Implementation of new technologies in science education at the University of Forestry

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Abstract: *Purpose of this paper is a presentation of some of the possibilities offered by e-learning platform Blackboard Learn ™ for science education at the University of Forestry.*

Key words: *e-learning, distance education, biological Sciences.*

INTRODUCTION

One of the main objectives of Bulgaria's development by 2020, is "the proportion of the population aged 30-34 years old having completed tertiary education" to increase from 26.9% to 36% in 2012 [1]. This ambitious plan, with an increase of over 9% in 8 years, could only be achieved with the rapid introduction of electronic distance learning in Bulgaria's higher education. This is one of the main trends in European Union's development, where the proportion of young people with higher education must be at least 40%, by 2020.

Within the project № BG051PO001-4.3.04-0052 "Development of Center for electronic forms of distance learning at University of Forestry", funded by the Operational Program "Human Resources Development", the university was able to create a complete electronic infrastructure, offering all the features and technical resources for quality and modern distance education. Installed and adapted to the needs of the University of Forestry was one of the leading electronic platforms in the world - Blackboard Learn ™.

Purpose of this paper is a presentation of some of the possibilities offered by e-learning platform for science education at the University of Forestry.

SUMMARY

University of Forestry (UF) strives to meet the requirements of the National Strategy for Lifelong Learning 2014-2020, by creating a modern and efficient system of higher education, in the center of which is the man with his personality and intellectual potential. The University is the only university in Bulgaria, which has trained specialists in the field of forestry, wood technology and furniture, engineering furniture design and landscape architecture [6].

Along with this, the rating system from January 2014 has presented UF as one of the leading universities in the country [2], which trains specialists in ecology and environmental protection, veterinary medicine, agronomy and plant protection, economic management and tourism.

The specific uniqueness of UF, and its significance nationwide, brings along higher responsibilities to both educational process and students. It is not insignificant, that it is they - the students, who have different expectations, attitudes and needs for more effective training, based on modern technologies. Implementation of better and more effective learning requires different methods, techniques and a wide range of knowledge of the teaching staff. All this, together with the created electronic repository of standardized educational components and virtual libraries, widely promotes the recruitment and the successful realization of young scientists and teachers in the university.

The first research into the use of e-learning systems in UF, began in 2002 with the development and testing of "Electronic system to support learning" (ESDP), which has its own module for generating Web-based courses to meet basic requirements regarding the publication in Internet and Intranet environment [7].

One of the main findings of this pilot study is that there are technological grounds for research, analysis and adaptation of systems, to meet the needs of e-learning at UF. Subsequently, the studies are focused on evaluating and adapting the e-learning systems with open source, for training at UF.

In 2006, the university investigated the functional feasibility of educational content and activities for the needs of distance learning. And a year later explored different options of the evaluation system, for electronic materials, for distance learning at UF. Studies reveal that the integration of advanced technologies for training and advanced IT solutions in education is most effective within a single educational space [10].

In the next few years continued work on the development and piloting of the methodology and technology for the creation, maintenance, development and use of e-learning for training purposes at UF. These studies are based on the use of embedded university programming environments for developing and maintaining of e-learning content - Moodle and eLSe [8, 9].

The project, whose implementation began in late 2012, aims to make UF one of the leading centers for electronic distance learning in the field of natural sciences in Bulgaria. One of the ambitious goals is to develop electronic forms for the courses of a minimum of six graduate training courses, and over 120 training modules. The implementation of the project will involve more than 1200 students and over 150 teacher from UF.

E-learning platform Blackboard Learn ™ is easily accessible and has customizable interface with many built-in functionalities (fig.1). The platform allows easy access to educational and / or informational resources for both teachers and students from UF [5]. To date, several universities in Bulgaria are using or intend to use Blackboard Learn ™ in the development of electronic forms of distance learning.

Fig. 1. Blackboard Learn for the needs of UF

New technologies and Internet are so strongly integrated into our daily lives that students use their smartphones everyday as a means of better communication and preferred method for learning. Students and teachers can use UF Blackboard Mobile Learn, giving them mobile access to assessments, upcoming tasks (tests, home), discussions, blogs, journals, multimedia and more from anywhere in the world, at any time. E-learning platform of UF will allow inclusion in the learning process of new target groups, in particular persons with special needs and those living in remote areas. Currently training of persons with disabilities in science is difficult, due to the specifics of the educational process. Heavy rhythm of traditional education is often a hard obstacle

for persons with special educational needs. This inconvenience will be overpassed by the inclusion of Blackboard Learn ™ in the educational process. The platform allows creation of models for individual planning of flexible learning paths, for continuous professional development.

It will create an opportunity for effective involvement in educational process of students from all over the country without being necessary to leave their homes. Along with that, Blackboard Learn ™ platform creates great opportunities for the foreign language teaching in UF, which can actively engage students not only from Bulgaria but also from the Balkans and Europe.

The advantages of Blackboard are that the platform is integrated with many world renowned suppliers of e-learning content such as: Barnes & Noble; Kaltura; McGraw-Hill; NBC Learn; Quality Matters and Selesforce.com. Blackboard compatibility with electronic educational content enables teachers to use ready-made text, graphics, presentations, videos, audio files, cases and more, which leads to improvements in the quality of education provided.

E-Blackboard Learn ™ platform enables the use of interactive e-learning content discipline by integrating video from YouTube ™, photos Flickr®, SlideShare presentations and more. (fig.2, fig. 3, fig.3a).
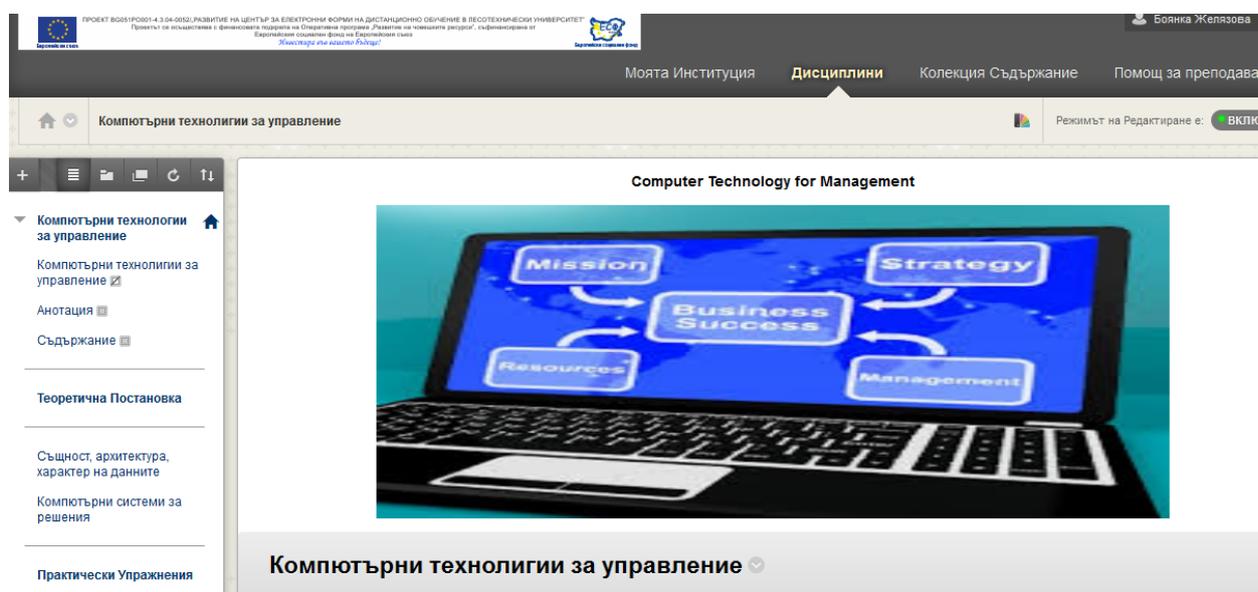

Fig.2 Startup screen of the discipline "Computer technology for management"

In UF operates "Center for Continuing Education" and "Career Development Center." These structures are also actively involved in the development of training courses and information campaigns in the e-learning platform of the University. They are used to stimulate the links between UF and business, between learners and the labor market.

In implementing the project, through the resources of e-learning platform in the learning process are included representatives of 10 leading companies, in the field of natural sciences. Joint curriculum development with industry aims to fully integrate the needs of the business and increase the employability of students. This innovative approach solves the problem of the discrepancy between the practical application of knowledge, acquired at UF, skills and competencies and the needs of the labor market. All "best practices" from the project, in the field of natural sciences can find their application, not only in other universities but also in various professional fields.
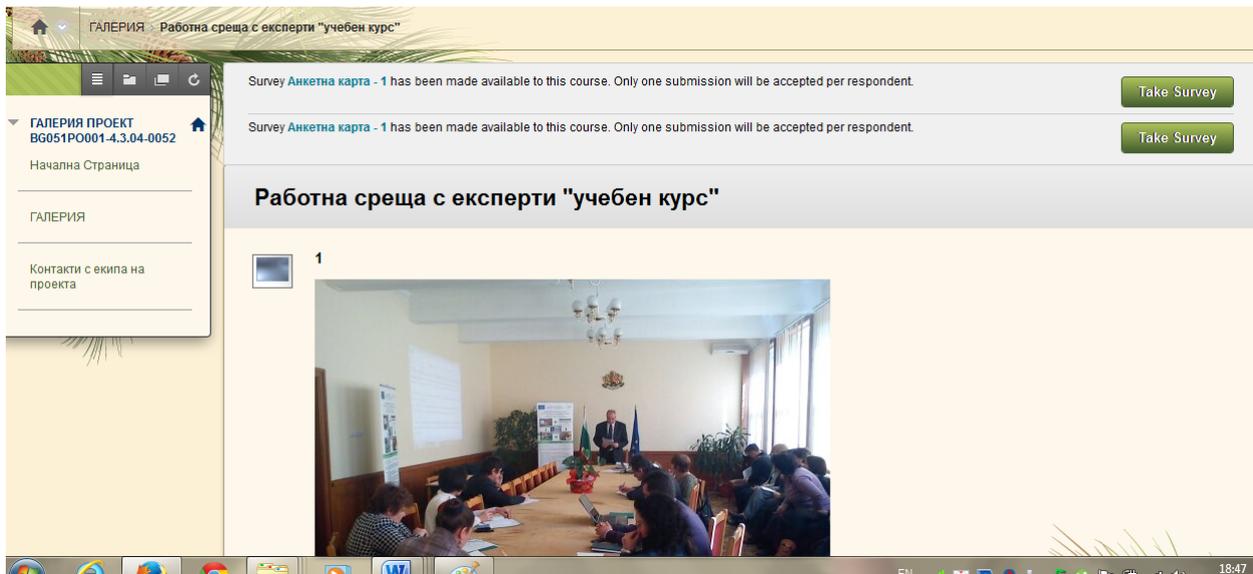
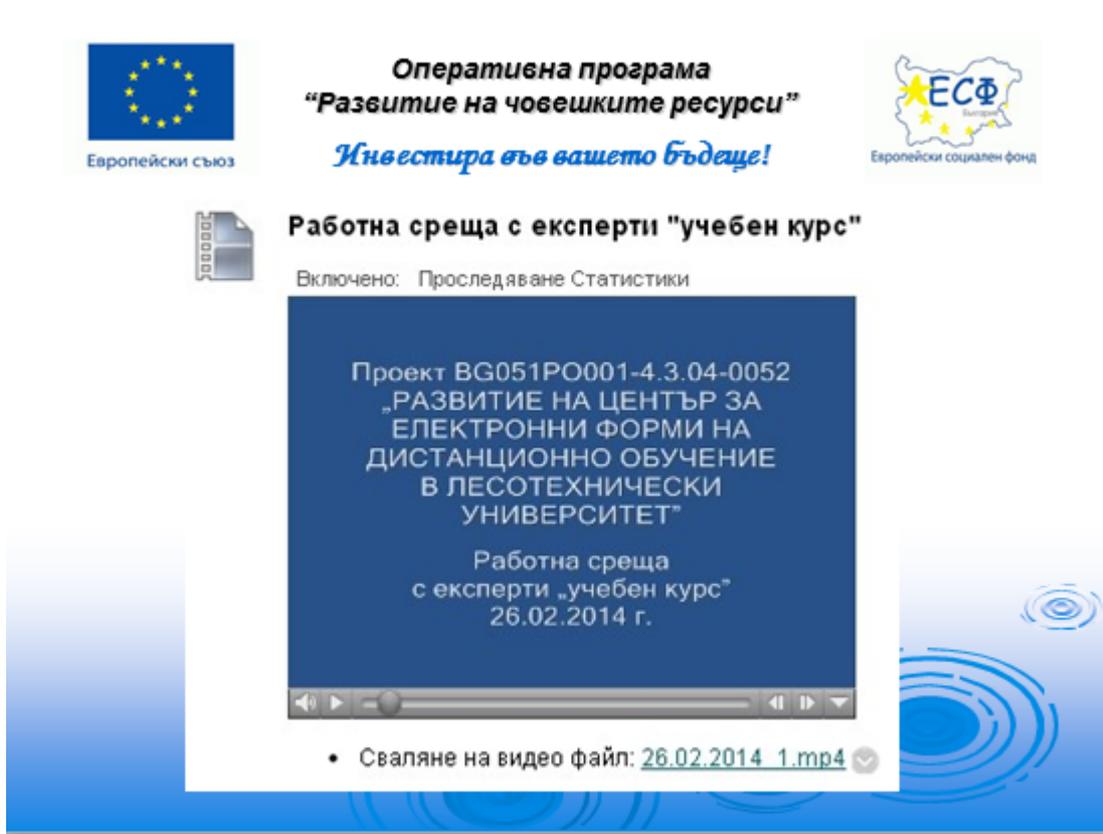Fig. 3 Workshop with experts – "study disciplines"

Fig.3a Workshop with experts - Interactive e-learning content by integrating video

Implementation of new technologies, in particular the e-learning platform Blackboard Learn ™ provides teachers and students of the UF, with access to modern electronic infrastructure. It also increases the motivation for professional development of both students and lecturers.

This material addresses issues, related to the preparation and uploading of educational content of developed modules and programs. Further analyzes and evaluation of the results of approbation of e-learning systems is forthcoming. From one

side the preparation and participation of teachers, and from other, inclusion of students for better organization of their education.

This article is the beginning of our future researches, related to the quality of education at UF, and evaluation of the e-learning system usage.

By 2020 UF should continue the development and modernization of educational infrastructure, based on the Strategy for Development of Higher Education, Operational Programme "Science and education for smart growth - 2014-2020", Partnership Agreement of Republic of Bulgaria with the European Commission for the new program period 2014 - 2020 year, and other donor programs.

University of Forestry is a leading educational and scientific center in the field of management and sustainable use of natural resources, which could benefit from EU financial resources, actively participating in the creation of partnership networks and joint electronic infrastructures, [4] as well as with other universities and business and secondary schools.

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