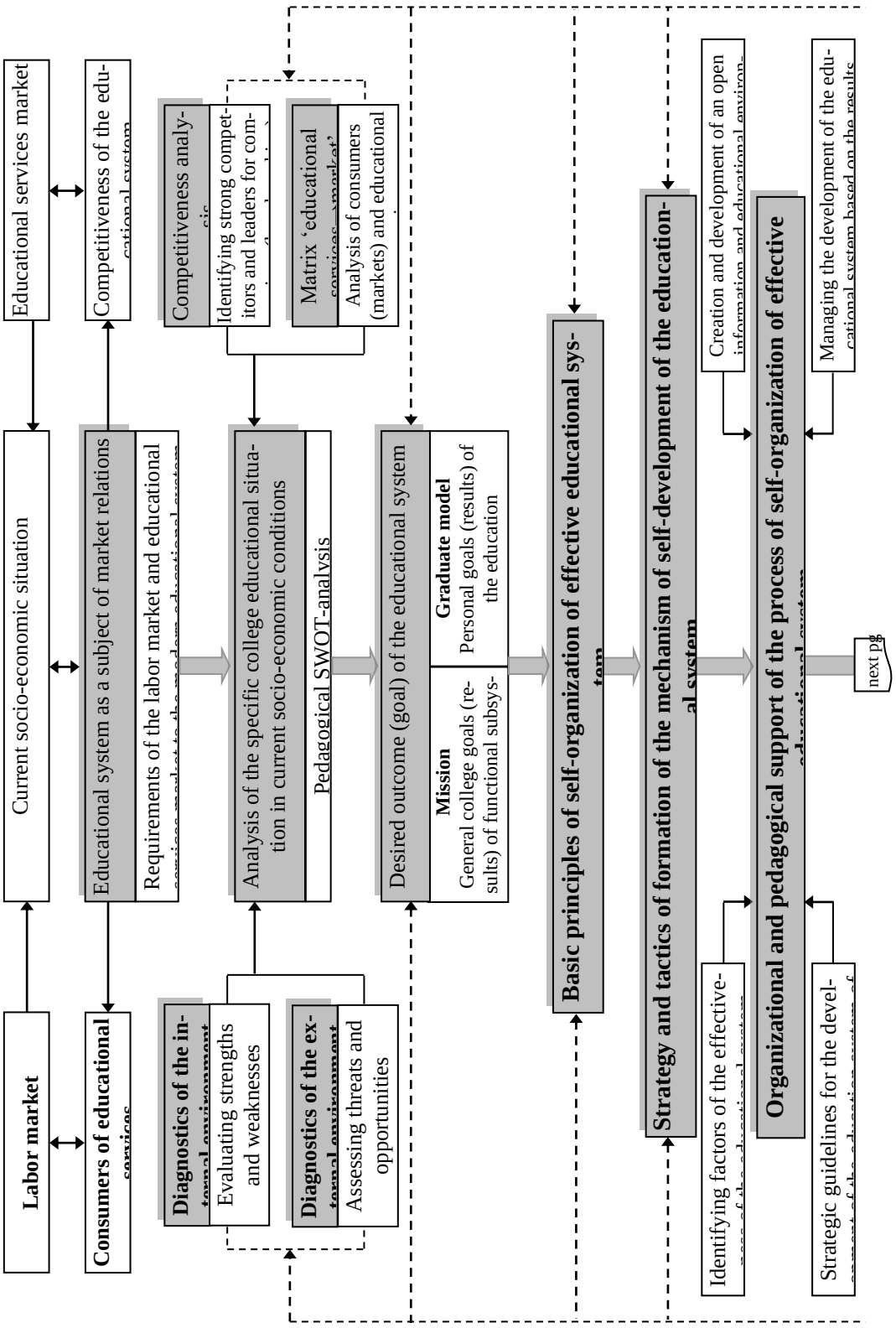
4.4. Structural-logical scheme of the conceptual model of the process of self-organization of the effective educational system

Taking into account the circumstances mentioned above which have an impact on the process of self-organization of the effective educational system, a structural-logical scheme of the corresponding conceptual model was developed (Figure 1).

During the research, the factors influencing the effectiveness were identified and systematized. They are: values and goals of the educational system; the content of education; technological subsystem (means, methods, forms) providing educational activity; different kinds of resources; organization of educational marketing; pedagogical management. It should be especially noted that the college educational system is influenced by environmental factors that can contribute to or hinder the increase in effectiveness.

4.5. Algorithm of process of self-organization of effective educational system

In the course of the research, an algorithm for the process of self-organization of the effective college educational system was designed which includes a number of blocks (Figure 2).


Educational services market
Competitiveness of the educational system
Current socio-economic situation
Educational system as a subject of market relations
Requirements of the labor market and educational
Competitiveness analysis
Identifying strong competitors and leaders for com
Matrix 'educational services-market'
Analysis of consumers (markets) and educational
Labor market
Consumers of educational services
Diagnostics of the internal environment
Evaluating strengths and weaknesses
Diagnostics of the external environment
Assessing threats and opportunities
Analysis of the specific college educational situation in current socio-economic conditions
Pedagogical SWOT-analysis
Desired outcome (goal) of the educational system
Graduate model
Personal goals (results) of the education
Mission
General college goals (results) of functional subsys-
Basic principles of self-organization of effective educational system
Strategy and tactics of formation of the mechanism of self-development of the educational system
Creation and development of an open information and educational enviro
Managing the development of the educational system based on the results
Identifying factors of the effective
Organizational and pedagogical support of the process of self-organization of effective educational system
Strategic guidelines for the devel
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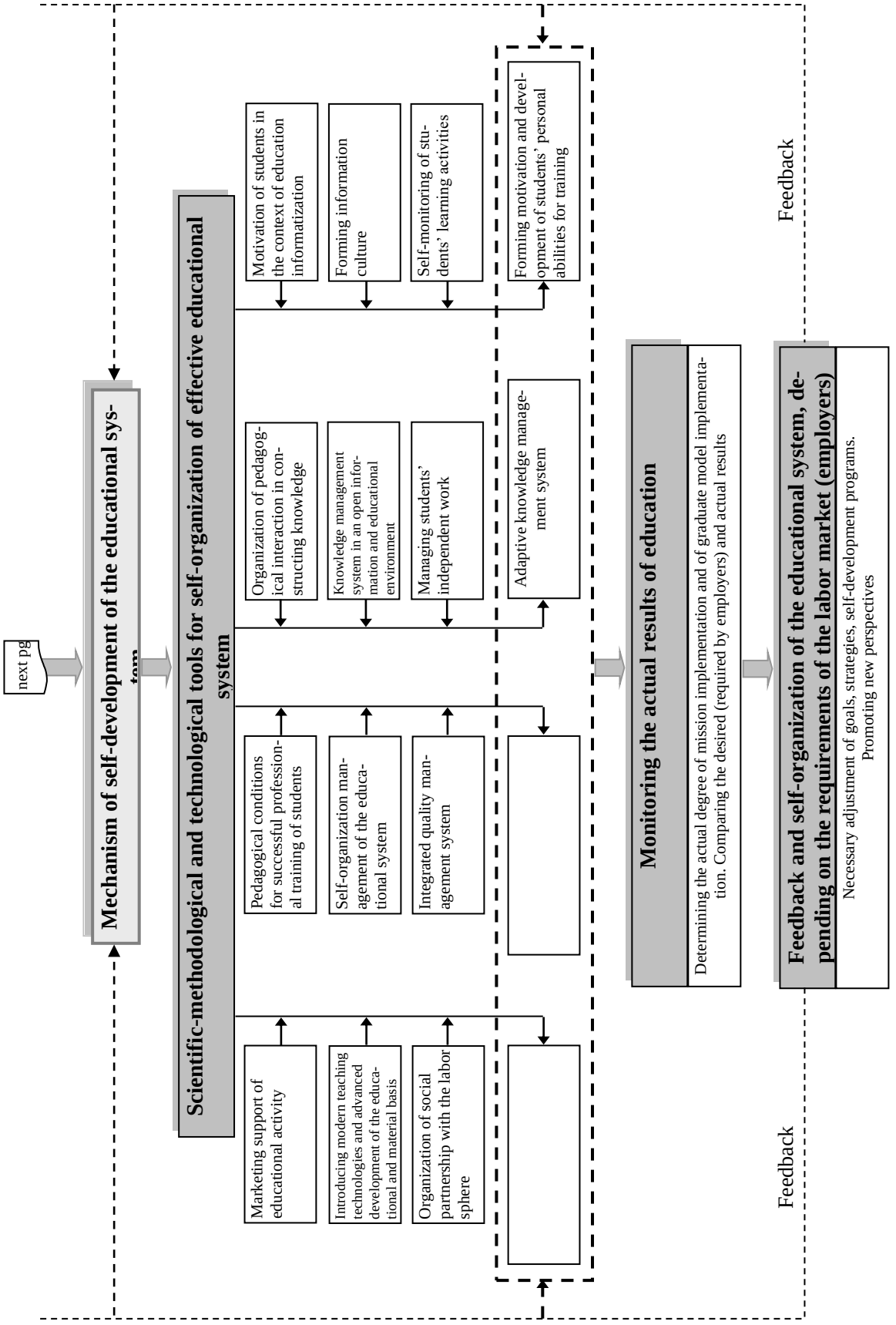


Fig. 1: Structural-Logical Scheme of the Conceptual Model of Self-Organization of the Effective College Educational System

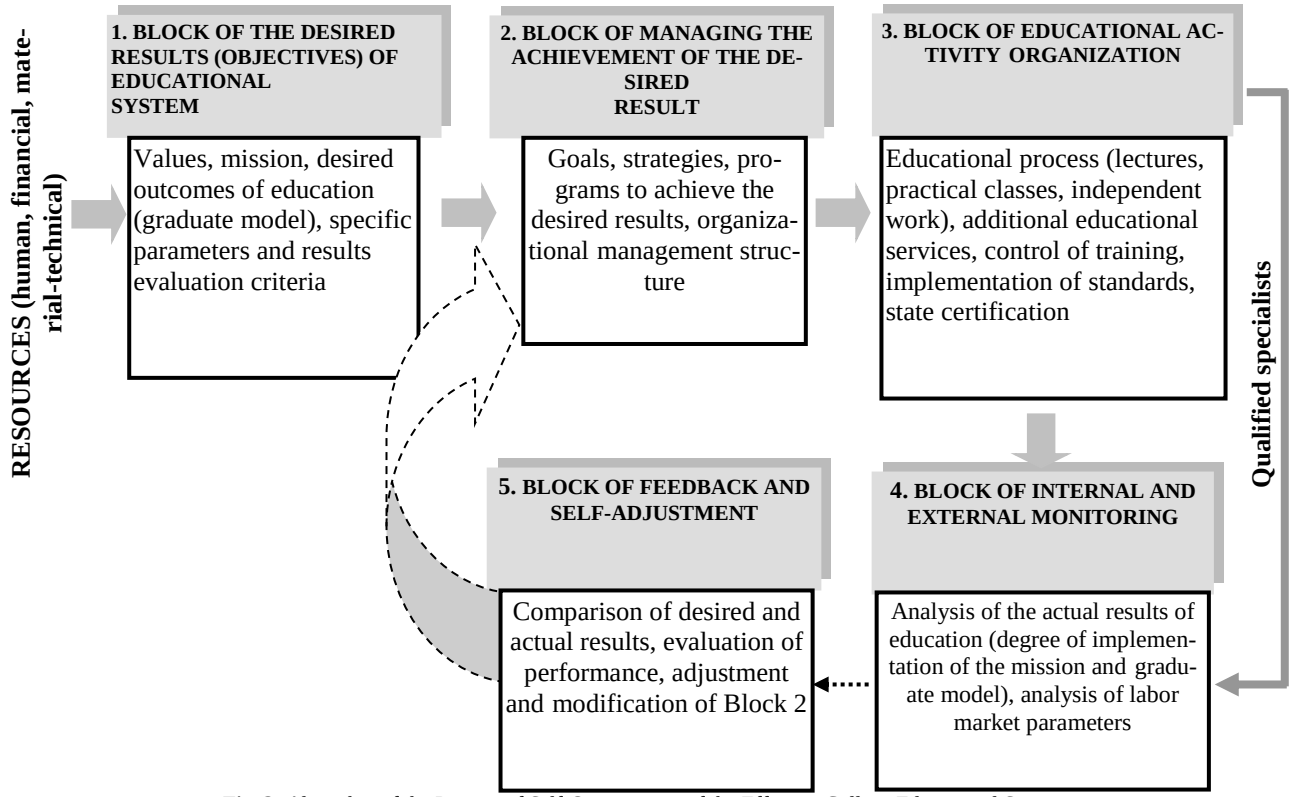


Fig. 2: Algorithm of the Process of Self-Organization of the Effective College Educational System.

Values, mission, desired results of education, specific parameters and criteria for their evaluation serve as the starting information on the basis of which the management process is organized to achieve the desired result (goal) of the educational system. Block 2 allows forming a controlling effect on a really functioning educational process. Block 3 includes the implementation of a group and individual educational process in accordance with the state standard, a set of additional educational services aimed at increasing the competitiveness of a specialist in the labor market, knowledge control, and state certification. Blocks 1, 2, 3 form the usual cycle of management of the educational system. By introducing Blocks 4 and 5, the conventional control scheme becomes a self-organized management process of achieving the desired outcome (goal) of the college educational system with feedback and self-adjustment elements that characterize the open-type educational system. Block 4 provides internal and external monitoring through the collection, analysis and preservation of information on the results of specific students' education, the effectiveness of pedagogical activity, the degree of mission implementation, objectives, specific programs to achieve the desired results, i.e. accumulation of necessary information, allowing to compare the desired and obtained results.

It is important to constantly monitor the labor market in order to identify specialties in demand or individual training areas that directly affect the competitiveness of the graduate specialists. A special place in the algorithm is assigned to Block 5, since it provides analysis, optimization and self-adjustment of factors affecting the effectiveness of the educational system. The task of increasing the effectiveness of the educational system is solved by changing the structure of Block 2, which includes the goals, strategies and specific programs to achieve the desired results.

In this case, the professional-personal model of the graduate corresponding to the educational and professional standard acts as a kind of analyzer of the level of effectiveness of the educational system. The proposed algorithm allows ensuring successful communication with the modern labor market.

5. Discussions

The analysis carried out in the course of the study showed that at present, the conceptual model of the process of self-organization of the effective college educational system is not developed in pedagogical theory and practice. In particular, the key competencies of the college educational system which generate the dynamic capabilities necessary to implement the basic principles, are not identified, and it is not determined what conditions and tools are required for this. It is with key (core) competencies that the opportunity to realize the process of self-organization of an effective educational system is linked, which finds recognition in the labor market and among social customers.

It should be noted that the process of self-organization of an effective educational system includes many interrelated components: the analysis of a specific educational situation, goals, principles, strategy, organizational and pedagogical support, the mechanism of self-development, scientific, methodological and technological tools. To solve the problem of achieving the desired result (goal) of the educational system in the labor market it is necessary to continue research that creates the prerequisites for the substantiation of the theoretical and methodological foundations that determine the logic and technology of the process of self-organization of the effective VET educational system.

The aspect of self-organization in the formation of the effective VET educational system is not yet given a proper scientific justification, therefore the idea of creating conceptual theoretical and methodological foundations for the process of self-organization of the VET educational system in the study described above is accepted as the leading one. It is legitimate to expect that the development of conceptual theoretical and methodological foundations that take into account the needs of society and of the modern labor market will give the educational systems of vocational education a certain stability and increase their effectiveness.

Studies aimed at identifying and developing the basic theoretical and methodological provisions of the process of self-organization are relevant and practically meaningful, since they are called upon to overcome the key contradiction highlighted above in solving the problem of achieving high results (high degree of achievement

of the desired result in the preparation of competitive workers in demand on the labor market specialists) of VET educational systems, concretized by the contradictions that currently exist in the professional education at the following levels:

- Socio-pedagogical – between the demands of society and the actual results of the educational activities of VET;
- Scientific and pedagogical – between the availability of conceptual approaches to the idea of self-organization as a source and basis for the evolutionary development of social and humanitarian systems and the lack of a methodological basis for the process of self-organization of VET educational systems aimed at developing a mechanism for self-development and achieving the desired result in the current socio-economic situation;
- Scientific and methodological – between the increased requirements for the practice of VET functioning and the absence of theoretical justification of goals, basic principles, the mechanism of self-development, organizational and pedagogical support, scientific methodological and technological tools of the process of self-organization of their educational systems.

The presence of these contradictions and the socio-pedagogical orientation of the problem under study determine its practical significance.

6. Conclusion

It is established that the preparation of a competitive specialist that meets the requirements of employers and is in demand on the labor market in the current socio-economic situation is possible only with the appropriate self-organization of the educational system.

Based on the revealed regularities and the developed concept of the process of self-organization, a corresponding model designed to ensure the ability of the educational system to self-development, feedback and communication with the labor market was designed. A significant feature of the model is the focus on realizing the preparation of highly qualified specialists in demand on the labor market, capable of professional adaptation and career growth.

A set of principles on which the process of self-organization of an effective educational system is based was developed and theoretically justified. The key competencies of the educational system were identified, which consist in the integration of various abilities to form the mechanism of self-development and generate the dynamic possibilities necessary for the practical implementation of the principles substantiated in the study.

The necessary scientific, methodological and technological tools for this are purposeful and systemic in nature.

As a result of the research, an algorithm for the process of self-organization of an effective educational system capable of promptly responding to changes in the current social and economic situation and the demands of society was designed.

The obtained results can serve as a theoretical basis for further scientific research in solving practical problems of increasing the effectiveness of educational systems.

In terms of future studies, it is of interest to develop standards for the effectiveness of educational systems, to identify and predict key factors for their self-development in a changing socio-economic situation and the external environment.

7. Recommendations

The proposed model and algorithm for the formation of self-organizing educational systems that are able to respond quickly to changes in the current social and economic situation and the needs of society can be useful in practical activities for vocational education, as well as for students and post-graduates of vocational pedagogical universities, faculties, colleges and technical schools.

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