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IMPLEMENTATION OF MODULE OBJECT-ORIENTED DYNAMIC EDUCATIONAL ENVIRONMENT MOODLE IN THE EDUCATIONAL PROCESS OF HIGH SCHOOL

The article reveals the importance of implementing the virtual learning environment Moodle in the educational process of future teachers of various disciplines on the example of Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets. The research is based on the analysis of the results of implementation of Moodle and outlines the benefits of learning with the use of resources of Moodle environment for students, teachers and institutions in general. The article substantiates the relevance of the outlined problem, its importance for students - future teachers and educated teachers. The algorithm for the introduction of virtual learning environment in the educational process at pedagogical universities is given.

Keywords: high educational establishment, educational process, virtual learning environment Moodle, distance learning.

ВПРОВАДЖЕННЯ МОДУЛЬНОГО ОБ'ЄКТНО-ОРІЄНТОВАНОГО ДИНАМІЧНОГО НАВЧАЛЬНОГО СЕРЕДОВИЩА MOODLE В ОСВІТНІЙ ПРОЦЕС ВИЩОЇ ОСВІТИ

Стаття демонструє важливість впровадження віртуального навчального середовища Moodle у навчальний процес майбутніх педагогів різних спеціальностей на прикладі Кременецької обласної гуманітарно-педагогічної академії ім. Тараса Шевченка. На основі аналізу результатів впровадження Moodle автор вказав на переваги навчання з використанням ресурсів середовища Moodle для студентів, викладачів і навчального закладу в цілому. У статті обґрунтовано актуальність окресленої проблеми, її важливість для студентів - майбутніх учителів та вже сформованих педагогів, побудовано алгоритм впровадження віртуального навчального середовища в навчальний процес педагогічного ВНЗ.

Ключові слова: вищий навчальний заклад, навчальний процес, віртуальне навчальне середовище Moodle, дистанційне навчання.

Trends in the development of modern world and domestic education demonstrate the introduction of new technologies and various training models (online courses, mixed learning, personalization, interactivity of the learning process). This requires not only the development of information and communication technologies, but also significant organizational changes, innovations in human resources policy, the improvement of the normative and methodological basis of the entire educational process, the development of pedagogical tools relevant to the tasks of modern education and the level of modern information and communication technologies (ICTs) [3] and rethinking of the role of educators - a teacher must become a partner in the learning process, possess innovative teaching skills, show technological enthusiasm, interest and mastery [7].

Sheryl Nussbaum-Beech (a member of the Board of Directors of the International Society of Technologies in Education, USA) stated: "Technologies will never replace a teacher, but a teacher who effectively applies technologies to develop his students will replace those who do not possess them". This statement should become a motivating factor for a teacher in the course of implementation of ICT and innovative technologies in the educational process.

The development of society requires rethinking of the organization of education and the role of its objects in the functioning of the entire system of education; that is a teacher and a student. In modern society, pedagogical educational institutions have to learn to solve a fundamentally new task - to educate young people who are able to think critically and deeply and are ready to change and have the tools to change themselves and their students. A young specialist, after graduating high educational establishment, finds a job, and then at the same time he must work, study and develop in the changing environment. Therefore, students who graduate high educational establishments need to possess, above all, learning skills, creative ability to face new challenges, ability to solve problems and work together and other skills needed in the 21st century.

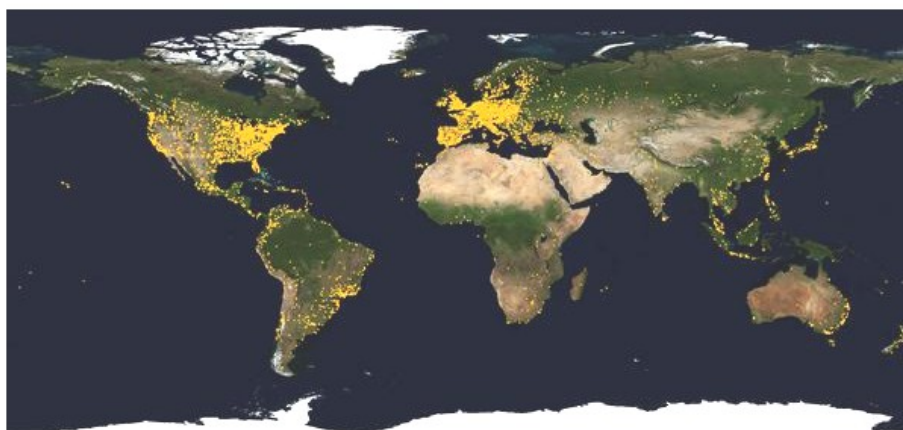
Nowadays a teacher is competing for student's time and attention not only with other teachers, but also with the whole system of modern life, in which the value of purposefulness and the ability to correctly set priorities are precious. To compete equally a teacher must become the leader of student's life project, the project to change oneself through education[3]. One of the tools for such changes is Moodle. Therefore, the relevance of the outlined problem, its importance for students - future teachers and already educated teachers, the need to construct an algorithm for the introduction of virtual learning environment in the educational process of pedagogical universities, have identified the purpose of the article.

Moodle is an abbreviation from the Modular Object-Oriented Dynamic Learning Environment. Moodle is also often referred to as the Learning Management System (LMS), Course Management System (CMS), Virtual Learning Environment (VLE), or simply a learning platform that provides teachers, students and administrators with a highly developed set of computer training tools, including distance learning.

Moodle can be used in training both in computer classrooms of an educational institution and at home. Moodle is the most sophisticated and widespread system in Ukraine and in the world. At the moment, Moodle already has 74,502 active sites in 232 countries (more than 65 million users) and continues to evolve at a much faster pace than its competitors. In Ukraine, there are currently 581 sites based on the Moodle platform.

Moodle is a free, open source system. It is not only free of charge, but also does not require any paid software for its work. That is, each educational establishment can implement the most perfect licensing system, without having to spend a single penny for the purchase of the software. At the same time, it can make changes to the code according to its needs.

More about MOODLE can be found on the official website of the project: <http://moodle.org/>.



There are 74502 currently active sites that have registered from 232 countries.

Fig.1 Image of site locations based on the Moodle platform.

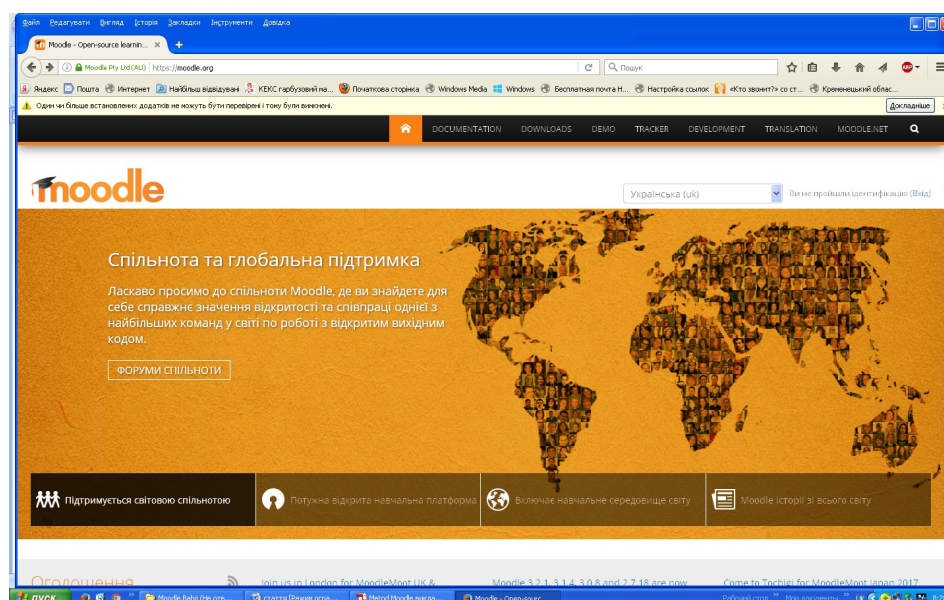


Fig. 2. Main page of the official site of the Moodle platform.

The system allows implementation of Moodle in working together for geographically separated students and teachers.

Let's take a look at the opportunities that Moodle gives for an educational establishment.

According to the Decree of the Cabinet of Ministers of Ukraine (December 30, 2015, No. 1187) "On the Approval of Licensing Conditions for the Conduct of Educational Activities of Educational Institutions" (Appendix 15 to the Licensing Conditions), the technological requirements for information principle of educational activities in the field of higher education contain an indicator: "Availability of electronic resource at an educational institution that contains educational and teaching materials of the curriculum, including those in the system of distance learning". At the same time, the minimum percentage of academic disciplines, that must satisfy this condition, is 30% for the entry-level (a junior specialist), 50% – for a bachelor and 60% – for a master.

The organization of distance learning is currently governed by the relevant principle. (Principle on distance learning approved by the Ministry of Education and

Science of Ukraine, No. 466, April 25, 2013). Distance learning refers to an individualized process of acquiring knowledge, skills and methods of cognitive activity of a person, which occurs mainly through mediated interaction of remote participants in the educational process in a specialized environment, which functions on the basis of modern psycho-pedagogical and information and communication technologies.

This principle (Clause 2.1) defines distance learning as a separate form of training, as well as the use of remote technologies in traditional forms: full-time, part-time, etc.

The training of specialists at the distant form requires a license from the Ministry, but the use of remote technologies in traditional forms of training is in the competence of the educational institution. This enables to introduce Moodle into an existing learning process (even if full-time sessions are conducted), which greatly increases its efficiency, reveals lots of new opportunities, is positively perceived by students, saves the auditorium and trains teachers to work in a distance learning form. We have reviewed electronic educational resources of universities in Ukraine, which train students for the specialty "Secondary Education" at the beginning of 2016-2017. The list of universities is based on the data from the official educational site of Ukraine at <http://osvita.ua/vnz/guide/search-17-0-0-104-29-25.html>

The results of the study reveal that most universities use Moodle system (19) for the placement of electronic educational resources, the rest (8), and Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets has also posted some teaching materials.

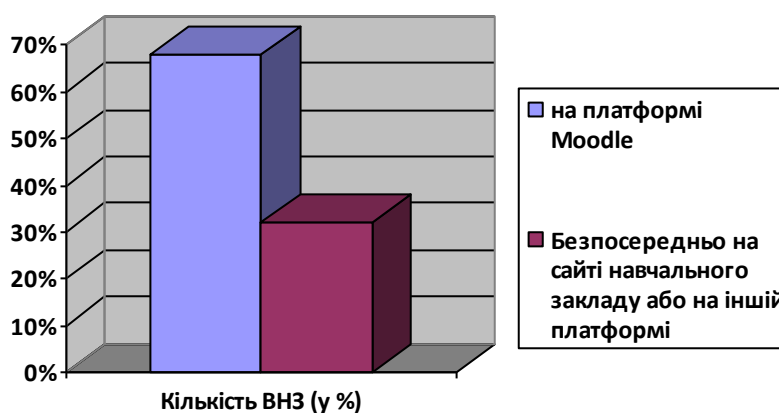
Table 1

Placement of educational resources at pedagogical educational institutions

Platform where educational resources of an educational institution are located	Number of universities (%)
Moodle platform	68%
Directly on the website or on a different platform	32%

Chart 1

Placement of educational resources at pedagogical educational institutions



Scientific and methodical seminars were held in the first semester (2016-2017) with the topic "Formation of the electronic database of educational and methodological complexes on the Moodle platform" in order to improve teachers' skills, to exchange the experience and scientific and methodological developments at the Department of

Theory and Methods of Technology of Education and Informatics at Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets. In particular,

- The departmental scientific and methodological seminar (18.10. 2016)
- University scientific and methodological seminar (11.11.2016)
- Inter-departmental scientific-methodical seminars (08-16.12.2016)

Due to the results of seminars, we may conclude that


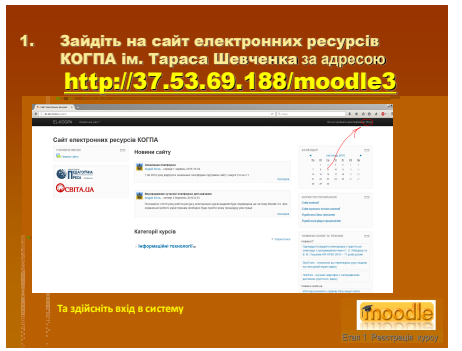
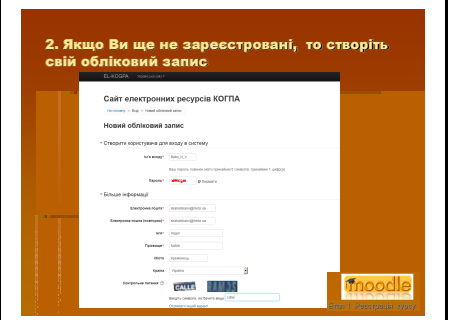
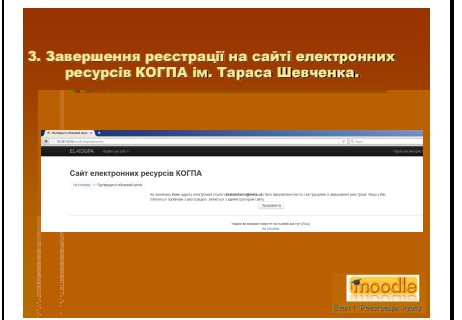
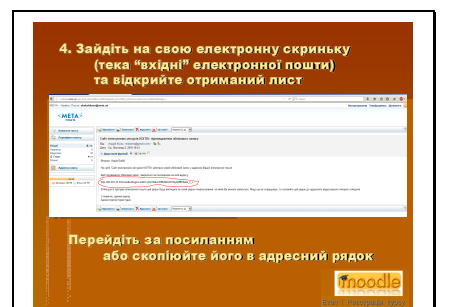
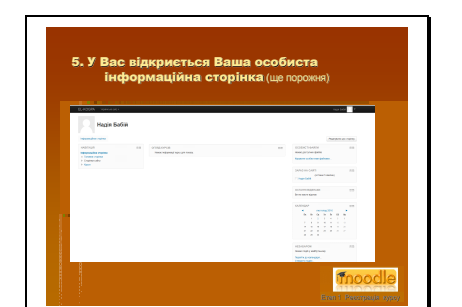
- resources available in the academy server allow to place training courses of disciplines,
- it is necessary to start the procedure for obtaining a domain name,
- it is necessary to develop courses for each teacher of the faculty and conduct their testing.

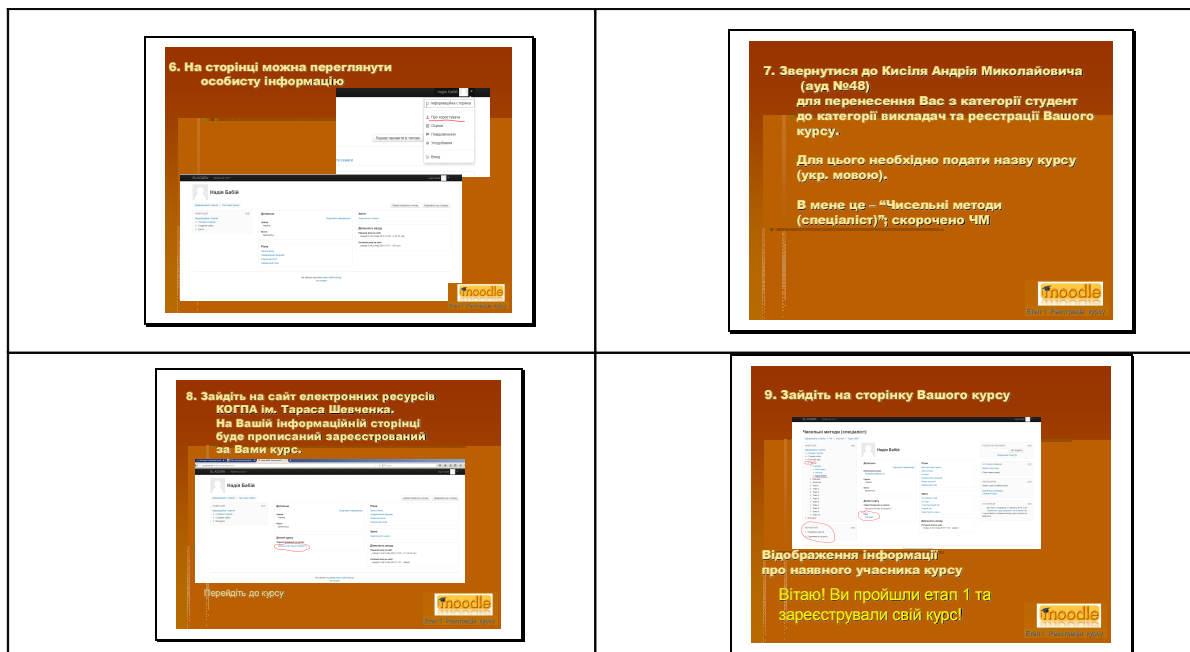
To implement Moodle environment in the learning process at Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets a series of presentations for teachers was offered, where the process of registering the course and filling the course with study materials was illustrated in detail. In particular, the first stage is shown in Table 2.

Table 2

Slideshows of the presentation “Registration of the course on Moodle platform”

Stage 1

 <p>«Формування електронної бази навчально-методичних комплексів на платформі програми «Moodle»</p> <p>Етап 1 Реєстрація курсу</p>	 <p>1. Зайдіть на сайт електронних ресурсів КОГПА ім. Тараса Шевченка за адресою http://37.53.69.188/moodle3</p> <p>Та здійсніть вхід в систему</p>
 <p>2. Якщо Ви ще не зареєстровані, то створіть свій обліковий запис</p>	 <p>3. Завершення реєстрації на сайті електронних ресурсів КОГПА ім. Тараса Шевченка.</p>
 <p>4. Зайдіть на свою електронну скриньку (тека «вхідні» електронної пошти) та відкрийте отриманий лист</p> <p>Перейдіть за посиланням або скопіюйте його в адресний рядок</p>	 <p>5. У Вас відкриється Ваша особиста інформаційна сторінка (ще порожня)</p>



The results of seminars revealed that 4 courses were registered in November, 2016, in January, 2017 – 17 courses and now 87 courses have been registered.

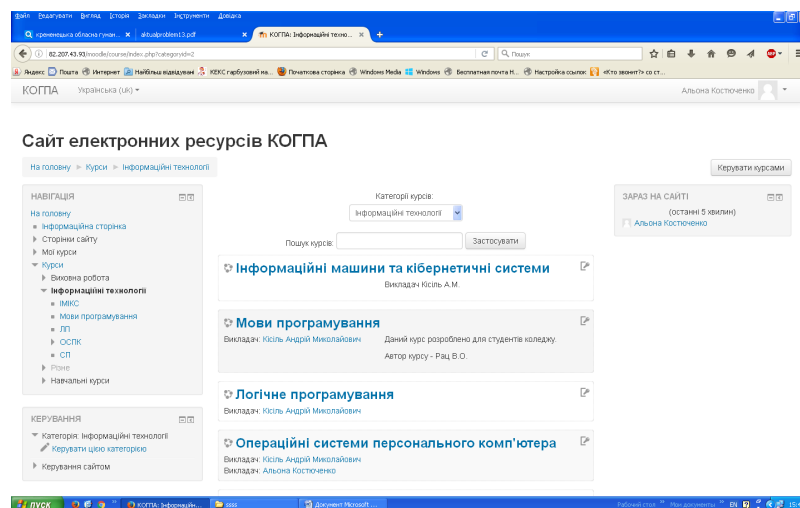


Fig. 3. Filling of courses of the site of electronic resources at Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets in November, 2016

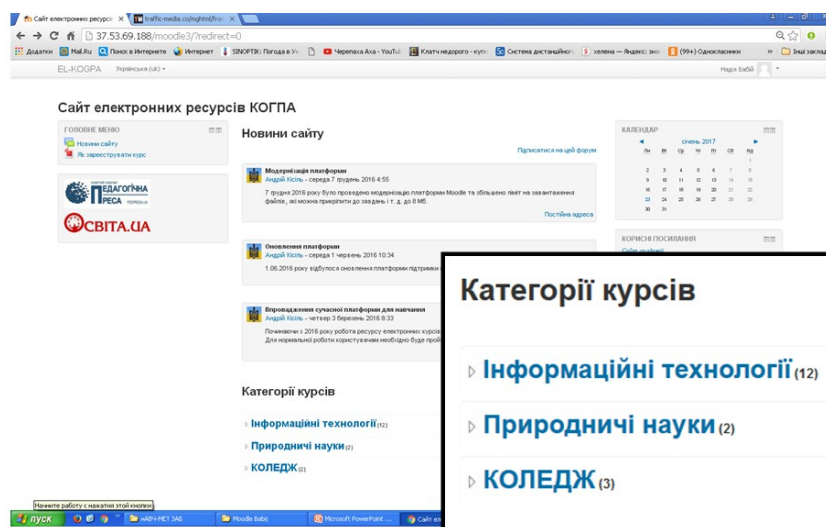


Fig. 4. Filling of courses of the site of electronic resources at Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets in January, 2017

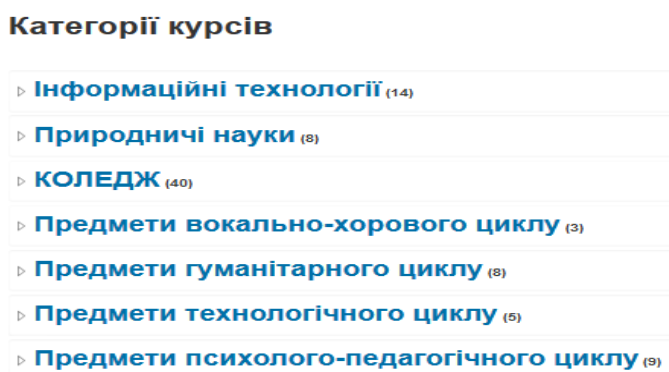


Fig. 5. Filling of courses of the site of electronic resources at Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets in March, 2017

The results of the study revealed the following opportunities for using Moodle learning environment at Taras Shevchenko Regional Humanitarian-Pedagogical Academy of Kremenets:

1. Monitoring of the availability of electronic teaching materials of disciplines for curricula of all areas of training (specialties).
2. Possibility of realization of a complete set of educational and methodological base of disciplines.
3. Ability to create the course assessment system (return form).
4. Analysis of students' requests, comments and suggestions which are received through anonymous electronic questionnaires and surveys.
5. Automatic control of the results of educational activities.
6. Wide opportunities for communication between all participants in the educational process, in particular between the administration and the teachers.
7. Introducing distance learning elements for students who combine education with work.

It should be noted that MOODLE learning environment reveals new opportunities not only for the institution as a whole, but for each teacher as well. According to the results of the implementation of the courses "Numerical methods", "Operating systems of the personal computer", "Programming languages", the teachers of the department have identified the following advantages of using MOODLE learning environment:

1. Creating courses and accessing them from any computer with the Internet access (no need to contact the site administrator every time).

2. Editing courses (the ability to quickly and easily change, expand, supplement and correct the teaching materials of the discipline).

3. Filling of courses with teaching and methodological base and its layout (structuring).

4. Ability to use different types of files (including audio and video files) when filling courses.

5. Organization of students' knowledge control by different forms and its account (tests, assignment of tasks with attached files or text, forum).

6. Monitoring and controlling students' time of work by reviewing the statistics of the number and time of visits.

7. Ability to set necessary terms for students to complete tasks.

8. Courses created in MOODLE are protected against unauthorized access, alteration and damage (destruction).

Students' work in Moodle environment has been analyzed. Students were quite active in using Moodle in the learning process. They quickly adapted and began to use educational materials, means of control and started to communicate with the help of messages, chat and forum.

The following benefits of Moodle learning environment for students (in descending order) can be singled out. (The data are submitted according to the results of students' questionnaire).

1. Possibility of repeated revision of educational material, which is constantly available on the Internet.

2. The teaching material placed in the Moodle environment is logically structured and it improves the conditions for independent learning.

3. Students' ability to view their grades (according to certain settings even those of the whole group) (intermediate and for the course as a whole)

4. Means of self-testing, realization of tasks for self-control.

5. Means of fulfilling tasks and evaluation regardless of human factor and a teacher.

6. Advanced Internet resources.

7. Possibility of distant using of teaching materials, interactive learning and communication with a teacher.

8. Possibility of personal participation in acquisition of educational material.

The generalization of the research results gives grounds to suggest following recommendations for:

- higher education institutions - regarding the development of the principle on the use of the Moodle environment in the learning process; monitoring the availability of electronic teaching materials for academic disciplines of the curricula in all areas of training (specialties); creation of a course evaluation system (return form); communication between all participants in the educational process, in particular

between the administration and the teachers; implementation of distance learning elements for students who combine education with work;

- scientific and pedagogical workers - regarding the creation of courses of educational disciplines and access to them from any computer with access to the Internet; filling of courses with teaching and methodological base and its layout; organization of students' knowledge control by different forms and its account; monitoring and controlling students' time of work by reviewing the statistics of the number and time of visits; ability to set necessary terms for students to complete tasks.

The study does not fully reveal all the aspects of the implementation of Moodle environment in the learning process. Further scientific and methodological research should be aimed at detailing the obtained algorithm via the presentations of each stage of using Moodle learning environment separately for teachers, administration and students.

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