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METHODOLOGICAL APPROACHES TO THE DESIGN
OF DISTANCE LEARNING COURSES

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Methodological Approaches to the Design of Distance Learning Courses

Methodological approaches to the design and organization of distance learning are a topical issue in the pedagogical research of scientists. The methodology of distance learning is based on the principles of pedagogical design, which consists of stages of modeling, designing and constructing.

The author analyzed and generalized the considered theories of designing the educational process and existing approaches to the realization of the phase of designing distance courses. This allowed identifying the stages of the latter: 1) preparatory stage (analysis, formulation of educational purposes, planning and organization of the activity of teachers and students); 2) the design stage (designing educational materials, designing feedback, designing student assessment system); 3) the final stage (course testing, integration of the course into the distance learning system, adding users to the course). Each of these steps is described in detail in the article.

These stages of designing the distance course found their implementation in the development of distance learning courses on the platform Moodle.

Key words: distance learning, distance learning course, designing a distance course, stages of thedistance course design.

The creation of a distance learning system is based on the general principles of design with the use of pedagogical design. To study the essence of the methodology of designing a distance course, let us consider the conceptual-terminology apparatus of the methodology.

Modern general encyclopedic publications give the following definitions of methodology. "Methodology is a doctrine of the structure, logical organization, methods and means of action" [1]. "Methodology is a system of principles and methods for organizing and constructing theoretical and practical activities, as well as teaching about this system" [2].

Some scholars view the methodology as a way of communication between science and practice [3], others as a means of helping science practice [4], etc.

Novikov O.M., Novikov D.O. give the following definition of this concept: "methodology is a doctrine of the organization of activities" [5]. Such a definition definitely determines the subject of the methodology – the organization of activities. Scientists note that not every activity needs the organization, in applying the methodology, but only that is aimed at obtaining objectively new or subjectively new result. That is, if we divide human activity into reproductive and productive, then the very productive activity requires the use of methodology. This definition of methodology allows us to consider it "as the doctrine of the organization of any human activity: any practical professional activity (scientific, artistic and game, etc.) – on the one hand, and on the other hand – both individual and collective activities [5].

The special development of methodological research was at the end of the XX century. This is explained, in particular, by the differentiation and integration of scientific knowledge, qualitative changes that have taken place in classical disciplines, and the emergence of many new disciplines.

Today, the concept of methodology is used in several ways: 1) a doctrine of research methods; 2) research methods used in a particular science; 3) general provisions underlying the study of various problems; 4) a system of principles and methods for the organization of theoretical and practical (cognitive) activities, as well as the science of this system.

The methodology performs the following functions:

– determines ways of acquiring scientific knowledge that reflects dynamic processes and phenomena;

– directs, envisages a special way, which achieves a certain research objective;

– provides comprehensive information about the process or phenomenon being studied;

– helps in introducing new information into the science theory fund;

–   provides clarification, enrichment, systematization of terms and concepts in science;

–   creates a system of scientific information, which is based on objective facts, and a logical-analytical tool for scientific knowledge.

These signs of the concept of "methodology" that determine its functions in science, make it possible to draw the following conclusion: methodology is a conceptual statement of purpose, content, research methods, which provide the obtaining of the most objective, accurate, systematic information about processes and phenomena.

Methodological approaches to the design and organization of distance learning are a topical issue in the pedagogical research of scientists. Thus, the analysis of the scientific and methodological basis of distance learning showed that the questions of the methodology of the educational process are highlighted in the works of V.V. Kraevsky, O.M. Novikov, D.O. Novikov, K.K. Platonov, V.M. Monakhov, E.V. Bachusova and others. Scientists V.M. Kukharenko, N.G. Sirotenko, V.Yu. Bykov, Yu.M. Bogachkov, O.O. Ilyin, V.V. Vyshnivsky, M.P. Gnidenko, G.I. Gaidur, N.V. Burkina, L.B. Ignatova, T.I. Nikolaichuk and others are studying the methodology and organization of distance learning, creating distance courses.

N.V. Burkina, L.B. Ignatova, T.I. Nikolaichuk emphasize that the methodology of distance learning is based on the principles of pedagogical design.

Pedagogical design is the application and development of the ideas of technical designing for pedagogical activity using all existing pedagogical theories and innovation practice.

Scientists note that pedagogical design is "an element of systemic, individual or group pedagogical activity, which consists of stages of modeling, designing and constructing, and is aimed at substantiating the ways of implementing pedagogical ideas" [6].

The stages of pedagogical design and results of workare indicated in the table 1.

Table 1

Stages of pedagogical design

The name of the stage	The result of the stage
Modeling	Pedagogical model – concepts of development, regulations, position, pedagogical theories and individual concepts reflecting the views of a teacher.
Designing	Pedagogical project – curricula, programs, qualification characteristics, methodical recommendations, etc.
Constructing	Elements of pedagogical constructions – plans-abstracts, abstracts, scripts, control schedules, didactic materials, schedule of classes, etc.

When creating distance courses Jerrold Kemp offered the following model of training design [7]:

– analysis of needs, resources, conditions, characteristics of students;

– definition of results, priorities, standards;

– writing goals, developing sections of measurement of implementation;

– selection of content, learning environment, training strategies, delivery system;

– preparation of courses, tests; review, validation of prototype classes;

– development and implementation of course modules;

– evaluation, re-review of the course.

Scientists at the University of Twente (Enschede, The Netherlands) recommend that developers of training materials for the Internet use 10 steps of the production cycle [7]:

– definition of needs and goals;

– collection of materials;

– learning the content of the training course;

– promotion of ideas on the effective organization of the educational process;

– designing;

– construction of diagrams of material passing;

- preparation of screens;

- development (course programming);

- preparation of additional materials (manuals, instructions, etc.);

- assessment (including experimental) and completion of training materials.

The analysis and generalization of the considered theories of designing the educational process and the existing approaches to the realization of the phase of designing distance courses allowed us to determine the stages of the latter:

1) The preparatory stage:

   o analysis;

   o setting educational goals;

   o planning and organizing the activities of a teacher and a student;

2) The design stage:

   o designing educational materials;

   o designing feedback;

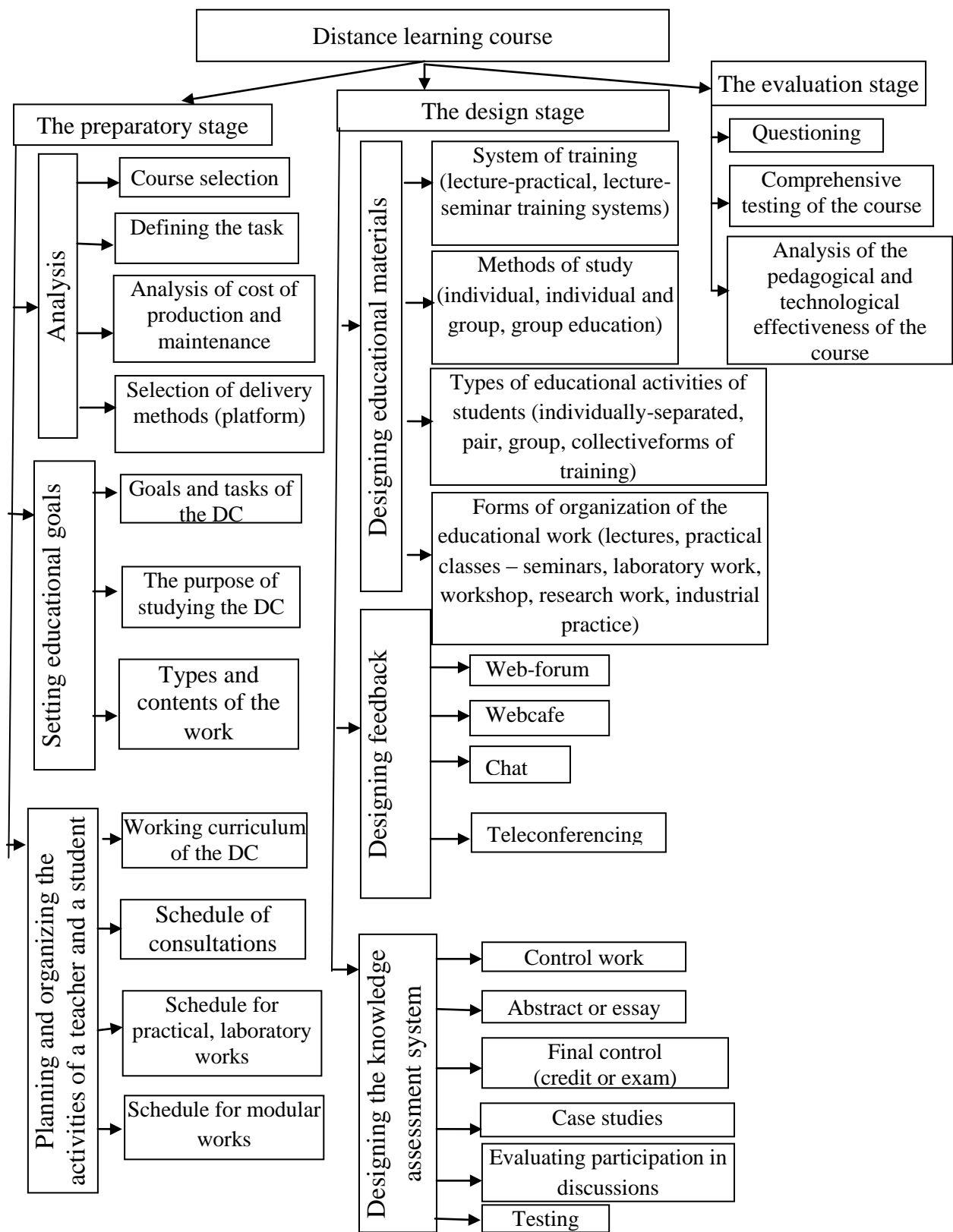   o designing the student assessment system;

3) The dinal stage:

   o course testing;

   o integration of the course into the system of distance learning;

   o adding users to the course.

Details of all these stages are presented in Pict. 1.

Let us characterize each of these stages.

The preparatory stage.

1. *Analysis.* The choice of the course, the definition of tasks and the target audience is carried out. The marketing analysis of the situation in the regional market of educational services in the subject area of the course is used, as well as the structural analysis of the network infrastructure, existing technical solutions and the prospects for using remote education technologies for the identified groups of potential listeners of the course.

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                          │   Distance learning course      │
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Distance learning course

The preparatory stage

Analysis
- Course selection
- Defining the task
- Analysis of cost of production and maintenance
- Selection of delivery methods (platform)

Setting educational goals
- Goals and tasks of the DC
- The purpose of studying the DC
- Types and contents of the work

Planning and organizing the activities of a teacher and a student
- Working curriculum of the DC
- Schedule of consultations
- Schedule for practical, laboratory works
- Schedule for modular works

The design stage

Designing educational materials
- System of training (lecture-practical, lecture-seminar training systems)
- Methods of study (individual, individual and group, group education)
- Types of educational activities of students (individually-separated, pair, group, collectiveforms of training)
- Forms of organization of the educational work (lectures, practical classes – seminars, laboratory work, workshop, research work, industrial practice)

Designing feedback
- Web-forum
- Webcafe
- Chat
- Teleconferencing

Designing the knowledge assessment system
- Control work
- Abstract or essay
- Final control (credit or exam)
- Case studies
- Evaluating participation in discussions
- Testing

The evaluation stage
- Questioning
- Comprehensive testing of the course
- Analysis of the pedagogical and technological effectiveness of the course

Pict. 1. Stages of designing distance courses

2. *Setting educational goals*. Having identified the target group of future students, we need to understand and formulate what goals and objectives we set before them, which skills we plan to form in them and what we want to teach. One should determine the purpose of the final result and determine tasks of learning – these are types and contents of the work, actions during the learning to achieve the goal.

3. *Planning and organizing the activities of a teacher and a student.* Organization of the educational process, which will correspond to the implemented model of education, the system of mastered knowledge and activities, forms of the student's study work. Development of the working curriculum of a distance course, schedule of consultations, delivery of practical, laboratory, modular works.

The design stage.

1. *Designing educational materials.* It is important to use those forms of training that correspond to both the most modern and most developed technologies of distance learning.

Designing the course materials in the distance course depends on the form of the student training.

The most common form of training is lecture. The purpose of the traditional lecture, as well as the lecture given to the student through a distance learning course, is to provide the student with systematized basic scientific knowledge of a discipline, the disclosure of problems, the state and prospects for progress in a particular field of science. The general requirements for a distance lecture are also preserved: scientific character, accessibility, unity of form and content, organic communication with other types of training sessions. But in the traditional lecture the cognitive activity of students is stimulated during the direct influence of the teacher. In the distance lecture, the emotionality of the presentation can be achieved through the active use of multimedia, when the teacher's speech is transmitted through audio recording, and non-verbal information – through video and animation.

Seminars, discussions are an active form of training and areusually constructed on the basis of live creative communication, friendly discussion on the subject. In the

distant version, seminars and discussions can be conducted using computer video and teleconferencing. Videoconferences are conducted in real time mode. Research by scientists O. Andreev [8], O. Verenych [9], V. Gritsenko [9], V. Kolos [9], S. Kudryavtseva [9] prove that the main didactic functions of such seminars do not differ from traditional ones possibilities of realization of visual interactive communication. Teleconferencing can be done in synchronous and asynchronous mode.

Laboratory and practical works in training of future specialists occupy one of the main places, that with the help of them formed skills in a certain field of knowledge. The most effective is the use of distance learning in the organization of laboratory works. When implementing complex laboratory work, you can use remote access to the central computer during simulation of the experiment.

1.   Independent work of students is a well-known form in the traditional version of the curriculum, which often contains only an independent work with literature. With the use of distance learning, the possibility of independent work of students is expanding. Independent work with the additional educational literature on paper carriers is generally preserved as an important part, but its basis is now independent work with multimedia educational programs, testing systems, information databases.

2.   *Designing feedback.*

One of the important directions of filling the course is the filling of the communicative environment. This will create a positive psychological effect, because when you enter the course for the first time, students will see not empty windows of web-forums, electronic bulletin boards, web-cafes, but they see that they are already waiting by someone and someone appeals to them, inviting to talk.

It is important to ensure the maximum possible virtual presence of a teacher in a distance learning course in order to create an effective feedback in distance learning. The instructor supervises students by controlling their activity while studying the course and analyzing the products of their personal and joint activities. In order to solve problems while studying the distance course, the teacher can use

comments, advice through the "Questions andAnswers" forum or provide online consultation through the chat.

3.   *Designing the knowledge assessment system.*

Among the main forms of control in distance learning we distinguish the following:

Control work (execution of special control tasks). The control work may have the same form as in the part-time training. However, there are other possibilities in the distance learning, for example, search for information on the Internet.

Abstract or essay. Students need to know the requirements for lectures and criteria for their assessment. It is advisable to post student works on the site, discuss them. This will increase the responsibility of students for their writing.

Final control (credit or exam). It must be implemented in real time. It is possible to use videoconferencing or chat technology here. Videoconferencing allows to see a credit. Some courses offer tasks on a web page that are open only for a limited time. During this time, a student must have time to complete them and send them to a teacher. However, there is a problem of personality identification.

Case studies. Such tasks represent an analysis of a particular life situation and are very promising for the system of distance learning, since they allow applying the knowledge gained in practice.

Evaluating participation in discussions. One of the forms of educational work is participation in virtual seminars, discussions, teleconferences (mailing list, forum, chat). A live discussion allows to "see" a student, understand the way of thinking, argumentation, etc. There are many ways to deploy and support discussion, assessment of the work of its participants. For example, such criteria as general activity, argumentation, number of reactions to publication, etc. can be entered. The choice of specific criteria depends on the teacher.

Testing.Testing can be done both online and offline. It is easy to organize an authorized entry with a limited time on the test site with the test program. The test control can be just a part of the control measures in the distance learning system.

The final stage of the development of the learning course.

This stage involves actions aimed at preparing the learning course prior to its use. It tests the developed course in order to identify errors, inconveniences, etc. An important point is the integration of the course into a distance learning system, namely: adding a course to group curriculum, individual student curricula, adding users to the course. These steps give the opportunity to combine the developed learning resources into a single organizational system.

The stages of designing the distance course identified by us have found their realization in the development of distance learning courses on the platform Moodle.

The use of this methodology in practice has shown that it contributes to a more efficient and high-quality process of developing distance learning courses, so that distance learning is holistic and systematic.

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Молчанюк В. А.

Методологічні підходи до проектування дистанційних навчальних курсів

Методологічні підходи до проектування та організації дистанційного навчання є актуальною проблемою в педагогічних дослідженнях науковців. Методологія дистанційного навчання базується на принципах педагогічного проектування, яке складається з етапів моделювання, проектування і конструювання.

Автором проведено аналіз та узагальнення розглянутих теорій проектування навчального процесу та існуючих підходів до реалізації фази проектування дистанційних курсів. Це дозволило визначити етапи останньої: 1) підготовчий етап (аналіз, постановка навчальних цілей, планування та організація діяльності викладача та студента); 2) етап проектування (проектування навчального матеріалу, проектування зворотного зв'язку, проектування системи оцінювання знань студентів); 3) завершальний етап (тестування курсу, інтеграція курсу до системи дистанційного навчання, додавання користувачів до курсу). В статті детально охарактеризовано кожний із цих етапів.

Визначені автором етапи проектування дистанційного курсу знайшли свою реалізацію при розробці дистанційних навчальних курсів на платформі Moodle.

Ключові слова: дистанційне навчання, дистанційний курс, проектування дистанційного курсу, етапи проектування дистанційного курсу.

Молчанюк В. А.

Методологические подходы к проектированию дистанционных учебных курсов

Методологические подходы к проектированию и организации дистанционного обучения является актуальной проблемой в педагогических исследованиях ученых. Методология дистанционного обучения базируется на принципах педагогического проектирования, которое состоит из этапов моделирования, проектирования и конструирования.

Автором проведен анализ и обобщение рассмотренных теорий проектирования учебного процесса и существующих подходов к реализации фазы проектирования дистанционных курсов. Это позволило определить этапы

последней: 1) подготовительный этап (анализ, постановка учебных целей, планирование и организация деятельности преподавателя и студента); 2) этап проектирования (проектирование учебного материала, проектирование обратной связи, проектирование системы оценки знаний студентов); 3) заключительный этап (тестирование курса, интеграция курса к системе дистанционного обучения, добавление пользователей к курсу). В статье подробно охарактеризованы каждый из этих этапов.

Определенные автором этапы проектирования дистанционного курса нашли свою реализацию при разработке дистанционных учебных курсов на платформе Moodle.

Ключевые слова: дистанционное обучение, дистанционный курс, проектирование дистанционного курса, этапы проектирования дистанционного курса.

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