

Learning from the distance in medical education at university of Sarajevo

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Summary

Distance learning or learning from the distance represents the educational technique which occupies significant place in the actual medical education of the health care professionals abroad, especially in postgraduate and continuous medical education. With two projects in this area Possibilities of introduction of Distance Learning in Medical Curriculum and Introduction and Implementation of Distance Learning in Medicine, the Cathedras for Medical Informatics, Medical faculty, University of Sarajevo and Tuzla have made tremendous progress in education of undergraduate students and medical professional in Bosnia and Herzegovina. Also, this paper gives recommendation for sustainable Distance Learning and really lifelong educational process.

Key words: Education, Medical Informatics, Distance Learning.

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1. Introduction

Distance learning is conventionally defined as: Broadly, any educational or learning process or system in which the teacher and instructor are separated geographically or in time from his or her students; or in which students are separated from other students or educational resources. Contemporary distance learning is affected through the implementation of computer and electronics technology to connect teacher and student in either real or delayed time or on an as-needed basis. Content delivery may be achieved through a variety of technologies, including satellites, computers, cable television, interactive video, electronic transmissions via telephone lines, and others. Distance learning does not preclude traditional learning processes; frequently it is used in conjunction with in-person classroom or professional training procedures and practices. It is also called distributed learning.

- **The California Distance Learning Project (CDLP)** uses the following definition: Distance Learning (DL) is an instructional delivery system that connects learners with educational resources. DL provides educational access to learners not enrolled in educational institutions and can augment the learning opportunities of current students. The implementation of DL is a process that uses available resources and will evolve to incorporate emerging technologies.

- **AT&T's Center for Excellence in Distance Learning:** «In today's information age, learning is no longer confined within

the four walls of a classroom. The instructor, armed with a textbook, is no longer the sole source of the education experience. Information resources are everywhere, often separated from the learner by time and space. Distance learning is the process of creating a new learning environment around remote resources.» These interactive workshops – from basic to advanced – will provide the skills and knowledge needed to build successful distance-learning programs and to manage distance learning systems,» said Dr. Alan Chute, director of AT&T's Center for Excellence in Distance Learning.

- **Definition of the United States Distance Learning Association (USDLA):** Distance Learning (DL), also known as Distance Education (DE), is simply learning from a distance, usually from home, or from a conveniently located off-campus site. DL allows adults to earn college credits, even entire degrees, without ever leaving home. DL makes use of the Internet, software, modems, TV stations, 2-way television using fiber optics, microwave, and digital phone lines, satellites, radio, ham radio, videocassette and audio tape, and the ever-popular mailbox, to deliver instruction. DL also refers to on-campus classes where the professor is not physically present, but communicating with students at several sites simultaneously via television, modems, or some other electronic means. A broader definition of DL includes non-credit courses, workshops, seminars, and career credits like CEUs (continuing education credits.). Additionally, DL is an exciting and growing part of public and private schools from elementary level through high school in many areas such as math, science, and languages.

2. Traditional way of learning and learning from the distance

Distance learning represents efficient educational model with still open question: What are advantages of distance learning comparing with traditional methods of learning? The latest researches shows that the format of instructions itself has no important influence on the students' achievements if access and availability to information technologies is assured as well as usage of the adequate content of education. In the assessment of the authentic situation the following issues should be addressed:

- Results of different tests prepared by lecturers 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.
- Traditional methods demonstrate better organization and they are clearer in respect to distance 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.

3. Facts about distance learning

Distance learning enables permanent learning (lifelong learning), students can improve themselves professionally and independently, at their own tempo, at place and time that they choose by themselves, they can choose great deal of subjects which offer different institutions, teachers-individuals; students go through materials for learning by speed of their own and as many times as they want. The place can be chosen – it depends on media which is used for learning material (they can learn at work or from home). Themes access which are not offered by studies in that field – students find and attend

the programmes which they are interested in, although they are not offered by educational or business institutions in place where they live in or work. Taking part in top-quality and most prestigious programmes – student can «attend» at least some studies at the top-quality institutions or studies held by lecturers that are very famous experts without changing their place of living. Choosing this way of learning – active or passive learning, different kinds of interaction: «Classical» written material and writing down their own lecture notes, interactive simulations, discussion with other students (e-mail, tele-conferences).

Practical work with different technologies – they get not just information about that they learn, but additional knowledge and skills about using computer, CD players, video recorders. Independent learning – teachers learn too from students who independently ask for information source. Abbreviation DL is very often connected with contemporary methods of learning and it derives from phrase Distance Learning translated in Bosnian language means open distance education. The phrase open education here has formal meaning. This phrase directs to the period when the idea about Open University has emerged. Without detailed explanations of its full meaning, it is important to point out that the basic idea was realization of bigger part of teaching process outside the classrooms. The meaning of education (learning) to distance can be expressed by the definition: That is a form of education which is in process permanently, or most of the time, all or most of the tasks of teaching and learning separately during the time and space between teacher and student. Pedagogical and organizational improvements have fundamental importance. It is in use both interaction teacher – student and interaction student – student. Phases of synchronized and unsynchronized learning are combined. Individual and group works are also combined. If all these forms are involved in educational process, they mutually supplement each other, as a last resort. Traditional education as well as contemporary education is supported by informatics technologies in unique system of flexible education. In order to use advantages of flexible education, it is necessary to combine different forms of learning, during the preparation phase and development of every educational course in appropriate way.

Fundamental advantages of flexible education in terms of classical education are:

- More efficiency.
- Increase capacities of educational institutions.
- Education can be easily adopted to the needs of education on-the-job.

- Costs of educational process are smaller.
- It is possible to distribute the education uniformly, thus the new educational programmes are available for fields outside of educational and economic centers.
- It enables the possibility of access to the foreign education.
- Superior quality of the knowledge gained.

4. Distance learning characteristics

Distance Learning (DL) or Distance Education (DE), simply telling that, this is distance education (from the apartment or from the distant location). Basic characteristics are: physical separation of teacher and student, usage of educational Medias in connection of student and teacher and separate communication and interactivity. There are two categories in defining and selection of distance learning: synchronic and no synchronic systems.

- Synchronic instructions require simultaneous participation of all students and teachers, and advantage of this system is interaction through TV, telecommunications, video conferences and Internet retrieves.
- No synchronic instruction does not require simultaneous participation of all students and teachers, what means that students do not to be gathered on the same place and time. They can choose their own time for lectures and learning. This system is much more flexible for students.

Information technologies have key role in the process of distance learning. It is very important for educator to choose proper technological solution in order to have interactive approach which can motivate students and to satisfy their needs in scientific and economical point of view. In Distance learning the following medias and technologies are being used:

- 1) Journals: studying through the correspondence.
- 2) Audio: radio, audiocassettes, audio conferences, phones.
- 3) TV / Video – One-way (through the TV programs, internal TV and VCR, cable TV satellite TV), and Two directional way of learning; interactive television. Special case are videocassettes.
- 4) Computer/data: Videodisc, CD-ROM, Internet, Intranet, Computer conferences, Fax-machine, etc.

5) Multimedia: combination of all above techniques.

The best approach is systematic combination of different techniques as well as:

- Large number of printed materials allow better direct communication, an also has its value as cost-effective way of contribution of different lecturers and teachers.
- Video and electronic conferences of e-mail could be used as sending messages, receiving feedback and various target communication among groups.
- Videocassettes can be used in lectures presentation and visualized oriented contents.

- Fax machine is used for distribution information and short information.
- In selection of interactive approaches, teacher has to choose very carefully technological solution in order to fulfill students' needs in educational, scientific and economical means.

5. Distance learning in medical curriculum and implementation of distance learning in medicine

In spite of fact that Bosnia and Herzegovina is last or second before last country in Europe in use of Internet technologies, there is a group of enthusiastic people accompanying prof. dr. Izet Masic at Medical Faculty and University of Sarajevo who have been making significant effort to improve poor digital literacy in the University and among medical professionals. E.g. 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 fourth Slovenian is familiar and uses Internet technologies. Comparison with western world and European Union is even worse. Presents of Distance learning is still modest, but in December, 2002 prof. Masic and his associates made first big step forward. As first phase of the project: Possibilities of introduction of Distance learning in Medical curriculum, as part of the celebration of Ten years of Cathedra for Medical Informatics, was held workshop the project approved by the Federal Ministry of Education, BiH. Participants of the workshop, eminent experts

from Sarajevo, Tuzla and Zagreb, Croatia, shared experience in application of distance learning. As a part of workshop we

made direct communication with UTIC (University Tele-information Centre) in real time, speed 512Kbps (Fig. 1.).



Fig. 1. UTIC web site.

University Tele-information Centre, established as part of University of Sarajevo and first ISP in Bosnia and Herzegovina in 1996 (www.utic.net.ba). It is scientific-organizational unit of the University of Sarajevo for improvement of scientific-research work and through UTIC members of the University can be gathered in the unique computer-communication structure. Objectives of UTIC are: to connect members of the University with similar institution in the country and abroad due to more efficient use of scientific, research and educational resources, use of educational data bases and other information for the needs of the University and its members. Also: Development an integration of informatics computer technologies in education Creation of flexible infrastructure which will enable e-Learning to be accessible to all students and University staff, Improvement of general digital literacy of academic population, Development of top quality educational content which could be integrated in the actual European processes of e-Learning revolution. In October 2003, University of Sarajevo began with Distance learning education, opening University Distance Learning Centre. Opening the University Distance Learning Centre, as coordination body and leader in all activities in connection to Distance learning, has provided opportunity

for development and growth of this kind of lifelong education (Fig. 2.).

In correlation with above project conducted by the University Tele-information Centre (UTIC) and as continuation of two-year project Possibilities of introduction of Distance learning in Medical curriculum, the Cantonal Ministry approves and supports a new project; Introduction and implementation of Distance learning in medicine. On UTIC web site, seven students enrolled from Medical faculty, for the subject Medical Informatics are able to learn from the distance location. So far, professor Masic and his assistants uploaded eleven lectures at the site: Hardware and software, Medical documentations, Medical informatics, Methods of data manipulation, Nomenclatures and classification systems, Data organization, Data, information and knowledge, Lectures 1, System and communication, Structure and data organization and Expert systems. Beside the materials it is possible to upload and download the following: Practical works, Seminar work, Information, Recommended links, Plan and programs, Quiz, Schedule, Recommended readings, Examination schedule and Examination results (Fig.3.).

Basically software application has two interfaces: teacher and student interface. Access from any of these is very simple and fast.

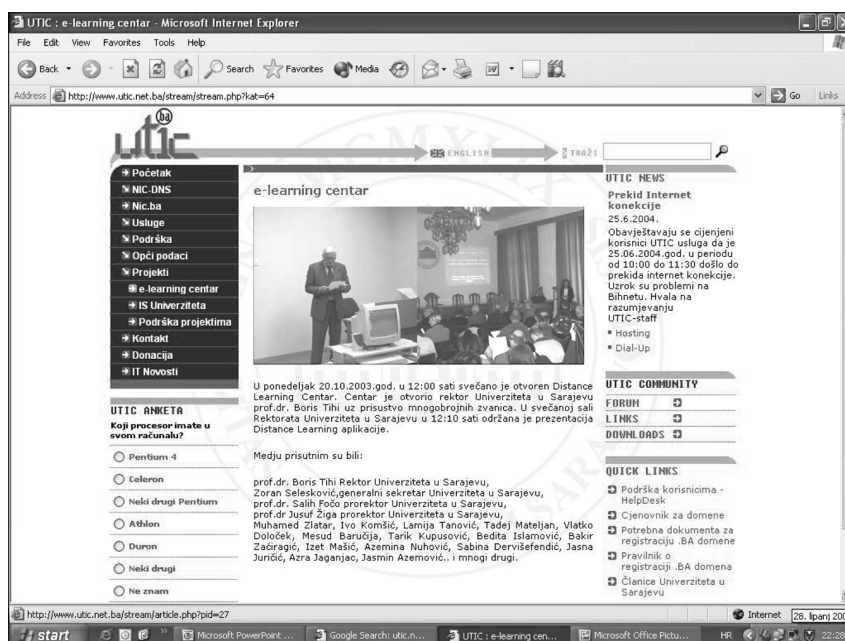


Fig. 2. Opening the University Distance Learning Centre.

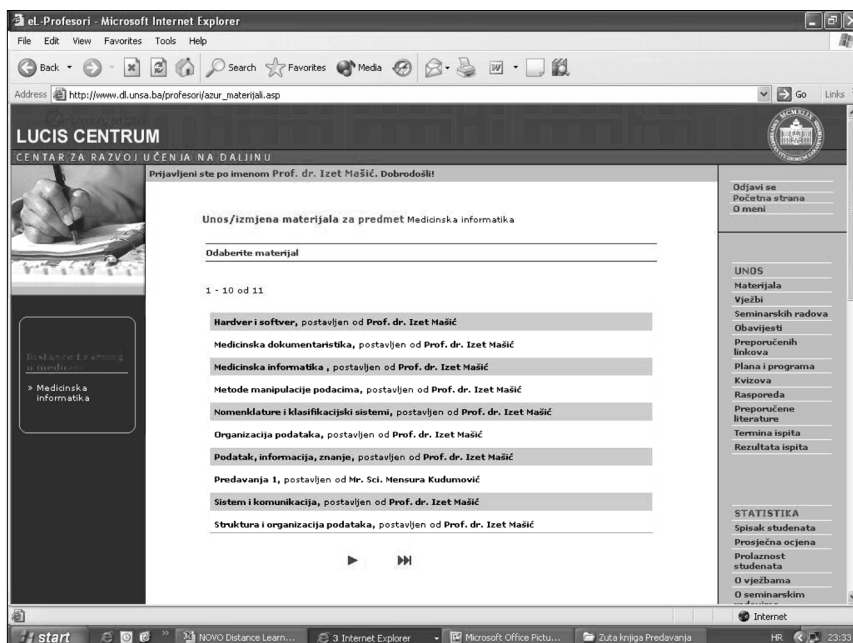


Fig. 3. Uploaded materials for subject Medical Informatics.

6. Conclusion

In order to have Distance Learning minimum of requirements should be in place: Minimal infrastructure: equipment and software, from laptop to notebook, projector and scanner to reliable and quality software, appropriate marketing in Bosnia and Herzegovina environment, educa-

tion of the educators and administrators, Electronic archive (and digital library), support from the officials (moral and financial) and sustainable funding.

Expected outcomes of the project Introduction and Implementation of Distance learning in medicine are:

- Development and integration of informatics-computer technologies in medical education.

- Creation of flexible infrastructure which will enable access to e-Learning by all students and teaching staff.
- Improvement of digital literacy of academic population.
- Ensure high educational standards to students and teaching staff and
- To help medical staff to develop «Lifelong learning way of life».

Above effects can be reached with parallel organization of Centre for Medical Informatics. This educational centre would offer number of distance learning educational tools, review of educational materials, professional literature, and recommendation for composition of educational materials using informational technologies and consulting help to authors.

Educational centre will, beside regular educational programmes, create educational materials, research, develop, and introduction of methods and learning skill in education. Cooperation of students and teacher will result with improved education of students at biomedical studies and medical staff in general.

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