

DETERMINATION OF EDUCATIONAL SYSTEM DEVELOPMENT IN HIGHER INSTITUTION

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ABSTRACT

The article deals with the problem of determination as a process of intensive development of educational system. The multiple-values form of determination is described in the article, as well as direct and indirect factors, influencing the development of any system. The educational system of higher education institution is presented as a self-determined, self-sustaining and self-stimulated structure in the article. The determination of educational system is discussed on different levels. It is proved that the development of educational systems is determined by external and internal factors. Among the most important internal factors are the mentality of the university management and teaching staff, the experience in professional and educational activities, internal resources of an educational institution and others. Among the most important external factors are the following: state policy in relation to education and culture; financial, material, technical, human and information resources available to the educational system from the external environment and others. The allocation of factors of high school educational system intensification suggests the basic paradigm of the educational system of high school determination that is described in the article.

KEY WORDS: Educational system, determination, self-determined structure, fluctuations, bifurcation processes.

YÜKSEK KURUMDA EĞİTİM SİSTEM KALKINMASININ BELİRLENMESİ

ÖZ

Makale, eğitim sisteminin yoğun bir gelişim süreci olarak belirleme sorununu ele almaktadır. Kararın çoklu değer biçimi makalede ve ayrıca herhangi bir sistemin gelişimini etkileyen doğrudan ve dolaylı faktörlerle açıklanmıştır. Yükseköğretim kurumunun eğitim sistemi, makalede kendi kendini belirleyen, kendini idame ettiren ve kendi kendini uyaran bir yapı olarak sunulmaktadır. Eğitim sisteminin belirlenmesi farklı düzeylerde ele alınmaktadır. Eğitim sistemlerinin gelişiminin dışsal ve içsel faktörler tarafından belirlendiği kanıtlanmıştır. En önemli iç faktör arasında üniversite yönetimi ve öğretim kadrosunun zihniyeti, mesleki ve eğitim faaliyetlerindeki deneyim, bir eğitim kurumunun dahili kaynakları ve diğerleri yer almaktadır. En önemli dış faktörler arasında şunlar vardır: eğitim ve kültürle ilgili devlet politikası; Mali, maddi, teknik, insani ve bilgi kaynaklarını dış ortamdan ve diğerlerinden eğitim sistemine sunmaktır. Lise eğitim sistemi yoğunlaştırma faktörlerinin dağılımı, makalede anlatılan lise tespitinin eğitim sisteminin temel paradigmasını göstermektedir.

ANAHTAR SÖZCÜKLER: Eğitim sistemi, belirlenmesi, kendini belirleyen yapı, dalgalanmalar, bifurkasyon süreçleri.

INTRODUCTION

The determination as a process of intensive development of educational system of higher educational institution means some objective factors of interrelations and interdependences of events and processes which are determined as a basis of structural and functional changes that influence the educational results. The notion of causality is the core of determinism doctrine.

The study of the determination system will start the development of the theoretical concept of intensive development of educational system management. "Undoubtedly, the reason is the Theory of Change", - says M. Bunge (Bunge, 1962).

All factors and reasons, influencing the development of any system, can be divided into direct and indirect. The interaction of these two kinds of reasons form the system of determination consequently its result. Direct reasons themselves cause the changes in any system. Indirect reasons don't cause any changes in the system. They act as stimulators, accelerators, motives, purposes - as an impulse force, in short.

It is known that the sequence of determination is that a reason always precedes a consequence. The time interval between the cause and the consequence can be different but it always exists. At the same time the existence of temporary sequence between any processes or events can't be considered as the basis of the cause-and-effect relationships between them.

Causality reflects objectively existing connection and dependence between the transitions of "possible" into "real". This connection is not simple, it includes the realization of different possibilities. Taking into consideration what was said above, the concept of causality reflects two parallel and identical processes: the objective choice of one concrete condition of an object from a set of possible conditions (it will be interpreted as a reason) and its realization; the described process involves another "choice" of one concrete condition from various conditions of another object (it will be interpreted as a consequence) and also its realization. Causality doesn't appear as a necessity but as the so called unity, synthesis of need and chance.

We are not going to describe famous types of determinism but we have to mention that in some complex systems, such as a higher educational system, a multiple-valued form of determination is realized. This system of determination is based on flexible, complex cause-and-effect relationships. Simplicity and complexity, chance and need interweave in a complicated manner.

Such type of determination influences not only system changes of the object (the reason) which affect the changes in another object (as a result of the action of the reason) but also shows backward process of determination (the reaction of the changing object) which influence the changes in the first object. Multiple-valued determination includes not only external reasons but also internal. The quality of internal determination is the capacity of the system to influence itself. This capacity is explained by inner interaction between the components of the system. Multiple-valued determination is also connected with self-development of the system, self-study and motivation (Deci, 1991). These processes lead to special system quality such as selectivity to external influences and thus ambiguity of consequences of external and internal reasons.

BIFURCATION PROCESSES IN EDUCATIONAL SYSTEM

The educational system of higher education institution can be presented as the self-determined structure (in the main aspects of functioning and development tendencies (Beacco, 2010)), self-sustaining and self-stimulated. Dissipative structure development can be defined taking into account the nature of the determination as the self-movement, own internal and necessary change of the system generated directly by its self-contrast and caused by the mediated influence of external determinants. The influence of external determinants on the educational system development depends on the level of any system development of, the level of its self-organization. The less developed system there is, the more role in its development some external managing influences play and the less role is of internal determinants. In highly-developed educational systems external factors play only the role of conditions and starters. They separate, strengthen or slow down the internal processes of the system.

Based on a synergetic paradigm of educational system development we consider that the process of selection is a main factor of any self-organized system which includes the thesaurus, the detector, the selector and some attractors (Prigozhin, 1986).

The thesaurus is a set of options from which the selection of one option is realized and then used in a dissipative structure. The more options we have (the wider the thesaurus), the more chances there are to select something valuable from the point of view of those who carries out the selection. The expansion of the choice field is achieved on the bases of subjects' different ideas generation, various opinions, approaches. The organizational bases of thesaurus widening is the use of multi-subject managing interaction in educational system.

The choice of one of the alternatives from the thesaurus of potential ways of development made by a self-

organized system is not carried out randomly. The high quality rise from one state of the system to another one is determined by internal interaction of elements of educational system which plays a detector role. Between components of system there is a competition towards the choice of concrete alternatives, or cooperation that means that some joint actions are used to uphold the certain alternative.

The final result of selection of options is defined not only by one of the interacting factors or components but by their equally effective superposition (imposing). This equally effective position is determined by qualitative and quantitative characteristics of interaction. It depends on distribution of cooperative tendencies or "balance of forces" that defend this or that alternative.

The third factor of the choice is a selector. The selector represents a determining principal, the rule, the norm according to which the choice is made. In the self-organized systems the principle of stability most often plays the role of selector: the system seeks to select such alternatives and the ways of development which realization leads to increase the stability of the system, provides minimization of resources expense. The quantitative changes reflecting an extensive form of development, collect in the system and reach some values which are called thresholds. If thresholds go over limits the process of bifurcations appear (branching).

In the system a possibility of development in different scenarios appears, it helps to realize alternative bifurcation structures. According to the law of stability preliminary sorting of options in development, their preliminary selection is made. The interaction of system components, which is shown in the form of fighting for the realization of this or that bifurcation structure, provides the final choice of one of the alternatives. Its realization leads to high quality change of the system condition (intensive development).

The process of social selection becomes too complicated in such social systems the elements of which are complex dissipative structures (i.e. the structures in which there is a constant exchange with environment of energy and information); possessing the properties of self-action, self-change of the components' properties; and also the change in generations and components are periodically replaced with similar ones in generative systems. The educational system of higher educational institution is exactly such kind of system as we can consider each element of this educational system including the subjects of educational process as a dissipative structure. Bifurcation processes happen not only at the all-system (all-high school) level, but also at the local level that considerably complicates the selection process, increases unpredictability of the ways to develop the educational system. The main components of such systems are people; they possess the ability to change the properties, characteristics, positions in different situations thanks to the unique personal relation to these or those phenomena and the influence of various information on them. All these provokes uncertainty, changes "the ratio of forces" during the selection process. In any educational system there is constantly a rotation of personnel potential and there are always the components similar with those which are left but not absolutely identical with them.

As for fluctuations, in relation to educational systems they take the form of the groups which work independently in an experimental format; of author's programs and educational activity technologies implementation; of students' teaching using individual programs and author's self-development systems. At the macroscopic level fluctuations are shown in the form of innovative ideas which are beyond some settled views, approaches, representations; in the form of teachers' and students' excess activity; in the form of nonconventional approaches to administrative tasks solution and creative decisions adoption.

Fluctuations perform the orientation role in the development of social system. The system development is always carried out based on the selection of the most appropriate option from a set of possible variants of development in the bifurcation points, or otherwise - on the basis of the decision making process. The decision making process is conducted most commonly in a situation of uncertainty. To reduce the risk when choosing a line of development of the social system, and to find the most optimal solutions, it is required to conduct a practical testing of the effectiveness of different options through their application not to the entire system, but to its elements. Such testing is carried out through the fluctuations. Experience shows that the same fluctuation patterns can be either progressive and effective for the development of the social system, or inefficient, depending on the conditions that are created for their implementation and development. Therefore, only those fluctuation structures, which are in demand at the present time, and respond to the kind of issues, that should be solved by the social system, are developed and expanded. While assessing the

effectiveness and progressiveness of a fluctuation structure, it is very important to define its role in meeting the new challenges, that arise due to the changes in the environment, and that could not be effectively solved by the existing organizational structures.

A very important part in the selection, in this context, is played by the attractor that is the vision of the subjects of the educational process of an ideal dissipative structure, towards which the educational system must evolve. According to E.N. Knyazeva and S.P. Kurdyumov, the role of the whole-system attractor is that it reflects the future state of the system (environment) and "draws together, organizes, creates, and modifies, in a way, its current state" (Knyazeva and Kurdyumov, 1992) and thereby enables the integration of the actions of the subjects, aimed at the development of the educational system.

Thus, from the standpoint of a synergistic approach, by the development of the university educational system we mean a regular, permanent, socially and internally determined self-movement of this system towards the improvement of its stability, organization, and efficiency of its operation, adaptation to the conditions and requirements of the surrounding environment, carried out through the social selection mechanisms, such as: the expansion of the thesaurus, detector, selector, attractors and the resolving of the system's inherent internal conflicts.

GROUP OF FACTORS TO INTENSIFY HIGH SCHOOL EDUCATIONAL SYSTEM DEVELOPMENT

The concept of the determination of the development of the educational systems would not be complete without the distinguishing of the relevant set of factors of the intensification of the development of the educational system of high school (Evan, 2013), which we divided into five groups.

Into the first group of factors we include scientific and technical ones, as well as scientific and technological factors. They are associated with the development of scientific and technical progress in the modern world; the use of science in the educational process as a "direct productive force"; the development and introduction of new educational technologies; the use of the latest means of communication such as computers, etc.; the involvement of teachers and students into research work. The most important of these factors include the computerization of the educational process; the use of Internet technologies, satellite television and multimedia; the use of distance learning; the construction of the educational process on a scientific basis; the use of modular and project-based learning; the involvement of teachers and students in scientific and academic research, and others.

The second group of factors directed to intensify the development of the educational system we call organizational management. Among them we indicate such pedagogical processes and phenomena that are associated with the educational activities organization, the mobilization of resources to ensure development of the educational system, with the rational use of these resources, innovative team activity, the coordination of the activities of educational subjects, personnel management, resources and processes that lead to an acceleration of the pace of reforms, to a significant improvement in the quality of education and subjects' life. Among such factors we include the following: changes in the nature of administrative interaction from monosubjective to polysubjective; transition from situational control of the educational system to the strategic one; the system of teachers' and students' innovative, experimental and creative activities stimulation; rating of their activities; the insurance of unity in the actions of education subjects through the use of system-wide attractors; restructuring of management; pedagogical monitoring of project activities and students' professional and personal development and others.

The environmental factors are included into the third group. Here there are such objects, phenomena and processes of internal and external environment that influence the intensification of the educational system of high school by the revitalization of educational subjects, their workability, productivity and creativity improvement. This group of intensification factors includes the intensification of the subjects in the external environment in order to use its resources for the educational system development; the creation of creative atmosphere in educational and other institutions; the use of health-keeping technologies to improve work efficiency of the educational activity subjects; facilitation establishment of relationships between the participants of education; aesthetization of environment and labor.

The fourth group consists of personal factors which include the improving of cultural and professional level of teachers; the creation of the most favorable conditions for teachers' and students' self-realization; providing students with the opportunities for the development of their individual educational trajectory; assisting teachers and students in the design and implementation of their professional career; using polysubject reflection of educational and professional activities.

The fifth group of factors form socio-economic factors. The most important of them include the level of public funding of educational institutions; teaching staff wages prevailing in the region; the efforts of competitors in the market of educational services; demographic situation in the region; mentality of the population; educational and cultural centers in the region and the quality of their work.

As it is known, the development of educational systems is determined by external and internal factors. The most important internal factors that contribute to the process of intensive educational high school system development are the mentality of the university management and teaching staff; the experience in professional and educational activities; internal resources of an educational institution; management nature of the educational system. The following characteristics of the mentality strongly influence the intensity of educational system development: pedagogical thinking and management paradigm; pedagogical values, target activities setting; predisposition to innovational or traditional activities; the dominant style of management interaction (monosubjective, collegiate or polysubjective) and leadership (authoritarian, democratic or liberal); behavior strategies.

The most significant teaching experience characteristics for the intensive development of a high school educational system are legal university status; its image; the dominant type of professional pedagogical activity (reproductively-performing, locally rationalistic or system-innovative); a technology used in educational process (extensive or intensive); pedagogical staff culture; the spiritual climate in the team.

The following characteristics of internal resources influence the tempo of high school educational system development: the priority of use, focus on the key problems of educational system development; the volume of investments into educational system development, innovative and experimental activities, into researches in the field of cultural and educational activities at the university in accordance with its strategic development concept, into promotion of effective innovations; provision of educational process and management of computer facilities and appropriate software; availability of network information resources and providing access to all educational subjects to the Internet; the presence of talented scientists, practitioners, capable to lead scientific schools, research laboratories, temporary research teams, to ensure scientific management of projects and programs and to succeed.

The researches in management theory show that the intensity of social systems development is crucially dependent on the human factor, and, above all, on the degree of common workers' creative potential use in these systems development and their inclusion into university management.

The most important external factors that have a significant impact on the process of intensification of the educational system of high school are the following: state policy in relation to education and culture; financial, material, technical, human and information resources available to the educational system from the external environment; the number and level of graduates of secondary schools and institutions of further education of culture and art; competition in the market of educational services in the region; employers' requirements for specialists; level of education and culture in the region.

External factors intensify the development of the educational system, they are manifested at the macro-, meso- and micro-social levels. Macro-level determination represent the socio-economic and spiritual processes which are taking place in the country, the development of higher education system and cultural process. All these terms reflect a social order of the educational system and ensure a certain degree of resource provision and regulate the activities of educational institutions.

External factors intensify the development of the educational system of the university related to mesosocial level of its determination and constitute the conditions, reflecting the peculiarity of a particular region, special features of regional educational systems and cultural processes. We should include here the level of cultural development in the region as well, the presence of regional institutions of culture and art and the

skill of professional and amateur artists, painters, designers, librarians, staff requirements; resource support of the university by the regional authorities; the level of competition in the education market, the regional needs for cultural services.

Microsocial level of external determination of the process of university educational system intensification reflects the impact of this process on the founders, specific institutions, parents, students, sponsors.

BASIC PARADIGM OF HIGH SCHOOL EDUCATIONAL SYSTEM DETERMINATION

So, the allocation of factors of high school educational system intensification suggests the basic paradigm of the educational system of high school determination and work direction for this process organization including:

- educational activity construction in accordance with the trends of cultural process and higher education development in the region, country and in the world in general;
- open education realization, maximum use of the educational institutions resources as well as the environment for the development of educational system subjects;
- the inclusion of all subjects of educational field into experimental, innovative and creative activities;
- ensuring maximum of freedom in subjects' actions on the basis of the transition to decentralized management structures and implementation of polysubject administrative interaction;
- achievement maximum of efficiency in the joint activities of educational process by providing targeted, semantic, and technological criterion of unity through the use of system-wide attractors.

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