

Distance Learning as Modern Method of Medical Education

Zlatan MASIC^a, Ahmed NOVO^b, Izet MASIC^b, Mensura KUDUMOVIC^b, Almir DZANANOVIC^b, Selim TOROMANOVIC^c

^aTechnical University, Vienna, Austria

^bUniversity of Sarajevo, Sarajevo, Bosnia&Herzegovina

^cHealth Centre, Cazin, Bosnia&Herzegovina

Abstract

Students of biomedical faculties are preparing by teachers to be professionals in health care system. They should become literate in using information technologies in their daily practice, especially internet and similar communication systems. It is reason that medical informatics education should be planned and presented by new and modern education methods, methodologies, contents and ways of transferring knowledge.

Distance learning represents the educative technique which occupies significant place in the actual medical education of health care professionals at undergraduate, postgraduate and continual medical education in most countries in the world.

Last five years at Faculty of medicine in Sarajevo, with help and contribution by experts from abroad, team of Cathedra for medical informatics realized project of introducing of distance learning in medical curriculum. This paper presents experience of application of distance learning in the medical education at University of Sarajevo, with presentation of advantages and disadvantages of that modern method of education from our experiences.

Key words:

Information technologies, Education, Distance learning.

Özet

Modern Bir Eğitim Yöntemi Olarak Uzaktan Öğrenme

Biyomedikal fakültelerdeki öğrenciler, öğretim elemanları tarafından sağlık sisteminde çalışmak üzere eğitilmektedir. Bu öğrenciler, günlük uygulamalarda bilgi teknolojilerini, özellikle İnternet ve benzeri iletişim teknolojilerini kullanabilecek şekilde yetiştirilmelidir. Bundan dolayı tıp bilişimi eğitimi yeni ve modern eğitim yöntemleri, metodolojileri, içerikleri ve bilgi transfer yöntemlerini kullanarak planlanmalı ve sunulmalıdır.

Uzaktan öğrenme, dünyadaki pek çok ülkede sağlık profesyonellerinin lisans, lisansüstü ve sürekli eğitimde önemli yer tutan bir eğitim tekniğidir.

Son beş yılda, yurtdışından uzmanların ve Cathedra ekibinin de yardımı ve katılımı ile Saraybosna Tıp Fakültesi, tıp müfredatının uzaktan öğrenilmesi projesini hayata geçirmiştir. Bu makalede Saraybosna Üniversitesinde uzaktan öğrenme uygulamasında elde edilen deneyimler, bu modern eğitim yönteminin avantaj ve dezavantajları ile ilgili yaşananlar aktarılacaktır.

Anahtar Kelimeler:

Bilgi teknolojileri, Eğitim, Uzaktan öğrenme

1. Introduction

Definition of distance learning as “use of technologies based on health care delivered on distance” covers areas such as electronic health, Tele-health (e-health), telematics, telemedicine, Tele-education, etc. Distance learning or learning from the distance represents the educational technique which keeps significant position in the actual medical education of the health care professionals abroad, especially in postgraduate and continuous medical education [1, 2]

With two projects in this area: “Possibilities of introduction of Distance Learning in Medical Curriculum” and “Introduction and Implementation of Distance Learning in Medicine”, professor Masic and his associates from the Cathedra for Medical Informatics, Medical faculty, University of Sarajevo have made tremendous progress in education of undergraduate students and medical professional in Bosnia and Herzegovina [3, 4].

Recommendation for sustainable Distance Learning and really lifelong educational process and described activities and efforts on introduction of distance learning in teaching process at Medical faculty, University of Sarajevo, Bosnia and Herzegovina and shown the key aspects of modern tele-education system. This is for the first time in B&H that students are able to apply for exam, have exam and results on the web site as well as his/her picture and all other significant data [4].

2. Traditional way of learning and learning from the distance

The traditional studying method is more and more replaced by the new aspect of the education the distance learning (tele-education), especially in the countries where Internet and new technologies everyday are used. The computers and the communication systems enables that the education system, including also at the biomedical faculties, could be modernized by new teaching methods like “learning on the distance” [2].

- Results of different tests prepared by lectors has trend to show advantages in comparison with traditional learning methods and there is significant distinction in affirmative attitude to educational materials between distance and traditional learning.
- Organization and needs for more efficient influence of distance learning very often improve traditional methods by teachers.
- Future research should be focus on critical factors in determining student involvement in development of educational process.
- The variety of teaching and learning options provided by technology allows education to be provided in an appropriate manner to a broader student demographic then ever before.

By late 1994, the Internet includes 3.2 million computer nodes spread across more than 57,000 institutions in more then 80 countries, with an estimated 30 million users. By the end of the century the Internet linked more then 400 million persons. The 2002 Euro barometer survey showed that an average of 78% of EU medical GPs were online, with at the highest level – 98% in Sweden and 97% in United Kingdom. Number of “online patients” grows every day as well. The 2003 Euro barometer survey on health information sources shows that 23% of Europeans use Internet for health information and that 41% of the European population considers that Internet is a good source of information on health. But, every 60th citizen of Bosnia and Herzegovina uses Internet (50.000 citizens of 3.000.000 citizens in Bosnia and Herzegovina) and in Slovenia every forth Slovenian is familiar and uses Internet technologies. It is reason why biomedical and other faculties in Bosnia and Herzegovina do not have many possibilities to introduce and improve larger distance learning as common way of teaching students and other medical professionals.

3. Introducing of Distance learning in medical curriculum at Faculty of medicine of University of Sarajevo

In October 2003, University of Sarajevo began with Distance learning education, opening University Distance Learning Centre at University of Sarajevo (UTIC – University Tele-informatic Center). Cantonal Ministry approved and supported two projects: “Possibilities of introduction of Distance learning in Medical curriculum” and “Introduction and implementation of Distance learning in medicine”. Projects are implemented over special designed Center for distance learning - “LUCIS CENTRUM” located at University Campus in Sarajevo (Figure 1).



Figure 1: Web page of “Lucis Centrum”.

Below lectures are uploaded to web (Figure 2);

- Hardware and software
- Medical documentations
- Medical informatics
- Methods of data manipulation
- Nomenclatures and classification systems
- Structure and data organization
- Data, information and knowledge
- Systems and communication

- Expert systems in biomedicine
- Artificial intelligence
- System of biomedical scientific and research information
- Application of Information technologies in medicine
- Health information systems

The screenshot shows a web browser window displaying the LUCIS CENTRUM website. The page title is "LUCIS CENTRUM" and the subtitle is "CENTAR ZA RAZVOJ UČENJA NA DALJINU". The user is logged in as "Prof. dr. Izet Mašić". The main content area is titled "Unos/izmjena materijala za predmet Medicinska informatika" and lists 11 items for selection. The items are:

- Hardver i softver, postavljen od Prof. dr. Izet Mašić
- Medicinska dokumentaristika, postavljen od Prof. dr. Izet Mašić
- Medicinska informatika, postavljen od Prof. dr. Izet Mašić
- Metode manipulacije podacima, postavljen od Prof. dr. Izet Mašić
- Nomenklature i klasifikacijski sistemi, postavljen od Prof. dr. Izet Mašić
- Organizacija podataka, postavljen od Prof. dr. Izet Mašić
- Podatak, informacija, znanje, postavljen od Prof. dr. Izet Mašić
- Predavanja 1, postavljen od Mr. Sci. Mensura Kudumović
- Sistem i komunikacija, postavljen od Prof. dr. Izet Mašić
- Struktura i organizacija podataka, postavljen od Prof. dr. Izet Mašić

The right sidebar contains navigation links for "UNOS" (Materijala, Vježbi, Seminarskih radova, Obavijesti, Preporučeni linkova, Plana i programa, Kvizova, Rasporeda, Preporučene literature, Termina ispita, Rezultata ispita) and "STATISTIKA" (Spisak studenata, Prosječna ocjena, Prolaznost studenata, O vježbama, O seminarskim radovima).

Figure 2: Lecture content of the centre.

Lecture contents will be presented in our virtual classroom. In our case, learning material from the subject of medical informatics, and later, hopefully from other medical subjects, will be available on web site, www.e-learning.ba (Figure 3).

In year 2002 at Cathedra of Medical informatics of Medical faculty in Sarajevo we executed first tele-exam in the history of education in Bosnia and Herzegovina on relation Podgorica (Serbia and Montenegro) and Sarajevo (Bosnia and Herzegovina). In June this year we provided first on-line examination of medical students after distance learning in the field of Medical informatics and Family medicine (Figure 4). Students satisfaction was very high.



Prezentacija na Medicinskom fakultetu

Prvo elektronsko polaganje ispita

U amfiteatru Medicinskog fakulteta jučer je održana izvrsna prezentacija projekta „Uvođenje učenja na daljinu u medicinski curiculum“, tako što je po prvi put u historiji Univerziteta u Sarajevu organizirano elektronsko polaganje ispita.

Ovaj projekt se realizira na Katedri za medicinsku informatiku Medicinskog fakulteta od 2002. godine i odobrili su ga Federalno i Kantonalno ministar-



Prikazana procedura učenja na daljinu
Z. P.

O PREDMETU

Medicinska informatika

OBAVIJEŠTI

Mr. Sc. Miroslava Kukuljović-Auriant, miroslava@yhsoc.com
Prof. dr. Izet Hasić, Professor, hasic@qtc.zet.ba

ISPITNI TERMINI

08.04.-2005
ISPIT IZ MEDICINSKE INFORMATIKE DI ODRŽAĆE SE 20.06.2005. GODINE

više o predmetu...

POGLEDAJTE

- Historijale
- Vježbe
- Seminarske radove
- Obavijesti
- Preporučene linkove
- Plan i program
- Kvizove
- Raspored
- Literaturu
- Prijave ispita
- Rezultate ispita

Zatvori prozor

POGLEDAJTE

- Materijale
- Vježbe
- Seminarske radove
- Obavijesti
- Preporučene linkove
- Plan i program
- Kvizove
- Raspored
- Literaturu
- Prijave ispita
- Rezultate ispita

Zatvori prozor

Metode manipulacije podacima

Indikator progressa

Pitanje 3 od 8

3. šta ne spada u tipične greške u manipuliranju s podacima:

Odaberite jedan tačan odgovor:

- A. greške detekcije
- B. greške interpretacije
- C. greške kolaboracije
- D. greške pri upisivanju podataka

Figure 3. Medical informatics content of the web site.

Figure 4. The first examination after distance learning.

5. Conclusion

Distance learning or learning from distance represents the educative technique which occupies significant place in the actual medical education of health care workers at the international plan, also in Bosnia and Herzegovina. This method of education is very useful in the domains of all kind of educational process: for undergraduate, postgraduate and continual medical education. It represents the educative technique of the significant effectiveness, which has to have at the disposal both the adequate technological infrastructure as well as previous education of the lecturer and user, adopted the teaching plans and the evaluation mechanisms of knowledge. By use of the rich choice of technological models, in relation to the traditional method of learning, enables the simultaneous education to the great number of students of the various profiles, the approach to all the relevant forms of data bases and data knowledge as well as the mechanism of the evaluation by the eminent institutions and lectures.

Bologna process, which started last years in European countries, provides us to promote and introduce modern educational methods of education at biomedical faculties in Bosnia and Herzegovina. Cathedra of Medical informatics and Cathedra of Family medicine at Faculty of medicine of University of Sarajevo started to use distance learning as common way of teaching of medical students. Satisfaction with this method of education within the students is good, but not yet suitable for most of medical disciplines at biomedical faculties in Bosnia and Herzegovina.

6. References

- [1] Masic Z, Novo A, Masic I, Kudumovic M. Distance learning at biomedical faculties in B&H. *Stud Health Technol Inform*, 2005; 116: 267-72.
- [2] Masic I, Novo A, Kudumovic M, Masic Z. E-learning at Medical faculty of University of Sarajevo. *AIM*, 2005; 13(3): 132-5.
- [3] Masic I, Novo A, Kudumovic R, Masic Z, Džananovic A, Skrbo A. *Med Inform*, 2005; 7: 29-35.
- [4] Mašić I, Kudumović M, Novo A, Rama A, Mašić Z. Mogućnosti uvođenja učenja na daljinu u medicinski kurikulum *Med Arh*, 2005; 59(4): 269-70.

7. Corresponding Author

Prof. Dr. Izet Masic, Univerzitet U Sarajevu, Medicinski Fakultet, Cekalusa 90/4, 71000 Sarajevo, e-mail: imasic@lol.ba, <http://www.imasic.org/mi/>