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ELABORATION OF THEORETICAL FOUNDATIONS FOR THE CREATION OF THE EDUCATIONAL ENVIRONMENT OF THE EDUCATIONAL INSTITUTION

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ABSTRACT

Informatization of society, the growth of the social role of the individual in the conditions of constant transformation of equipment and technologies require constant development and modernization of the educational environment in order to form and maintain the current level of professional education throughout a person's life. Knowledge and information in modern information society are becoming the main intellectual resource, while the volume and pace of knowledge accumulation are constantly increasing. The paper considers the problem of creating the educational environment of an educational institution and its impact on the quality and effectiveness of the educational process. The educational environment is defined as a set of conditions affecting the development and formation of abilities, needs, interests, and consciousness of a person in common object space. Modern computerization of education is based primarily on the information approach, remaining, in fact, on the "manual" management of learning, which does not allow to fully individualizing this process. The traditional learning objectives in the form of knowledge, skills, and abilities are being replaced by a competency-based approach. The paper provides a classification of didactic training systems in the coordinates of the parameters: the orientation of the learning process, the type of process control, the nature of control. Such a classification is the basis for the focused design of training information systems with specified characteristics in terms of the acquisition of competencies. Based on the training scheme of L. Rastrygin developed a model of communication of knowledge carrier and students in learning system. The model contains parameters of the level of assimilation of knowledge and characteristics of the learning object with reference to the duration of the study of the discipline and allows to develop and evaluate an individual learning path.

Keywords: Educational Environment; Competency-Based Approach; Individual Learning; Information Technology; Communication Model Of Knowledge

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INTRODUCTION

Currently, trends in higher education are linked to the existence of competitive relationships between universities. The main indicator of educational activity is the quality of training of specialists who have the necessary competencies that meet market requirements. This, in turn, forms the task of improving the mechanisms of managing educational processes and building a system of objective assessment of students' knowledge. The creation of such a proactive model of management, allows to take into account the residual knowledge of students in the study of courses of different duration and to develop individual learning trajectories for students with different levels of preparation. It is necessary to take into account the possibility of changing the training courses, depending on the residual knowledge of the student – for in-depth or repeated study.

The development of information technology and computer systems for technical, educational, and social purposes creates the preconditions for the transition to a knowledge society, which, together with the increasing competition in the labor market, raises the demand for quality lifelong vocational education for everyone [1]. Knowledge, information and computer technologies in the information society are becoming a major intellectual resource whose volumes and rates of generation are constantly increasing [2].

The use of a project approach, as a basis for change management in any system, directs anyone activity, including in educational projects, to proactive scheme management system "man-machine-environment" by using models that reflect the essential properties of the constituent elements of such a system [3].

LITERATURE REVIEW

The development of modern society is aimed at addressing the challenges of the sustainable development of civilization with the deepening of

scientific approaches and the introduction of new information technologies and technical means in all fields [4]. On this basis, existing and emerging fields of knowledge and high technology (e.g., nano and biotechnology, space technologies, artificial intelligence technologies, educational technologies, health and agriculture technologies, information and communication technologies, etc.), are being developed new highly intelligent automatic and automated high-performance tools are being created [5, 6]. New materials, alternative environmentally safer sources and converters of different types of energy are being developed, their experimental testing, industrial production, and widespread use are carried out [7]. Economic systems are developing (labor, capital, goods and services markets, competition in these markets is increasing) [8]. The systems of management of socio-economic and technological processes are being improved. As a result, productivity increases, the means and culture of social work, ways of human activity change rapidly [9, 10].

The complexity of interaction between elements of information systems, especially in the field of education, which focus on competence-oriented models and methods of forming the information environment of the university due to the presence of many external and internal factors. The uncertainty of the educational environment and the uniqueness of the tasks that are solved by the educational activities make it impossible to separate and carefully study the system by elements [11].

The learning process is implemented in a complex poorly structured system, which includes many heterogeneous subsystems that form a complex "web" of communications [12]. The development of an adequate deterministic formal description for such systems, in the general case, does not have its decision since it is almost impossible to establish causal relationships between results, resources, and methods of organizational and technical interaction [13].

Educational information systems, as a rule, have emergent properties – certain characteristics that are not peculiar to the individual elements, as well as the sum of the properties of the elements [14]. Such features direct the need to study processes in educational systems not for the properties of individual components, but for the system as a whole [15, 16]. Therefore, it is proposed to use phenomenological models to reflect the trajectory of the development of educational systems in the phase space of state probabilities [17]. The class of such models may include Markov chains, which allow displaying the relationship between input and output parameters without taking into account the physical nature of the processes. Markov chains reflect the topological structure of the links between system elements. At the same time, the "tuning" of model parameters to specific projects is performed on the basis of practical data by determining the conditional probabilities of transitions between elements of the system [18].

The learning process can be analyzed from the standpoint of the theory of self-organization of complex ordered systems, based on the properties of the synergistic approach [19]. Learning systems can be attributed to the class of nonlinear systems because, for example, increasing the control impact in the form of the amount of training material that is required for the study does not lead to a definite result in quality improvement. It is known that in difficult organized systems it is impossible to apply "rigid" methods of control [20]. It is necessary to understand how to put systems on the rails of self-organization when external goals are related to the needs of these systems. The defining tenet of the synergistic approach is that development, which must be managed, takes the form of self-government. In addition, the widespread dissemination of educational information in electronic forms, on the one hand, leads to a pluralistic nature of ways to achieve learning goals, on the other, objectively leads to the chaos of educational information [22, 23]. In this regard, the formation of an individualized learning strategy often leads to the creation of a "unique curriculum" for the student, with a chaotic accumulation of educational courses [21].

These features of social development led to the need for changes in the composition, structure, and scope of social and educational activities [22]. Due to a significant increase in the volume of data produced and circulated in the educational environment, the dynamism and complexity of scientific and technical processes and learning processes have increased significantly [23]. The development of ICTs, the rapid expansion of tools and information technologies have accelerated the processes of communication that have formed new and more effective ways of transmitting electronic data [23]. These technologies are the basis for a rapid movement towards the information society, towards the future knowledge society [22]. So there is a need for constant (in the pace of real change) rethinking the known and acquiring new knowledge. This determines that professionals must acquire new knowledge and competencies throughout their lives [24]. At the same time, the education system should create such opportunities.

The objectivity of the development of the modern world creates such a contradiction - society, on the one hand, defines and will continue to put forward new

requirements for qualitative indicators of different educational levels of its members [26]. On the other hand, employers will need to improve the skills of employees who are also focused on professional growth and personal development. Addressing this contradiction defines a strategy for the dynamic development of the educational environment, which creates conditions for equal access to education, expansion of forms of education, and improvement of the level of educational services. The need to respond to the challenges of the present and future expectations affirms a new educational paradigm in society, which is the need to ensure equal access to quality education for all those who need to learn, who desire, who need lifelong learning and who have the opportunity [25]. In many ways, the implementation of the new educational paradigm in Ukraine's education system can be ensured on the basis of the gradual systematic introduction of the principles of open education into its various subsystems. It corresponds to the modern world tendencies of development of educational systems, provides organic integration of the national system of education in the world educational space. What is most important about this approach is that it opens up new opportunities for those who are studying (planning to study). The main manifestation of the educational result of this approach is a rational, flexible and dynamic strategy of change in the education system, in order to fulfill the personal needs of the person for harmonious development and to systematically improve skills over the current areas of specialty in both the personal and the public interest. This approach will allow expanding the horizons and range of methods and information technologies for self-improvement on the basis of self-education, self-determination, self-affirmation, to find their place in modern society. By providing substantial “freedom” to students, students, teachers regarding their educational and organizational activities, open-ended lifelong learning systems are simultaneously managed systems. They are subordinated to the goals of education with adaptation to certain tasks of the educational process.

Appropriate educational environments are being formed for the practical implementation of open education systems. The main problems of their creation are computer-technological, organizational-managerial, psychological-pedagogical, financial-economic, and regulatory frameworks. Along with the awareness of the need for a comprehensive and balanced solution to each of these problems, it should be emphasized and highlighted that the theoretical and practical solution of which today is the most difficult, unspecified, and properly resolved task. The psycho-pedagogical problem, by definition of the authors [25, 26], is today the most significant “constraint” of open education on the basis of e-distance technologies for training, retraining and advanced training of adults. This problem requires a thorough study of the positive experience of creating systems of open education, conducting research aimed at its solution, the implementation of appropriate psychological and pedagogical experiments to confirm the advanced scientific hypotheses and ensure the validity of the implementation of the obtained scientific results in the practice of educational systems. The obvious need to address this problem leads to the emergence of the so-called e-pedagogy, which, drawing on the achievements of classical psycho-pedagogical science, develops specific tasks of creation and effective implementation in the educational practice of ICT, in particular the problem of open education pedagogy. The study of open education systems is first and foremost related to the identification and awareness of the essential features of the phenomenon of open education, the ways in which it is constructed. This study should include, in particular, the modeling of open education objects and processes, the study and refinement of its models. The considerable uncertainty of many models of objects and processes of education leads to the carrying out of the simulation experiments, which are carried out in the environment of the respective simulation systems. The tools and technologies of these systems make it possible to significantly increase the efficiency of experiments with models, to provide automation of the process of collecting and processing experimental data, and on this basis to build adequate models of objects and processes [26].

THE GOAL OF THE ARTICLE

The purpose of the research is to theoretically substantiate the need to create an educational environment of the institution and to develop a model of learning management with feedback, which is formed depending on the evaluation of learning outcomes in the dynamics of interaction between the carrier of knowledge and the student.

MAIN PART

The problem of creating an educational environment and its impact on the quality and effectiveness of education is one of the central places in modern educational activities. In general, the concept of the educational environment is defined as a set of conditions that affect the development and formation of abilities, needs, interests and the consciousness of personality in common object space.

Fig. 1 schematically shows the common object space and its elements, namely, the environment and environment of the sustainable human development of GPM® Global P5TM, which intersect in the common object space.

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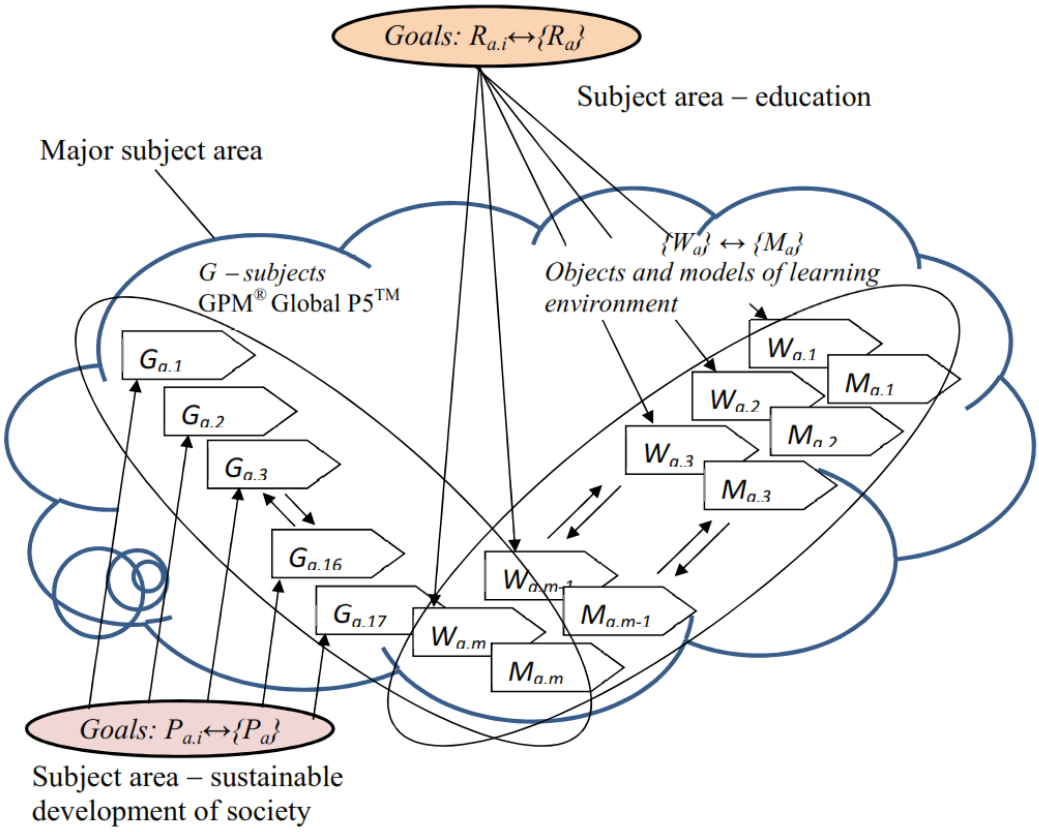

Fig. 1. **Schematic representation of a common object space and its elements – environments of subject areas that have a targeted focus**

Source: **compiled by the authors**

The objects of each environment have certain goals of their existence, which form the overall purpose of the environment. At the same time, some objects intersect in the common object space for their intended purpose. For example, one of the main goals for the sustainable development of humanity in the global context of the UN is the goal: "Quality Education". This goal is realized in the educational environment.

The main objects that can shape the educational environment [27]:

– schemes of training by L. A. Rastrigyn, as a reflection of communication of the carrier of knowledge and learners in the computer training system;

– practical basics of information technology creation through projects, such as communication in the educational environment for three types of role-playing by Belbin, functional according to GOST R 54869-2011 and value model of the project lifecycle according to GPM® Global P5TM standard;

– didactic training systems in the coordinates of the parameters: directionality of the learning process (scattered directional), process control (manual automatic), nature of management (open-closed);

– learning processes based on the creation of information technologies, as a set of computer learning processes, monitoring of students 'current achievements, based on the creation, processing, generalization, dissemination, and use of data on students' current achievements for decision-making to manage the learning process;

– information technologies for the tasks of managing the search for metadata publications in scientometric databases, for building a service-oriented system of information provision for end-users;

– information retrieval technology for extracting metadata publications from common scientometric databases;

– it has been investigated that competence and knowledge are constantly changing due to the traits of the participants in the learning process and through the transfer of knowledge from the outside to the educational environment;

– the knowledge management structure contains four fundamental entities of knowledge carriers: the customer (learners), the team of teachers, the system of training and in-depth knowledge;

– lifelong learning technologies to provide additional training for staff in the event of a knowledge gap;

– lifelong learning methods that aim to balance the needs of society and the motivational structure of the individual to solve the applied science problem of increasing the efficiency of computerized learning.

This list may be supplemented by other researchers in the event of the further development of an educational environment that is an open system.

The transition from reactive to proactive management in training systems based on adaptation to the student's capabilities defines a new modern paradigm of the technology for managing information support for computer training systems [28]. In addition to the well-known processes of knowledge management, such as the collection, creation, processing, generalization, dissemination and use of knowledge, it is necessary to resolve the essential contradiction that exists in training systems. This contradiction concerns the effectiveness of existing communications between the knowledge carrier and the student [29,30]. In this setting, the creation of computer training systems is transformed into the development of information technology with elements of intelligent control and adaptation of the communication channel "man - machine" to constant changes [31].

The introduction of adaptive learning management systems leads to a reduction in training time, a decrease in the cases of duplication of educational material, and a decrease in training costs. Moreover, due to the individualization of the learning process, it becomes possible to build an individual trajectory of development and training of the individual. Under such learning conditions, one can expect an increase in the effectiveness of training by taking into account the specific characteristics of the student [32].

The creation of information technology for education is associated with a "reboot" of the entire educational institution management system [25]. At the same time, new information technologies are "embedded" in existing functional elements of training systems [33,34].

The development of computer technology gives rise to new approaches to the design of training systems to resolve the contradictions between the capabilities of information systems and the tasks of quality training for students. So, A. Atanov [31] and V. Bespalko [29] note that automated computer-based training systems should be built taking into account the particularities of didactics of instruction. The role of the teacher in this case does not decrease, but rather increases significantly. Indeed, the level of quality of education is ensured through the use of an intellectual product in the form of electronic textbooks, test assignments, learning scenarios and algorithms for the formation of an individual trajectory of the educational process for each student.

Orientation to the use of the theory of didactic systems will allow purposefully to develop training systems with specified characteristics in terms of the acquisition of competencies. In Fig. 2 shows the classification of didactic training systems in the coordinates of the parameters: the orientation of the learning process (dispersed – directed), process control (manual – automatic), the nature of control (open-closed).

The vertices of the cube correspond to certain didactic training systems, each of which creates the conditions for achieving a characteristic level of knowledge acquisition ($0 < k < 1$). Classical learning is a scattered process with an open control system, implemented by the teacher "manually" without automation means with the efficiency of mastering knowledge at the level $k = 0.3$.

The development of training systems took place in the following sequence: top 7 (tutor) → top 5 (small group) → top 1 (classic training) → top 2 (audio-visual devices, textbooks II) → top 3 (consultant) → top 4 (the usual textbooks I) → top 6 (testing, e-learning, textbooks III) → top 8 (adaptive learning).

Adaptive learning systems (top 8) reproduce the "Tutor system" using modern computer-aided learning management automation. Computer testing corresponds to a closed type of control in a scattered information environment (top 6).

The best learning indicators are inherent in the adaptive technology of information support of training systems, when the learning process is directed, automated, and closed (Fig. 2). In these conditions, communication takes place according to scheme: the system (learner) – training is fully personified. Therefore, it is very relevant to build a model of this communication to determine the general patterns of learning, taking into account the specific properties of the trainees.

The traditional learning goals in the form of knowledge, skills, and abilities are being replaced by the competency approach, the central concept of which is competency. Competency is understood to mean special, conditional and measurable knowledge, skills, and other characteristics (abilities, preferences) that a person possesses and which are necessary to carry out professional activities in this field.

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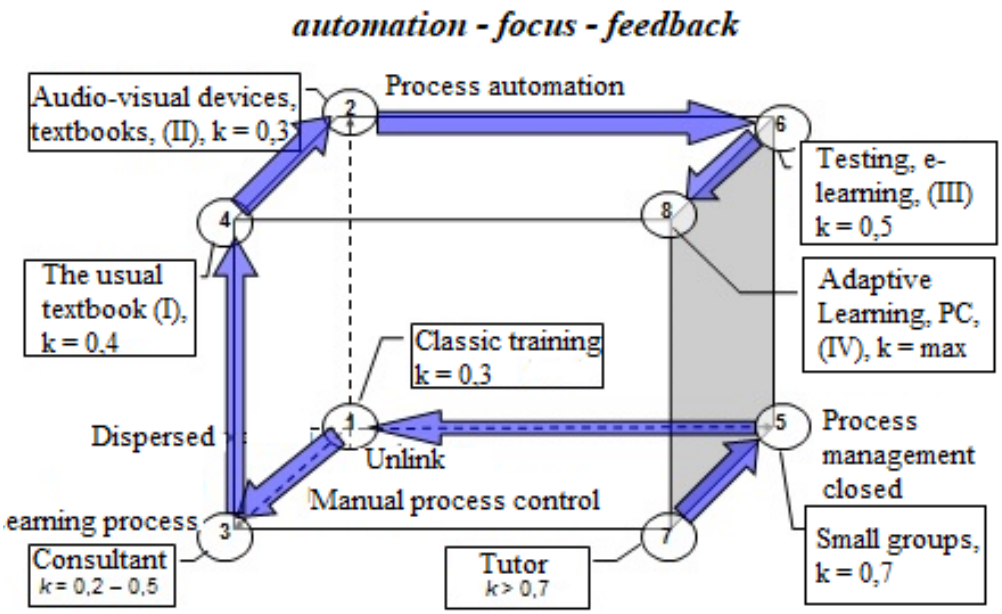

Fig. 2. **Classification of didactic teaching systems**
Source: **compiled by the authors**

The concept of competence, firstly, combines the intellectual and practical component of education; secondly, this concept is based on the ideology of interpreting the content of education, formed "from the result" (based on standards); thirdly, competence has an integral nature, including a number of homogeneous skills and knowledge related to professional, information, legal and other fields of activity [35].

In traditional systems of learning, cognitive management of students is carried out by the teacher. There are two ways to manage learning activities, corresponding to two types of control: open (Fig. 2, a plane with tops 1; 2; 3; 4) and closed (Fig. 2, tops 5; 6; 7; 8).

In the case of the open-loop training system, monitoring, control, and correction of training are carried out in accordance with the end result, which is achieved over a relatively long period of training. The disadvantage of this management is the difficulty in diagnosing gaps in learning and the inability to address them at the end of a long learning phase.

In the case of the closed-loop training systems, monitoring, control, and adjustment of student activity are performed after studying each educational element. Such control cannot be carried out by traditional means – it is realized only with the help of computer systems (or with the help of a tutor).

In addition to the considered properties, learning management, depending on the individual characteristics of students, can be directional or dispersed. Accounting for the individual characteristics of each student (for example preparedness and pace) is possible only in the case of directed training. With a scattered learning process, group averaging of information influences is carried out.

Depending on the use of technical (as a rule, computer tools) for performing learning management operations, one distinguishes between manual, that is, what is performed by the teacher, and automatic, involving technical means.

The combination of the considered characteristics leads to the formation of eight monodidactic possible types of learning management. Their totality during a certain period of study leads to combined didactic systems.

Given the decisive nature of learning management, it is possible to build an educational process focused on achieving certain goals:

a) achieving a certain level of assimilation of activities in an optimal way and ensuring the educational effect of training in relation to the characteristics of each student;

b) overcoming the growing contradiction between the avalanche-like growth of information and the limited opportunities for its assimilation of students;

c) improvement of working conditions for teachers with a general intensification of the educational process, which allows increasing the share of the creative component in comparison with the routine.

The model of interaction between the object and the subject of training. Let the change in the level of preparation of the student depend only on communication with the carrier of knowledge, which may be a tutor or a training system. In this case:

$$\Delta x = x \cdot g \cdot \Delta t - x \cdot m \cdot \Delta t, \quad (1)$$

where:

x – is the level of training (level of knowledge, competencies);

Δx – is the change in the parameter x during the education Δt;

g – is the coefficient of growth of knowledge and competencies;

m – is the coefficient of decrease in the level of knowledge, competencies as a result of natural dissipation (forgetting).

Most often, the value of x is estimated in relative units, as part (frequency) of the correct answers in the proposed tests. The values of the coefficients g and m are unique for each student and can be found experimentally by processing data from training statistics.

At $\Delta t \rightarrow 0$ from (1) after transformations, obtain a differential equation describing the dynamics of the learning process:

$$\frac{dx}{dt} = rx\,, \quad (2)$$

where: r – subtraction of parameters; r = g – m.

Dividing the variables (2) obtain the expression:

$$\int_{x_0}^{x} \frac{dx}{x} = \int_{t_0}^{t} r \cdot dt, \quad (3)$$

where x_0 – level of training in moment t_0.

Integrating (3) obtain an expression for assessing the level of training in the learning process:

$$x = x_0 e^{rt}\,. \quad (4)$$

The pattern of exponential growth in the level of training is fair at the initial stage of training. In the real conditions of learning, there is always the so-called "environmental resistance". "Environmental resistance" is expressed mainly in limiting the possibilities of increasing the level of knowledge due to the lack of an infinite source of knowledge in this subject area. This means that at the moment there is a certain boundary − a complete set of known theoretical and practical provisions for a given discipline (or subject area), which can be called the capacity of the discipline K. The closer the student's level of preparation x to the capacity K, the higher the resistance of the environment.

In Fig. 3 shows a diagram of the ratio of the total capacity of the discipline K and its studied part x.

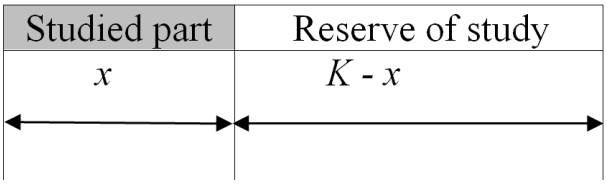

Fig. 3. **Total capacity of discipline K and its studied part x**

Source: **compiled by the authors**

For values of $x << K$, when the learning reserve is close to the capacity of the discipline K, the learning speed will be described by equation (2). In this case learning speed will be designated as V_0. If the training reserve decreases significantly, then the learning speed V_x at this stage will be proportional to the volume of discipline that has not yet been studied. Given these features of the learning process:

$$V_x = V_0 \frac{K - x}{K}. \quad (5)$$

Substituting relation (5) in (2), find:

$$\frac{dx}{dt} = rx \frac{K - x}{K}. \quad (6)$$

Dependence (6) differs from equation (2) by the presence of a dimensionless coefficient on the right side, which is the ratio of the reserve of study time to the amount of discipline that has been studied. This ratio characterizes the resistance of the environment.

To study the dynamics of the learning process, assume that $K = 1$. Then x should be considered as a fraction of the total capacity of the discipline K: $0 < x < 1$. Moreover, (6) can be transformed into a dimensionless form:

$$\frac{dx}{dt} = rx(1 - x)\,. \quad (7)$$

The variable equations (7) must be divided and integrated:

$$\frac{1}{r}\int_{x_0}^{x} \frac{dx}{x(1-x)} = \int_{0}^{t} dt; \quad (8)$$

$$t = \frac{1}{r}\left(\ln \frac{x}{1-x} - \ln \frac{x_0}{1-x_0}\right); \quad (9)$$

after conversion (9) can be calculated:

$$x = \frac{1}{1 + D \cdot e^{-rt}}; \quad (10)$$

where $D = \dfrac{1 - x_0}{x_0}$.

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The choice of a scale for changing the time coordinate *t* depends on the method of expressing the parameter *r* of the knowledge growth coefficient. The value of *r* can be expressed as a relative increase in knowledge during the study of one training course. In this case, the training interval is $\Delta t = 1$.

If considering the study of courses that are studied for several semesters, then $\Delta t = S$, where *S* is the number of semesters for studying the discipline.

To ensure the operation and integration of the information subsystems of the university into a single information space, a number of requirements should be fulfilled in the development of systems: integration, adaptability, distribution, scalability, quality [35].

Various forms of organization of computer training based on new information technologies can be applied [36]. In recent years, training such as interactive television (two-way TV) has become increasingly common; e-learning systems; interactive training systems using multimedia information; video conferencing, etc.

The problem of organizing computer training is multifaceted and extremely complex. Of course, it is not limited to the above components. A separate problem is caused by the student's information support infrastructure:

How and where should training information be located?

What should be the structure and composition of the educational material itself?

What is the optimal feedback form for distance learning?

If courses or their modules will be hosted on specific servers, then what should be the conditions for access to them?

Is it advisable to place any educational information on web pages?

CONCLUSIONS

The development of a communication model of a knowledge carrier and students in a computer-based training system, including parameters of the level of knowledge acquisition and student characteristics with reference to the duration of the discipline, allows you to develop an individual learning path using the adaptive system tuning method. At the same time, one should also consider the resources for adapting training courses, which should be designed as branched educational computer systems. That is, the programming of training courses should provide for the possibility of repeated more in-depth multivariate presentation of educational elements, depending on the current results of testing student achievements.

The solution to these problems lies in the field of learning process management in the form of creating information technology, as a set of computer-aided learning processes, monitoring students' current achievements, creating, processing, generalizing, disseminating, and using data to make learning management decisions.

The development of learning processes in higher education is aimed at a significant increase in students' independent work through the use of the latest information technologies. The use of information support of the educational environment is one of the main approaches to increase the share of training time in the form of independent work, for those who study. Therefore, the development and formation of the university's information infrastructure to support educational processes is an urgent task.

The developed model can be recommended for use as a reference when monitoring the learning process.

A lot of tasks, technical, pedagogical and economic plan, which should be solved in each case in accordance with the specific capabilities of technological and computer support, depending on the composition of groups of students and in accordance with the specifics of a particular course and learning objectives. All these parameters determine the uniqueness of the proposed information system.

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РОЗРОБКА ТЕОРЕТИЧНИХ ЗАСАД СТВОРЕННЯ ОСВІТНЬОГО СЕРЕДОВИЩА НАВЧАЛЬНОГО ЗАКЛАДУ

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АНОТАЦІЯ

. Інформатизація суспільства, зростання соціальної ролі особистості та інтелектуальності її праці в умовах швидких трансформацій техніки і технологій потребують постійного розвитку і модернізації освітнього середовища для формування та підтримки актуальної професійної освіти упродовж всього життя для кожної людини. Знання та інформація в інформаційному суспільстві стають головним інтелектуальним ресурсом, втім як об'єм та темпи накопичення знань безперервно та різко зростають. В роботі розглянуто проблему створення освітнього середовища навчального закладу та його вплив на якість і ефективність освіти. Освітнє середовище визначено як сукупність умов, що впливають на розвиток і формування здібностей, потреб, інтересів, свідомості особистості в загальному об'єктному просторі. Сучасна комп'ютеризація освіти ґрунтується переважно на інформаційному підході, залишаючись за суттю на «ручному» управлінні навчанням, що не дозволяє повною мірою індивідуалізувати цей процес. На зміну традиційним цілям навчання у вигляді сформованих знань, умінь і навичок, приходить компетентнісний підхід (competency approach), центральним поняттям якого є компетенція. В роботі наведено класифікацію дидактичних систем навчання в координатах параметрів: спрямованість процесу навчання (розсіяний - спрямований), управління процесом (ручне - автоматичне), характер управління (розімкнений - замкнутий), що є основою для цілеспрямованого проектування інформаційних систем навчання із заданими характеристиками за рівнем набуття компетенцій. На основі схеми навчання Л. А. Растригіна розроблена модель комунікації носія знань і тих, хто навчається, в системі комп'ютерного навчання, яка містить параметри рівня засвоєння знань і характеристики учня з прив'язкою до тривалості вивчення дисципліни, що дозволяє розробляти і оцінювати індивідуальну траєкторію навчання.

Ключові слова: освітнє середовище; компетентнісний підхід; індивідуальне навчання; інформаційні технології; комунікативна модель знань

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РАЗРАБОТКА ТЕОРЕТИЧЕСКИХ ОСНОВ СОЗДАНИЯ ОБРАЗОВАТЕЛЬНОЙ СРЕДЫ УЧЕБНОГО ЗАВЕДЕНИЯ

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АННОТАЦИЯ

Информатизация общества, рост социальной роли личности в условиях постоянной трансформации техники и технологий требуют постоянного развития и модернизации образовательной среды для формирования и поддержания актуального уровня профессионального образования в течение всей жизни человека. Знания и информация в современном информационном обществе становятся главным интеллектуальным ресурсом, в то время как объемы и темпы накопления знаний непрерывно возрастают. В работе рассмотрена проблема создания образовательной среды учебного заведения и его влияние на качество и эффективность учебного процесса. Образовательная среда определена как совокупность условий, влияющих на развитие и формирование способностей, потребностей, интересов, сознания личности в общем объектном пространстве. Современная компьютеризация образования основывается преимущественно на информационном подходе, оставаясь, по сути, на «ручном» управлении обучением, что не позволяет в полной мере индивидуализировать этот процесс. На смену традиционным целям обучения в виде сформированных знаний, умений и навыков, приходит компетентностный подход. В работе приведена классификация дидактических систем обучения в координатах параметров: направленность процесса обучения, тип управления процессом, характер управления. Такая классификация является основой для целенаправленного проектирования информационных систем обучения с заданными характеристиками по уровню приобретения компетенций. На

основе схемы обучения Л. А. Растригина разработана модель коммуникации носителя знаний и учащихся в системе компьютерного обучения. Модель содержит параметры уровня усвоения знаний и характеристики объекта обучения с привязкой к продолжительности изучения дисциплины и позволяет разрабатывать и оценивать индивидуальную траекторию обучения.

Ключевые слова: образовательная среда; компетентностный подход; индивидуальное обучение; информационные технологии; коммуникативная модель знаний

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