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PREPARATION OF VIDEO LECTURES FOR DISTANCE EDUCATION

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Professional paper
In this paper the application of the software product Camtasia Studio 8 and some developments of the authors when preparing video lectures for distance education are presented. The developed films are in several languages and are accessible in the Internet. Regular and part-time students may study them in details using a computer or a smartphone in time and place most convenient for them. The selected information in the video lectures is presented much faster and accurately compared to the traditional methods for teaching, which saves time. There are included animations with comments, simulations and inserted video clips to visualize the presented material. The authors work in collaboration on a new project for international cooperation under CEEPUS program for preparation of video lectures and exercises in German and English for students studying in the partner universities.

Keywords: *distance education; e-learning; Internet; video-lectures*

Priprema video predavanja za obrazovanje na daljinu

Stručni članka
U ovom radu je predstavljena primjena softvera Camtasia Studio 8 i neki doprinosi autora pri pripremi video predavanja za obrazovanje na daljinu. Razvijeni su filmovi na nekoliko jezika i dostupni su putem interneta. Redoviti i izvanredni studenti mogu ih studirati u detalje koristeći računalo ili pametni telefon u vrijeme i na mjestu koje im najviše odgovara. Odabrane informacije u video predavanjima se predstavljaju puno brže i točnije u usporedbi s tradicionalnim metodama poučavanja, što štedi vrijeme. Uključene su animacije s komentarima, simulacije i ubačeni su video filmovi koji vizualiziraju prezentirani materijal. Autori surađuju na novom projektu međunarodne suradnje u sklopu CEEPUS programa za pripremu video predavanja i vježbi na njemačkom i engleskom jeziku za studente koji studiraju na partnerskim sveučilištima.

Ključne riječi: *e-učenje; Internet; obrazovanje na daljnu; video predavanja*

1 Introduction

The method of teaching with video-lectures is successfully used for one year in several faculties of the Technical University of Sofia and is financed under agreements with the European Union. In the present publication the authors share their experience and some methods used to increase the interest and engagement of the students to the studied subjects. The distance education via Internet is an imposing type of education acquired very well by the students, supporting to a great extent the preparation of the students and contributing for better results from the examinations.

The most up-to-date and effective method for e-learning is distance education via Internet. This technology presents an opportunity for access to the information on different subjects by a computer, tablet or a smartphone at any time and any place. It is used by people with various finance resources and different age in order to increase their knowledge and qualification.

In the present publication characteristics of the asynchronous communication via the Internet or Intranet are depicted among the lecturer and the students. The emphasis is on the usage of the software product Camtasia Studio 8 and its application for development of video lectures. The authors present their experience and some methods used by them when realizing real distance education.

The access of the students to web-based video lectures is done by an Internet platform selected in advance. The communication between them and the lecturer is performed using e-mail, discussion forums, computer or video conference and chat. Usually the lecturers base the information for their subject in a specific web-site, YouTube for example, where they contribute most often: the syllabus, exam test, questionnaire with control questions, on-line exercises and other materials. The lecturer is in charge for the periodic up-dating of the study material.

This form of web-based education usually requires registration using a password. The Internet-based video lectures and exercises with recorded audio and video detailed explanations on behalf of the lecturer avoid the shortcomings of traditional presentations based in the Internet, which most often contain figures and a few text explanations. This is the reason they present limited information for the subject in question and do not give an opportunity for additional video visualization of the material.

According to the references the results from the statistical surveys done so far prove unambiguously that distance education with video lectures via Internet is a method equal to the contact classes, as regards efficiency and quality.

Findings indicate that a very large percentage of students who watch the videos use them as a helpful tutoring resource and receive several types of improved-learning benefits including improvement in topic understanding, better grades, and greater ease of learning. Video lectures are made up of the instructor's audio narrative added to Camtasia Studio screens that display topic content. Lectures are encoded in video files and distributed online [1].

In the Republic of Bulgaria 68 % of the universities have implemented the systems for e-learning. In 94 % of them implementation of information and computer technologies in the educational process has started, and in 84 % of the higher schools are offered different specialties and Master of Science programmes with distance education [2].

2 Analysis of internet distance education advantages

Distance education via Internet or Intranet using video lectures presents an opportunity for requalification of elder employees and trainees to make them competitive to their younger colleagues. It supports personal development and professional growth. The model is suitable for higher school students, students and company employees, for whom it is difficult to attend traditional contact classes in set time and place.

The video lectures present an opportunity for all willing to acquire new knowledge, regardless of their financial abilities and dwelling place. This type of education enlarges significantly the number of trainees in the universities with relatively small number of lecturers. The flexibility of this educational technology is expressed by the freedom of choice of tempo by everyone, as well as place of study. The trainees can review the material for a second time, if they could not understand it from the first video presentation. They get access to the video lectures presented by the lecturer in which information is shown in details, prepared and accurately selected in advance for each slide of the filmed presentation, which guarantees higher quality of the acquired knowledge compared to contact classes in study rooms.

Modern information and telecommunication technologies, as well as the presence of Internet present an opportunity for quick spreading and saving of information at remote distances at any time. The video lectures prepared on specific topic from the subjects in the syllabus are input into a selected web-browser in the Internet space as filmed presentations with recorded audio and video explanations of the lecturer. Additionally, animations, simulations and commented films are included in them, which visualizes the studied material. This contributes to fast understanding and memorizing of information. The interactivity of this type of education gives an opportunity to present the lectures in a way similar to the traditional teaching with the lecturer present in the room. The lecturer and the students may additionally communicate using video and/or audio connection in time convenient for both parties. Putting questions connected with the studied material and discussing them is done easily most often using forums or e-mails. The teaching model is especially suitable for regular and part-time students who find it difficult to attend traditionally held lectures in specific time. The bilateral communication between the trainees and the lecturer gives an opportunity to carry out an organized educational process. The prevailing part of the trainees accepts positively this new type of education because it meets their vision for realization of up-to-date communications.

The preparation of video lectures is a very long-lasting and responsible process. This is the most labour-consuming component of the Internet based courses and is the best paid lecturer's effort. The qualities of video lectures are reflected directly on the knowledge of trainees. Due to this reason nowadays this type of education in many universities is sponsored under contracts with the European Union. Usually the development of video lectures is financed for the basic subjects that traditionally attract increased interest. In this way a wide circle of trainees is provided. Nevertheless, the cost of distance education via Internet is not high because the expenditures for software and hardware are small. Expenses for rooms, official trips, printing of supporting materials, etc. are small. The price of the Internet services is low. The method for distance education via Internet with video lectures requires fewer expenses from the universities compared to contact classes.

According to the statistics the students from technical universities most easily and quickly adapt to the web-courses with video lectures, because they have mastered the new communication technologies by now. The distance education is preferred most often by students from Master of Science degree and post-graduate students. More and more Internet customers prefer getting information from audio and video sources to reading printed textbooks and materials.

This modern technology for presenting knowledge distantly may be combined with TV conference, chat or an on-line connection between the students and the lecturer.

Web-based education gained grounds as a new methodology to get information and put the university and professional education on a contemporary level. Different program-media were developed for building up systems for distance education, such as Moodle, Blackboard, eLSe, etc. [2].

3 Preparation of video lectures with Camtasia studio 8 product

Camtasia Studio is inexpensive screen recording software that allows the user to create multi-platform video and audio recordings of anything that can be displayed or demonstrated on a computer screen, including computer labs assignments, the use of integrated development environments, PowerPoint lectures, demonstrations of Java applets, and software tutorials. Picture-in-picture video is also possible with the addition of an inexpensive web camera. With this screen recording software, a multitude of possibilities exist for developing learning objects and enhancing existing ones, which can then be easily integrated into both in class and online instruction [3].

In the present publication the authors do not have as an aim to present instructions how to operate with the software product Camtasia Studio 8. This information is freely accessible in the Internet and in printed sources. The authors would like to emphasize the features of the programme and share their experience from real distance education via Internet supported by video lectures.

Camtasia Studio 8 is a professional programme for creating video clips for professional, educational or personal needs. By using this product it is possible to record all activities done on a computer. Thus the information may be shared with other users. The programme presents opportunities to create professional video presentations, educational clips, manuals for operation with programmes and many others. It may be used for preparation of video lectures for distance education. It will record the current images and sounds. The usage of an additional web-camera with a

microphone provides synchronous filming of the lecturer and his/hers comments for the presentation of each slide. When preparing different video clips, the changing position of the cursor shifted by the lecturer to point and comments given for components from a specific figure are recorded. The usage of a tablet compensates the absence of a blackboard. The lecturer has the opportunity to film on the spot the drawing of diagrams with synchronous record of his/hers audio comment. The created video clips for different slides are assembled from the prepared in advance presentation in a unified video lecture. It is saved in one of the following formats: mp4, mov, avi, gif, wmv, camv, swf, rf or flv. The video lectures, clips or films created this way may be uploaded in YouTube and the respective access rights for the trainees can be configured.

The starting still of an example video lecture in German on the subject "Historical development of machine tools" is presented in Fig. 1 [4]. The standard arrangement of the information for each slide is given. Usually in the upper left corner of the screen the lecturer is recorded during his/her comments.

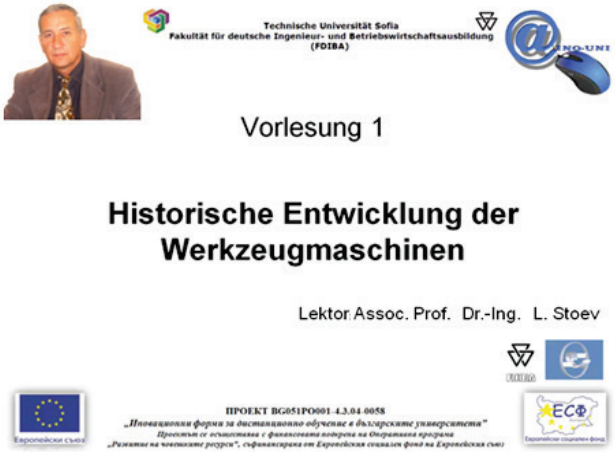

Figure 1 Exemplary slide from a video presentation [4]

In the section "References" in the publication two links are listed for access to the subject in YouTube in German [4] and in Bulgarian [5] to enable the readers to review the materials and get some idea about the web-based video lectures if they wish so. The developed topic is part of a series of lectures prepared as modules in German and Bulgarian for the subject "Technology of Machine Building" under agreements BG051PO001-4.3.04-0045 [6] and BG051PO001-4.3.04-0058 [7] "Innovation types of distance education in Bulgarian universities". The projects were realized during 2013 and 2014 with financial support by the Operative programme "Development of Human Resources". They were financed by the European social fund of the European Union. Both projects were realized according to agreements between the Faculty for Industrial Technologies and the Faculty for German Engineering Education and Industrial Management of the Technical University of Sofia. 35 modules on 14 topics from the syllabus for the subject "Technology of Machine Building", Part 1, were developed in Bulgarian language, which are included in a web-based textbook reviewed by Prof. Dražan Kozak and Prof. Antun Stoić from the Josip Juraj Strossmayer University of Osijek. In total 879 slides were used and the total duration of the video lectures is 13,35 hours. From this statistics it is evident that it is possible to create video lectures with suitably selected and synthesized information and very good preparation by the lecturer in advance to present it to trainees via Internet in a quite short period of time. To make a comparison – these 14 topics are studied for about 10 weeks during the semester with contact lectures each with duration of 3 hours. The creation of specialized educational video films with duration longer than 10 hours requires continuous work on behalf of the lecturer for almost one year. This is the reason for this kind of labour of the lecturers to be best paid. The developed 35 modules with video presentations are accessible with a password at any time and at any place for the students from the following three machine-building faculties from the Technical University of Sofia: Faculty for Industrial Technologies, Faculty for German Engineering Education and Industrial Management and Machine Building Faculty. They can be reviewed using personal computers or smartphones.

In Fig. 2 a picture from a still of a video lecture is presented when reviewed using a computer and a smartphone.

Figure 2 Picture from a still of a video lecture when reviewed using a computer and a smartphone [2]

The filming of the lecturer during the whole presentation, as well as the protection of his figures with semi-transparent water mark shown in Fig. 3 [8] guarantee his copyrights.

Figure 3 Stills protected with a watermark from two video lectures

This approach was adopted by the authors of the present publication when preparing the video lectures to certify and protect their personal contribution when preparing and entering the video lectures in the Internet.

To increase the interest of the students from the Faculty for German Engineering Education and Industrial Management of the Technical University in Sofia for the studied material and the technology for preparation of video lectures in foreign language using the Camtasia Studio 8 programme, the authors conducted an interesting experiment. They offered the students to compose video presentations by themselves on given topics from the syllabus of the subject "Technology of Machine Building". For this new type of course work they were given information from the lecturers and selected materials by themselves in the Internet. Their work was attested periodically by the lecturers when having tutorials, using e-mails and in the subject's forum. The students used a specialized application to convert written text into speech in German with suitable timbre and clear enunciation. In this way the necessity to record them personally using a web-camera and a microphone was avoided which usually confuses them. They showed their presentations to their mates and it was extremely amusing. In this way the students acquired additional skills and gave their personal contribution to the preparation of new materials for distant education on the subject "Technology of Machine Building". All of them did very well and this was reflected in their marks at the end of the semester. Their authors' video presentations were entered into YouTube and in the site of the project for distance education of the Faculty for German Engineering Education and Industrial Management in a separate section "Students' presentations". Those who would like to see some of them can use the URL addresses given in [9].

4 Conclusion

In the present paper the authors demonstrate their experience for preparation of video lectures for distance education using Internet. They work in collaboration on a new project from the international programme CEEPUS for establishment of summer schools in several European countries in the framework of which during their holiday regular and post-graduate students will be taught in German or in English by qualified lecturers from different European universities on several technical subjects. Before the beginning of the summer schools the students will have access to web-based video lectures, textbooks [10], presentations and other information. Their preliminary preparation will contribute to learning the studied material quickly in short terms. After successful conclusion of the study those who finished the courses will be awarded internationally acknowledged certificates for an acquired additional professional qualification.

5 References

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