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ПЕДАГОГІЧНЕ МОДЕЛЮВАННЯ ОСВІТНЬОГО СЕРЕДОВИЩА УНІВЕРСИТЕТУ В УМОВАХ ЄВРОІНТЕГРАЦІЇ

PEDAGOGICAL MODELING OF EDUCATIONAL ENVIRONMENT OF THE UNIVERSITY UNDER THE CONDITIONS OF EUROPEAN INTEGRATION

Статтю присвячено розгляду педагогічного моделювання як феномена модернізації освітнього середовища університету, що відповідає суспільним викликам і вимогам європейського інтеграційного процесу; розкрито й розширено сутність педагогічного моделювання в контексті дослідження; виокремлено й охарактеризовано найпоширеніші типи педагогічних моделей: педагогічні моделі освіти як цінності, педагогічні моделі освіти як системи, педагогічні моделі освіти як єдність процесу і результату; подано авторське бачення сутності педагогічного моделювання освітнього середовища університету, яке полягає у відображенні особливостей існуючої педагогічної мети, алгоритму в спеціально створеному об'єкті, а також освітнього середовища, що є сукупністю матеріальних чинників навчально-пізнавального процесу, міжособистісних стосунків, які встановлюються між суб'єктами педагогічної взаємодії; доведено, що системний підхід у процесі педагогічного моделювання є ефективним і перспективним для соціалізації та самореалізації особистості в умовах євроінтеграції.

Ключові слова: модель, моделювання, педагогічне моделювання, освітнє середовище, університет, євроінтеграція.

The article deals with the pedagogical modeling as a phenomenon of the university's educational environment modernization which corresponds to the social challenges and demands of the European integration process. The article describes pedagogical modeling has several aspects of application as follows: epistemological, which states that a model is an intermediate object in the process of understanding the pedagogical phenomenon; general methodological, which enabled to assess the relations between the characteristics of the state of the various educational process elements at different stages of their description and study; psychological, which enables to describe various aspects of educational and pedagogical activities, and identify, on this basis, psychological and pedagogical patterns. Modeling of educational activity at the university carried out on the basis of the described components is offered as a variant of models. The definitions of an educational environment of a certain higher educational institution (university) have been analyzed, which made it is possible to conclude that such an educational environment is a combination of material factors of the educational process and interpersonal relations, which are set up by the subjects of education in the process of pedagogical interaction. The article also confirms that the analysis of the practical activity of higher educational institutions (in particular, Kyiv International University) in the process of pedagogical modeling a system approach is very effective. Therefore, depending on the psychological microclimate, the educational process can take place in an atmosphere of interaction and cooperation. The text as well proves that high-quality educational environment can exists only under the condition of equal access to educational resources for each person in a convenient way and time.

Key words: model, modeling, pedagogical modeling, educational environment, university, European integration

Since each civilized state requires competent and competitive specialists, new requirements for the quality of the educational process and its results are being set under the modern conditions of social and political transformations. The implementation of reforms in the education system of Ukraine is primarily connected with the need to address a number of system problems that have become more urgent during the last decade. We fully agree with the statement, which is often claimed by politicians, economists, as well as scholars, that the modernization of society should also include the reform of education, the main result of which is the willingness and ability of young professionals to be responsible for social well-being. Therefore, the reforms in the different life spheres require setting of personal and life values, developing of strong responsibility and professional competence. Moreover they should be performed on high spiritual level. Taking into account the above mentioned special attention is focused on the quality of professional and higher education, the main task of which is to prepare specialists of different levels and qualifications for certain economic fields of our country. It is the system of higher education, pursued by students at universities, which guarantees fundamental, cultural preparation along with sufficient practical training of specialists who in their turn must influence the pace and level of the scientific, technical, economic, social and cultural processes, and formation of society intellectual potential. [Bratko, 2017]

We are convinced that all the modernization processes we face are primarily aimed at identifying effective ways of reforming the quality of education, since this aspect remains relevant and unsolved. The issue of education quality is also determined by the change of its mission in society, the qualitative characteristics of pupils and students, the requirements and expectations of stakeholders regarding the results of the educational process, since 'the millenniums', or 'generation Y', as they are called by sociologists, have other approaches to work and career than previous generations. Moreover, higher educational institutions deal with other generations – 'generation Z' or 'Homelanour', 'Homeland Generation', and 'New Silent Generation' – people born after 2000 [Volovych, Tarasenko, Zaharchenko, 1998]. Representatives of this generation are actively using a variety of gadgets, due to which they are often referred to as "digital people." They seek to be engaged in science, technology, and art; be careful of money and how to spend it; give preference to a healthy lifestyle, etc. Taking into account the above-mentioned objective factors, institutions of higher education need to change their approaches to improving the educational environment, which would meet the needs of the time and the demands of an individual.

For further continuation of the relevant information presentation it is necessary to pay special attention to the fact that more and more studies related to the modeling of the structure and conceptual characteristics of certain aspects of the educational process within the national, social and cultural spheres at the levels of secondary and professional education are becoming prevalent. It is also very important to pay much attention to the modern studies held in the following spheres: creation of a personality-oriented educational environment that would take into account rapid informatization, development of digital libraries, digital publishing, the ability of the youth to master new technologies very quickly, growing importance of the Internet-education; as well as the active introduction of qualitatively new forms and methods of training and education, individual educational programs for each pupil/student, a fundamental change in the role of a teacher/professor in the education system; the need for reorganization of the structure of curricula and programs, the creation of new models of university campuses; increasing the number of mass open online courses and their popularity, providing greater interest in dual education,

strengthening autonomy and democratization of the educational process, transition to a continuous education system, etc.

Our scientific research is **aimed** at revealing the essence of the pedagogical modeling of the University's educational environment in an open society. Hence it is necessary to give more details when defining the content of the concept of 'modeling', which is quite frequent in both commonly used and scientific lexicon. Modeling in pedagogy in compared to the other spheres of human knowledge has its own peculiarities. According to V. Miheev, pedagogical modeling has several aspects of application, in particular:

– epistemological, which states that a model is an intermediate object in the process of understanding the pedagogical phenomenon;
– general methodological, which enabled to assess the relations between the characteristics of the state of the various educational process elements at different stages of their description and study;
– psychological, which enables to describe various aspects of educational and pedagogical activities, and identify, on this basis, psychological and pedagogical patterns [Miheev, 2005, s. 8].

Each of the above mentioned aspects of modeling allows to formalize qualitatively different aspects of a pedagogical phenomenon (object or process) for the study of content and technological interpretation as well as creation of managing (influencing) mechanisms. The object of pedagogical modeling is usually the content of education, since its model design is a reflection of the developers' ideas on the implementation, through the content improvement and its conceptual approaches, of the objectives of education in accordance with those guidelines and needs of society as a whole, and a person in particular. In this context, it is necessary to highlight two well-known secondary education models – technocratic and practice-oriented. These are the models which determine the essence of pedagogical modeling of the educational environment in higher educational institutions. On the basis of the above mentioned considerations, modeling is defined as the process of creating an imaginary or material-implemented system that displays or reproduces an object, and is capable of executing it in such a way that its study expanded the information about the object.

A thorough analysis of Ukrainian and foreign sources on the outlined problem made it clear that A. Bratko, O. Bereziuk, O. Vlasenko, O. Pyrogov, I. Osadchyi, V. Shtoff and others studied human modeling in a very substantive manner. 'Model' is an "abstract representation of theories, its operationalization, which can be conveyed empirically" [Chernilevskyi, Tomchuk, Dubaseniuk, Antonova, 2012, s.339]. The main requirements for constructing the model are its adequacy, i.e., the correspondence with the reality, the essential properties of an object. Hence the conclusion – displaying of objects is called models, and the process of their creation – modeling. In general, modeling is a "scientific method of understanding phenomena or processes by reproducing their characteristics on other objects, models specially created for this purpose [Chernilevskyi, Tomchuk, Dubaseniuk, Antonova, 2012, s.337]. Modeling as a universal form of knowledge is used in the study or transformation of phenomena in any field of activity. The aim of modeling is to create a model of a real object. We are convinced that the use of functional modeling for constructing a model of higher education allows to make a more profound analysis of higher education, as well as to unify the procedure itself.

Theory of modeling and the logic of constructing the educational systems and processes models in the psychological and pedagogical scientific literature were described

in the works of Yu.Babanskyi, O. Bereziuk, P.Galperin, V. Davydov, O. Dubaseniuk, V. Kraevskyi, Yu. Kuliutkina, I. Lerner, V. Onyshchuk, I. Podlasyi, M. Skatkin and others. Under the term "modeling" we mean the process of creating a system description, the component of which is a 'process', i.e., a set of interconnected and interacting activities allowing representation and description of the full range of educational processes in the educational institution at any stage of detail, provision of an accurate description of modeled objects, optimization of interaction and mutual understanding between the participants who are planning the educational process [Bratko, 2017].

The essence of the term 'pedagogical modeling' is defined as a reflection of characteristics and features of an existing pedagogical aim in a specially created object, which is a pedagogical model [Kraevskiy, 2006]. On this basis, we have developed an algorithm for pedagogical modeling of the university's global environment at certain stages, which are mandatory for achieving an expected result, namely:
 – setting goals and tasks of modeling;
  – formulation of an object and subject of modeling;
  – identification of legislative and normative provisions of the modeling object functioning;
  – choosing a theory that describes (explains) the essence of the subject of modeling;
  – substantiation of the basic hypotheses simplifying a real object;
  – formation of modeling conceptual apparatus;
  – constructing an object model using categories, concepts, statements and judgments;
  – examination of an object model as to the respect to the principles of scientific knowledge, laws of logical thinking, current legal and financial norms, etc.;
  – studying the features of the model (adequacy and completeness of the reality reflection, prognostics, etc.) through the implementation of a mental or natural experiment when solving certain pedagogical problems using the developed model;
  – refinement, adjustment and final design of a model.

Studying the pedagogical modeling of the educational environment of the university, we should note that under modern conditions of European integration, the following models are universally recognized: ecological and personal (V. Yasvin); ecopsychological (V. Panov); communicative (V. Rubtsov); anthropological and psychological (V. Slobodchykov); psychodidactic (V. Lebedeva, V. Orlov); model of the educational environment as a certain educational environment of a certain educational institution (Yu. Kuliutkin, V. Novikov, N. Bordovska).

Based on the definitions given in psychological and pedagogical sources and scientific studies, there should be a conclusion on the existence of the most common types of pedagogical models, which include: pedagogical models of education as value; pedagogical models of education as a system; pedagogical models of education as a process; pedagogical models of education as a result [Osadchyi, 2013].

We consider that the most expedient from a practical point of view on the modeling of the educational environment of the University in the context of European integration are two pedagogical models of education as a process and as a result complementing each other.

Pedagogical model of education as entity of process and result can be presented in a a scheme (Fig. 1).

PA

S_1 S_2 , where
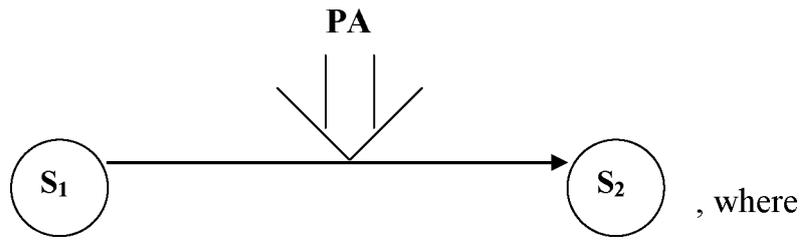
S_1 – initial state of an object
S_2 – final state of an object
PA – pedagogic activity

Fig. 1. Model of education as entity of process and result

The complex object (in our case, the educational environment of the university), which is presented in the pedagogical model, can be presented analytically using an information synergistic model, namely:

$S_a = <\{a_1, \dots a_i\}, \{b_1, \dots b_m\}, \{x_1, \dots x_k\}>$, or

$S_a = <\{b_1, \dots b_m\}, \{x_1, \dots x_k\}>$, or

$S_a = <\{x_1, \dots x_k\}$,

where S_a – arbitrary system (actualized reality);

a_i – state micro parameter;

b_m – state macro parameter as an integrated characteristic of the array of micro parameters a_i;

$x_k = f(b_1, \dots b_m)$ – law of self-organization (organizational principle) as a functional dependence between state macro parameters b_m;
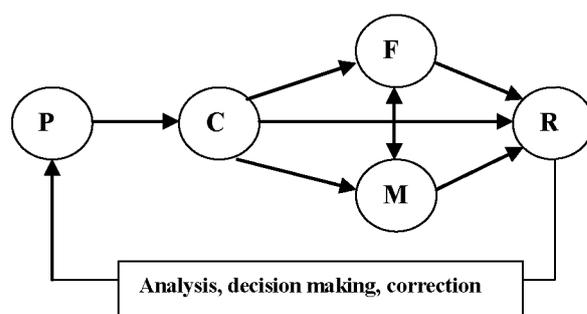
$k\hat{I}N, i\hat{I}N, m\hat{I}N, k<m<i$.

It is also possible to use the graphic model of a complex object, which is a university for polyfunctionality (Fig. 2).
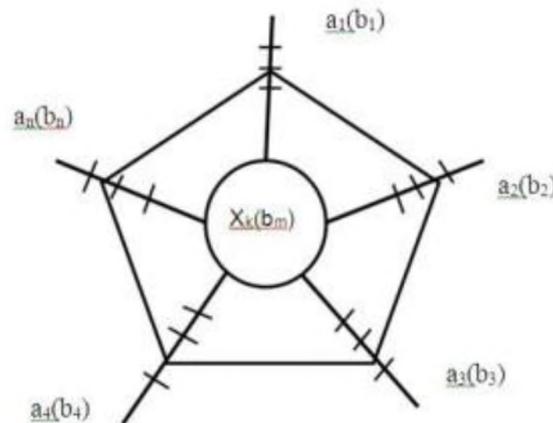
Fig. 2. Graphic model of a complex object

Pedagogical interaction at the university can be submitted by the classical activity model (Fig. 3).

o, where

P – purpose of activity
C – content of activity
F– form of interaction
M – method of interaction
R – result of activity

Fig 3. Classical activity model

According to the given classical model, the purpose is "an ideal thought-provoking result of activity" [Bereziuk (red.), 2013 s. 1486]. If the purpose is complex, then it is revealed through a set of tasks – the results of activity at intermediate stages, in certain areas (directions), etc. The content of the activity is something "described, in particular the application of their work in a certain system" [Prohorov (red.), 1989, s. 161]. Activity is the ability of a person to make changes (predictable results), mediated by the ideal (purpose), in the reality. Form is a way of organizing, existence of content. Content and form "are interconnected components of a single process of content self-formation, transferring one into another" [Prohorov (red.), 1989, s. 161]. Method is a way of practical and theoretical human activity; way to achieve the purpose; somehow organized activity. Result is quantitative and (or) qualitative changes in the object of activity. Quantity is a category that expresses the external definition of an object: its size, number, volume, degree of features development, etc. [Kremen (red.), 2008, s. 607]. Quality is the notion that "expresses essential certainty of an object, due to which it is exactly what it is, and not the other"[Kremen (red.), 2008, s. 567].

Modeling of educational activity at the university carried out on the basis of the described components is offered as a variant of models. The urgency of the study of the university's educational environment in order to increase the professionalism of future specialists is also confirmed by the fact that today there are more than a hundred definitions of a key concept of 'educational environment' in the scientific literature, therefore the wording of the author's understanding of the phenomenon of the university's educational environment is based on the results of the analysis of scientific views on the phenomenon studied, presented in the writings of modern Ukrainian and foreign psychologists and educators, namely: V. Avdieieva (content of the educational process concept) by O. Artiukhina (educational environment as a pedagogical phenomenon), I. Arendarchuk (educational environment as a factor of psychological and pedagogical risks), I. Baieva (educational environment of school), G. Bieliaieva (educational environment in different types of educational institutions), S. Bratchenko (environmental expertise), V. Bykova (educational system and educational environment models), E. Vasylieva (educational environment as an object of management), N. Gontarovska (conceptual basics for the innovative environment creation), and others.

Therefore, there are many interpretations of the essence of educational environment. In particular, Yu. Ananina believes that the educational environment is a "combination of influences and conditions for the formation of an individual, as well as opportunities for his/her development, which can be found in his/her surrounding" [Ananina, 2013, p. 26]. According to V. Yasvin, educational environment is a "system of influences and conditions for the formation of an individual in a certain way, as well as opportunities for his/her development, which are contained in the social and spatial-subject environment" [Rapatsevich E. (sost.), 2001, p. 140]. L. Redko defines educational environment as a "set of possibilities for satisfying the student's professional and educational needs for the development of his professional competence" [Redko, 1996, p. 27]. V. Bykov and V. Kremen state that educational environment of a higher educational institution is a subsystem of a pedagogical system, artificially constructed with purpose in an educational institution certain substantial space surrounding a student, in which the educational process is carried out and the necessary and sufficient conditions for its participants are created to achieve the purpose of study effectively and safely [Bykov, 2013, nr 2, pp. 3–16].

Thus, the definitions of an educational environment of a certain higher educational institution (university) have been analyzed, which made it is possible to conclude that such an educational environment is a combination of material factors of the educational process and interpersonal relations, which are set up by the subjects of education in the process of pedagogical interaction. Essential components of the educational environment, according to most researchers, are: flexibility; common features and ability to communicate; great number of events; cultural conformity; vector and sphere orientation; transparency, ability to develop and self-development; system orientation, ability to be organized, structure orientation; socialization; publicity. [[1]; Swee Chiew Goh, 2002; Vidacek-Hains, Appatova, Prats, 2008, pp. 137–144]

The system is not only a real object, but also a cognitive tool, so a systematic approach is a way of our understanding of an object. The need for such a method of study, which would allow comparing the relations between the constituent and the whole, combining a variety of already known and newly acquired scientific facts and phenomena in a general system of concepts, establishing general patterns for different quality pedagogical phenomena, led to the emergence of a new scientific direction called 'systematic approach [Blauberg, Yudin, 1973].

A higher education institution, in our case – a university – is a large system consisting of subsystems: educational process goals and objectives, pedagogical conditions, the number of scientific and pedagogical workers, students, as well as the content and technological provision of educational programs and technologies. The components of an educational system, its main features and peculiarities are the presence of interconnected components, which, being subjected to a single entity, still have some independence, and the hierarchy of system (system exists as part of the system of higher level). For example, a higher educational institution is both a social and pedagogical system and a system-forming component of education. Consequently, the notion 'educational environment' reflects the interconnection of the conditions that ensure education to an individual, is, first of all, a subsystem of the social and cultural environment, a combination of historically formed factors, circumstances, situations, i.e., the integrity of the specially organized pedagogical conditions of personality development. Educational environment is often viewed as a structure that covers several interrelated levels: global, regional, and local [Kremen (red.), 2008]. Educational environment can also

be characterized as a set of social, cultural, psychological and pedagogical conditions, interaction of which results in the formation of an individual.

Analysis of the practical activity of higher educational institutions (in particular, Kyiv International University) confirmed that in the process of pedagogical modeling a system approach is very effective. It involves disclosing the integrity of an object, identifying and studying its internal structure, as well as relations with the external environment, at the same time the object is a part of the real world, which is allocated and researched. Therefore, for the modeling of educational processes it is necessary to know what exactly should be undergo modeling, i.e., to determine the analytical variables of educational processes (elements or object signs that are to be detected, measured and evaluated). Educational process derives from a large number of analytical variables, among which are the following: structural, dynamic, factor, typological, social and technological. The essence of the educational process is reflected in its definition, and the content of each educational process includes three groups of elements that combine educational actions and interactions, the subject of educational actions and interactions, i.e. why they occur, changes caused by educational actions. Variety of forms of educational process is expressed in its specific manifestations under different conditions. Specific forms are inherent in educational processes in the professional training of students, working with adults at various courses, etc. Various forms of education are peculiar for the educational environment. To the most common forms we refer active lectures or lectures-discussions, classes in laboratories, practical and seminar classes, educational tours, etc., as well as individual, group activity, educational interaction; innovative forms of education that are developed by pioneer-professors. Depending on the psychological microclimate, the educational process can take place in an atmosphere of interaction and cooperation, or of indifference and conflict.

Conclusion. It is pedagogical modeling that allows creating a human-centered environment of partners in education at the university, favorable conditions for the socialization and self-realization of an individual. Thus, the extrapolation of pedagogical modeling in the conditions of a particular educational space of the university allows the professional training of a new generation specialists, introducing innovative technologies, improving interaction between people, identifying new landmarks and updating the content, which determines each educational institution dynamic development. We are deeply convinced that a high-quality educational environment will be only under the condition of equal access to educational resources for each person in a convenient way and time, available opportunities to choose an individual path, style and time for study, supporting the efforts of those who seek to share their knowledge, gives the ability to an individual to show his/her achievements in education, effective personal and self-development.

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ОСВІТА АВСТРІЇ: ІСТОРИЧНІ АКЦЕНТИ РОЗВИТКУ

EDUCATION IN AUSTRIA: HISTORICAL DEVELOPMENTAL EMPHASIS

На основі спеціальних архівно-аналітичних матеріалів зроблено спробу розкрити історичні аспекти розвитку і становлення освіти в Австрії. Визначено основні віхи реформування змістового наповнення, зумовлених суспільними, політичними та ідеологічними трансформаціями, які мали місце в той чи інший період становлення та розвитку освіти.

Особливий акцент зроблено на розкритті відомих політичних і громадських діячів, учених-реформаторів у галузі педагогіки, чиї ідеї слугували підґрунтям історії освіти Австрії. Розкрито діяльність Габсбургів у розвитку освіти – зробити Відень центром австрійської імперії; правління Марії Терезії та її сина Йозеф II – що стало початком ідей