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# Method of construction of electronic training course in computer-oriented learning environment

Gained in the process of informatization of education, experience shows that the use of computer-aided learning technologies – this is not simply a change in technical support of the teacher, that change of the whole complex of his teaching philosophies and approaches, a willingness to transfer their knowledge and experience in new media, that is the willingness to carry out their professional activities in the new environment – new information educational environment, where the teacher ceases to be the the sole source of information for the student, the only conductor of didactic training principles. It is the formation of a new type of pedagogical culture – „a culture that requires updating educational content, approaches and methods, organizational forms of education" [Бавико, Чичановський, Букреєва, Орлов 2002].

Based upon the theory of the gradual formation of mental actions we have determined the sequence of work in computer-oriented learning environment for mastering by students necessary information of current scientific knowledge in the field of ecology, environment and balanced nature use and built structure-logic diagram of the operation in the environment [Гальперин 1981: 78–86; Касаткин 2011: 330–336].

Within the SQUARE model highlighted next main characteristics of quality: *functionality* (accuracy, consistency, interoperability, security, availability); *reliability* (sustainability, completeness, recoverability); *accessibility* (efficiency of development, ergonomics, intelligibility); *efficiency* (on resources and time); *maintenance* (simplicity of analysis, variability, stability, testability); *tolerability* (adaptability, compliance with the standards and regulations, installation flexibility, substitutability). Facilities being developed with using formal methods tend to characterized by high level of tolerance [Гура, Василовский, Дикарев 2003].

Content management of computer-oriented learning environment is performed using freely distributed software PHP and Moodle platform. In the developed algorithm, we work in such an environment, there is some discrepancy between the need to take advantage of computer-oriented learning environments in the training of highly qualified specialists environmentalists and lack of peda-

gogically and methodologically grounded software, methods of use of these tools in training activities.

Having carried out an analysis of the classical model of e-learning we make comparisons with the e-learning courses that provide teachers on the basis of the information and communication learning environment Moodle. On the basis of the initial data, we have created an alternative procedure taking into account features compilation and use of e-learning courses in the aforementioned software environment.

The main requirement to the shell of distance education is that it does not become „close" to support virtual learning environment that is in the shell should be laid sufficient number of tools to fully support the training of engineers, biotechnologists, ecologists and other.

On the basis (the knowledge base, the problems base) of presented educational materials and tools (presentations, chat, assignments, tests, virtual conferences, forums etc.) are trained in computer-oriented environment in the shell of the Moodle platform. In the extended form the electronic structure of the training course.

To test the effectiveness of methods of application of ecology students of computer-oriented learning environment we have created an e-learning course on the subject „Informatics and systematology". So, to begin classes in the environment, the student must first visit the Knowledge Portal of the National University of Life and Environmental Sciences of Ukraine (http://moodle.nubip. edu.ua).

The next step in the student's environment is finding a training unit (department) and the choice of said by lecturer e-learning course.

Making selection of discipline, the student will be authorized in e-learning courses. It should be noted that enrollment (registration) of students can occur in two ways: by forcibly and independently (the student registers on the course itself).

Having got in e-learning course the student sees the shell that was created by means of computer-oriented environment on the Moodle platform (see. Picture 1). Since the student registers for a course he has the opportunity to get acquainted with the General information (curriculum, assessment criteria, schedule, news, timetable, and other).

In the course of training students receive theoretical knowledge and perform practical (laboratory works), which are sent to a remote server for teachers validation. The teacher has an opportunity to supervise the activities of the student in computer-oriented educational environment, check sent laboratory works and evaluate their. After studying certain substantial module the teacher holds interim control test to verify the fixing of the theoretical knowledge of the student.

**Picture 1. The title page of e-learning course on the subject „Informatics and systematology" for students in ecology**

Score from content module includes the accumulated scores in laboratory works, which the teacher exposes (see Picture 2) and score of student that exposes environmental in compiling unit test.



**Picture 2. Block for testing and evaluation of students placed and received tasks**

Assessing the practical activities of the student teacher has the opportunity to comment on the student's work. If necessary, by means of computer-oriented learning environment, the teacher can make a virtual communication with the student to refine his knowledge or other information. The same connection can be carried out by student in relation to the teacher or another student. In the process of preparation of the teacher to the use of computer-oriented learning environments can distinguish into two stages: 1) development of information competence of a teacher in General terms, 2) his ability to implement in their professional field newer media, i.e. to be not only user of ready software products, but mostly serve the creator of the developer's own teaching tools.

Particular attention should be paid to use the electronic journal of student grades (see Picture 3). Gradebook is permanently open resource that can be used as a student and his parents for orientation in the process of studying the discipline.



**Журнал оцінок**

| Ім'я / Прізвище ↑ | | Модуль 1 ⤨ ∑ м1 ⇵ | Модуль 2 ⤨ ∑ м2 ⇵ | Підсумок ... ⇵ | Іспит, залік (2 ... ⇵ | Загальне за курс ⇵ |
|---|---|---|---|---|---|---|
| Андріяненко Валерія Анатоліївна | ▦ | 67 | 65 | 46 | 17 | 63 |
| Благодир Богдан Павлович | ▦ | 67 | 64 | 46 | 19 | 65 |
| Власенко Інна Сергіївна | ▦ | 63 | 67 | 45 | 19 | 64 |
| Гігашвілі Наталія Автанділівна | ▦ | 71 | 60 | 46 | 18 | 64 |

**Picture 3. Window of E-Gradebook of the student is available for viewing during whole semester**

At the first stage of professional training the teacher on the use of computer-learning environments is usually conducted at the extension courses. At this stage, as a rule, the process of teacher training is over and the second stage acts as a problem to be solved by their own, in the best case at the level of self education.

In our view, attracting the students to the design activity of the project creation in computer-oriented learning environment should promote the development of e-learning course for students.

The proposed course will be implemented in two stages:

1) formulation and solution of the problem of development of information technologies at the level of active student (work with various programming environments –Word, Excel, PowerPoint, Photoshop, MacroMedia, and also work with video clips, audio etc.) regardless of the subject of learning;

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2) formulation and solution of the task of training the future ecologist as an expert and a studentto the use of ready software products, training of specialists in ecology as the creator of its own software products to meet specific goals and objectives.

During the work on the structure and content of the course the author has to come from a number of key provisions that allow the student to successfully master and subsequently creatively apply knowledge and skills in their future careers. Feature of the interaction of the teacher and the student is that they communicate in the learning process as colleagues – current and future. Therefore, from the level of use by teacher the computer-oriented training environment depends largely on the level of training of the student as a future specialist in the field of information and postinformational society.

In modeling the learning process, part of which is carried out through the use of information technology, the teacher must take into account the criteria and ways of integration between them:

1) general educational potential of information technologies and their implementation on their basis of the teaching principles;

2) ratio of the key competencies of educational with opportunities of integrating information technology into the learning process as a means of representation and processing of learning material using a computer in Lesson [Касаткін 2011: 330–336].

During the development of the course were taken into account: computer-oriented teaching methods; developed the function of computer-oriented learning environment; demonstration the function of computer-oriented learning environment; control functions of computer-oriented learning environment; diagnostic functions of computer-oriented learning environment; reference and information functions of computer-oriented learning environment; the combined functions of computer-oriented learning environment [Мясникова, Мясников 2008].

To the conditions that determine the effectiveness of computer-oriented learning environments, we attributed:
– Basic computer literacy of teachers and students;
– Sufficient number of software tools for educational purposes;
– The presence of object-oriented techniques.

Achieving these conditions provided a significant improvement of the quality of the educational process in the preparation of specialists in ecology.

The experimental study showed that the use of computer-oriented learning environment influences the formation in it of knowledge and skills of future specialists. At the organization of the educational process in such an environment should take into account significant factors that could affect the outcome of the study of disciplines by future specialists. The existing relationship between the individual style of information processing in e-learning courses and results of

education led to the conclusion that the high level of „internet addiction" of students can have a positive influence on the absorption of the material at self work in the information-educational environment [DeGani, Martin, Stead 2010].

## Literature

Бавико О.Є., Чичановський І.О., Букреєва І.В., Орлов А.В., *Формуванняціннісихо-рієнтаційособистості*. – Режим доступу до статті: http://www.conference. mdpu.org.ua/conf_all/confer/2002/conf_antro/4/ baviko.html

DeGani A., Martin G., Stead G. (2010), *Frances Wade. E-learning Standards for an M-learning world – informing the development of e-learning standards for the mobile web. Lincoln House*, Cambridge.

Гальперин П.Я. (1981), *Формирование умственных действий//Хрестоматия по общей психологии: Психология мышления* – М. – С. 78–86.

Гура В.В., Василовский В.В., Дикарев С.Б. (2003), *Электронные образовательные ресурсы как педагогическая среда открытого образования*. Труды X Всероссийской научно-методической конференции „Телематика", Том 2. – СПб.

Касаткін Д.Ю. (2011), *Специфічні принципи побудови профілю інформаційно-освітнього середови щанавчання*. Науковий вісник НУБіП України. – Вип.159(2) – Київ. – С. 330–336.

Мясникова Т.С., Мясников С.А. (2008), *Система дистанционного обучения MOODLE*. – Харьков. –232 с.

## Abstract

The article discusses method of construction and aspects of using e-learning course in computer-oriented environment on the example of discipline „Information and systematology".

**Key words:** E-course, computer-oriented environment, distance learning, e-learning, moodle.