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E-COURSE BASED ON THE PLATFORM MOODLE IN TEACHING PHYSICS TO FUTURE SPECIALISTS OF RIVER AND SEA TRANSPORT

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The article considers that the fastest way to include Ukraine into the global educational system is to create conditions for widespread use of the Internet for training purposes, which is considered the most perfect model of communication in the global information society. It is stated that one of the most common and most convenient forms of distance learning for marine institutions of higher education is electronic courses.

Their main advantage over traditional forms of education is to provide the conditions for productive individual work of the students. It is shown that the problem of individual work is particularly relevant for marine education, due to the specific schedule of the educational process, including the presence of long-term shipboard training. It is defined the peculiarities of usage of e-learning courses in Physics for training of the specialists of river and sea transport.

It is proposed the interpretation of the term "e-learning course in Physics" as an information model of a specific topic or section of "Physics", which displays the oriented basis of cognitive activity of the student, it provides organic and natural formation, regulates mental and emotional processes, predicts the opportunities for educational tasks solving by offered means for stimulating the development of personal cognitive capabilities.

The requirements for e-learning courses in Physics are determined and their advantages over other innovative teaching methods towards the realization of methodological features of the educational process are highlighted. The structure of e-learning courses in Physics is proposed and the experience of e-courses using in Physics for bachelors of specialty "River and Sea transport" is described.

Keywords: *information educational technologies, learning platform MOODLE LMS, e-learning course.*

Problem definition and its relationship with important scientific and practical tasks. In recent years we have observed a reorientation effect: if previously (8-10 years ago) the development of society, specifically its technical sphere, influenced the creation and implementation of information technologies, then now these information technologies have an influence on the development of society, implementing into all spheres of human activities, ensuring the spread of information flow and creating a global information space.

The computerization of education is an integral part of these processes. Ukraine has actively been involved in the formation of a new education system that is focused on integration into the world educational information space. Accordingly, there are significant changes not only in theory, but also in practice teaching techniques. Therefore, the issue of widespread information technology usage in education has increased an interest in its study.

Modern information technologies make change and modernize the learning process. In schools the USA, France, UK, Japan, Finland and other countries has developed a large number of computer systems educational purposes.

Informatization of education is seen as a prerequisite and most important stage of informatization of Ukraine as a whole, as the process of training people to full life in the

information society. It is associated with providing areas of education theory and practice development and use of modern information technologies aimed at realizing the goals of psycho-pedagogical training and education.

Analysis of recent research and publications in which a solution of problem. Many modern scholars (V.P. Bepalko, B.S. Hershunskyy, E.I. Mashbits, I.V. Robert et al.) show that the use of information technologies in teaching promotes efficiency in the educational process of self-mastery skills search and knowledge representation; general knowledge mastering techniques and strategies of educational material; self-selection timetable training activities, organizational forms and methods. The use of information technology in education highlighted in the works of V.Y. Bykov, Y.V. Bulakhov, O.N. Bondarenko A.F. Verlan, V. Godin, A.M. Gurzhii, M.I. Zhaldak, Y. Beetle, V.F. Zabolotniy, A.I. Dzungza, RM Dydkovskoho, Y. Doroshenko, G.A. Kazakov, G.N. Kondratenko, A.N. Kondratieva, L. Kalinin, A.A. Mishchenko, N.V. Morse, L. Marine, L.E. Petukhov, A.P. Pinchuk, O.V. Spivakovsky, A.S. Fedorchuk, A.V. Shestopal, V.P. Yurchuk, M.I. Yakovlev and others.

Information and communication technologies are among the most important tools of the educational process in the preparation of students of technical universities. While the process of learning, there are new equipment, technology, communications. Therefore, training should be focused on the amount of professional knowledge and skills, which is constantly changing and growing. Thus, pedagogical and didactic tools of information and communication technologies training should follow scientific and technological progress, and sometimes even be able to predict its trend is intensified and modernized in time.

The development of information technology, computer tools, the Internet, telecommunications allows for a new approach to work with information, promotes learning motivation, enhance cognitive activity of future navigators and engineers sudnoenerhetykiv. This significantly increases the possibilities for differentiated and individual learning, students can independently choose where, when and how they will learn, in turn this they develop their own communicative competence.

Use of information technology in education can reveal various psychological and pedagogical aspects:

- the interaction of human and computer;
- the development of thinking, memory and imagination;
- processes of perception and processing of information;
- emotional sphere;
- change in cognitive, emotional and motivational processes.

There are three main areas of information technology in education.

The first area presents educational programs (e-books) for the different disciplines that have developed and are used for the regulation of learning and self-employment. Programs of this kind of work the algorithm developer and usually have an educational text of the demonstrations, various tasks and assignments, tests and evaluation of performance, sometimes tips. Most often they are for school courses. Recently, more and more such training programs are designed to enable remote access, namely, correspondence, training and self-study, including via the Internet

The second line up support programs, which are used as a tool for any kind of educational activity (practical or laboratory classes, out-of-classroom work): automated calculations, optimization, study the properties of objects and processes on mathematical models. Such programs contain various kinds of reference and information systems, text and image editors, spreadsheets, and so on.

The third area is the most promising. It is based on work in the field of artificial intelligence. When applying this kind of intelligent software systems and techniques taught implemented an individual approach to learning, it is possible to design the educational process for a particular student, and for the characteristics of the subject areas and requirements for groups of students.

Revealing these trends, we should note the following methodological learning objectives from the perspective of teaching the principles of information technology:

- Personalization and differentiation of the learning process;
- Increase internal learning motivation and interest in the future of the profession;
- Automation of control of feedback, correction and self-correction, diagnosis and evaluation of educational activities;
- Ability to learn, repeat, fix, test their knowledge, including their own;
- Release of training time to reflect on the results obtained through the implementation of specialized computer engineering calculations (labor-intensive computational operations);
- Modeling and simulation of objects studied or investigated, processes, phenomena which are difficult or impossible to visually observe through a difficult or expensive equipment (rotary, oscillatory motion, adding vibrations, molecular processes, quantum, solid state physics, nuclear physics)
- Improved training, personal development student, activation of cognitive activity, the development of thinking;
- Organization of professionally-oriented education, formation of professionally important qualities of future specialist;
- Performing experimental research with the help of designers and mathematical applications;
- Study methods of statistical processing of the experimental results, such as laboratory equipment, where a large number of measurements takes little time;
- Distance learning via the Internet;
- Self-knowledge, knowledge of the environment, the formation of information culture.

The implementation of information technologies in educational process provides the solution of many problems, but we should allocate the major, that are inextricably linked, such as:

- the training and education enrichment by establishing methods and training technologies, that are appropriate to the current technical capabilities;
- further improvement of the technical information technologies capabilities, increasing their educational potential in the process of applying new methodical approaches to their use.

It is obvious, that in teaching physics information technologies have an exceptional value. Following this, nowadays a huge amount of methodical works on improvement the quality of mastering physical knowledge is dedicated to the problem of their practical usage, among which we can mention works of Ukrainian scientists as P. S. Atamanchuk, L. Y. Blahodarenko, V. F. Zabolotnyi, A. I. Lyashenko, N. A. Myslytska, V. D. Syrotyuk, V. P. Sergienko, M. I. Shut, etc. There is no doubt in the fact, that each scientist, who works in this direction, has made an important contribution to its development.

Statement of the object of article. However, the problem of information technologies usage in high school has not been completely solved, or more precisely to say, is only at the initial stage of its solution.

How can this be explained? Firstly, information technologies are developing very rapidly, and as the educational process is quite inertial, it changes slowly, and any of its changes demands new educational models development, thus, it needs the proper amount of time. Secondly, each real educational process has its own specifications, which should be adapted with new information provision, and it is quite challenging.

Is it possible to agree with the statement, that the future of education is based on information technologies, which use local and global computer network?

Let's analyze this issue. Recently, some members of the educational community have expressed the idea, that not all innovations borrowed from Europe have affected our education system in a positive way. Especially it states for technical education, the quality of which has always been high in our country. Undoubtedly, we can agree with these ideas. It is quite obvious, that European educational experience is not always suitable for us and we should treat it selectively. However, our educational system was affected more by upgrading methodological and

organizational approaches to learning (credit-transfer system introduction, reducing the quantity of teaching hours, the combination of specialties, the new techniques of conduction lectures, seminars, practical and laboratory classes, etc.).

As for information technologies, the conclusion is unambiguous: their implementation into the educational process contributes significant increase in quality of education. Therefore, we should not be behind other international educational institutions. As a result, we consider, that the proper conditions creation for widespread global Internet usage, that is known as the most superior model of communication in global information society, will be the fastest way to include Ukraine into the global educational system. Thus, the main ways of Ukraine entry into the global information-educational environment are:

- the creation of modern national informational environment and integrating into it various educational establishments of different accreditation levels;
- the creation of a unified distance education national system;
- the computer technology usage as a learning tool, which allows to improve the process of teaching and learning, increase its quality and efficiency.

The basic material of the article. Information technology now have a huge number of appointments and functions. Every teacher uses them depending on the specific needs of the educational process. However, it is high time to choose such Information Technologies for educational purposes, that are most in demand among students.

The results of statistical studies show, that over 60% of Ukrainian students actively use the Internet, and it provides significant opportunities for the introduction of distance learning. Moreover, we want to note, that we are talking about distance learning, not about distance education, because, in our opinion, this form of education can be effective even in countries, where students have utterly different capabilities and stable motivation for learning because of their mentality.

Electronic courses (online courses) are known as one of the most common and most convenient form of distance learning. Thousands of students in Ukraine use this form of education. The main advantage of electronic courses over traditional forms of education is providing conditions for productive and independent student's work. It's not a secret, that in traditional learning system individual work nature is observed only in a small quantity of students. What about electronic courses, the idea encourages students to work because it is usual, interesting and accessible.

The issue of self-studying is particularly relevant for maritime educational establishments due to the specific schedule, namely:

- practices presence with duration of 6 months;
- possible interruption of studies due to the departure trainee to practice before the completion of the semester;
- possible cadet's late arrival from practice and return to studying process after the start of the semester.

Therefore, a significant portion of students is studying independently according to individual schedule; furthermore, the number of senior students can reach 50%.

Given the foregoing, the direction of Kherson State Maritime Academy took a number of preparatory measures for training and methodological support of the educational process of students enrolled on an individual schedule and the introduction of distance learning elements, namely:

- Developed by distance learning module based on object-oriented learning environment Moodle. This work has involved leading experts and professors of information technology, computer systems and networks.
- Creating a network of specialized classrooms and lecture halls equipped with the necessary multimedia, video cameras, with access to the Wi-Fi. In these classrooms the students can work with their laptops to access the necessary materials on servers Academy. It is possible to broadcast lectures taught in one of the rooms, or from other places, in all offices, and the ability to view individual accession lectures remote user.

- Creation of a specialized laboratory "recording studio" to record video lectures, videos, practical laboratory sessions and gym, which subsequently placed at distance learning, and written to disk.

- Create your own printing house to print the necessary teaching materials for students before their departure in practice.

Addressing organizational issues and logistical support elements enabled the introduction of distance learning in the organization of the educational process of the Academy, and especially to the study subjects cycle of basic and natural science training.

Today the department of information technology, computer systems and networks, a project Distance Learning System (DLS) KSMA. The plan of the project on the platform MOODLE created site structure and its methodological basis. We have collected, edited and posted on the DLS more than 3000 pieces of information (work programs, lectures, guidelines for laboratory, seminars, control tests of knowledge) and create almost 1500 accounts of teachers and students (students) KSMA. Today continues the process of site content and the process of submitting the necessary materials to the site is one of the priorities of all departments of the Academy.

Also, due to the project DLS MOODLE, developed the necessary guidelines for teachers - users of the site, and a series of workshops for support staff departments and teachers.

Given the importance of objective evaluation of educational achievements of students in accordance with the competence approach to the educational process, we have achieved the transition to a three tier monitoring the students acquired knowledge and skills, namely:

- current control carried out by the teacher on the results of assimilation of content cadets modules of subjects (thematic evaluation);
- evaluation forming units (subjects) during test-examinations;
- final mastering integral evaluation of the students (students) certain competencies according to the stage of training.

In the current academic year, an integral assessment takes the form of Rector control considered during admission to state certification of students (students) graduate courses and the translation of cadets (students) the following courses. Departments have developed a special task for comprehensive assessment of acquired competences, which was the platform for test-exams in the form of computer-based testing platform based MOODLE and was implemented at the Faculty navigation. A comprehensive inspection rector competencies acquired by students I - IV courses full-time online online distance learning. All results can be electronically at any time to check on the site; Printed forms submitted to the Dean.

Beginning with the 2016-2017 school year at all levels of training at the academy exams implemented in the form of compulsory testing of computer-based platform MOODLE. This form of control makes it impossible for the human factor in evaluating the quality of education students.

Today the question on an independent evaluation of educational achievements of students not only in subjects where the exam is a form of control, but also of those subjects which form controls are differentiated tests or tests. Lecturer developed tests from most disciplines of higher education Bachelor and Master professional direction "navigation", which made the implementation of information technology specialists, computer systems and networks based on the platform MOODLE. Currently, these tests are tested at all levels of training at the academy.

Let us more detail on the basic principles and the principles of developing e-learning courses, which we used in developing didactic and methodical maintenance of discipline "Physics".

Learning Management System «Modular Object-Oriented Dynamic Learning Environment» (LMS MOODLE) platform is used in Kherson State Maritime Academy for the implementation of e-learning courses to improve the efficiency of independent students' work in physics learning. The main advantage of this system is that it allows creation of e-learning courses (networking courses), that contain the whole necessary educational and support material, means of control (or links to them) and methodological guidelines according to the Physics discipline working program. Consequently, the MOODLE platform usage provides an opportunity for students to master Physics course in a single informational environment.

Taking into consideration organizational specifications of the Physics educational process in maritime institutions, studying LMS MOODLE platform is selected due to its qualities, namely:

- the wide opportunities for placing and updating training and methodological support of the Physics course;
- presence of tools for remote students consultation, in particular through forums;
- the possibility of regular monitoring of students work by reviewing visits statistics;
- presence of an active feedback;
- the possibility to use electronic courses for both distance and daily learning.

A wide communication arsenal is one of the major advantages of LMS MOODLE. The system supports sharing files of any formats both between teachers and students and between students themselves. Notification service allows informing all participants or selected groups of the course about current events. Forum provides an opportunity to organize educational issue discussion of that can be conducted in groups. It is possible to attach files of any format to forum posts, answers of either students or feedbacks of teacher.

There is a function of reports evaluation - both for teachers and students. Chat allows to organize educational discussions of individual problems in real time. The teacher quickly gets cadets works, analyse them, corrects errors and sends back for further development. The high level of training interactivity, the diversity of methods and forms of training materials presentation, the possibility of modular content structuring, the individual education plan creation, the permanent active inquiry system availability, the comfort and privacy training – all of these contribute significant enhance interest in discipline, develop skills and enhance self-learning cadets process. In addition, teacher can quickly and effectively manage these processes.

The role of the teacher changes. Abandoning the dominant role in the learning process, teacher starts operating only as a mentor, as one of the information sources and as an assistant in the process of cadets' self-development.

Introducing a model of distance learning network environment science possible in three ways:

- using only Internet technologies;
- using the case method as part of the curriculum passed in printed form, and proper training is in network mode,
- mixed mode, which is a symbiosis of full-time and distance learning. Studying in mixed mode, in our opinion, is the most appropriate method for marine education. Thus, the following learning activities: self-study, networking and practical laboratory sessions, networking discussions and consultations, educational telecommunications project teletestinh.

Central to the system of distance learning physics is independent work of students with materials network environment. This type of training activities implemented in two forms: without personal contact with a teacher-tyutorm and under his guidance. In both cases, independent work was guided, as students interact with information and educational content protection platform Moodle, equipped with a monitoring system by which controlled the mastery of basic themes Course (frequency of treatment, the amount of time spent, the results of the tasks and exercises practical and laboratory work).

Teaching telecommunications project as a way of organizing classes provides comprehensive character education of all its subjects. Complex projects implemented in the network environment testing model, assumed independent decision students real practical problems in the course of joint research and creative teaching and learning activities and the acquisition of basic knowledge of physics.

Networking practical and laboratory classes are among the main organizational forms of teaching physics process in distance education. They were held in the form of network discussions via television and audio conferencing, were based on the discussion of problems, identifying and comparing different points of view, were both group and individual, were held in off-line mode under the guidance and with the teacher network -tyutora.

Network consultation represents a form of communication teacher-tutor students, assist them in mastering self-learning material. They carried out the first phase of the medium in text format by email or by means telekonferentssvyazi, and further using a specially developed membrane Moodle.

Recently, Kherson State Maritime Academy e-courses in various disciplines, including Physics discipline are actively developed and used in teaching cadets on daily and correspondence forms of studying, to improve training seafarers' programs qualification, in cadets' research work organization and during course projects and diploma preparation. Educational and instructional footage in e-learning courses are listed in the most accessible and comprehensive form.

There are the main advantages below of e-learning courses compared to traditional means of teaching:

- no matter where marine expert is, he is always provided with high quality learning and teaching materials, that can be handled in convenient for him time;
- e-learning courses are highly functional, in particular, they are provided with function of consultation and progress testing in real time.

It is important to mention, that the Physics e-learning courses usage by specialists in river and sea transport is characterized by certain features, that occur only to maritime institutes. Let us examine them in details.

1. Physics e-learning course is designed for self-studying, but during cadets' self-preparation, because of the educational process specifications, he should be present among other cadets and in teacher presence.

In this regard, the cadet at any time has the opportunity to consult the teacher or other cadets and correct his mistakes and inaccuracies in the task performances. Thus, the feedback at the request of the cadet can be done both in person and online. Under these conditions, the work on electronic course transforms into a group, collective or individual form of issue solving and conclusions formulating.

The teacher also receives more benefits in comparison with the guidance of academic work online. Indeed, he controls directly the cadet's actions in finding the optimal solution of educational problem and constructs educational elements of educational process regulations, supervising him directly. It should be noted, that in such circumstances methodological approach in implementing e-learning courses slightly modifies compared to work on them directly via the Internet. However, we are inclined to believe, that it fully meets the principles of our national education and also significantly enhances Physics e-learning courses.

2. The cadets, who work on the Physics e-learning courses in terms of sailing (during their shipboard training) are stated in a situation, when they are required to have the most accurate planning of their studying activities.

Experience shows, that a cadet who receives any other ("on land") technical specialty, while working on an electronic course follows the same approach as during studying subjects by traditional methods, namely acquires knowledge not systematically, often leaves the implementation of learning objectives for the end of the semester, that, certainly, reduces the quality of learning rate. However, the cadet at sea is put under quite difficult conditions:

- firstly, he works for the watchman method, and therefore has a very limited time for studying activities;
- secondly, he is always in the crew, that is not always consists of other cadets; even if they are some of them, they may be from other courses, mastering the content of other disciplines.

As we can see, in sailing conditions cadet's studying work is fully individual. In addition, he should usually work on several disciplines. Therefore, the cadet must design his own plan of learning activities and manage it, plan methods of educational work in view of its aims and objectives to evaluate their achievements under program of action and correlate them with the planned results.

We have suggested interpretation of the "Physics electronic training course" term. Electronic Learning course is an information model of specific topic or section of Physics course, which displays the estimated basis of cognitive cadet's activity, provides organic and natural

formation, regulates mental and emotional processes, predicts the possibility of solving educational problems through the proposed stimulating development means of personal cognitive capabilities.

We have established requirements for electronic learning courses in physics:

1. Physics electronic learning course should be based on educational standards industry and Physics curriculum, reflect the continuity of learning, integration of Physics disciplines in professional training cycle, include means of implementation and stimulating effect on the formation and development of cognitive functions and professional orientation of the cadet individuality.

2. The development of electronic learning courses should be conducted on a single theoretical and methodological basis, all of its components must be holistic and interrelated according to the logical structure of construction of educational information.

3. Implementation of electronic learning courses should be based on appropriate methods, that meet the objectives and content of education, involving the usage of corrective methods and techniques, that stimulate learning activities.

4. An important component of electronic learning courses should be a diagnostic method to detect the level of learning activities based on logical operations and productive ways of obtaining knowledge.

Let us experience the use of electronic courses for Bachelor training in specialty "River and Sea transport" as an example of discipline "Physics". The authors developed ELC (e-learning courses) in all branches of physics according to the curriculum.

We have proposed such a structure of e-learning course in Physics. The introduction course parts include introductory video, the curriculum, the schedule, examination issues as well as general methodological guidelines to study the course both for students and for teachers. There is also a link to open electronic educational resources with of relevant physics sections of other universities, libraries, news forum and a forum to discuss common problems associated with work in the system.

Each module includes the following elements: the necessary theoretical material, teaching materials for practical lessons, a number of tasks for individual work of students, links to recommended educational publications available in electronic library of educational establishment, hyperlinks to external electronic information sources, as well as the tests for current and final control. Studying of electronic courses material is along with full-time education.

Theoretical course material is provided in the form of elements "lecture", where each block of theoretical material is completed with theoretical test questions. If there is a wrong answer, the system returns the student to re-study of the theory. In addition, the unit includes presentations, animations, videos, which are useful when studying the specific issues.

We have also used LMS MOODLE opportunities for the development and use of the tests. The system allows you to create different types of tasks. The most interesting and useful tasks when studying Physics are, in our opinion, "the tasks for calculation" and "attached questions." In the first case, the system itself generates every new numeric data of the test task with the interval given by the creator. As the correct answer is formula by which the system makes a calculation. It provides that each student receives his original version of the task.

In another case, the test task can contain an unlimited number of "attached issues" of various types. It allows control an integrated system of knowledge and skills of students by using one test task. A specific test is formed by a teacher from the bank of the tasks established by him. The test can be configured both in studying mode and in a control mode.

An integral part of the successful assimilation of Physics is the cadet's ability to solve specific tasks, the formation of which involves systematizing and consolidating knowledge gained when studying theory, the ability to use additional and reference books. So, each module of the course contains a description of methods and examples of solving tasks on the topic. To monitor the process of mastering of relevant skills, an individual work is performed. It is done with the help of the tasks with answers in a file that is sent to the teacher. The results of the work determine the extent of practical mastering of Physics course.

Laboratory works provided by the curriculum in Physics are performed in specialized classrooms. The student can do all previous work independently, to examine the description of the work required remotely, to prepare the table for the measurement results, to undergo an appropriate test and to get an access to the laboratory work.

The structure of the courses there is also the task to review the historical and biographical information. This is a database "Great Scientists", where great attention is paid to Ukrainian scientists.

Cadets performing this task, study the biographies of scientists who made significant contributions to the development of the relevant section of Physics, the history of scientific thought. This leads to a better understanding of the discipline, allows humanize studying Physics, to disclose context of a physical discovery, the law or phenomenon wider. In addition, cadets are proposed to write a project on one of the themes related to the history of physics. Moreover, the system makes it possible to involve other students to check and evaluate the projects. Experience shows that the use of elements of the biographical method in students' individual work promotes interest in physics, improving the quality of bachelors education.

Importantly, feedback is provided with a large number of evaluated elements, and allows to use of score-rating system actively, as well as forums and chat rooms. Such services as "Messaging", "Comment" are intended for individual communication of the teacher and the student, for reviewing papers, for discussing current educational problems.

An important feature of electronic course in LMS MOODLE is that the system creates and maintains a portfolio of each student: works submitted by him, marks and comments of the teacher, posts on the forum. The final register with all results obtained while working with e-learning courses can be converted, for example, as a document Microsoft Office Excel.

Creating e-courses, selection, development of materials, placing them in LMS MOODLE, the organization of work with students in a virtual educational space – is not an easy job and requires an appropriate training of the teacher. In order to solve the issues on development, deployment of training materials, implementation of the course in the educational process, in the Kherson State Maritime Academy a system of permanent teaching seminars on the theory and practice of using LMS MOODLE learning is organized between the departments. The specialists of Information and Computing Center work at all departments of the Academy to consult the teachers and provide them with technical support. The teachers of Department of Information Technology, Computer Systems and Networks have developed electronic educational course for academy teaching staff on the use of LMS MOODLE in education. The result of training is the creation of electronic courses on the discipline by the teachers.

An important part of LMS MOODLE in terms of scientific research, analyzing the results and effectiveness of this form of studying is an element of "survey". Several answers are offered for each question posed, and the student must choose one (a task with a choice of answer). These elements have been implemented by us in each e-learning course. The questions were used to determine the effectiveness of e-courses and types of individual work in the context of motivation, self-development, formation of certain skills and competencies. The system stores all the answers received in a form suitable for further statistical analysis. To obtain objective information survey is conducted after completion the training and passing the exam by the students.

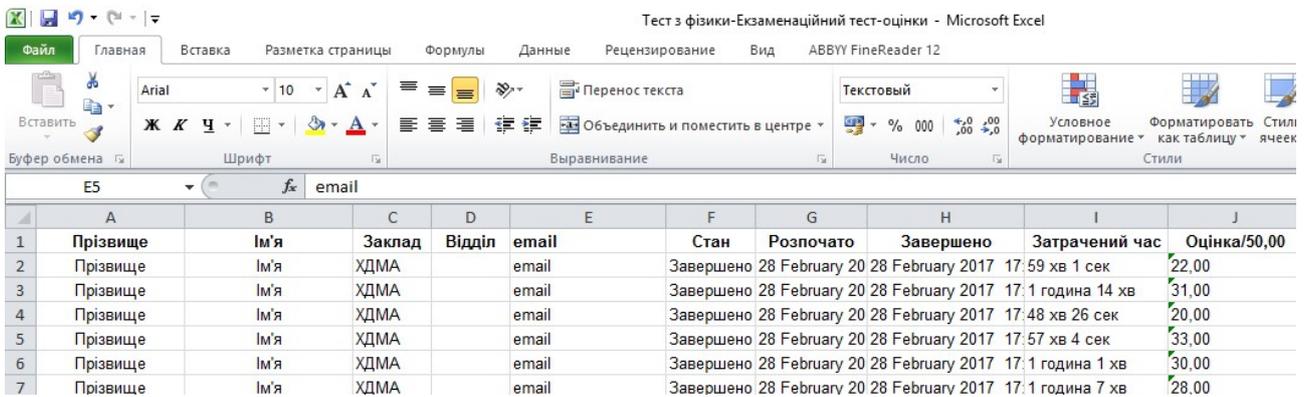
Analysis of the results of numerous interviews and comparing the success of students clearly show that the implementation of electronic courses in Physics in the educational process greatly increases the effectiveness of individual work of the students. Systematized material of e-learning courses blocks, easy navigation facilitate consistent and clear process of doing an individual work under the supervision of the teacher throughout the semester.

If it is necessary, an advisory service is provided in either on-line, and through forums and private messages. Involving each student in such activity, the real performance of different learning activities can objectively assess the quality and volume of individual work of the students.

At the same time, the constant presence of feedback, availability of educational information as well as results motivate students to more productive individual activity.

The use of electronic courses when studying of the relevant sections of Physics allows the teacher to organize extra curriculum individual work of students effectively, to help them navigate among the various sources of information, to obtain information about students engaged in extra curriculum activity, if learning is successful, how much time the student is spent for studying a particular topic. All this information is recorded in the students' register which is formed automatically, without additional expenditures of teacher's labor.

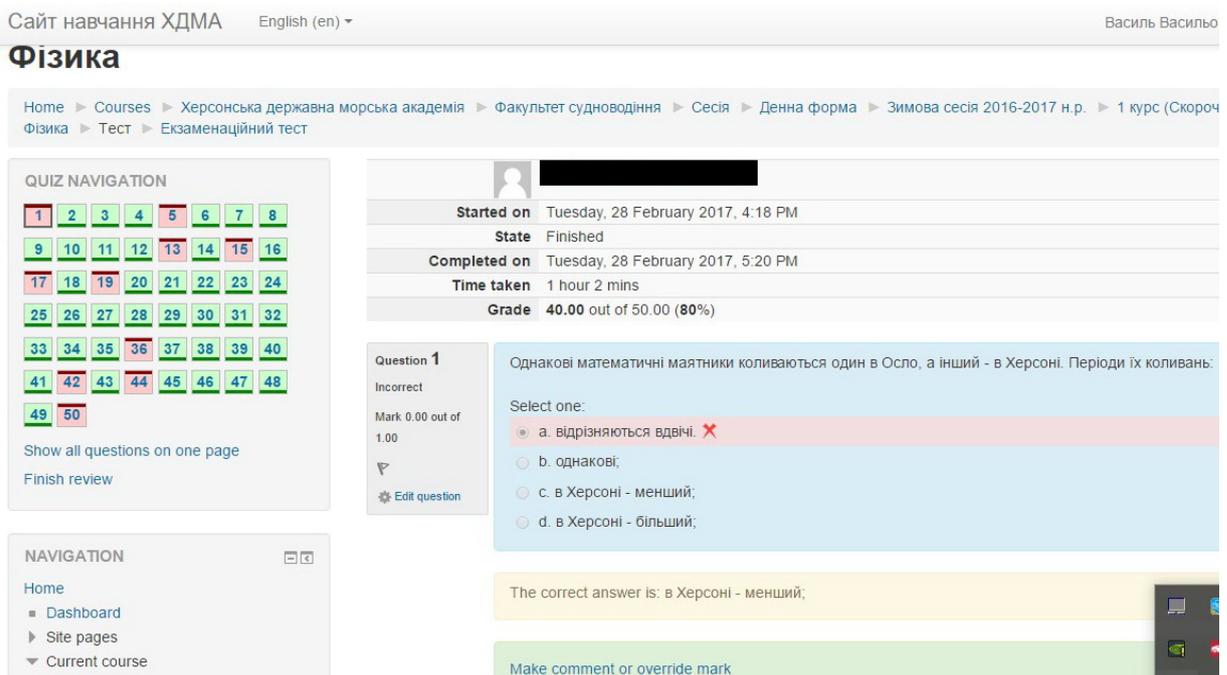
For example, a final test sheet is formed, which can be viewed in different forms online or exported in user-friendly formats:



	A	B	C	D	E	F	G	H	I	J
1	Прізвище	Ім'я	Заклад	Відділ	email	Стан	Розпочато	Завершено	Затрачений час	Оцінка/50,00
2	Прізвище	Ім'я	ХДМА		email	Завершено	28 February 20	28 February 2017	17:59 хв 1 сек	22,00
3	Прізвище	Ім'я	ХДМА		email	Завершено	28 February 20	28 February 2017	17:1 година 14 хв	31,00
4	Прізвище	Ім'я	ХДМА		email	Завершено	28 February 20	28 February 2017	17:48 хв 26 сек	20,00
5	Прізвище	Ім'я	ХДМА		email	Завершено	28 February 20	28 February 2017	17:57 хв 4 сек	33,00
6	Прізвище	Ім'я	ХДМА		email	Завершено	28 February 20	28 February 2017	17:1 година 1 хв	30,00
7	Прізвище	Ім'я	ХДМА		email	Завершено	28 February 20	28 February 2017	17:1 година 7 хв	28,00

Fig. 1. Example of the test list exported to the MS Excel

This site provides an opportunity to track, analyze and provide cadets the necessary advice for each question separately:



Сайт навчання ХДМА English (en) Василь Василю

Фізика

Home ► Courses ► Херсонська державна морська академія ► Факультет судноводіння ► Сесія ► Денна форма ► Зимова сесія 2016-2017 н.р. ► 1 курс (Скорочена Фізика) ► Тест ► Екзаменаційний тест

QUIZ NAVIGATION

1 2 3 4 5 6 7 8
9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24
25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48
49 50

Show all questions on one page
Finish review

NAVIGATION

Home
Dashboard
Site pages
Current course

Question 1
Incorrect
Mark 0.00 out of 1.00
Edit question

Started on Tuesday, 28 February 2017, 4:18 PM
State Finished
Completed on Tuesday, 28 February 2017, 5:20 PM
Time taken 1 hour 2 mins
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Однакові математичні маятники коливаються один в Осло, а інший - в Херсоні. Періоди їх коливань:

Select one:

a. відрізняються вдвічі. ❌
 b. однакові;
 c. в Херсоні - менший;
 d. в Херсоні - більший;

The correct answer is: в Херсоні - менший;

Make comment or override mark

Fig. 2. Page of information about testing a particular student

In practice, the organization of educational process and individual work based on e-learning courses is keen interest among students because this form of work is quite natural for them and is an important complement to traditional forms of learning. Electronic Physics courses allow each cadet to construct individual trajectories of development and learning, providing optimal formation of professionally important qualities and competencies, and learning the material on a high level of synthesis.

Conclusions and prospects. Based on the foregoing, we have identified the following benefits of e-learning courses in Physics compared to other innovative teaching methods towards the realization of methodological features of the educational process, namely:

- work with electronic course provides complete training structure of students activity;
- the stage of construction action model dominates (the cadet does it) among the stages of electronic learning course, and the effectiveness of learning is determined by the stage at which student chooses how to solve educational problems (self-regulation action) as well as by the stage of evaluation personal results (personal self-evaluation).

Thus, e-learning courses provide high-quality presentation of educational information and are characterized by complexity and systemic. We can confidently assert that creation and implementation of e-learning courses in Physics has a special value for marine institutions of higher education specific to the educational process.

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ЕЛЕКТРОННІ КУРСИ НА БАЗІ ПЛАТФОРМИ MOODLE У НАВЧАННІ ФІЗИКИ МАЙБУТНІХ ФАХІВЦІВ РІЧКОВОГО ТА МОРСЬКОГО ТРАНСПОРТУ

У статті наголошується, що найбільш швидким способом включення України у світову освітню систему є створення умов для повсюдного використання в навчальних цілях глобальної мережі Інтернет, яка вважається найбільш довершеною моделлю комунікації в умовах глобального інформаційного суспільства. Констатовано, що однією з найпоширеніших та найзручніших форм дистанційного навчання для морських вищих навчальних закладів є електронні курси, головна перевага яких перед традиційними формами навчання полягає у забезпеченні умов для плідної самостійної роботи студентів. Показано, що проблема самостійної роботи є особливо актуальною для морських навчальних закладів, що пов'язано зі специфікою графіка освітнього процесу, зокрема, наявністю тривалих морських практик. Виокремлено особливості використання електронних навчальних курсів з фізики при підготовці фахівців річкового та морського транспорту. Запропоновано тлумачення терміну «електронний навчальний курс з фізики» як інформаційної моделі певної теми або розділу дисципліни «Фізика», що відображає орієнтовну основу пізнавальної діяльності курсанта, забезпечує її органічне і природне формування, здійснює регулювання мисленнєвими та емоційними процесами, прогнозує можливості розв'язання навчальних задач через запропоновані засоби стимулюючого розвитку особистісних пізнавальних можливостей. Встановлено вимоги до електронних навчальних курсів з фізики та виділено їх переваги порівняно з іншими інноваційними методами навчання у напрямі реалізації методичних функцій освітнього процесу. Запропоновано структуру електронного навчального курсу з фізики та висвітлено досвід застосування електронних курсів з фізики для підготовки бакалаврів зі спеціальності «Річковий та морський транспорт».

Ключові слова: інформаційні освітні технології, навчальна платформа LMS MOODLE, електронний навчальний курс.

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ЭЛЕКТРОННЫЕ КУРСЫ НА БАЗЕ ПЛАТФОРМЫ MOODLE В ОБУЧЕНИИ ФИЗИКИ БУДУЩИХ СПЕЦИАЛИСТОВ РЕЧНОГО И МОРСКОГО ТРАНСПОРТА

В статье сделан акцент на том, что наиболее быстрым способом включения Украины в мировую образовательную систему является создание условий для повсеместного использования в учебных целях глобальной сети Интернет, которая считается наиболее совершенной моделью коммуникации в условиях глобального информационного общества. Констатировано, что одной из наиболее распространённых и удобных форм дистанционного обучения для морского высшего учебного заведения являются электронные курсы, главное преимущество которых по сравнению с традиционными формами обучения состоит в обеспечении условий для плодворной самостоятельной работы курсантов. Показано, что проблема самостоятельной работы является особо актуальной для морской высшей школы, что связано со спецификой графика образовательного процесса, в частности, наличием длительных морских практик. Выделены особенности использования электронных учебных курсов по физике при подготовке будущих специалистов речного и морского транспорта. Предложена авторская трактовка термина «электронный учебный курс по физике» как

информационной модели определённой темы или раздела дисциплины «Физика», отражающей ориентировочную основу познавательной деятельности курсанта, обеспечивающей её органичное и естественное формирование, осуществляющей регулирование мыслительными и эмоциональными процессами, прогнозирующей возможности решения учебных задач посредством предложенных средств стимулирующего развития личностных познавательных возможностей. Установлены требования к электронным учебным курсам по физике и выделены их основные преимущества по сравнению с другими инновационными формами обучения в направлении реализации методических функций образовательного процесса. Предложена структура электронного учебного курса по физике и освещён опыт применения электронных курсов по физике для подготовки бакалавров по специальности «Речной и морской транспорт».

Ключевые слова: информационные образовательные технологии, учебная платформа LMS MOODLE, электронный учебный курс.