PEDAGOGICS

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PRINCIPLES OF INDIVIDUALIZATION AND INCREASING IN DISTANCE LEARNING EFFICIENCY

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The basic principles of increasing in distance learning efficiency and principles of teacher–tutor work with each student are considered.

The description of a problem

Distance learning (DL) – is a new organization of educational process, which is based on a principle of independent training of a student.

It suppose defined environment of training, which is characterized, by the fact that the majority, and often all students, are remote from the teacher in space and (or) in time.

However, both sides have an opportunity rather simply to support dialogue, using telecommunication tools.

Distance learning ensures wider popularity in system of high education all over the world, because this kind of education gives new educational opportunities:

– wide usage of electronic courses (lecture synopsizes, textbooks, laboratory practical works, thesauruses etc.);

– usage of videoconferences, consultations of teachers;

– Internet global networks and so on.

Many universities are pursuing virtual programs, offering classes via the Internet and thus allowing students with personal computers and teachers to interact even they are many miles apart.

Such approach is now a flexi time, flexi place activity.

Technology of realization of distance learning procedure

There are three basic technologies possible to allocate in distance learning system:

– case-technology;

– TV-technology;

– network technology.

The earliest case-technology represents a complex, which includes a well-structured complete set of educational-methodical materials (case) and interactive opportunity for the teachers–tutors in regional educational centers of DL.

In the self-studying process of the specialized material a student may timely connect teacher – consultants (tutors) at regional educational centers of DL.

During the usage of this technology several details are processed: technology of the territorial educational canter creation, remote from a basic educational institution, system of work with the authors – developers of courses and tutors, order of mutual relation of a basic educational institution with the territorial educational center in the educational process.

Institute of extramural and distance learning of National Aviation University (NAU) provides this technology.

To take part in this kind of training, a set of lecture synopses and some additional materials prepared on the compact disks should be used.

Usage of TV-technologies is based on the usage of television lectures with the teachers' subsequent advices at the regional DL educational centers.

However, in conditions of economic instability, the works in this direction practically are not carried out.

The network technology is based on the usage of a global information network Internet for the maintenance of students by educational-methodical materials, and also for interactive work with the teacher [1].

It is the most popular technology of distance learning all over the world.

The given work considers network DL. We shall consider more in detail the problems connected with the organization of this kind of DL.

Structure of DL system includes:

– educational institution, which forms DL procedure;

– information resources;

– technical tools and software;

– teachers of the distant learning form (tutors);

– students.

Each component of the given system has its features and consequently brings in certain difficulties into the process of DL procedure formation [2].

So, one of problems in distance learning is the choice of a provider, that is higher educational institution, which realizes DL procedure. Another problem is the teachers' training.

Types of providers

There are so-called virtual universities, which use only electronic technologies. Upon termination of such university it is possible to receive a bachelor or muster's degree.

Other type of virtual university does not award degrees, but only gives access to educational courses of various educational institutions.

To estimate provider it is possible only on a level of its accreditation. There are various levels of accreditation:

– regional;
– national;
– specialized professional.

Information resources

The information resources provide teachers and students by survey and narrow specialized information through local and global networks.

Now the multimedia electronic textbooks have become the mass tool of self-education.

However even they have a number of disadvantages.

For example, disadvantage of such textbooks are a static character of knowledge, primitive ways of automatic control of mastering the material, absence of interact with a teacher expert [3].

The improvement of computer textbooks on the basis of modern achievement in the field of information technologies and decision of artificial intelligence tasks have resulted in occurrence of qualitatively new intellectual systems of automated training with opportunities of the removed access to them.

Requirements to organization of distance learning procedure

For organization of effective DL procedure it is necessary in appropriate way to prepare, namely to structure the material of courses.

In the result of such structurezation each element (module) becomes completed, independent element of the given course.

Thus, according to the educational syllabus on various specialties it is possible to form courses of disciplines of independent elements.

Besides it is necessary to create an extensive database of educational-help materials (audio- and video cartridges, compact discs etc.).

High demands are made of such material such as the efficiency of distance learning essentially depends on the form and quality of educational materials granting.

Demands are also made of technical tools and software of the regional DL educational centers (for example, for realization of videoconferences it is necessary to have appropriate technical tools and software).

Teachers' training

One of the major requirements in organization of DL procedure is the preparation of teachers-tutors, who will carry out distance courses, because they should be not only experts in the fields of knowledge, but also have the certain knowledge in the field of modern computer technologies. In this connection the organization of teachers retraining is necessary for the participation in DL procedure [4].

The experts in directions, which are necessary for organization of this or other course, will carry out such training of the teachers.

Usually there are experts in graphic design, experts on modern virtual training environments, editors and others.

Preliminary testing of the entrants

To prepare the specialists with most complete subsequent usage in different areas, it is necessary previously to focus the entrants on the certain specialties.

For this purpose it is necessary to provide the service in DL system, in which the preliminary testing will be offered to everyone wishing.

Such test with a high grade of validity will allow to define inclinations of the entrant and, accordingly, most acceptable area of his future activity as a specialist.

According to the results of such preliminary testing a number of specialties will be offered to the entrant, which are most acceptable for his personal characteristics.

As a result of knowledge application the future specialist will receive the maximal effect after the future study.

Other necessary aspect of DL procedure organization is the realization of statistical account of testing results of the already admitted students and their further employment.

The results of such statistical supervision should be accessible and be demonstrated to new entrants. It will allow the entrants to appreciate the help in the choice of direction in training and to value the choice of the future specialty.

One more important aspect of DL procedure organization is realization of other kind of testing, which allows generating homogeneous groups of the students according to the level of their preparation.

According to this level of preparation it is possible to offer "Individual program of studying" to the students, which will allow generating the list of dis-

ciplines and sequence of their study, and will allow defining necessary sections and time for their study.

For example, if the given discipline includes some obligatory sections, and the student well understands materials of one of them, he can pas the resulting test on this section at once and to choose for study any interesting sections for him which are not included into the obligatory sections on the given discipline [5].

Organizing DL procedure the special attention is given to the quality of mastering of theoretical material and testing of the received knowledge, skills and practical habits of the students.

The decision of the task of DL quality control, its conformity to the standards of education, has basic meaning for successful work of all DL system. Besides, at the distance testing and control the problems of authorization and checking should be decided, whether student answers the test questions independently or not.

As the control of independent performance of the test tasks in DL is technically complicated now, intersession control of knowledge is being realized. The final estimation of knowledge should be carried out in direct dialogue between the teachers and student at the exam similarly to extramural training form [6].

Representation of educational material in structure network distance learning

Network DL structure uses a modular principle, which is based on a specific form of educational material representation.

The modular principle assumes integrity and completion, completeness and be logicality of unit's construction of educational material as modules, inside which the educational material is structured as a system of educational elements.

The technology is adapted to individual features of base knowledge of student, being trained at the expense of a final mark and skills, rate of mastering and individualization of training [5].

Modular training as one of the basic purposes pursues formation of skills of self-education. Therefore, all process is built on the basis of the realized criterion function, independent decision of the offered tasks, search of new knowledge. The teacher is converted into an adviser and an expert.

Modular system due to integration of information blocks, which outstrip training considerably saves time, assumes movement of the trainee under the scheme of didactic process "common – common – individual" with gradual immersing in a detail and complication of the investigated material.

Modular technology is guided at development of the students, first of all at his skills and habits.

The frequentative reparative activity during independent work with educational programs at adequate and individual level of complexity and difficulty transfers skills to habits.

On all grade levels the teacher acts as the organizer and chief of the process, and executes a role of the independent researcher of problems, which decision results in the beforehand structure of skills and habits.

Thus, the individual construction of educational material built according to psychological features, provides achievement of didactic tasks to each student. It has completeness of the material in the module and both integration of different kinds and forms of training.

Each student connects the positive role of modular training with sensibleness of the perspective in each separate module of training. The beginning of the module contains the description of the integrated purpose, beginning of its element – description of an individual purpose.

The educational activity at modular training is structured on educational situations, or task, educational actions, control, estimation.

The project of development of educational-methodical set on this or that discipline for realization of modular training technology includes creation of three components:

– a lecture material;
– laboratory tasks;
– testing.

Features of modular training takes into account distinctions in people psychology, which master material of a particular discipline.

The offered methodology of modular training assumes the changing of accents in training.

The programs of training are built according to circumstance, that it is enough for the student to get acquainted with bases of this or that discipline and, at desire, to deepen the knowledge.

The given technology assumes such organization of training, which is characterized by studying of theoretical material by integrated blocks – modules, algorithmization of educational process, completeness and coordination of perception cycles.

The individualization of educational activity at levels creates a situation of a choice for the teacher and student and provides an opportunity of the further successful self-education and professional training, professional usage of personal computer.

The basic principles of this technology are the concepts of modular training, structuralization of training on separate elements, individualization, dynamisy, flexibility, realized prospective, versatile methodical consultation and parity.

The compression of educational material by means of integration, its system representation and repeated studying from the general to the particular allows receiving high training effect.

Peculiarities of modular training technology and formed system of thinking of the trainees allow formulating methodological principles which are based on the project of creation educational-methodical documentation for a distance training method.

Prospects of introduction distance learning at National Aviation University

Some foreign educational institutions, such as the London University in external programs, offer a number of specialties for DL.

One of the conditions for the entrants of such distance courses in foreign countries is the passing of special tests in English language, which will be carried out only at the special centers.

Therefore it is possible to assert, that a lot of wishing to study in higher educational institutions, using distance form of training, will choose such educational institutions, in which it is possible to choose the language of training.

In Ukraine to attract a wide circle of entrants it is necessary to create distance courses to use several languages, namely: Ukrainian, Russian, English and some other.

The basis for this purpose is the attraction of entrants of DL from the Community of Independent States (Russian), and other countries of various regions, such as, for example, China, Vietnam, India (English language) etc.

In this case Institute of extramural and distance learning of NAU can be used as a provider.

It is stipulated by a new project, which is being carried out at NAU for several years already: training in English, and also it is planned to teach disciplines of separate specialties Spanish and some other languages.

The students of Ukraine and students of different countries of the world take part in this project.

In this connection, students, who finished training on such distance courses, will be given certificates of the international sample.

Conclusions

The area of application of modular training is not limited to frameworks of distance learning and can be used in any forms of training. The positive effect, which is achieved as a result of such training, connected to dynamics, which are based on variativity of elements, modules, contents of elements and modules, and also enables to expand a circle of future students thanks to the wishing to study Russian, English and other languages.

References

1. *Семенец В.* Дистанционные методы обучения. Состояние, проблемы, перспективы // Новий колегіум. – 2000. – №3. – С. 24–30.

2. *Дистанційне навчання*: Навч. посіб. / Під ред. Е.С. Полат. – М.: Гуманит. изд. центр ВЛАДРС, 1998. – 192 с.

3. *Вороной С.М., Сергеева О.П.* Средства контроля и мониторинга процессов приобретения знаний интеллектуальных систем дистанционного обучения // Искусственный интеллект. – 2001. – №3. – С. 465–473.

4. *Новые* педагогические и информационные технологии в системе образования // Дистанционное и виртуальное обучение / Под ред. Е.С. Полат. – М., 2000. – №3. – С. 51–55.

5. *Сирота С.В.* Извлечение знаний в интеллектуальной обучающей системе, базирующейся на анализе формальных понятий // Искусственный интеллект. – 2001. – №3. – С. 510–524.

6. *Вороной С.М., Москалев В.Э.* Интегрированные инструментальные средства приобретения, конструирования и обновления знаний интеллектуальных обучающих систем // Проблемы программирования. – 2000. – №1-2. – С. 284–487.

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Принципи індивідуалізації та підвищення ефективності дистанційного навчання

Розглянуто загальні принципи організації та підвищення ефективності дистанційного навчання. Окремо виділено принципи роботи викладачів-тьюторів з кожним студентом.

Н.Б. Фомина

Принципы индивидуализации и повышения эффективности дистанционного обучения

Рассмотрены основные принципы повышения эффективности дистанционного обучения и принципы работы преподавателей-тьюторов с каждым студентом.