6th INTERNATIONAL CONFERENCE OF CZECH AND SLOVAK FACULTIES OF MEDICINE

focused on e-learning and informatics in medical education

November 27–28, 2012
Best Western Premium Hotel International Brno **

LET US MOVE FORWARD

mefanet
2012

6th INTERNATIONAL CONFERENCE OF CZECH AND SLOVAK FACULTIES OF MEDICINE

focused on e-learning and informatics in medical education

EDITORS
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CONFERENCE PARTNERS

CONTENT

WELCOME WORD

Dear colleagues and students,

we are pleased to welcome you to the 6th year of the MEFANET conference, which brings together teachers and students of all medical faculties of the Czech Republic and Slovakia and experts in the field of medical informatics and electronic support of teaching. Besides the methodological and educational aspects of e-learning in the network of all Czech and Slovak medical faculties MEFANET (MEdical FAculties NETwork), this year conference will also be focused on the impact of this phenomenon on a specific field of medicine. This time the Programme Committee chose the topic: "E-learning in medical education focused on human locomotor system".

Besides the standard lecture sessions, the conference programme also includes two specialized educational workshops. They will be focused on novel methods for electronic evaluation and further on virtual casusistics. The plenary sessions and symposia will certainly be attractive as well, since they include lectures by invited speakers from the MEFANET network, but also by our dear guests from abroad, who will introduce their research and work in innovations for teaching of clinical reasoning and for gamification of medical education. An important space in the MEFANET 2012 program is provided by faculties focused on education in health care sciences and other paramedical specialities.

We thank all participating speakers and authors of the conference proceedings contributions. We believe that this year event will continue in inspiring our teaching and research activities.

On behalf of the Programme Committee
Ladislav Dušek, Stanislav Štípek

On behalf of the Organization Committee
Daniel Schwarz, Martin Komenda, Jaroslav Majerník

PŘIVÍTÁNÍ

Vážené kolegyně, vážení kolegové, milí studenti,

dovolujeme si Vás přivítat na 6. ročníku konference MEFANET, na které se pravidelně potkávají pedagogové a studenti všech lékařských fakult z České republiky a ze Slovenska spolu s odborníky v oblasti zdravotnické informatiky a elektronické podpory výuky. Letošní konference se vedle metodických a pedagogických aspektů e-learningu v síti všech českých a slovenských fakult MEFANET (MEdical FAculties NETwork) bude opět zabývat i dopadem tohoto fenoménu na konkrétní obor medicíny. Programový výbor tentokrát zvolil téma: Aplikace e-learningu v oborech zabývajících se výukou pohybového aparátu.

I letos najdete v programu konference kromě standardních přednáškových bloků ještě dva pracovně zaměřené, interaktivní vzdělávací semináře. Ty se budou věnovat jednak moderním trendům v hodnocení znalostí a dále také virtuálním kazuistikám spolu s hodnocením diagnostických algoritmů. Atraktivní budou jistě i plenární sekce a symposia, neboť zde zazní vedle příspěvků od zvaných řečníků z tuzemských lékařských fakult také přednášky vzácných hostů, kteří z různých úhlů pohledu představí výsledky své práce v projektech zaměřených na inovace výuky klinického rozhodování a na aplikace principů „škola hrou" do výuky medicíny.

Významný prostor v programu konference MEFANET 2012 letos zajišťují fakulty zdravotnických nelékařských věd. V této oblasti se realizuje velmi aktivní skupina odborných garantů oborů a specializací z oblasti zdravotnických věd a ošetřovatelství.

Děkujeme všem přihlášeným řečníkům a všem autorům příspěvků ve sborníku konference. Věříme, že letošní akce bude další inspirací pro naši pedagogickou i odbornou činnost.

Za programový výbor konference
Ladislav Dušek, Stanislav Štípek

Za organizační výbor konference
Daniel Schwarz, Martin Komenda, Jaroslav Majerník

PROGRAMME COMMITTEE

Ing. Milan Blaha, Ph.D. (IBA LF MU)
MUDr. Lukáš Bolek, Ph.D. (LFP UK)
doc. RNDr. Ladislav Dušek, Ph.D. (IBA LF MU)
MUDr. Jitka Feberová, Ph.D. (2.LF UK)
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Mgr. Martin Komenda (IBA LF MU)
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PhDr. Michal Trnka, Ph.D.(LF UK)
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ORGANIZATION COMMITTEE

Ing. Daniel Schwarz, Ph.D. (IBA LF MU)
Mgr. Martin Komenda (IBA LF MU)
Ing. Jaroslav Majerník, Ph.D. (LF UPJŠ)

ORGANIZING AGENCY

Medial Agency s.r.o.
Lidická 48, 602 00 Brno, Czech Republic
E-mail: krticka@medialagency.cz
Phone: +420 545 421 921
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GENERAL INFORMATION

Conference venue
Hotel International
Husova 16, 659 21 Brno, Czech republic
GPS : 49°11'41.55"N, 16°36'17.24"E

Registration of participants at the conference venue
On-line pre-registration is preferred.
27 November 2012, 7.30–16.00 h
28 November 2012, 8.00–11.00 h

Lunch
Lunch is included in the registration fee and will be provided to all conference participants
on 27th and 28th November 2012 in the hotel restaurant.

Information for lecturers
• Data projector (4:3), PC connected to the Internet (50 Mbps), laser pointer and microphone are available for lecturers.
• The lecturers are invited to test the technical equipment before the conference starts or during breaks.
• Technical assistance will be available for the whole time of the conference.
• Presentations might be uploaded on the PC available at the registration desk.
• It is also possible to deliver your presentation directly to the operator of the PC in the congress hall (this is not recommended due to a possible overload)

We ask lecturers to stay within the time limit for their presentations.

TUESDAY, 27 NOVEMBER 2012

	HALL A	**HALL B**
9.00	***OPENING CEREMONY***	
	Prof. Jaroslav Štěrba, M.D., Ph.D.	
	Assoc. prof. Ladislav Dušek, Ph.D. **MEFANET – state of the union after six years of networking**	
9.45	***D1.1a PLENARY SESSION I***	
	D. Schwarz & M. Komenda **Clinical reasoning: available tools and new prospects for MEFANET**	
	L. Woodham **Using self-assessment virtual patients on mobile devices**	
11.00	***COFFEE BREAK***	
11.15	***D1.1b PLENARY SESSION I***	
	A. Raudaschl **Gamification of medical education**	
12.00	***LUNCH***	
13.00	***D1.2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH***	
15.20	***COFFEE BREAK***	
16.15		***D1.3 WORKSHOP: E-ASSESSMENT – MODERN TRENDS OF KNOWLEDGE ASSESSMENT***
17.00	***D1.4 E-LEARNING CASE STUDIES***	***D1.5 E-ASSESSMENT AND LMS***
18.00		***D1.6 MULTIMEDIA IN MEDICAL EDUCATION***
18.45	***END OF 1ST DAY PROGRAMME***	
19.00	***SOCIAL EVENING***	

POSTER SESSION

WEDNESDAY, 28 NOVEMBER 2012

	HALL A	HALL B
9.00	**D2.1 PLENARY SESSION II** M. Vejražka **Modern teaching approaches in the mirror of Comenius' ideas**	
9.00	**D2.2a E-LEARNING IN MEDICAL FIELDS FOCUSED ON HUMAN LOCOMOTOR SYSTEM**	
10.30	**COFFEE BREAK**	
10.40	**D2.2b E-LEARNING IN MEDICAL FIELDS FOCUSED ON HUMAN LOCOMOTOR SYSTEM**	
11.30	**HEALTH CARE SCIENCES COORDINATING COUNCIL** close discussion	**D2.3 WORKSHOP: VIRTUAL CASUISTICS – GUIDELINE FOR AUTHORS**
13.00	**LUNCH / OBĚD**	
13.45	**D2.4a ELECTRONIC SUPPORT OF EDUCATION IN HEALTH CARE SCIENCES**	
15.05	**COFFEE BREAK**	
15.30	**D2.4b ELECTRONIC SUPPORT OF EDUCATION IN HEALTH CARE SCIENCES**	
15.30		**MEFANET COORDINATING COUNCIL** open discussion

POSTER SESSION

SYMPOSIA

Symposium "E-LEARNING IN MEDICAL FIELDS FOCUSED ON HUMAN LOCOMOTOR SYSTEM"

Guarantor: Assoc. prof. Jiří Gallo, M.D., Ph.D. (Faculty of Medicine, Palacký University Olomouc)

Speakers:

- Gallo J.: Introduction to the Symposium: Hip and Knee Osteoarthritis
- Laichman S.: How to Teach Anatomy of the Hip and Knee with Regard to Osteoarthritis
- Valdmanová L.: Biomechanical Approach to Studying Musculoskeletal System
- Florian Z.: E-Learning Possibilities in Study of Human Biomechanics
- Janura M.: Gait Analysis of Patients with Osteoarthritis of the Knee and Hip Joint
- Vaverka F.: Long-term Observation of Gait Cycle Changes after Total Hip Replacement – Case Study
- Krobot A.: E-learning in Teaching of Hip and Knee Osteoarthritis: A Physiotherapist's Point of View
- Pavelka K.: EULAR Recommendations for Diagnosis and Therapy of Hip and Knee Osteoarthritis

Model topic: Osteoarthritis of Weight Bearing Joints

Symposium will be focused on one of the most frequent movement apparatus diseases. Invited experts will introduce their discipline's viewpoints on diagnostics and treatment of the disease. Supposed duration on the panel is 90 minutes.

Expected topics:

1. Current viewpoints on osteoarthritis etiopathogenesis – what has been taught about osteoarthritis etiopathogenesis at faculties of medicine and health studies
2. How to teach anatomy of weight bearing joints
3. Everything is connected to everything else – a physiotherapist's holistic viewpoint
4. An analysis of walk in patients with hip and knee osteoarthritis
5. Kinematic aspects of weight bearing joints osteoarthritis
6. Osteoarthritis and force effects in weight bearing joints
7. EULAR's standpoints to OA treatment

Symposium "APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH"

Guarantor: Assoc. prof. Miroslav Dvořák, Ph.D. (Brno University of Technology)

Model topic: Information Systems in Education and Research

Speakers:

- Dvořák M.: Development of Information Technologies in Public Health during past 30 years, current state and perspective
- Blaha M.: I-COP - Analytical Application for Hospital Data Mining
- Harazim H.: Data-Driven and Problem-Based Learning With the Use of Severe Sepsis Cases
- Rous V.: The Use of Hospital Information Resources for Medical Stuff Education
- Šlapák I.: Educational Portal for Pediatric & Videodocumentation of Surgery Cases
- Pokorná A.: The Use of Medical Imaging Data in the Training of Future Non-medical Health Professionals
- Hačkajlo D.: Portal Zlatokop in Support of Clinical Research
- Vlach K.: Integration of Medical Subsystems and Their Inclusion in Education

WORKSHOPS

Workshop "E-ASSESSMENT – MODERN TRENDS OF KNOWLEDGE ASSESSMENT"

Organization:

Martin Vejražka, M.D., Ph.D. (1st Faculty of Medicine, Charles University in Prague), Čestmír Štuka, Ph.D. (1st Faculty of Medicine, Charles University in Prague), Patrícia Martinková, Ph.D. (Institute of Computer Science, Academy of Sciences of the Czech Republic), Jan Trnka, M.D., Ph.D. (3rd Faculty of Medicine, Charles University in Prague), Martin Komenda, M.Sc. (Faculty of Medicine, Masaryk University, Brno)

Workshop is organized for medical teachers and will be focused on good practice in preparation, realization, and evaluation of electronic examination.

Expected topics:

- Overview of tests preparation life cycle
- Modern types of test questions (how to write good questions, introduction to SBA)
- Tests standardiztion (Angoff and Ebel method)
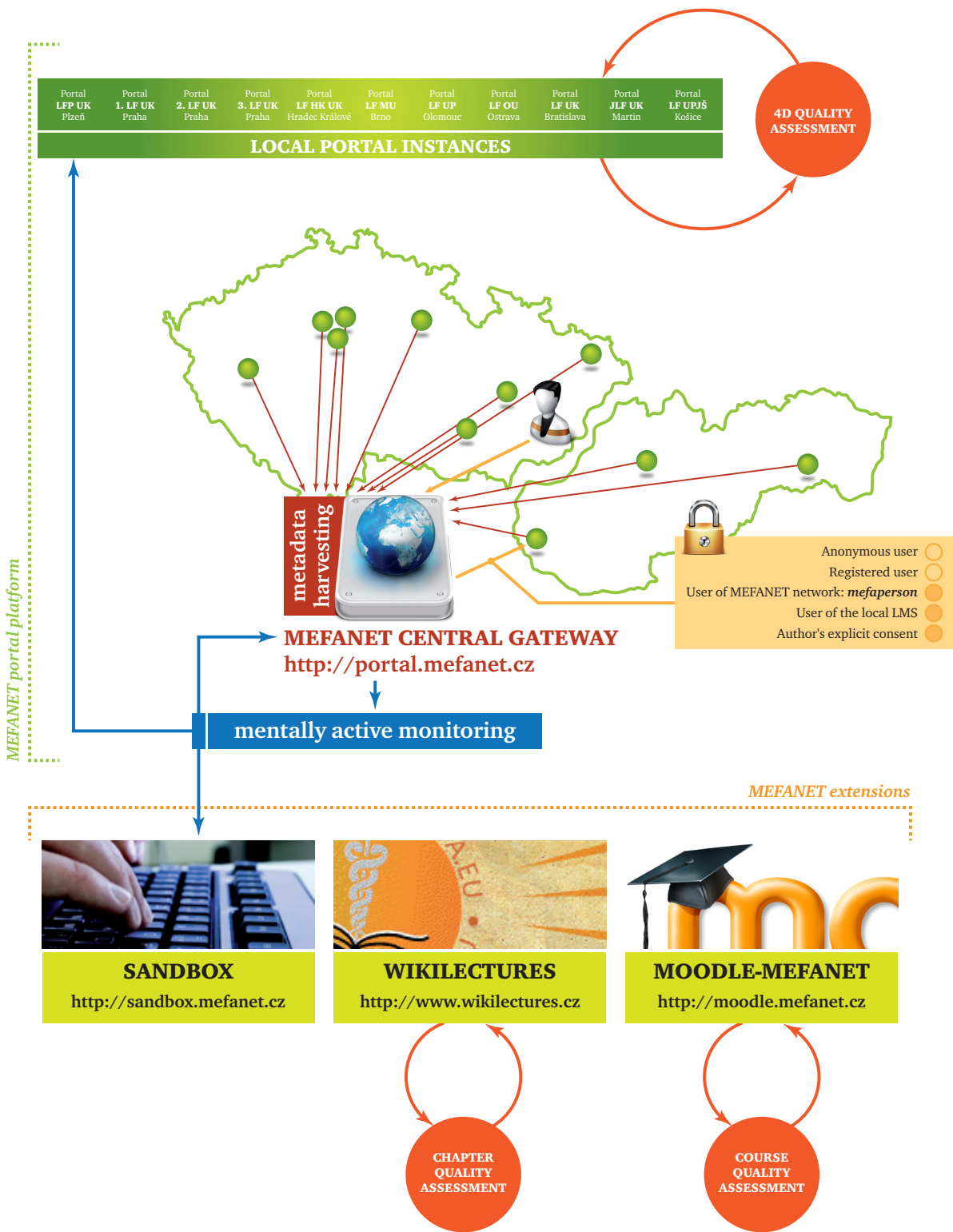- Psychometric characteristics of tests (validity, reliability, item analysis)

Workshop "VIRTUAL CASUISTICS – GUIDELINE FOR AUTHORS"

Organization:

Prof. Aleš Ryška, M.D., Ph.D. (Faculty of Medicine in Hradec Králové, Charles University in Prague), Ilja Tachecí, M.D., Ph.D. (Faculty of Medicine in Hradec Králové, Charles University in Prague)

Expected topics:

- Virtual consulting room
- Assessment of diagnostic algorithms - bonuses and maluses
- Use of virtual case reports in teaching practice

| Portal **LFP UK** Plzeň | Portal **1. LF UK** Praha | Portal **2. LF UK** Praha | Portal **3. LF UK** Praha | Portal **LF HK UK** Hradec Králové | Portal **LF MU** Brno | Portal **LF UP** Olomouc | Portal **LF OU** Ostrava | Portal **LF UK** Bratislava | Portal **JLF UK** Martin | Portal **LF UPJŠ** Košice |

LOCAL PORTAL INSTANCES

4D QUALITY ASSESSMENT

MEFANET portal platform

metadata harvesting

Anonymous user
Registered user
User of MEFANET network: *mefaperson*
User of the local LMS
Author's explicit consent

MEFANET CENTRAL GATEWAY
http://portal.mefanet.cz

mentally active monitoring

MEFANET extensions

SANDBOX

http://sandbox.mefanet.cz

WIKILECTURES

http://www.wikilectures.cz

MOODLE-MEFANET

http://moodle.mefanet.cz

CHAPTER QUALITY ASSESSMENT

COURSE QUALITY ASSESSMENT

The MEFANET portal platform and its extensions: publishing scheme.

OPENING CEREMONY *(45 min)*
TUESDAY, 27 NOVEMBER 2012, 9.00–9.45, HALL A
Prof. Jaroslav Štěrba, M.D., Ph.D.
Faculty of Medicine, Masaryk University, Brno

Assoc. prof. Ladislav Dušek, Ph.D.
Faculty of Medicine, Masaryk University, Brno
MEFANET – state of the union after six years of networking

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D1-1 PLENARY SESSION I: M-LEARNING & SERIOUS GAMES
TUESDAY, 27 NOVEMBER 2012, 9.45–12.00, HALL A

Schwarz D. & Komenda M. *(30 min)*
Faculty of Medicine, Masaryk University, Brno
Clinical Reasoning: Available Tools And New Prospects for MEFANET

Woodham L. *(45 min)*
St. George's University, London
Using Self-Assessment Virtual Patients on Mobile Devices

Raudaschl A. *(45 min)*
NHS Greater Glasgow and Clyde, Medmosis, Glasgow
Gamification of Medical Education

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D1-2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF
HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH
TUESDAY, 27 NOVEMBER 2012, 13.00–15.20, HALL A

Dvořák M. *(25 min)*
Faculty of Electronics and Communication Technologies, Brno University of Technology
Development of Information Technologies in Public Health during past 30 years, current state and perspective

Blaha M. *(12 min)*
Institute of Biostatistics, Faculty of Medicine, Masaryk University, Brno
I-COP – Analytical Application for Hospital Data Mining

Harazim H. *(12 min)*
Faculty Hospital Brno & Institute of Biostatistics, Faculty of Medicine, Masaryk University
Data-Driven and Problem-Based Learning With the Use of Severe Sepsis Cases

Rous V. *(12 min)*
Thomayer Hospital, Prague
The Use of Hospital Information Resources for Medical Stuff Education

Šlapák I. *(12 min)*

Faculty of Medicine, Masaryk University, Brno

Educational Portal for Pediatric & Videodocumentation of Surgery Cases

Pokorná A. *(12 min)*

Faculty of Medicine, Masaryk University, Brno

The Use of Medical Imaging Data in the Training of Future Non-medical Health Professionals

Hačkajlo D. *(12 min)*

IKEM, Prague

Portal Zlatokop in Support of Clinical Research

Vlach K. *(12 min)*

Technical University, Ostrava

Integration of Medical Subsystems and Their Inclusion in Education

D1-3 E-ASSESSMENT – MODERN TRENDS OF KNOWLEDGE ASSESSMENT
TUESDAY, 27 NOVEMBER 2012, 15.30–17.00, HALL B

D1-4 E-LEARNING CASE STUDIES
TUESDAY, 27 NOVEMBER 2012, 17.00–18.30, HALL A

Dostálová T. *(12 min)*

2nd Faculty of Medicine, Charles University in Prague

Web-based Interactive Learning Programs for Dentistry Concept and Its Evaluation

Kymplová J. *(12 min)*

1st Faculty of Medicine, Charles University in Prague

The Use of E-learning for Statistical Evaluation of The Results of Blood Pressure Measurement in Practical Exercises in Biophysics

Lesenková E. S. *(12 min)*

National Medical Library, Prague

Quality and Effectiveness Evaluation of E-learning Courses in the Field of Medical Librarianship

Mazánek P. *(12 min)*

Faculty of Medicine in Hradec Králové, Charles University in Prague

E-learning Project IT medik and Administration of Documents

Oravský R. *(12 min)*

Faculty of Medicine, Pavol Jozef Šafárik University in Košice

Atlas of Symptoms and Syndromes

Vaněk, F. *(12 min)*

1ˢᵗ Faculty of Medicine, Charles University in Prague

IPv6 experience in an academic environment

D1-5 E-ASSESSMENT AND LMS
TUESDAY, 27 NOVEMBER 2012, 17.00–18.00, HALL B

Feberová J. *(12 min)*

2ⁿᵈ Faculty of Medicine, Charles University in Prague

Basic Steps How Create an Online Course in Frame Assessment of Quality According to Evaluation Criteria

Komenda M. *(12 min)*

Institute of Biostatistics, Faculty of Medicine, Masaryk University, Brno

EMEE – New Monitoring Module for Moodle

Rajdl D. *(12 min)*

Faculty of Medicine in Plzeň, Charles University in Prague

E-klinická biochemie – New Interuniversity Course in An Environment of MOODLE MEFANET

Kvašňák E. *(12 min)*

3ʳᵈ Faculty of Medicine, Charles University in Prague

Testing Portal of Medical Biophysics Questions

D1-6 MULTIMEDIA IN MEDICAL EDUCATION
TUESDAY, 27 NOVEMBER 2012, 18.00–18.45, HALL B

Kozlíková K. *(12 min)*

Faculty of Medicine, Comenius University in Bratislava

Electromagnetic Biosignals And Electromagnetic Radiation In Electronic Education of Medical Biophysics – State of the Project In the Middle Period

Majerník J. *(12 min)*

Faculty of Medicine, Pavol Jozef Šafárik University in Košice

Sharing Infectology Video and Audio Lectures Using Faculty's Portal

Krcho P. *(12 min)*

Faculty of Medicine, Pavol Jozef Šafárik University in Košice

Visualisation of the Ultrasound Evaluations in Critically Ill Newborns

D2-1 PLENARY SESSION II: SERIOUS GAMES FOR MEDICAL EDUCATION
WEDNESDAY, 28 NOVEMBER 2012, 9.00–9.45, HALL A

Vejražka M. *(45 min)*
1st Faculty of Medicine, Charles University in Prague
Modern teaching approaches in the mirror of Comenius' ideas

D2-2 E-LEARNING IN MEDICAL FIELDS FOCUSED
ON HUMAN LOCOMOTOR SYSTEM
WEDNESDAY, 28 NOVEMBER 2012, 9.45–11.35, HALL A

BIOSPACE
InBody
InBody

Gallo J. *(15 min)*
Faculty of Medicine, Palacký University Olomouc
Introduction to the Symposium: Hip and Knee Osteoarthritis

Laichman S. *(10 min)*
Faculty of Medicine, Palacký University Olomouc
Visualisation

Valdmanová L. *(10 min)*
New Technologies - Research Centre, University of West Bohemia, Plzeň
Biomechanical Approach to Studying Musculoskeletal System

Florian Z. *(10 min)*
Faculty of Mechanical Engineering, Brno University of Technology
E-Learning Possibilities in Study of Human Biomechanics

Janura M. *(10 min)*
Faculty of Physical Culture, Palacký University Olomouc
Gait Analysis of Patients with Osteoarthritis of the Knee and Hip Joint

Vaverka F. *(10 min)*
Pedagogical Faculty, University of Ostrava
Long-term Observation of Gait Cycle Changes after Total Hip Replacement – Case Study

Krobot A. *(10 min)*
Faculty of Medicine, Palacký University Olomouc
E-learning in Teaching of Hip and Knee Osteoarthritis: A Physiotherapist's Point of View

Pavelka K. *(10 min)*
1st Faculty of Medicine, Charles University in Prague
EULAR Recommendations for Diagnosis and Therapy of Hip and Knee Osteoarthritis

HEALTH CARE SCIENCES COORDINATING COUNCIL
WEDNESDAY, 28 NOVEMBER 2012, 11.35–13.05, HALL A

D2-3 VIRTUAL CASUISTICS – GUIDELINE FOR AUTHORS
WEDNESDAY, 28 NOVEMBER 2012, 11.35–13.05, HALL B

D2-4 ELECTRONIC SUPPORT OF EDUCATION IN HEALTH
CARE SCIENCES
WEDNESDAY, 28 NOVEMBER 2012, 13.45–16.25, HALL A

Jarošová D. *(25 min)*

Faculty of Medicine, University of Ostrava

Introduction + Implementation of EBP in nursing teaching at Faculty of Medicine University of Ostrava

Farský I. *(12 min)*

Jessenius Faculty of Medicine, Comenius University in Martin

Multimedial textbook of nursing techniques and skills

Ovšonková A. *(12 min)*

Jessenius Faculty of Medicine, Comenius University in Martin

The perspectives of e-learning education in paediatric nursing

Bóriková I. *(12 min)*

Jessenius Faculty of Medicine, Comenius University in Martin

Assessment Tools in Gerontological Nursing – to create of electronic database

Andraščíková Š. *(12 min)*

Faculty of Health Care professions, Presov University

Multimedial technologies in preparing of midwives

Mikšová Z. *(12 min)*

Faculty of Health Sciences, Palacky University Olomouc

E-learning education – project POMEZI at Faculty of Health Sciences

Vondrušková L. *(12 min)*

1st Faculty of Medicine, Charles University in Prague

The Virtual Patient (VP): Relevant for Paramedical Professions or Not?

Pokorná H. *(12 min)*

Faculty of Medicine, Palacký University Olomouc

Application of PBL method to education of health care proffessionals

Zahradníček O. *(12 min)*

Faculty of Medicine, Masaryk University, Brno

Introduction to clinical microbiology as a fully e-learning subject in education of nurses and midwives

Svobodová H. *(12 min)*
3rd Faculty of Medicine, Charles University in Prague
Hygienic care about patient in intensive care – study multimedial material for nurses

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MEDICAL FACULTIES COORDINATING COUNCIL
WEDNESDAY, 28 NOVEMBER 2012, 16.30–18.00, HALL A

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POSTER SESSION
27–28 NOVEMBER 2012

Jana Heczková, Eva Marková
1st Faculty of Medicine, Charles University in Prague
Experience with using Moodle software to support First Aid and Patient Care lessons and organizing Summer Clerkship of Patient Care

Kateřina Ivanová
Faculty of Medicine and Dentistry, Palacký University Olomouc
Project Center for Clinical Practice Guidelines

Miloslav Klugar
Faculty of Medicine and Dentistry, Palacký University Olomouc
Using of e-learning and e-output in the PraGraM project (a law literacy of medical students) at the Faculty of Medicine and Dentistry, Palacky University in Olomouc

Radka Lichnovská
Faculty of Medicine and Dentistry, Palacký University Olomouc
A long-term student's evaluation of the new e-learning method of teaching

Lenka Luhová
Faculty of Science, Faculty of Medicine, Palacký University Olomouc
Project IMBIO: E-learning Support of Practical Education of Biochemistry and Immunology

Jiří Lukeš
University Hospital Olomouc, Faculty of Medicine , Palacký University Olomouc
Possibilities of postgraduate training in clinical biochemistry

Petr Schneiderka
Faculty of Medicine and Dentistry, Palacký University Olomouc
Construction and validation of e-learning environment for the integration of courses in preclinical and clinical disciplines at the Medical Faculty and Faculty of Health Sciences, Palacky University in Olomouc, Czech Republic

Antonín Šípek
1st Faculty of Medicine, Charles University in Prague
Introduction to clinical microbiology as Creation of interactive casuistcs in WikiLectures

Michal Trnka
Faculty of Medicine, Comenius University in Bratislava
Self-learning Algorithms in Education of Health Care Professionals

František Vaněk
1ˢᵗ Faculty of Medicine, Charles University in Prague
IPv6 protocol

Jaroslav Veselý
Faculty of Medicine, Palacký University Olomouc
E-learning support for the interdisciplinary integration of educational theme "Consciousness" as studied at the Palacky University in Olomouc

... sejdeme se na AKUTNĚ.CZ

MEFANET: STATE OF THE UNION
AFTER SIX YEARS OF NETWORKING

L. Dušek, D. Schwarz, M. Komenda
Faculty of Medicine, Masaryk University
D1-1A PLENARY SESSION I | TUESDAY, 27 NOVEMBER 2012, 9.45

Keywords: MEFANET, medical education, e-learning, e-publishing, networking

The MEFANET project (MEdical FAculties NETwork) has initiated international, effective and open cooperation among all medical faculties in the Czech Republic and Slovakia.

One of the elementary goals of the project is to advance medical teaching and learning with the use of modern information and communication technologies. As an instrument for that, MEFANET has decided to develop an original and uniform solution for educational web portals which are used, together with a central gateway, to offer and share digital educational content. Recent developments have focused on extending the set of tools for multidimensional assessment of the published contents quality. The original assessment was based on the following four dimensions: A. review, B. typological classification, C. the level of the target groups, D. users' self-study score. In addition to that, the new editorial processes now include also mentally active monitoring of the published contents.

Three new ICT tools have also been introduced to the MEFANET community besides the common e-publishing portal platform. These new tools provide higher level of interactivity for students during their self-study process.

The contribution will show how the new three tools SANDBOX, WIKILECTURES and MOODLE-MEFANET are related to the already established and standardized CENTRAL GATEWAY of the portal platform.

CLINICAL REASONING: AVAILABLE TOOLS
AND NEW PROSPECTS FOR MEFANET

D. Schwarz, M. Komenda
Faculty of Medicine, Masaryk University
D1-1A PLENARY SESSION I | TUESDAY, 27 NOVEMBER 2012, 9.45

Keywords: clinical reasoning, e-learning, virtual patient, computer simulation

Medical education has been undergoing a significant shift from traditional methods (textbooks, lectures, bedside teaching) to more comprehensive approach, which also employs modern ICT tools (e-learning, interactive algorithms, computer simulations, virtual patients). Such approach has been demonstrated to enhance and improve learning skills of medical students and residents in comparison to traditional methods. There have been several factors in medicine and medical education that significantly support these trends; particularly rapid development of new technologies and generally shorter hospital stays, which decreases student's chance to meet a given diagnosis or case.

The following casuistry tools will be introduced to the MEFANET community: 1) WebSP, 2) Open Labyrinth, 3) Interactive Multimedia Algorithms for Acute Medicine Teaching and Learning and

4) DiagnosisX. In addition, two platforms useful for developing interactive video will be also presented: RoD (Reactions on Display) and YouTube.com advanced editing tools.
The contribution will be concluded by a proposal how the interactive cases will be integrated into the MEFANET portal platform.

USING MOBILE DEVICES FOR SELF-ASSESSMENT IN MEDICAL EDUCATION

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D1-1A PLENARY SESSION I | TUESDAY, 27 NOVEMBER 2012, 9.45

Keywords: virtual patients, mobile devices, self-assessment, mLearning, eLearning

Having used virtual patients (VPs) widely in their medical curriculum, St George's, University of London (SGUL) has developed an application for mobile devices to provide self-assessment VPs that complement group sessions. This presentation will describe the app and explain the educational reasoning underpinning its design, as well as summarising the feedback received. The benefits that it provides for learners will be described, along with a discussion of the practical and technological considerations that have to be addressed when creating such a resource, and the ways that technical standards for educational content are able to assist with this process.

Since 2009, the undergraduate course at SGUL has delivered its Problem-Based Learning (PBL) curriculum using VPs which allow learners to explore the consequences of the decisions that they take, a learning experience ideally suited for the teaching of clinical reasoning. In addition, SGUL provides students with an additional structured programme (1–3 per week) of VPs designed for formative self-assessment, which directly complement the PBL sessions and build upon and broaden student exposure to the concepts introduced in those sessions. However, when provided through a web interface, student take-up of these resources was considerably lower than anticipated.

It was hypothesised that usage of these resources would be increased by offering a delivery platform to students that better suited their working habits for self-directed learning. Based on the results of an annual survey that polls students' use of mobile devices, an app that allows VPs to be played on mobile devices was developed, called MedAssess. The app includes assessment functionality such as single best answer and enquiry-based questions, cumulative scoring, and allows VPs to be downloaded to the device and played without the need to maintain a network connection.

MedAssess was first released to students in September 2011, and the same assessment VPs are made available on the app as on the web.

The role of open technical standards for education was significant in enabling content to be developed and delivered using MedAssess. By designing the app around the MedBiquitous Virtual Patient standard it was ensured that resources are able to be delivered efficiently to students across multiple platforms, both over the web and on mobile devices.

Feedback from students indicates that MedAssess has been well received, and that the self-assessment resources are now being used more widely, with a higher student-uptake. Full details of the feedback and usage data will be presented, along with conclusions that consider how the appropriate use of mobile devices can impact upon student learning.

GAMIFICATION OF MEDICAL EDUCATION

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D1-1B PLENARY SESSION I | TUESDAY, 27 NOVEMBER 2012, 11.15

Keywords: mobile, gamication, application

Application of game mechanics to medical education to improve attention, engagement and retention of medical learning material in a mobile application.

The aim was to combine the principles of test-enhanced learning, i.e., repeated testing of educational material combined with relevant feedback to improve student comprehension and retention, with game mechanics in medical education. Game mechanics such as attractive interfaces, timing, short and long term goals and online competition are utilized by the games industry to promote user engagement and frequent voluntary play.

We created an application for smart phones called 'Ward Round' which aimed to simulate the learning experience on hospital ward rounds in an entertaining way.

The application has been downloaded over 700 times in just 9 months around the world, and has received high review scores across the board. Students use the application on average 2 times a day for approximately 3–10 minutes, with a current retention rate of 71 % of all users*.

We consider this a great success for our prototype application and are currently developing more applications based around the same concept with Glasgow Medical School in Scotland and other institutions.

Based on Flurry analytics accessed on the 17/10/2012 18:30 GMT.

DEVELOPMENT OF INFORMATION TECHNOLOGIES IN PUBLIC HEALTH DURING PAST 30 YEARS, CURRENT STATE AND PERSPECTIVE

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Technical University of Brno, Faculty of Electronics and Communication Technologies
D1-2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH | TUESDAY, 27 NOVEMBER 2012, 13.00

Keywords: Information systems, HIS development, history, perspective of HIS

Brief summary of reasons for development of Hospital Information Systems (HIS) is described. We mention different concepts of HIS development. Primary negative attitude of physicians to the invasion of information technologies to hospitals has been slowly changed.

We feel two reasons for this change: 1) Development and production of new very useful medical devices like CT, NMR, bed-side monitors, modern ECG's, laboratory and other diagnostic and therapeutic instruments. All of them were equipped by computer technology. 2) Information systems

have brought new quality to physicians' work. Access to enormous amount of data was suddenly very simple and very fast.

Extended teaching of fundamentals of computer science at medical universities is very important for a new generation of physicians. Modern methods of e-learning allow to use websites and medical atlases including presentations of surgical interventions in different branches of surgical medicine, physiotherapeutic methods, etc. Electronic materials used for education in medical informatics may also be used by medical staff in hospitals or for obligatory gradual courses.

Software producing companies are obliged to teach potential users how to use effectively implemented information system. E-learning is a good method how to teach new employees who need to start using the system. Prepared manuals, animated presentations and e-learning courses are well accepted, especially by new users who didn't pass starting training after system implementation and therefore hadn't a personal contact to the training person. In hospitals, mostly the nurses are employees who migrate from one hospital to another, in some cases about 30 % of them interchange themselves between hospitals every year.

We are witnesses to extreme miniaturization of electronic equipment and continuous cut down of its cost. This will allow using of current methods of patient treatment and information technologies also in poor regions in the Third World. In our countries, massive use of e-learning methods will result in better medical knowledge among physicians and all medical staff. Telematics in health service and use of Internet data storages may be a trend in future development of information systems. Large amount of patient data in current databases is a big encouragement for expanded use of data mining and application of artificial intelligence methods in medical expert systems.

I-COP – ANALYTICAL APPLICATION
FOR HOSPITAL DATA MINING

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Faculty of Medicine, Masaryk University
D1-2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH | TUESDAY, 27 NOVEMBER 2012, 13.00

The usage of real operational data from medical facilities for teaching and research purpose is still rather rare. It is partly due to the heterogeneity of information systems and the difficulty to access such data. It is also due to the nature of the data that are typically found in unstructured form and emphasize operational and administrative use rather than the clinical side of things. Educational platform I-COP, in cooperation with 11 partner cancer centres, is trying to build a new source of information, which would open up oncological data to professionals for teaching and scientific utilization.

The completion of joint I-COP database means disclosure of information about the process of treatment of cancer patients, including details from both hospital administrative data and clinical data. The database is created by merging two data sources – statements of health insurance companies, which carry information about particular treatment process realized in the medical facility, and data from the National Cancer Registry, which provide clinical information.

By processing and combining these resources in one database we get a comprehensive view. Parametric information from the registry shows how we treat patients and analysis of administrative

data adds information about the process itself. Therefore, it is possible to describe, assess and link together treatment of specifically defined groups of patients.

The project is being built and implemented as comprehensive data source that will contribute to scientific and educational work of oncologists. The combined database will provide a whole new perspective on the process of treatment of cancer patients, allowing its use for evaluation and analysis of care for cancer patients. We will also be able to compare the results of each facility with the reference values and open technical discussion over individual results. There are analytical web learning tools build above the I-COP database that will be available to all participating partners. Their goal is to make the data accessible to a broad range of experts to support their research and educational activities.

DATA-DRIVEN AND PROBLEM-BASED LEARNING WITH THE USE OF SEVERE SEPSIS CASES

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D1-2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH | TUESDAY, 27 NOVEMBER 2012, 13.00

Keywords: clinical education, e-learning, clinical cases, severe sepsis, intensive care medicine

Severe sepsis and septic shock are still associated with high morbidity and mortality rates. The EPOSS research project aimed on monitoring medical care in patients with severe sepsis and septic shock allowed development of an advanced infrastructure enabling data utilization by SEPSIS-Q project. This educational portal using the source data from EPOSS research database supports creation of clinical case collection, what fulfills the attractive idea about data-driven medical education, which was presented by Dušek et al. in as one of the main pillars for medical education in the MEFANET (MEdical FAculties NETwork).

EPOSS research database manages parametric data stored from a set of on-line forms including clinical parameters during the first seven days of hospitalization, information on anti-infective therapy, on dismissal or patient's death. Retrospective medical records with no direct person identifiers are the only source of data for the EPOSS research database.

SEPSIS-Q educational portal offers current events on sepsis, monitoring of scientific journals, guidelines, useful links and at last but not at least clinical cases. They represent the connection between www.sepsis-q.cz and eposs.registry.cz. Cases from EPOSS research database suitable for education are selected by experienced teachers from the participating clinical sites and subsequently upgraded to didactically appropriate level by a backoffice application (PHP/MySQL), which enables convenient and comprehensive web content management. All the finished cases have to be additionally approved by a guarantee designated by the Board of the EPOSS/SEPSIS-Q project.

The clinical case, completed and approved, becomes immediately available on-line. Each case is presented by its title, abstract and information about the author and sorted by mortality, gender, severity of sepsis and location of origo. Selecting a case from the collection activates a player, which takes the form of a flash object executed in Adobe flash player environment.

After one and a half years of collecting nearly 490 parametric records about severe sepsis and septic shock patients into the EPOSS research database, the first two pilot tutorial cases were created, both with seven nodes and both accompanied by pictures and video sequences. The case Toxic Shock Syndrome is demonstration of correct diagnosis and rapid treatment of this possibly fatal event in young woman. Proper examination, finding of sepsis origo, targeting of antibiotic therapy on suspect germ and promptly transferring the patient to the ICU led to quick improvement and early discharge from hospital.

On the other hand, next case shows how difficult could be finding the right diagnosis and how many obstacles could be laid between diagnosis and cure in elderly woman. The main symptom – bleeding to upper digestive tract – led to hospitalization and clinical state of patient worsen although surgical source of bleeding was not found. The coagulopathy was consequence of advanced sepsis progressing to septic shock with impairment of consciousness. Finally the source of sepsis was identified as urinary tract blocked by nephrolithiasis and nephrostomia was performed. Further treatment was complicated by renal failure and difficult correction of haemostasis and took 14days on ICU.

An advanced infrastructure of EPOSS/SEPSIS-Q project has been developed enabling data utilization from everyday clinical practice for innovation of clinical teaching represented by the first two pilot tutorial cases for now. In future the real clinical cases may become the basis for Problem-Based Learning (PBL) sessions.

The EPOSS/SEPSIS-Q project not only delivers the first comprehensive information on how severe sepsis and septic shock is treated in the Czech Republic, but may also advance the education of future clinicians who will be able to influence the outcome of the medical care.

USE OF HOSPITAL INFORMATION RESOURCES FOR MEDICAL STAFF EDUCATION

Vladimír Rous, Vladimír Vocetka
Thomayer Hospital, Prague
D1-2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH | TUESDAY, 27 NOVEMBER 2012, 13.00

This paper describes practical experiences with e-health education of medical stuff in the Thomayer Hospital (TN).

It's based on positive results of successfully completed project Construction and implementation of the educational system for "the centre of information and education in e-Health" (CZ.2.17/1.1.00/32244) and the first experience with extraction of information within the I-COP system development.

Both projects are based on effective hospital information resources exploitation to support health care about patients and also support the physician's scientific activities. We briefly discuss the possibilities how to find out the needs of data mining for medical stuff in TN. Also are mentioned pro-

cedures of managing educational courses for medical stuff and practical explanation of support for educational and scientific activities of physicians. We also point out, that very important part is the form of study, which is combination of e-learning and practical lections.

Further we focus on first practical experiences of data mining from i-COP, which combines data from statements for healthcare insurance and the Oncology register. The last part of this paper is describing effectiveness of e-health education in TN. This gives the physicians better knowledge of ICT equipment and makes the ICT more user-friendly, which finally gives the physicians more time to care about the patient.

EDUCATIONAL PORTAL FOR PEDIATRIC + VIDEODOCUMENTATION OF SURGERY CASES

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D1-2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH | TUESDAY, 27 NOVEMBER 2012, 13.00

Keywords: pediatricas, Education, Video

Educational Portal widespread teaching of pediatrics at the Medical Faculty of Masaryk University in Brno has been created within the project advanced teaching of pediatrics at the Medical Faculty of Masaryk University in Brno. Electronic textbooks were created, available for medical students. The content of textbooks are 10 participating clinics and departments, supplemented pictures and video documentation.

Video films present basic or special medical cases in which the process is documented diagnosis or surgical treatment.

Educational portal is available on the website as well as LF MU video coverage, which is secured and restricted only to students and teachers.

The lecture presents the form and content of the website and selected videos. The following are the experiences of teachers and students with this form of teaching – rapid availability, texts, pictures, diagrams and videos, the possibility of ongoing updates and enhancements.

THE USE OF MEDICAL IMAGING DATA IN THE TRAINING OF FUTURE NON-MEDICAL HEALTH PROFESSIONALS

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D1-2 APPLICATIONS OF PRACTICAL KNOWLEDGE OF HEALTHCARE FACILITIES INTO TEACHING AND RESEARCH | TUESDAY, 27 NOVEMBER 2012, 13.00

Keywords: medical imaging data, secondary health care and nursing schools, PACS, DICOM, case studies, e-learning, Moodle

The paper deals with the research carried out within a European project entitled Effective Teaching in Secondary Nursing Schools, which was a collaborative venture between Masaryk University and three secondary medical and nursing schools in Brno. It was focused primarily on the integration of medical imaging technologies into e-learning courses. The research was targeted at three areas: identify suitable imaging technologies and virtual learning environment, instruct teachers how to create teaching materials for their students and pilot the created online courses in the selected schools establishing whether it is possible to introduce this innovative approach on a larger scale.

Using medical imaging obtained from routine medical procedures for teaching students of healthcare professions is becoming increasingly attractive not only because it offers an access to factual knowledge and links nursing theory to clinical nursing practice, but it is also important with regard to the massive increase in the numbers of students and the limits of clinical practice.

The core technology enabling to work with medical image data is the Picture Archiving and Communication System (PACS) and the universal format for image storage and transfer is Digital Imaging and Communications in Medicine (DICOM). Various imaging modalities (CT, MRI, USG, X-ray, etc.) are transmitted via a secured network to workstations for interpreting and reviewing. The expertly annotated images and reports are archived and stored for future retrieval.

The advanced core technology is used for a secure transfer of visual material between distant medical centers and specialists, but it can also readily connect teaching hospitals and training facilities, in this particular case, it became part of e-learning courses created in Moodle LMS.

Medical image data can be used in different parts of the learning process both in the traditional model (motivation, exposure, fixation) and the constructivist model (evocation, awareness, reflection).

Our research aimed at answering questions such as: Is it suitable to introduce advanced computer technologies, namely medical imaging, as early as at the stage of secondary education? What will be the added value that these technologies bring to students and teachers? Will students benefit from online courses in general and the virtual hospital comprising of case studies in particular? Will the secondary school teachers be able to cope with the advanced technologies introduced within the project?

The outcomes of the project prove that our expectations were solidly based in reality. Not only university students are capable of using complex e-learning materials, but these can be rewarding for secondary education too.

Another important question was whether Moodle is an adequately sophisticated, yet simultaneously sufficiently user-friendly virtual learning environment for such an ambitious enterprise. One of the advantages of Moodle is the fact that it is an open source system licensed under the GNU General Public License, thus allowing for customization. In order to simplify the process of incorporating the contents of the database image data into the teaching materials and to increase user comfort, new tools were created, e.g., Moodle formatting control link, thumbnail images, PACS reference convertor, etc.

PORTAL ZLATOKOP IN SUPPORT OF CLINICAL RESEARCH

David Hačkajlo, Michal Kahle
IKEM

Zlatokop is used throughout our institute as EHR system. It manages clinical processes and collects structured clinical data.
Structured clinical data are not only used in daily management of our patients but are also available for data mining tools integrated into our application. Clinical staff can quickly and effectively search for patient with similar problems or use these tools as start-up position for clinical research.

Zlatokop and structured data collected in it are widely used in clinical research in our institute.

INTEGRATION OF MEDICAL SUBSYSTEMS
AND THEIR INCLUSION IN EDUCATION

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There is a generally known problem about interconnection between various devices and systems in medicine environments. Data transfers between these systems are often very complicated or even not possible at all. These systems are simply not compatible. This paper describes one of the real problems of this kind and its solution. This solution is then included into education. Specific interconnection problems are needed to be solved at the cardio surgery department in the "Městská nemocnice Ostrava". Data from devices named DASH (vital signs monitor) and ICS 3000 (Implant Control System) are need to be automatically transferred to the operational report which is then exported to the nationwide pacemaker registry named REPACE. Also the data about patient from hospital information system Clinicom is automatically included.
Modified application of the developed system called ImplantSys is prepared for students who are introduced to tasks with real time data capturing from the vital signs monitor (DASH or EAGLE). Students are able to measure, process and evaluate data sets from ECG, pulse oxymetry, blood pressure, etc. They will be able to apply some algorithms to the signals in the MATLAB. Several lessons in two courses that combine technical and medical practice are running this semester. The lessons are focused on the whole process of medical data acquisition and designing the software which allows that. They will see how some of the principles are implemented in the C# programming language.
The outputs are: The new developed application named ImplantSys. Software simulator of biosignals such as ECG, respiration, blood pressure and blood saturation. Exercises in two courses. Interface which can transform the datasets acquired from vital signs monitor to be usable in the

MATLAB. Cooperation with hospital "Městská nemocnice Ostrava" and Institute of Biostatistics and Analyses at the Faculty of Medicine and the Faculty of Science of the Masaryk University from Brno.

Interconnection between vital signs monitors and PC is crucial in acquiring signals in the digital form. Then it is possible to archive and process these signals with further algorithms. Other sources of information as hospital information system and ICS 3000 device is used for making an operation report about pacemaker implantation. Therefore it is going to the REPACE registry directly from the ImplantSys and the data are mostly acquired automatically by this application. From this point of view it is very useful for medical staff to work faster and without mistakes such as typos. For education it is very important to show the students real applications such as this to bolster their motivation in studies. They will see what they can achieve and will be more inspired.

WEB-BASED INTERACTIVE LEARNING PROGRAMS FOR DENTISTRY CONCEPT AND ITS EVALUATION

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D1-4 E-LEARNING CASE STUDIES | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: e-learning, dentistry, evaluation

The change in pedagogy relates partly to the development of electronic media and communication possibilities that are available in networked environments. This new technology dominated the process and took the focus away from the educational content and learning. It has now reached a more mature state and the focus is now placed increasingly on content, learning and outcome. A prerequisite for a rational learning process is that knowledge is easily accessible, searchable and retrievable. In this respect electronic technology is a necessary tool in modern learning. The aim of our study was to evaluate the results of Czech-English education courses in Dentistry for students of general medicine and to compare students with access to Internet based e-learning courses to those without.

The course was taught in two parallel groups of Czech and international students. Groups and teaching hours were as follows in the fourth year of the M.D. curriculum: Stomatology – course duration 10 days – examination – 4 EC credits; Book – Dentistry and Oral Diseases (Grada Publishing, Prague, ISBN 978-80-247-3005-9); 10 lectures – traditional lectures (years 2009–2010) and e-learning education (years 2010–2012); 10 lectures – contact hours. Materials published on the portals of the individual dental study programs (http://dl.cuni.cz), as well as at the common central access point, have different access levels, ranging from material that is freely available to all to materials that are accessible only after receiving permission from the author. A number of software tools are used for the creation of e-learning courses, such as, e.g., WebCT, Blackboard, Adobe Connect or Microsoft Class Server. Students included in our study were divided into two groups according to the e-learning program: those taking traditional courses only (N = 161 (130 Czech students; 31 international students; 81 women and 80 men, average age 24 years)), and those taking e-learning lectures (N = 130 (105 Czech students; 25 international students; 60 women and 45 men, average age 24 years)). The goal of our study was to check student activities during the educational process, namely online work – lessons, articles, videos, literature, quizzes and direct Internet access.

The four-point scale was used for Stomatology oral examination and following evaluation: 1 – excellent; 2 – very well; 3 – sufficient or pass; 4 – insufficient. There were no differences between Czech and international students, or between students who had (1.246) and had not taken the e-learning course (1.23). Real differences were found in the results of the questionnaire. It was confirmed that students using the e-learning system have seen greater benefits in theoretical and practical training. The e-learning database was easy to operate and users also noted its increased functionalities. The new training system provided valuable knowledge for students' learning, and increased their level of satisfaction. The statistically significant results of all questions, with the level of significance changing from 0.014 (question – all important technical concepts (principles, skills …) mentioned in the syllabus, or required for exam clarified with teachers during the course?) to 0.00000004 (question – Do you agree that tutor's attitude to students was mainly open and respectful?).

The e-learning course has a direct influence on learning experiences, dental information, opinions and comments. Our results verified that satisfaction is an important and influential factor in determining whether a student decides to take a dentistry and maxillofacial surgery course. Students should be given time for practical therapy in the clinic. The findings highlighted the importance of e-learning to training in dentistry and maxillofacial surgery. It was observed that students would like to use e-learning for their training. It was confirmed that students enjoyed the oral lectures significantly more than computer-aided learning online tools, but favored their use as a supplement to this. It was demonstrated that examination results did not correspond to the type of education but it was confirmed that e-learning helped to prepare students for practical training. The e-learning course had a direct influence on learning experiences, dental information, opinions and comments.

THE USE OF E-LEARNING FOR STATISTICAL EVALUATION OF THE RESULTS OF BLOOD PRESSURE MEASUREMENT IN PRACTICAL EXERCISES IN BIOPHYSICS

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D1-4 E-LEARNING CASE STUDIES | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: blood pressure measurement, statistical evaluation, e-learning

We introduced an e-learning system for developing protocols used in biophysical practices at the First Faculty of Medicine of Charles University. These Excel forms provide us with a number of biometric data and the results of measurements. For example, new system supports both the statistical evaluation and the comparison of auscultatory blood pressure measurement, digital and palpation method. Measurements of systolic and diastolic blood pressure, of course, depend on each other, but they also depend on a number of biometric and other data which are readily available in healthy students (sex, height, weight, physical exercise, etc.).

The aim of this contribution is to show possible use of the experimental measurements for both the teaching purposes as well as the database of non-trivial application for complex methods of statistical evaluation.

For two years we have acquired and processed data from 1041 students. The basic model for the analysis is multiple factors ANOVA for several fixed factors (sex, BMI, heart rate) and for several

repeated measurements factors (systolic /diastolic pressure measurements, right/left hand, repeat attempts and three above mentioned methods of measurement).

Our results demonstrate known effects of stress on systolic and diastolic blood pressure. The statistical significance of the parameters used in the regression models, however, depends upon the measurement of blood pressure which varies in accuracy. The main results of our work will be documented graphically.

The results also formalize statistically significant depending blood pressure on sex, BMI and resting heart rate values.

QUALITY AND EFFECTIVENESS EVALUATION OF E-LEARNING COURSES IN THE FIELD OF MEDICAL LIBRARIANSHIP

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D1-4 E-LEARNING CASE STUDIES | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: LMS Moodle, e-learning courses quality, medical informatics and information science

In this paper we introduce an electronic courses "Modern procedures in medical libraries" and "Library and information services in helthcare libraries", which are parts of the continuing professional education organized by the National Medical Library in Prague (NML), and their evaluation. These courses were carried out in several phases, the first course at the end of 2010, then during March and April 2011 and during March and April 2012, and the second is open during October and November 2012.

The courses are designed for a lifelong learning of medical librarians that work in smaller hospitals and other types of healthcare institutions and do not have either proper education or sufficient experience.

We tested the evaluation and assessment of the effectiveness and usefulness of the first e-learning course (Modern procedures…) with the help of Kirkpatrick's scale.

Donald L. Kirkpatricks's model comprises four levels.

- Level 1 – Reaction – to what degree participants react favourably to the training
- Level 2 – Learning – to what degree participants acquire the intended knowledge, skills, attitudes, confidence, and commitment based on their participation in a training event
- Level 3 – Behaviour – To what degree participants apply what they learned during training when they are back on the job
- Level 4 – Results – To what degree targeted outcomes occur as a result of the training event and subsequent reinforcement

The second course (Library and information services…) will be evaluated with combination of the Kirkpatrick's model and a new system for quality evaluation of e-learning courses based on the doctoral thesis "Using the Learning Management System in the university environment" by J. Feberova.

So far only the results from the first course evaluation are known at this time. The results from the combined evaluation will be processed at the end of the second course (November) and will be presented at the conference.

Results from the first course:

Reaction

The first level of the Kirpatrick's model was assessed with the means of an evaluation questionnaire at the end of the course. Reaction of participants to the e-learning form of the course were positive, such a course was acceptable for all the students from both groups with the exception of only one person and they would participate in another e-learning course.

Learning

The evaluation of the second level was carried out both by comparison of the results of the preliminary and final tests, that comprised 17 questions covering the main course themes, and by assessment of each lesson's assignments. The average results of the tests were improved in both courses.

Behavior

The participants of the first course were asked three months after the course completion to fill in a questionnaire, that was aimed at using the newly acquired knowledge in everyday work. The results really showed some potential changes in the students' practices.

The systems for structured creation and evaluation of the electronic courses should help both the authors and reviewers and the students to unify quality criteria.

E-LEARNING PROJECT IT MEDIK
AND ADMINISTRATION OF DOCUMENTS

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D1-4 E-LEARNING CASE STUDIES | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: IT medik, e-learning, administration

The first part of IT medik project, which is supported by Operational program Education for Competitiveness CZ.1.07/2.2.00/15.0164, is finished. ITmedik deals with support of pregraduate medical education based on LMS Moodle 2 by the library of electronic materials. The main aim is to present results of the first part of the ITmedik project, achieved knowledge and its application for the second part.

Education supporting materials are stored in a central database (Database activity module of Moodle 2) and divided into topic categories simultaneously. An issue related to high volume of documents and contracts is observed. All of 560 documents must be paired with specific contract. Every material must be checked formally. In the next part of ITmedik project, the workflow is even more complicated. Database of e-learning courses is situated in LMS Moodle as well. Compared to the first part, professional control is needed and 6 documents must be paired with single courses. It is decided to build new software as a method of e-courses evidence.

New customized system for e-courses evidence is called ITmedikSOFT. The web based application has two different interfaces. The first one serves to e–courses authors for registration and submission. The second one is strictly separated and accessible only to members of project team with different privileges. All contracts and protocols including signalization of process statuses are linked to specific courses and well summarized. Emailing of contracts and comments is available too. Using the application helps to keep order in huge amount of documents, clearly shows the stage of

submitting process of every e-course, saves time of administrative workers and reduces a risk of errors.

Knowledge achieved during running the first part of ITmedik project was applied in the second part dealing with building medical database of e-learning courses. For more effective administrative work, web application named ITmedikSOFT was created. The complexity of all ITmedik's submission processes is controlled by web application and stored in database. Every record is printed out during the process and backed up in the ITmedikSOFT application.

ATLAS OF SYMPTOMS AND SYNDROMES

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D1-4 E-LEARNING CASE STUDIES | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: syndrome, symptom, eponymously named diseases

First step to make the right diagnosis is to examine patient and recognize symptoms. Sometimes the diagnosis is clear, but sometimes patients have more symptoms that form syndromes. Because of a huge amount of syndromes it is almost impossible to know all of them. That is why there is a need for some literature that describes these syndromes and its symptoms really briefly and clearly.

Although there are many medical books, it is hard to find one that describes all of the – especially written in Slovak language. Another problem can be explained on this example: A student of medicine has to know that trisomy of 18th chromosome is called Edwards syndrome but when it comes to visual recognizing of patient's diagnosis, this information is not very useful. Students have to see how those pathological lesions, malformations and symptoms look like. We were searching for many sources on medical webpages and medical books in order to create an atlas of all known syndromes.

This educational work contains all syndromes alphabetically sorted and divided into chapters. Each chapter deals with one organ system, with its symptoms and all syndromes that are connected to it. Descriptions of syndromes contain information about etiology, clinical symptoms and prognosis. We added alternate names of syndromes that are sometimes used in literature and describe the same syndrome – for example Gruner-Bertolotti syndrome is also called von Monakow syndrome or Parinaud syndrome. What is more, this work also includes pictures of those syndromes that are visible by eye. Our work also includes those names of syndromes that are not used nowadays – for example Heberden syndrome is an old synonym for angina pectoris. This fact possibly makes this atlas of syndromes the first complete atlas written in Slovak language.

This work helps students to get quick and practical information about any syndrome. It can also be used by teachers to improve the quality of lectures.

IPV6 EXPERIENCE IN AN ACADEMIC ENVIRONMENT

František Vaněk
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D1-4 E-LEARNING CASE STUDIES | TUESDAY, 27 NOVEMBER 2012, 17.00

The Internet is now primary source of information in the field of science and education. IP addresses are necessary for basic Internet operations. Pool old IP addresses is now exhausted, gradually started new protocol IPv6. If the existing software to work in the new environment, it is necessary to observe certain rules. Alternatively, it is necessary to modify existing programs. Experience with the operation of IPv6 will be described in this paper.

Currently, most of teaching and scientific information is available via the Internet. Schools have on their website tutorials as well as verification systems of acquired knowledge. Most high schools have at least Data Center implemented IPv6. Running IPv6 brings with it many problems that the administrator should know. Otherwise, it can reduce the server availability, security threats and data loss. Vice versa – the correct implementation of IPv6 and use its properties can bring many benefits.

The new protocol IPv6 has been deployed at FEE CTU in Charles Square complex in 2010 (UCEEB – Servers in 2012). The described experiences are the result of two years of operation of IPv6, the protocol was gradually deployed on servers on the PC end. Typical properties, frequently asked questions and user errors were:

1. Basic features of IPv6 (especially GW) – when configuring the IPv6 default gateway is not entered
2. There is no NAT (Network Address Translation)
3. Dual-stack. If it is not operationally impossible, always choose the simultaneous operation of both protocols
4. Service private servers do not need IPv6
5. Win-installation IPv6 … problem with WinXP
6. Win-security … watch out for firewall (duplication rules)
7. Win / apache work … just some version
8. Privacy mod … always prohibit
9. The authorization addresses … addresses instead of one external port NAT always allow all prefixes
10. Addresses filtration … blocking attacks, do not block each address – always full prefix (address banning)
11. The option of tracing the hacker
12. Browser timeout when running IPv6/IPv4 (Geoff Huston)
13. Monitoring approaches … can be more accurate, if you modify the program. Beware of the forums
14. Buy periphery always with IPv6 support

Despite many problems, IPv6 deployment is a positive step.

Deployment of the new IPv6 represents work primarily for server administrators. From the outside, this activity is nothing new, no new information, new discoveries, new teaching aids. But it's a necessary step to enable existing and new data sources were available to all students.

BASIC STEPS HOW CREATE AN ONLINE COURSE IN FRAME ASSESSMENT OF QUALITY ACCORDING TO EVALUATION CRITERIA

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D1-5 E-ASSESSMENT AND LMS | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: online course, quality, evaluation criteria

The main goal was to create a support application that should provide to creators of courses develop quality online course.

The application is designed according to the criteria of quality, based on the ISO standards. Evaluation framework was created. Based on the evaluation framework were designed evaluation criteria for assessing the quality of e-learning courses in the following categories: educational area, target group, technological area, management and validation of the course. Criteria were created based on the evaluation model, which was designed based on the frame of reference ISO. This model contains seven phases in two areas (preparation of courses, running of courses): needs analysis, planning e-courses, the conception and design of e-courses, realization designs courses and creation of e-learning materials, implementation, learning process, validation.

Final application for course author's support takes the form of an interactive web form. It consists of three parts; the first part is used to create a document with basic information about the course, which must be accessed to the participants before the course begins. The second part contains information which should be placed in the beginning of the course. The third part is a guide for their own content of course. It contains various basic steps for creating course includes didactic and illustrative diagrams and illustrated examples. You will also find manual for the creation of learning materials, activities and easy navigation in the course. Applications for the assessment take the form of an interactive questionnaire.

Elearning courses at Charles University are very popular tool for teaching. They are a standard part of an aid in teaching full-time and distance learning. The central installation Moodle is now over 3000 courses. Created applications will contribute to the standardization and improvement of e-learning courses, especially in the university environment. Created applications will contribute to the standardization and improvement of e-learning courses, especially in the university environment.

EMEE – NEW MONITORING MODULE FOR MOODLE

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D1-5 E-ASSESSMENT AND LMS | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: elearning, moodle, education

This contribution gives an introduction to EMEE concept, which covers effective monitoring of student behavior. Well-founded feedback called EMEE (Effective Monitoring and Evaluation of Education) represents an interdisciplinary project combining an informatics approach with math-

ematical and pedagogical methods. The EMEE integration into the most widespread open-source learning management system Moodle will be introduced.

The EMEE idea is based on an innovative feedback method integrated into an learning management system. The added value lies in new information for teachers discovered by data mining, statistical and analytical data processing. The result will be clearly visualized in diagrammatic form (graphs and tables). The pilot EMEE functionalities are available in the LMS Moodle. All fundamental principles including the conceptual database model are described in this paper.

This contribution described a brand-new EMEE concept which shifts learning feedback to better optimization from the point of view of the end user. Without the need for complicated and often bothersome questionnaires and surveys, the teachers will have a tool providing a well-founded and hence valuable picture of their teaching.

The pilot experiment showed clearly that the proposed principles are applicable in practice and the output opens not only an objective insight into student behavior, but also follow-up modification of teaching methods. Another logical step is the development of a new module for the LMS system environment – specifically for Moodle. Moodle-EMEE gives teachers feedback options not only on student activity but also and firstly on their own teaching.

E-KLINICKÁ BIOCHEMIE – NEW INTERUNIVERSITY COURSE IN AN ENVIRONMENT OF MOODLE MEFANET

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D1-5 E-ASSESSMENT AND LMS | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: MOODLE MEFANET, E-klinická biochemie, meziuniverzitní kurz, prezentace s mluveným komentářem, testy

MOODLE MEFANET (http://moodle.mefanet.cz) is a new e-learning platform for sharing complex e-learning courses. In fact, it is a central installation of LMS MOODLE (currently of version 2.3.) that is accessible for all members of MEFANET network via Shibboleth authentisation. This procedure enables to login by local authentisation mechanisms and cooperate in one common LMS environment.

An example of current application developed in MOODLE MEFANET is an interuniversity e-learning course E-klinická biochemie (project No.: CZ.1.07/2.2.00/15.0048).

To build the course we used following tools: Google Documents (textbook chapters), Adobe Presenter (narrated presentations published by SCORM packages) and LMS MOODLE (quiz questions, interactive lessons and other modules).

The participating universities are: Charles University in Prague (Medical Faculty in Pilsen, 1st and 2nd Medical Faculty), Masaryk University in Brno (Medical Faculty) and University of Ostrava (Medical Faculty). The course is composed of interactive study materials (textbook chapters, narrated presentations and tests) that cover all topics of clinical biochemistry. We appreciate possibility to use and sustain study materials in a central storage. However, it is essential to learn paths leading to effective incorporation of central course parts into local teaching algorithms used in each faculty. In the presentation, we practically demonstrate selected content and advantages of central course based on MOODLE MEFANET platform.

MOODLE MEFANET is a viable platform that connects advantages of central storage and complete didactic course suitable for direct and targeted consumption by students.

TESTING PORTAL OF MEDICAL BIOPHYSICS QUESTIONS

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D1-5 E-ASSESSMENT AND LMS | TUESDAY, 27 NOVEMBER 2012, 17.00

Keywords: portal, Moodle, biophysics, testing

Education of medical biophysics at medical faculties in the Czech Republic faces for long time insufficient pool of testing question. The long term aim of presented activities was to create critical mass of testing questions and to fulfil three purposes: at first to facilitate and simplify testing of medical biophysics at all participating faculties, at second standardize testing at medical faculties and at third to enable students a self-preparation (training) for real testing.

Because the quality of testing questions is the issue of the main importance, each question underwent anonymous revision process focused on: (1) formal quality and comprehensibility, (2) usefulness and (3) determination of severity level.

The result presented here comprises the pool of 3000 multiple choice testing questions located at purposely created LMS Moodle portal with an option simultaneously to generate interactive PDF files for hard copy tests. Questions are divided into 8 thematic subunits of medical biophysics: Molecular biophysics, Thermo-dynamics, Mechanics, Electricity and magnetism, Optics and acoustic, Radiation, Imaging methods, Rest).

Project focused on creation a sharing of testing questions has proceeded by setting up the portal editing board and on-going discussion about the next steps like evaluation of questions, participation of all medical faculties and interface this portal with MEFANET network and portal structure.

ELECTROMAGNETIC BIOSIGNALS AND ELECTROMAGNETIC RADIATION IN ELECTRONIC EDUCATION OF MEDICAL BIOPHYSICS – STATE OF THE PROJECT IN THE MIDDLE PERIOD

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D1-6 MULTIMEDIA IN MEDICAL EDUCATION | TUESDAY, 27 NOVEMBER 2012, 18.00

Keywords: e-learning, bioelectromagnetism, didactic test

The aim of this study is to present the state of solution of the pedagogic project devoted to preparing multimedia materials in form of e-learning support and e-learning courses. The target groups are students of general medicine and dentistry studying in Slovak and in English, and students of

biomedical physics. In the first stage, we cover the topics concerning bioelectromagnetism clustered into ten main areas.

The pedagogical project KEGA 004UK-4/2011 "Electromagnetic biosignals and electromagnetic radiation: electronic education of Medical Biophysics (creation of e-learning courses)" is devoted to prepare lectures in electronic form to allow better and deeper understanding of several topics which cannot be explained in detail during current lessons because of lack of time during normal planned classes [1]. The individual study will be accompanied by didactic tests with automatic evaluation to monitor and to verify the students' knowledge. All multimedia materials will appear also in a printed (text) version, always in Slovak as well as in English language to assure as much as possible identical education in both languages.

After one and half year of solving the project, i.e., in the middle period, we have prepared electronic presentations for eight of the planned topic areas: physical basis of bioelectromagnetism; transport processes; biophysics of excitation processes; biological signals as the basis of the diagnostic methods in medicine; essentials of biomedical electronics; passive electric and magnetic properties of cells, tissues and organs; electromagnetic spectrum starting form basic characteristics and ending with corresponding spectroscopic and tomographic methods; safety and protection of health during registration of electric and magnetic biosignals. After internal review of several project co-workers, the presentations are step by step published at the MEFANET Portal of the FM CU in both languages (http://portal.fmed.uniba.sk/). After completing the topics in each area, we assume the access from the Central gate of the MEFANET project.

Over one thousand and two hundred test questions for didactic tests are prepared and reviewed by independent reviewers in Slovak. Nowadays, these questions are translated into English language and transformed into a form suitable for moodle application to allow on-line testing of students.

The main advantage of this way of preparing the lectures is that the students obtain comprised material in a short appropriate form, which is prevailingly needed to cover each lectures topic of the course. In addition, the students have access to the lectures any time and can prepare better for the examination.

Reference:

[1] Kozlíková, K. et al.: Electromagnetic biosignals and electromagnetic radiation in electronic education of medical biophysics – a pedagogic project. In: MEFANET 2011 [CD ROM. – Brno: Masarykova Univerzita, 2011. – S. [1–5]. – ISBN 978-80-7392-179-8

SHARING INFECTOLOGY VIDEO AND AUDIO LECTURES USING FACULTY'S PORTAL

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D1-6 MULTIMEDIA IN MEDICAL EDUCATION | TUESDAY, 27 NOVEMBER 2012, 18.00

Keywords: education, lectures, multimedia, infectology

Recent trends in education indicate an expansion of distance forms, and the most of higher education institutions offer certain type of such activities. This is caused even by the technology innova-

tions but also by the budgetary constraints. Because of limited financial sources, the universities often reexamine their curriculums and explore alternatives to find cost-effective ways of delivering education. Here, the distance education can be considered as a default alternative. Regarding used grade of technology, it may be organized as different concepts including distance learning, distributed learning, online learning, e-learning, virtual education, web-based learning, computer-based training, and blended or hybrid learning.

The primary aim of our work is to increase an educational level in the area of infectology. To realize such activities we started to distribute opened live education events based on Helix streaming technologies. The events, where the discussions and the real-time feedback of the audience are needed, are organized using software (EVO) and/or hardware (Polycom HD) videoconferencing technologies. Lectures are broadcasted to the audience with no special requirements to receive the content. These forms are suitable for those users who can watch such sessions in real time. We respect that there are often objective reasons why some of the sessions cannot be watched when broadcasted. Therefore, the raw video archives are used to prepare audiovisual lectures. Such education materials include DVD movies, compressed video formats for web as well as interactive presentations. All are processed to be available for students in both on-line and off-line forms.

Video and audio lectures are shared using our faculty portal. Most of the materials are stored directly on the portal and are offered through its internal functions. The rest of these educational sources are linked to the other university's servers, but using this way the users are able to find everything on one place. Pure video lectures processed by video editing software EDIUS and/or Pinnacle studio are converted (Free Studio, DVD to FLV Converter) to the SWF and FLV video files. Once they are placed on the portal the users may watch them using internal player of the portal or using external one, depending on the size and the quality of the video file. Interactive presentations are prepared in combination of Microsoft PowerPoint and Adobe Presenter. They are processed and shared only if the authors offer their original PPT/PPTX presentations. Using users' feedback capabilities of the portal we expect to have also an asynchronous collaboration to improve our work. The substantial educational materials will be published also in printed versions to satisfy user not familiar with multimedia technologies.

It is hard to find an optimal and the most effective teaching methods. As we suppose, the combination of traditional teaching methods and new technological innovations may satisfy both the teachers and the students, even in subjects of clinical medicine. Therefore, we capture the live broadcasted lectures and the records are processed to be used by the students during their study. Such audio, video and content equipped records are shared using our portal of Multimedia support in the education of clinical and health care disciplines with no restrictions that ensures whole world accessibility.

VISUALIZATION OF ULTRASOUND FINDINGS IN CRITICALLY ILL NEWBORNS

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D1-6 MULTIMEDIA IN MEDICAL EDUCATION | TUESDAY, 27 NOVEMBER 2012, 18.00

Keywords: newborn, ultrasound evaluation of the newborn, visualisation of the scans, continual education

The purpose of the lecture is to present and describe the system of archiving and assessment of ultrasound findings in critically ill newborns.

In recent years, the range of possible examinations and displaying directly at a patient's bedside has grown radically. The basic examination is done using ultrasound medical device Aloka Alpha 6. The purpose of ultrasound examination in newborns is: 1. detection of life-threatening morphological developmental defects of organ systems, 2. assessment of circulatory characteristics, 3. assessment of effectivity of selected intervention procedure, 4. assessment of possible damage to tissue and organs. During examination, static, dynamic and computer-modified images are stored. Storing of video sequence, which assesses dynamics of tissue movement, is part of the examination. The recorded data are then stored in a hard disc drive of ultrasound device and laptop via WiFi. A large-screen display is produced using a high-power tablet. The purpose of this system is to store data in different places while linking them to a database of patients. In addition, the system is aiming at fast and simple access to information about patients during daily medical rounds directly at patients' bedside (incubator with a lot of equipment) and information displaying on a large screen for physicians, nurses, parents, as well as for medical students and trainees.

The system enables easy selection and comparison of findings. The diagnoses are parallelly supported by digital data.

Main positive points of the project. Safe archiving, fast overview of findings, comparison of findings, continual education, elimination of necessity to expose a patient to repeated examinations in the event of unclear findings. Higher level of communication and more effective and early intervention.

MODERN TEACHING APPROACHES IN THE MIRROR OF COMENIUS' IDEAS

Martin Vejražka, Čestmír Štuka, Stanislav Štípek
1st Faculty of Medicine, Charles University in Prague
D2-1 PLENARY SESSION II | WEDNESDAY, 28 NOVEMBER 2012, 9.00

Keywords: Stdent-centered learning, open access, student as a teacher

In the seventeenth century, John Amos Comenius formulated five principles that teachers should follow in their work: the principle of clarity – the learner should gain a direct experience; principle of consistency – curriculum should well organized, linked and balanced, both within and between subjects; principle of vigorousness – new skills should be obtained by direct experience and should be practically exploited; principle of permanence – repetition of competencies is essential; and the principle of proportionality – training should be adequate to capabilities of students. Comenius also stressed that learning should be amusing and that students should learn each other.

The fulfillment of Comenius' ideas remains the objective of modern teaching approaches: we are talking about learner-centered teaching and problem-based learning. Accessibility and openness, another of Comenius ideas, still have passionate supporters and opponents.

What are the ideals and the reality of enjoyable learning? How to get students more involved in the educational process at the time of digital media and social networking? Should students participate in education as teachers? Should the teaching materials be freely shared and available to anyone?

THE ADVANTAGE OF E-LEARNING IN THE TEACHING OF MUSCULOSKELETAL DISEASES

Jiří Gallo[1] with contribution of Zdeněk Florian[2], Miroslav Holeček[3], Miroslav Janura[4], Alois Krobot[5], Stanislav Laichman[1], Karel Pavelka[6], Linda Valdmanová[3], František Vaverka[7]
(in alphabetical order)
[1] Faculty of Medicine and Dentistry, Palacký University Olomouc, [2] Faculty of Mechanical Engineering, Brno University of Technology, [3] New Technologies – Research Centre, University of West Bohemia Plzeň, [4] Faculty of Physical Culture, Palacký University Olomouc, [5] Faculty of Health Sciences, Palacký University Olomouc, [6] 1st Faculty of Medicine, Charles University in Prague, [7] Pedagogical Faculty, University of Ostrava. Czech Republic

Musculoskeletal disorders (MSD) account for the most work-related, lost-time claims in the developed countries, which is considered as a big problem. We believe that education is an important aspect of health care assuming highly educated and well-trained health-workers provide earlier and more precise diagnosis and more effective therapy. In this way improvement in the education can lead to enormous financial and social benefit. The question is how to produce such highly educated health-workers. Currently orthopaedic surgeons, rheumatologists, and physiotherapists organize the learning of MSD separately.

The hypothesis is that such approach is highly limited because it does not cover the spectrum of the disease/clinical practice. Additionally, his/her specialty biases limit teaching approach of each specialist. As a result, there are difficulties in the diagnosis and treatment of MSD that increase individual suffering of the patient and also the burden to each health-care system in comparison to care provided by complexly educated health-workers.

In this section we will show usefulness of multidisciplinary approach to especially osteoarthritis of the hip and knee joints. The symposium covers a broad spectrum of topics including basic science, clinical, and engineering aspects of hip and knee osteoarthritis.

HIP AND KNEE OSTEOARTHRITIS INTRODUCTION TO THE SYMPOSIUM

Jiří Gallo
Faculty of Medicine and Dentistry, Palacký University Olomouc
D2-2A E-LEARNING IN MEDICAL FIELDS FOCUSED ON HUMAN
LOCOMOTOR SYSTEM | WEDNESDAY, 28 NOVEMBER 2012, 9.45

Hip and knee osteoarthritis (OA) is progressive condition in nature. Together they account for enormous health-care cost and the impairment, disability, and even handicap in many patients in the developed countries, which is considered as a big problem. Currently, early diagnosis, evidence-based treatment, and patient-centred approach are the most important aspects of health care assuming highly educated and well-trained health-workers provide earlier and more precise diagnosis and more effective therapy.

In this way an improvement in the education could lead to enormous patient-, financial-, and social-related benefits. The question is how to produce such highly educated health-workers. Currently orthopaedic surgeons, rheumatologists, and physiotherapists organize the learning of hip and knee OA separately. The hypothesis is that such approach is highly limited because it does not cover the spectrum of the disease/clinical practice. Additionally, his/her specialty biases limit teaching approach of each specialist. As a result, there are difficulties in the diagnosis and treatment of OA that increase individual suffering of the patient and also the burden to each health-care system in comparison to care provided by complexly educated health-workers. In this way, e-learning could be one of the most influential tool for modern education of health-care workers. In this lecture I will start the symposium showing the limits of orthopaedic approach to the teaching of hip and knee OA. Based on it, other participants will demonstrate the usefulness of multidisciplinary approach to hip and knee OA.

HOW TO TEACH ANATOMY OF THE HIP AND KNEE WITH REGARD TO OSTEOARTHRITIS

Stanislav Laichman
Faculty of Medicine and Dentistry, Palacký University Olomouc
D2-2A E-LEARNING IN MEDICAL FIELDS FOCUSED ON HUMAN
LOCOMOTOR SYSTEM | WEDNESDAY, 28 NOVEMBER 2012, 9.45

Keywords: e-learning, anatomy, hip, knee, osteoarthritis

Due to degenerative changes in weight bearing joints of the lower extremities, it is essential in the initial phases of the medical studies to concentrate on lectures and demonstrations focused on the anatomy and movements of the hip and knee joints, whereof possible related disorders originate. It especially concerns the following descriptions:

1. The type of joint (according to the number of parts, the shape of the interface, the type of mobility and the number of possible axes).
2. Detailed description of the ball and socket (articular cartilage arrangement) type of joint.
3. The insertion of the articular capsule, detailed description of the fibrous layer with reinforcing ligaments, detailed description of the synovial membrane along with the synovial folds (plica).
4. Special articular system (the labrum, the disc, the menisci, fibrocartilage, the mucosal bursae, the corpora adipose).
5. The basic and centre position of a joint (especially of the hip joint, due to subluxation of the head in upright position).
6. The range of movements (active x passive).
7. Vascular supply (generally from several sources – collateral and recurrent supply).
8. Sensory innervation (information about the position, direction and degree of movement, angular velocity, the degree and tension of the capsule and ligaments). Autonomous innervation – regulation of the lumen of nourishing blood vessels).

E-learning offers new possibilities for overall improvement of education in anatomy especially in relation to specific musculoskeletal conditions like osteoarthritis of the hip and knee.

BIOMECHANICAL APPROACH TO STUDYING MUSCULOSKELETAL SYSTEM

Linda Valdmanová, Hana Čechová, Luděk Hynčík, Miroslav Holeček
University of West Bohemia, New Technologies – Research Centre

Many citizens in Europe are affected by disorders or diseases due to biomechanical overload on the musculoskeletal system. Contemporary medical students learn to identify the problems and successfully treat it using classical approach based on patients' medication and rehabilitation. However the situation seems to be more complex taking into account not only medical but also biomechanical aspects of the problem. Deeper education in the occupational biomechanics and related musculoskeletal load by modern computer aided educational methods like web based e-learning does not overload the students and contribute to the broader understanding of the problem.

The presentation concerns interdisciplinary approach for investigating behaviour of musculoskeletal system and studying disorders or diseases due to biomechanical overload of the system. The musculoskeletal system is a complex structure interconnecting joints and cartilages to muscles driven by the neural system ensuring the system performance and stability. The biomechanical modelling approach using multi-body system methodology will be presented as a possible computer aided support for medical students' education. Such virtual approach accommodating both mechanical and medical knowledge enables many features within studying musculoskeletal analysis, e.g., parameterization of patient from the anthropometrical point of view or simple implementation of various loading conditions. Students can simply complete their knowledge using the virtual environment, e.g., web based application. Simple application will be presented.

The presentation and the topic addressed contribute to the interdisciplinary education of not only medical students in the field of musculoskeletal system and its behaviour because besides the classical medical identification, treatment and patient rehabilitation, it shows also biomechanical aspects of the problem. Using a specifically developed software tools using the biomechanical background and methods the students can simply analyse the behaviour of the musculoskeletal system from the mechanical point of view. The knowledge shall be simply transferred to the students using modern educational methods like web based e-learning, not overloading them but contributing to the broader understanding of the problem.

E-LEARNING POSSIBILITIES IN STUDY OF HUMAN BIOMECHANICS

Zdeněk Florian, Petr Marcián, Libor Borák, Jiří Valášek, Kamil Řehák, David Krpalek, Veronika Ebringerová
Brno, University of Technology, Faculty of Mechanical Engineering, Institute of Solid Mechanics, Mechatronics and Biomechanics

One of the basic tasks of musculosceletal biomechanics is solving hip-joint- and knee-joint-related problems. One of the most common methods of solving these problems today is computational modeling especially using the finite element method (FEM). Creation of models used by this method is usually composed of several steps including modeling of geometry or material properties etc. Recently, imaging techniques such as computer tomography (CT), magnetic resonance (MRI) or lately micro-CT devices started to play decisive role in creating computational models of high level. Image data obtained from these devices require suitable processing and sufficient knowledge to build models which face increasing demands from scientific as well as clinical point of view. For these purposes a web site with e-learning capabilities have been created by team of doctoral students from Institute of Solid Mechanics, Mechatronics and Biomechanics. The aim of this contribution is to introduce the most recent ways of data processing and creation of computational models. For easier dealing with computational models in biomechanics the e-learning site has been created for students of 4th and 5th year of mechanical engineering courses. The contribution presents practical examples of the e-learning tools (e.g., processing of images from imaging devices, creation of bone geometry or material models and computational models in general). Image processing is very useful for creating specific geometry models from CT data and for converting them into computer aided design (CAD) systems. Moreover, bone models created using these procedures can be used for designing patient-specific fixators and implants which can be afterwards printed out on a 3D printer (i.e., using rapid prototyping methods). CAD models of bone with fixator or implant can also be converted into computational system in which FEM simulations can be performed and analyzed. These simulations require material models of the analyzed living tissues (bones) which can also be obtained from CT data. For this purpose, commented examples of these procedures are placed on our e-learning site as well. These examples allow students to go deeper into the practical solution of the mentioned problems.

Currently, the e-learning site is frequently used by students in their semestral, bachelor or diploma projects. As the researched problems become more complex and as also students focus on problems from various fields, e-learning site expands accordingly. The examples are focused on solving specific problems from clinical practice and can be used for developing students' skills in creating high-level computational models, doing complex simulations and analyzing them. The proof of the success of the e-learning site and its study materials is in two "Prof. Valenta and Prof. Cihak" Awards given to Ing. Kamil Rehak (2010) and Ing. Radek Legersky (2011). This prize is awarded by "Laboratory of Biomechanics – Endowment fund" in the national competition.

GAIT ANALYSIS OF PATIENTS WITH OSTEOARTHRITIS OF THE KNEE AND HIP JOINT

Miroslav Janura
Faculty of Physical Culture, Palacký University Olomouc
D2-2B E-LEARNING IN MEDICAL FIELDS FOCUSED ON HUMAN
LOCOMOTOR SYSTEM | WEDNESDAY, 28 NOVEMBER 2012, 10.45

Keywords: biomechanics, gait, knee, hip

Walking is man's basic mode of locomotion. Changes in a person's musculoskeletal system are transferred to his gait performance and can greatly affect his quality of life. The biomechanical gait analysis is available to quantify differences between groups of patients. An understanding of

these differences can help physicians determine their level of intervention during treatment. This analysis is performed using non-invasive techniques with minimal patient loading. The aim of the study was the gait analysis of the patients with osteoarthritis.

The basic biomechanical methods used in this gait analysis study were kinematic and kinetic analysis. The kinematic analysis (optoelectronic system Vicon MX) enabled an evaluation of changes in selected joints on the lower limb and pelvis. The components of the ground reaction force (force plates Kistler) were evaluated by kinetic analysis of the standing phase of the stride. Both systems are the most modern devices available for complex gait analysis. Students participated in the processing of the measured data. The influence of various parameters on the final gait model in the selected group of patience as well as the comparison the results with the gaits of healthy people was executed.

Changes in gait parameters may occur in patients with unilateral osteoarthritis of the knee joint as compared to the gait pattern of healthy control subjects. Knee joint deficit was compensated for other segments and joints in the lower limb, especially hip and pelvic. Reduced motion of the knee joint leads to increased pelvic motion, which should affect the mobility of the lumbar spine, which causes overloading and pain in the lumbar region of the spine. The students responded positively to their active participation in the practical teaching aspects of the analysis. It was concluded that such an approach to teaching helps students to work with scientific data and enables them to have a better understanding of the theoretical background and the principles of devices' functions.

LONG-TERM OBSERVATION OF GAIT CYCLE CHANGES AFTER TOTAL HIP REPLACEMENT – CASE STUDY

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Keywords: Gait analysis, gait cycle, total hip replacement, kinetic analysis, biomechanics, long-term observation

The aim of therapy of hip and knee osteoarthritis is to maintain useful walking capacity. Kinetic analysis of the gait is fast, simple and reliable method that allows us to objectively monitoring changes in the gait cycle after the patient's return to normal walking after surgery. Relatively little attention is directed to longitudinal changes in the walking after surgery. Here we present the kinetic analysis of the gait in patients after hip replacement surgery until they return to normal walking capacity (case study).

Cementless total hip replacement was implanted in man (age 69 years, height 1.73 m, weight 78 kg) with primary osteoarthritis of the right hip joint. The second day after the surgery the patient was seated and on the third day started practicing walking using conventional crutches. The patient underwent extensive physiotherapy. The laboratory monitoring of the walk started in the 5th week after the surgery. Laboratory tests were executed on the 5th, 7th, 8th, 12th, 18th and 22nd week. Relatively small differences in the temporal characteristics of the step cycle between operated and

non-operated leg were found. Large differences in maximal strength and force impulses between operated and non-operated leg from the initial measurement in the 5th week are progressively reduced to the same size on both legs at 22nd week after surgery. Additionally, the information from the examination characterizes objectively the load level of operated leg.

We conclude that the information based on the kinetic analysis of the gait is significant for corrections of surgeon's and physiotherapist's instructions to loading the operated leg in a positive or negative sense. These findings should be included into e-learning materials on therapy of end-stage of hip and knee osteoarthritis.

E-LEARNING IN TEACHING OF HIP AND KNEE OSTEOARTHRITIS: A PHYSIOTHERAPIST'S POINT OF VIEW

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The traditional biomedical model suggests that pain and loss of function are a direct result of hip and knee damage associated with osteoarthritis. Treatments are, therefore, aimed at pharmacological alleviation or cutting the pain/ inflammation, which should result in decrease in pain and disability.

Non-pharmacologic therapies including modern physiotherapy have moderate to strong evidence they can effectively relieve from pain and improve/maintain the function of musculoskeletal apparatus.

Currently, physiotherapy is a well-accepted therapeutic intervention in hip and knee osteoarthritis. These findings should be widely disseminated. In this line, e-learning seems to be one of the most effective learning tools.

EULAR RECOMMENDATIONS RELATED TO HIP AND KNEE OSTEOARTHRITIS

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Diagnosis and therapy of hip and knee osteoarthritis (OA) should be based on evidence-based principles.

In order to address this problem, EULAR convened group of experts (rheumatologists, orthopaedic surgeons, physiotherapist, epidemiologist, patients) to produce evidence – based recommendations for the management of knee and hip OA. Very important step now is dissemination of these Recommendations on national level and to different specialists.

E-learning would be excellent possibility for this activity.

IMPLEMENTATION OF EBP IN NURSING TEACHING AT FACULTY OF MEDICINE UNIVERSITY OF OSTRAVA

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The rapid development od nursing theory and practice in the Czech Republic leads to qualitative change in nursing – the implementation of Evidence Based Practice. Evidence based practice (EBP) is quite a new phenomenon in the nursing, which appears in the CR in the last few years. We have indeed introduced a national curriculum of the Nursing and Midwifery Bachelor Programmes, however the subject of EBP is not its part. EBP was included into the nursing education in University of Ostrava only in 2008 as a new course of Bachelor and Master Nursing study programme.

Teaching EBP is implemented at the University of Ostrava in the two categories of courses: 1 separate course for Evidence Based Nursing in curricula of bachelor's, master's and doctoral nursing programs, 2 EBP integrated into clinical nursing courses for students of bachelor's and master's programs. Teaching EBP as a separate course in a group from 10 to 12 students for one semester is organized in the computer lab and through e-learning course. The theoretical part is lectured to students as a brief insight into the EBP supplemented by self-study students who use e-learning course and information published on the portal Mefanet. Practical exercises all students perform together with the teacher on the example of pre-defined problem of nursing practice. Students create their individual projects and present them before the group (project based learning). Integration of EBP in clinical subjects we started in 2010/11, with the support of the European project "Innovation of the Health Care Study Programmes at the University of Ostrava". The main objective was to implement elements of EBP in selected clinical subjects of bachelor's and master's nursing programs (e.g., Internal Nursing, Surgical Nursing, Pediatric Nursing, Gerontological Nursing, Community Care, Palliative care, Intensive care etc.).

Students choose the nursing problem of their clinical practice. Independently look up solutions according to the principles and stages of EBP. Written project students send to teacher for evaluation through e-learning environment. Every student presents his/her project in the group of students and students together discuss. In collaboration with nurses from Faculty Hospital, who are our former students and working as mentors for our current students, we created for each clinical course of at least 10 case studies and clinical scenarios. Each case study includes one or more problems, according to the level of students (bachelor, master). Nurses from the hospital give us real problems of clinical practice, designs, themes. Teachers modify clinical nursing problems into a case study, clinical scenarios, and integrate into the teaching. Exercise in clinical nursing courses (e.g., nursing Surgery) underway in the wards at the University Hospital in a group of about 10–12 students. Case study / clinical scenarios is specified teacher group 2–3 students who independently prepare and process involved solving problems ahead of the instruction. Solutions and recommendations consult with the teacher and students CELP group of students. If possible, students implement best practice recommendations for patients and evaluate the results

In teaching EBP in computer labs are students trained in searching and naming clinical problems. They search for problem solutions in databases. They build projects through e-learning course and

study materials published on the Mefanet portal. Based on the acquired knowledge and skills they try to find an effective solution to a particular clinical problem and implement found evidence in clinical practice ("best practice").

MULTIMEDIAL TEXTBOOK OF NURSING TECHNIQUES AND SKILLS

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Current students are very different from their recently graduated peers. These students are so-called digital native students. The term describes the difference between those who have grown up with modern technology and those who have had to adapt to it. These students live in a world in which digital technology is a part of their everyday life. They are not familiar with a world without technology. The technologies represent their natural language thus these students naturally expect technologies to be used in teaching and learning process.

The project aims to create multimedia textbook Nursing skills and techniques. Currently the students are available only conventional written media (like textbooks and books) that do not meet the needs of a modern education. The target groups of the project are students of nursing, midwifery and general medicine who need to learn to be skilled in basic nursing procedures and techniques necessary for their subsequent clinical practice. By the means of audio-visual simulations the students will be provided also with basic principles of effective communication with the patient.The textbook will include multimedia elements such as pictures, animations and audio-visual sequences with the emphasis on audio-visual simulations of specific nursing procedures. Textbook will combine two elements: multimedia system and interactivity. When creating multimedia simulations of specific nursing techniques and skills the evidences of research studies implemented in selected issues will be taken into account to support evidence-based nursing and evidence-based practice (EBN, EBP).

The textbook will cover all the basic nursing procedures, techniques and skills. It will be organized into several chapters and lessons to follow the structure and thematic plans of teaching contact lessons within face-to-face education in practical exercises. The content of the textbook will be as follows: Communication; Infection control; Hygiene; Activity and Mobility; Nutrition; Fluid Balance; Vital signs; Oxygenation; Administering Medications. Creation of interactive multimedia textbook will contribute to more attractive way of study and improve the quality of education particularly by extending self-study opportunities of the students.

Multimedia university textbook with an emphasis on audio-visual simulations and interactive learning elements (tests) should help the students to better understanding of the subject matter to be learned. It also allows the skills acquired to be checked even without the presence of the teacher. It is beneficial particularly for the students with no previous experience with the use of medical devices and equipment and healthcare as a whole.

THE PERSPECTIVES OF E-LEARNING EDUCATION IN PAEDIATRIC NURSING

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Within the framework of teaching paediatrics and paediatric nursing teachers and students often encounter situations when their access to some diagnostic and therapeutic procedures or nursing interventions is limited due to objective reasons. That is why the aim of the project presented is to create study material for nursing students oriented on paediatrics and paediatric nursing by the means of e-learning course in LMS Moodle.

Face-to-face form of education in this subject will be supplemented by upcoming e-learning course (blended learning). The course will be intended particularly for the students of fulltime form of pre-graduate study programme in nursing (bachelor's programme) as they are more skilled and experienced in the use of information and communication technologies. To create, distribute and administrate the course we will use the software package LMS Moodle that allows the creation of courses with various levels of structuring and graphical editing. The course will be arranged to several chapters and lessons structured according to thematic plans of education at the contact lessons (lectures, practical seminars). Information about this e-learning course will be published at the portal of MEFANET JLF UK and exported to the central gate of MEFANET thus the course will be available to all the users from medical faculties in Slovakia and Czech Republic.

Supplementation of face-to-face form of education by e-learning using different methods of presentation of the topic allows the students to gain more comprehensive perception of the issue of interest. By usage of modern information and communication technologies more attractive studying environment and less troublesome way of study will be offered to students. Didactic evaluation in online process gives more opportunities to teachers to create various methods of evaluation.

Creation of e-learning course will contribute to higher quality of education particularly by the means of expanding the self-study and using the methods of active learning in students of face-to-face form of study.

ASSESSMENT TOOLS IN GERONTOLOGICAL NURSING – TO CREATE OF ELECTRONIC DATABASE

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Normal aging changes, acute illness, worsening chronic illness, and hospitalization can contribute to a decline in the ability to perform tasks necessary to live independently in the community. There is strong evidence that single and/or comprehensive assessment of older people (geriatric patients), when followed by the implementation of individualised care plans, reduces the risk of older people being re-admitted to hospitals or placed in care homes. One of the best ways to evaluate the health status is through functional assessment which provides objective data that may indicate future decline or improvement in health status. The assessment of functional status is important when caring for patients with worsening chronic illness, and hospitalization can contribute to a decline in the ability to perform tasks necessary to live independently in the community. The information from a functional assessment can provide objective data to assist with targeting individualized rehabilitation needs. Assessment is a significant part of nurses' daily lives. An integral part of the assessment process is the assessment tool.

Project "Assessment Tools in Gerontological Nursing – to create of electronic database" supported by Ministry of Education, Science, Research and Sport of the Slovak Republic (KEGA registration number 054UK-4/2012, New Technologies, methods and forms in education). The project focused to make pilot electronic educational database of assessment tools designated on assessment chosen domains generally in seniors' population and population of geriatric patients with specific health problem. Domains of assessment priority will be oriented on physical (activities of daily living, nutrition, pain, risk of pressure ulcers, risk of falls) and mental health (cognitive functioning, dementia, delirium, depression). Contents of database integrate and give relevant information about present assessment tools for students of nursing study and nurses in clinical practice. The project will supplement traditional face-to-face manner of education.

Reliable and valid tools used in clinical practice help to quantify and objectify patient's functional capacity. The specific instrument has optimal statement value and prognostic significance for the patient. The generic instruments serve usually as screening tools. During assessment we obtain important data with the help of assessment tools, which help the process of nursing diagnosis and also they evaluate effectiveness of nursing interventions.

The use of a standardised assessment tool may support professional judgement and increase the quality and consistency of the assessment. Database will be basic elements on potential creation of national database. This database absent in Slovak clinical nursing practice yet. Database will be present in electronic version and will be used as education function for students of nursing study on Jessenius Faculty of Medicine in Martin of Comenius University in Bratislava. Database will be serve as other those interested about assessment tools after free registration on educational portal.

MULTIMEDIAL TECHNOLOGIES IN PREPARING OF MIDWIVES

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Keywords: midwifery, internacionalization of education, multimedial technology, e-learning

• Innovate theoretical and practical programmes of midwives to create e-learning programmes,
• enable the on-line access of students to scientific – research information based on the evidence of practice,
• create distant educational modules in the area of the woman care and supporting the health

care in case of the care for women in physiological and pathological conditions in the area of neonathology – the care about physiological and gynaecological point of view,
- modificate the learning modules into the virtual e-learning educational area,
- enable the learning moduls from define areas into on-line system for students in English and German language,
- prepare the educational and text materials of the professional skills in electronic and printed form,
- give the students and teachers the back reaction of received knowledge control using on-line system,
- prepare the co-authors monography,
- create a space for discussion groups of students and teachers to exchanged experiences and views.

E-learning education is the method of distant education. Nowadays in the time of high-technology this method is preferred and actual. The project is focused on the preparing electronic-educational material in form of professional modules in Slovak, English and German languages which can help for professional preparing of midwives in agreement with adult principles of education. Its main role is: to access the modern knowledge from: physiology and pathology of pregnant women, labour, postpartum and neonathology and nursing care with using multimedia technics. The particular modules will be focused on these topics:
- health and family support,
- maintanence of woman health,
- physiology of pregnancy,
- postpartum care about physiological newborn,
- pathology of pregnancy, postpartum,
- care about women with gynaecological diseases.

- On-line accessible multimedia e-learning electronic study material for material of moduls,
- international scientific conference for professionals in adult education in midwifery field
- book of articles from the conference,
- co-authors monography,
- professional articles in home and foreign journals,
- active presentation of project results in home and foreign conferences.

We can improve the modernization of new forms and methods of education in preparing the midwives, widening the offer of professional midwifery education in distant form. We can create a new dimension of study opportunities , new possibilities of self-study students and using the modules in long-life study, widening the module competence of authors in know-how education of adults, we can use a high competence of interaction and friendly user management of self-education on the Internet, multiplicand effect for continuing to create and develop next e-learning courses in midwifery study programmes, the assumptions that midwifery will be widen in modern work implementation process in health care professions

E-LEARNING EDUCATION – PROJECT POMEZI AT FACULTY OF HEALTH SCIENCES

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Keywords: study support, learning object, project POMEZI, EDIS

Objectives of contribution:
- introduce innovation study subjects at Faculty of Health Sciences at Palacky University in Olomouc,
- present educational information system – EDIS.

The introduction of new spacers elements into teaching means an extension of the methods and content of teaching. Using educational portal EDIS allows teachers and students actively implement the learning process. EDIS was developed in the project POMEZI at Palacky University in Olomouc.

As a result of innovations in teaching will:
- creating e-learning study materials in certain subjects,
- innovation study contents of selected subjects,
- innovation and the introduction of new teaching methods,
- creating foreign language alternatives selected study subjects.

Innovation in education nonmedical disciplines of study will lead to streamlining and improving the quality of teaching at Faculty of Health Sciences at Palacky University in Olomouc.

THE VIRTUAL PATIENT (VP): RELEVANT FOR PARAMEDICAL PROFESSIONS OR NOT?

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Keywords: The Virtual Patient (VP), education of paramedics, effectiveness of Virtual Patient (VP), evaluation

At present, e-learning is experiencing vast development also in paramedical professions. It may

be used in full-time tuition, distance learning, continuing medical education of both medical and paramedical staff, and last but not least, in on-site training of new employees. Also the Ministry of Health of the CR shows interest in development of e-learning in paramedical professions, as witnessed by the project "Prohlubování a zvyšování úrovně odborných znalostí" (Professional Knowledge Level Improvement); in addition to that, in 2011, MEFANET (MEdical FAculties Education NETwork) established a working group to further promote and develop e-learning in paramedical professions.

One of possible ways of development of e-learning in paramedical professions is the Virtual Patient (VP). It is, in fact, a simulation of real clinical scenarios aimed at supporting the decision-making process. The VP may also be used to train diagnostic skills and support the decision-making on follow-up treatment. In other words, the VP aims at education of paramedics by the means of computer simulation with feedback. The VP makes use of multimedia and computer graphics with commentary. It is generally used to present, fix and test diagnostic skills necessary for decision-making based upon accessible clinical information about the patient. The VP was first introduced in 1971 to become a part of the doctor, nurse and paramedic training programmes.

As it has been written above, there is interest on the side of the Ministry of Health of the CR in the development of e-learning in paramedical professions; also, according to Section 67 of Law 96/2004 Coll (On the terms and conditions for improving and acknowledging the qualification in paramedical professions and for performing activities within the health care scheme), paramedical staff is bound to take part in continuous medical education. Based upon relevant research outcomes on the exploitation of the VP in nurse and doctor education, it is apparent that the VP is being utilised. The outcomes, though, point out the lack of studies that would deal with detailed answers to questions that arise in connection with utilisation of the VP, as well as with profound evaluation of its effectiveness.

The planned dissertation thesis will focus on the evaluation of the VP effectiveness and its utilisation in paramedical professions (2012–2016). The thesis will be dealing with establishing the VP in paramedical professions and, subsequently, with the evaluation of its effectiveness. In the field of paramedical professions, the VP offers broad exploitation in continuous medical education and in on-site training at specialised wards; it may also be used as an innovative learning tool at secondary nursing schools and colleges. With reference to the principles and goals of the MEFANET network, this dissertation thesis will cater for the development of e-learning in paramedical professions.

APPLICATION OF PBL METHOD TO EDUCATION OF HEALTH CARE PROFFESSIONALS

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Keywords: problem-based learning; education; method; responsibility; effectiveness; communication; knowledge; student centered education

Method Problem Based Learning was publicized by Howard Barrows and his colleagues from McMaster University in Canada in education of health proffesionals from the end of the 60s last cen-

tury. Method PBL respects the requirements for the maximum possible students' participation in the process of teaching. Thus conceived teaching respects not only didactic principles of scientificity but also the linking of theory with practice. This method forms a significant contribution to creativity and creative thinking which is essential for academic education.

The contribution proposes a summary of so far published information and piece of knowledge about the teaching method PBL. It deals with its introduction and frequently applied form in academic teaching and also with the obstacles that arise, among others, while introducing this method into practice, or with significances of benefit for students, tutors and educational institutions. Furthermore the author in collaboration with partner institutions from Netherlands, Belgium, Spain and other European countries have tried to quantify the time strain of students while direct instruction and self-study. Furthermore, it presents an outline comparison of economic costs, which carries a classical education and teaching methods using PBL.

As Bligh, Wood, Lee and Kwan, Norman and Smidt show in their work, method PBL is a very suitable educational technique for medical professionals. Not only because there are a lot of appropriate case studies in everyday clinical practice, but students can see the link between theory and practice. Furhther, they agreed on attractiveness of the method among students who are participants themselves on things they have studied. Educators are becoming facilitators, helpers and partners, are not only prospective authorities. As a large positive, they also see the final evaluation of the group work by each of its member including self-evaluation of own readiness for the meeting. More possitive assessment obtain the fact that all staff join the preparation, creation and putting PBL curriculum into practice. It is necessary to think about cross-culicular links, connection from simple to more complex and distribution of curriculum into each stage of the study. Go through the trial and learn from the final evaluation and make further steps to improvements. Another important part is to give to students the possibility to work with relevant informations. It means: internet connection, accesses to different databases, library, textbooks, e-learning etc. (Bligh J., 1995; Wood D.F., 2003; Lee R.M.K.W, Kwan CH.-Y., 1997; Norman G.F., Schmidt H.G., 2000).

Foreign experience of partner institutions that implemented this method in their practice, despite the initial difficulty, whether time, personnel (leaving of teachers who did not accept the teaching methods changes) and other, were outright positive. Priority of introducing PBL are especially in using the information sources, improving communication skills and reducing the cost by recuction of direct teaching. Responses of students (foreing and our) who can compare classical teaching methods with PBL, are very positive. They appreciate their own participation in education, which leads to greater effectiveness of each lesson, students feel much more resposibility for the result of their work, which they can use in clinical practice.

A FULLY E-LEARNING SUBJECT IN EDUCATION OF NURSES AND MIDWIVES

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Keywords: Nurses, Midwives, Clinical microbiology, E-learning

Unlike other faculties Czech universities, faculties of medicine were always typical by high ratio of strictly compulsory subjects during the study. This fact was always looked critically from many sides. In the same time we observed quite big differences in knowledge of our new students. This is logical, as they come with different types of secondary schools and of course even different individual schools. Therefore we decided to prepare an elective subject for new students of nursing and midwifery wishing to improve their knowledge of microbes and almost medically important microbes before they would start their compulsory course "Microbiology and immunology" (usually in the 2nd semester of their study). The problem was that it was quite difficult to arrange this course for 1st semester students, even to find a free space in their time schedule. Therefore we decided to change the form of the course from a presence course to fully e-learning course form.

To prepare the e-learning course, it was necessary to remake the original study materials (slide-shows with texts and pictures). All parts that needed teacher's explanation had to be replaced by prolonged text, explaining the topic itself. Paradoxically, some less important topics were removed, because is became evident that is would be very difficult to explain them – and in the same time it was also clear that removing them would not damage the final target, e.g., to give the student some elementary basis for their future study. Each of five main topics (formerly five classes, newly five "recommended weeks of study") was supplied by final check-up questions to enable students to self-check themselves. These questions were just for self-testing. After the end of the final course, the student had to subdue the final test through the Information System of Masaryk University. The questions in the test were quite similar as the check-up questions, nevertheless, they were different. The students were allowed to do the test from home. We did not wish to check their memory for detailed fact, but rather their orientation in the problematic.

We have placed this e-learning form of that subject to the Information System of Masaryk University for Autumn Semester 2012. The difference between former presence form and the new e-learning form was clearly visible: in previous yeas usually majority or even all students primarily enrolled for the subject cancelled the enrollment when they were forced to come in early morning hours to a seminary. On the contrary, this year the number of students even has raised after declaration that the subject was remade into the e-learning form. The final feedback from the student was not available in the moment of abstract deadline and it would be reported directly at the conference.

We conclude that e-learning form is a good way how to prepare more elective subjects to students of medical faculties and even for bachelor degree programmes like nursing or midwifery. The time schedule of these students if often quite full, but the e-learning form solves this problem and it is even attractive for them.

HYGIENIC CARE ABOUT PATIENT IN INTENSIVE CARE – STUDY MULTIMEDIAL MATERIAL FOR NURSES

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Keywords: hygiene, unconscioussnes, multimedial study material

Presentation introduces with project for preparing of multimedial tool for medical and paramedical students (mainly for nursing students). Authors want to mediate a real picture of nursing care in

intensive medicine without to put at risk patients in ICU and ARD. The educational DVD is focused on particular sequences of hygienic care of patients in unconscioussnes. The project is supportde from fund FRVŠ (2012).

For studying intensive nursing care exist only a few educational material. Therefore authors decided prepare multimedial educational tool where there are demostrated equipment, procedure, documentation of nursing care with a regard to risk of imobilisation and with a protection of staff. Authors show hygienic care of skin, hair, eyes, oral and nose cavity, ears, assessment of bedsores risk, positioning in bed, care about cathetres, genital. Videosequences with comments and texts were taped with cooperation with TM Studio in ARD.

Authors decided to create this multimedial educational material about hygienic care of patients in intensive care because in CR doesn't existes any videotape from real situation with real unconscioussnes patient.

Hygienic care about such patients is trained on artificial models at school. As well is not always possible to go to hospital units with students and to teach students nursing care about such patients, we have to respect their health condition. The connection of pictures and text draw real situation nearer to students and the can be practicaly and emotionaly better prepared for this practice.

MAKE THE MEFANET NETWORK ACCESSIBLE TO ACADEMICS AT THE FACULTY HOSPITAL

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The solution offers a way how to effectively make accessible portal Mefanet to specialists and involve them more closely into the creation of electronic educational materials. They are mainly academic staff working at the Faculty Hospital Pilsen who gets the opportunity to access the portal using the same verification as in Faculty Hospital. The approach is implemented by connecting the Faculty Hospital Pilsen into the Czech Academic Identity Federation (eduID.cz) and with shibboleth authentication system.

Authenticated access to the portal MEFANET for academic staff at the Faculty Hospital Pilsen is solved with the support of Czech Academic Identity Federation (eduID.cz). The Federation provides to its members a service that uses the user identities in the access control to network (internet) services, while respecting the protection of personal data.

Implementation of shibboleth authentication system was necessary to deal with the administrative and technical point of view. The technology is implemented with the full support of the Department of Management Information Systems of Faculty Hospital.

The administrative part of the project lay in the nomination of responsible person so-called administrative contact, who handle all communication with the operator of Federation (Nomination forms, personal and CESNET CA server certificate for secure communications, publishing metadata, nomination of technical contacts).

The technical part is solved by instalation of the identity provider (ID). Identity provider is an interface connected to the user database of the Faculty Hospital organization. The service performs authentication and provides information about users. For shibboleth applications authentication was necessary to define the attributes from users database in Active Directory. Attributes are eduPer-

sonPrincipalName, eduPersonScopedAffiliation, entitlement, mail, displayName, Shib-Person-o, givenName, sn. After this service instalation was implemented the Shibboleth for communication between identity provider (Faculty Hospital Pilsen) and service provider (applications MEFANET). The Installation and implementation proceed at first in earmarking of system platform (hardware – server), which will serve for the operating system and identity provider installation. Futhermore was necessary to install the Shibboleth application. And finally the server was incorporated into the network infrastructure of Faculty Hospital.

From the perspective of the Faculty Hospital Pilsen as an inseparable regional partner of Medical faculty this is an innovative process that offers additional Faculty Hospitals in Czech Republic quite new solution of the involvement of specialists in the process of creating and using electronic materials within the MEFANET network. A Target group experts from practice "Medical Specialists with part-time at Medical faculty" opens a unique opportunity to access MEFANET network (central source of electronic medical educational materials) and thereby they become more involved in the educational process and also get an opportunity to enhance their professional qualifications.

EXPERIENCE WITH USING MOODLE SOFTWARE TO SUPPORT FIRST AID AND PATIENT CARE LESSONS AND ORGANIZING SUMMER CLERKSHIP OF PATIENT CARE

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Keywords: E-learning course, First Aid, Patient Care, E-learning support

At our Nursing institute the Moodle software is currently used to support First Aid and Patient Care lessons and to improve management of Summer Clerkship in Patient Care. Prepared e-support used for pre-class learning allowed the skills training at both, First Aid and Patient Care, to be extended and short scenarios to be practiced during lessons.

E-learning courses were developed at first as an electronic support of study for medical and dentistry students of English parallel. Each e-course consists of several parts that provide resources (study texts and links to other recommended resources such as articles, tutorials, videos) and different kinds of quizzes. The learned knowledge is checked by on-line test at the end of each part. Students can check their progress and see feedback. Communication with teacher is also enabled using messages board.

Following skills trainings are organized after each part of e-course always for only small groups of students. Practical lessons focus mainly on skills training and scenarios learning using dummies (some of them PC controlled).

The Moodle software is also used to provide all necessary information to complete Summer Clerkship in Patient Care, to allow students to choose the most convenient placement and to keep tutors to be informed accurately about students' registration for placement.

The experience gained so far indicates that using e-support is not inferior to previous traditional education in classroom but on the top of that pre-classes learning seems to allow more time to be spent on practicing and revising. Teacher can focus much more on training particular skills and practicing different kind of pre-set scenarios that will require students to implement learned knowledge.

The experience gained so far is going to be extended further. More e-learning courses is planned

to be implemented to support study at Nursing Institute in short future. E-learning support is currently being prepared not only for Medical students but for students of Bachelor's and Master's degree in Nursing.

PROJECT CENTER FOR CLINICAL PRACTICE GUIDELINES

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Keywords: clinical practice guidelines, EBM, methodology of CPG creation

The process of improving the quality of care in the Czech Republic and also abroad requires the development of practice guidelines in the area of prevention, diagnosis, treatment and rehabilitation. The poster presentation introduces the project, which purpose is to teach students to understand the principles of clinical practice guidelines (CPG).
CPG must be determined so the results reflect the latest scientific findings. This is necessary to understand the general principles of CPG, which are valid in all fields of Medicine.
The students of Medical Faculty of Palacky University are familiarized with CPG principles by key activities of the project that are focused on: a) the development of the Center for CPG, b) the development of pedagogical skills of lectors, c) preparation of scientific texts, d) realization of teaching courses and workshops.
The prepared texts about creation, adaptation, implementation and evaluation of CPG are the basis for the creation of teaching guidelines for the lectors and the interactive material for the students as well.

USING OF E-LEARNING AND E-OUTPUT IN THE PRAGRAM PROJECT (A LAW LITERACY OF MEDICAL STUDENTS) AT THE FACULTY OF MEDICINE AND DENTISTRY, PALACKY UNIVERSITY IN OLOMOUC

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Keywords: law, education, law literacy, medical students

The project PraGraM, which is realized from January 2012 at the Faculty of Medicine and Dentistry in Olomouc , uses e-learning elements during the teaching, methodology and outputs of this additional study.
This is an educational project.
The project is focused on 3 basic aims:
1. The pilot verification of 3 new educational blocks and subsequently their transformation into 3 optional subjects at the Faculty of Medicine and Dentistry of Palacky University in Olomouc.

2. The organization of cycle of workshops interfacing a law, economics and medical environment at both domestic and international (approach and examples of good practice all over the Word)
3. Publishing of compendious monograph The Law in medical practice – a material where a physician can have a look in any phase of working life and where man can find the answers to the law issues of medical profession. This compendious monograph will be edited on CD, together it should be posted on the Internet, specifically on web pages of Department of Social Medicine and Health Care Policy.

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The introduction of new teaching methods while all e-elements of teaching whether during teaching realization or in a form of output material, it brings an increase of medical student's law and economic literacy and it becomes a good example for physician's lifelong educational process.

A LONG-TERM STUDENT'S EVALUATION OF THE NEW E-LEARNING METHOD OF TEACHING

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Keywords: histology, practical, virtual slides, e-learning, evaluation

At the Department of Histology and Embryology in Olomouc, we have introduced a new method of teaching practical histology using digital equivalents of traditional glass slides, called "virtual slides" (VS). In the database of e-practical, there are several supporting documents available to students that help them to orient easily in the subject of the practical session. We have also introduced practical examination of histology slides with electronic tests on personal computers (PC). During three subsequent academic years, using anonymous questionnaires, students evaluated this method of practical teaching at the end of this subject taught to Medical and Dentistry students. Glass histology slides have been scanned with Olympus dotSlide scanning system using standard 40x objective lens, creating thousands of overlapping images. The VS images are viewed on student's PC as a single image map at variable magnifications using dedicated viewer software (Olyvia, Olympus). Our histology practical classroom consists of 1 server PC (teacher) and 30 client's PC (students). The core of this virtual slide learning system is our own Database of Histology Practical that is build up in MS Excel document format. For electronic testing of student's practical knowledge we use special software Quizmaker '09 (Articulate). This software has a selective option to shuffle sequences of questions and also to shuffle all distracters in the quiz randomly on

monitors of examined students. The evaluation questionnaire contains 10 questions concerning the benefits in the use of VS and classical glass slides (2 q.), the use of supporting documents during and after the practical session (2 q.), evaluation of teacher's and student's activity during practical sessions (3 q.) and benefits of in-course electronic testing of practical skills and knowledge in multiple choice questions (MCQ) format (2 q.). One question is aimed at student's capability to express their theoretical knowledge properly in oral examinations.

Comparing student's responses in three academic years concerning the benefits in the use of VS and classical glass slides, there were no changes in their highly positive evaluation of this new method. Increasingly positive responses were also in their use of supporting documents attached to the database of virtual slides (from 50 % to 68 %) and active preparation of students prior to practical sessions (from 3 % to 15 %). Students also admitted that they increasingly benefited from the in-course electronic testing (from 86 % to 93 %) that motivated students to more systematic studies during two semesters. They unequivocally preferred electronic forms of examinations over oral ones. On the other hand, students agreed that they were not able to express their theoretical knowledge properly in oral discussions or exams.

The e-learning format of histology practical based on virtual slides proved to be a didactically efficient method of teaching histology to medical students. Majority of students of General Medicine and Dentistry evaluated positively the use of virtual slides. They also benefited from using the attached supporting documents during practical sessions and self-studies. Regarding PC-based examination, most of the exposed students preferred practical examination in MCQ format over the classical oral examination. This may be also related to the recent trend of decreasing capability of students to express their acquired knowledge orally, irrespective of the subject they study. Teacher moderated in-group discussions with students over the displayed virtual slides in practical sessions could be a good remedy to this negative trend.

PROJECT IMBIO: E-LEARNING SUPPORT OF PRACTICAL EDUCATION OF BIOCHEMISTRY AND IMMUNOLOGY

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Keywords: biochemistry, clinical biochemistry, immunology, e-learning

The goal of the project IMBIO has been the innovation of experimental courses of Biochemistry, Clinical Biochemistry and Immunology in the Palacký University in Olomouc using e-learning approach. The project includes the innovation of practical education of total 11 subjects in 4 accredited study programs at Faculty of Science and Faculty of Medicine and concerns approx. 800 students of Palacký University.

The planned project activities have included the creation of 30 teaching modules, comprising theoretical introduction to laboratory experiments, description of used material, chemicals and instrumentation (including corresponding photo documentation), protocols of solution and media preparation, detail step-by-step method manuals, video sequences of key experimental procedures, instructions of data evaluation and introductory and concluding tests of student knowledge. Beside experimental exercises realised by students within the frame of practical courses teaching,

individual modules will contain also examples of practical application of presented methods in laboratories of project partners (Department of Laboratory Medicine – Prostějov Hospital and Department of Clinical Biochemistry and Immunogenetics – Faculty Hospital Olomouc). Modules will be located and accessible at project e-learning portal through web applications. Complete laboratory manuals has been published also in the form of three printed textbooks: Laboratory Courses of Biochemistry, Practical Exercises in Clinical Biochemistry and Selected Methods in Immunology. During the first half of the project duration, the majority of planned indicators has been achieved. Currently at the web e-learning portal, there are 59 modules (38 in Clinical biochemistry), 163 videos (60 in Clinical Biochemistry) and 715 testing questions available to be used in practical education. Their usefulness as e-learning support of experimental teaching has been widely tested in laboratory courses involving participation of 532 students of Palacký University. The outcomes of the project have been highly positively evaluated by the end-users, both University educators and their students.

POSSIBILITIES OF POSTGRADUATE TRAINING IN CLINICAL BIOCHEMISTRY

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POSTER SESSION | 27–28 NOVEMBER 2012

Creating e-learning program to support teaching the course "Clinical Biochemistry". • The content of textbooks follows on Schneiderka P. et al.: Determination of analytes in clinical biochemistry, part 1 and 2 (Karolinum, Prague 2008)

Software solutions available with / without authorization via any Internet browser.

Technical solutions: a dedicated web server with technical support to ensure continuous surveillance system functionality to back up data stored. Support for cross-platform scripting language (PHP ver. 4.0 and higher) and database solution using MySQL server.

We present 2 of 4 successive blocks: KB I – Introduction and preanalytical interferences, KB II – Pathobiochemical principles in clinical biochemistry, KB III – Laboratory techniques in clinical biochemistry, KB IV – Evaluation of results and postanalytical part.

CONSTRUCTION AND VALIDATION OF E-LEARNING ENVIRONMENT FOR THE INTEGRATION OF COURSES IN PRECLINICAL AND CLINICAL DISCIPLINES AT THE MEDICAL FACULTY AND FACULTY OF HEALTH SCIENCES, PALACKY UNIVERSITY IN OLOMOUC, CZECH REPUBLIC

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Information is presented on the above project (Reg. No. CZ.1.07/2.2.00/15.0313) started from the year 2010 and currently entering the last third of its solution.

Main objective of the project is formation of LMS environment to strengthen both horizontal and vertical bonds among courses given in a critical period of study, when students are passing from preclinical disciplines to clinical disciplines. The project reflects the existing absence of vertical and horizontal links of medical subjects in the background of continuously increasing amount of knowledge.

Solution was found in the extensive use of information technologies and progressive enhancement of network efficiency. Results of the project neither replace existing textbooks and platforms nor limit any other didactic means. On the contrary, they supplement such attitudes, allow to involve interdisciplinary entries and use it in order of raising quality of education.

The shape of produced environment is an educational portal integrated into University network. It was built on a wikipedia principle. The portal is simply accessible from public internet. It contains sets of digitalized study supports expanded by multimedial entries and virtual presentations. Supports are focused on crucial dynamic and problematic topics from preclinical and clinical disciplines in the study programme of medicine and health sciences.

Our project emphasizes interdisciplinary connections and allows maximal benefit to the student from the combination an off-line study with other established educational forms. Along with that, the environment performs sufficiently robust and perspective platform for didactic strategy, which enables involvement of students into self-production of educational materials.

INTRODUCTION TO CLINICAL MICROBIOLOGY AS CREATION OF INTERACTIVE CASUISTCS IN WIKILECTURES

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POSTER SESSION | 27–28 NOVEMBER 2012

Keywords: Casustics, E-learning, Educational Websites, WikiLectures

Interactive casuistics are an important part of modern teaching methods at the medical schools. They are able to simulate the decision and differential-diagnosis algorithms that are common in the clinical practice. The reality issue of the casuistic is the most important – because of the description of real case (patient).

Casusitics were created directly in the WikiLectures (www.wikiskripta.eu). This educational website is using free open source software – MediaWiki.

At present – several casuistics covering internal medicine and clinical genetics topics are available. Each casuistic includes several linked pages with interactive components, that lead the student from the anamnesis to the results and conclusions of the case. Of course, these pages are linked to various articles in WikiLectures, which enables students to access different useful topics with just one click.

WikiLectures present a dynamic web space for articles and lectures covering various medical topics. WikiLectures also enables creation of simple interactive casuistics, which are special because of the connection of the casuistic and various learning texts.

SELF-LEARNING ALGORITHMS IN EDUCATION OF HEALTH CARE PROFESSIONALS

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Keywords: information society, e-Health, self-educational algorithms, e-learning

The authors have processed data on possibilities of making use of self-educational algorithms in the process of lifelong education, e.g., by distance or factual e-learning forms and means of educating health care professionals from different points of view. That is to say, from the point of view of making use at providing the respective health care, at biomedical research and from the point of view of making use in electronic educational process. The authors also discuss how these algorithms can secure spreading of functionally effective health care informational systems and how in electronic education the self-educational algorithms raise its effectiveness.

Self-learning algorithms (SA) represent such a type of algorithms which are able to secure, in a way, the adaptation of a system, in which they are implemented, on the basis of examples. SA sets up its own inner configuration (learning itself) in a way so its output reactions would optimize gradually in the view of required outputs. These systems are basically set on data algorithms and algorithms securing the information safety.

A typical task for SA is the classification. The system – the classificator – on the basis of a set of input data and its right setting into classes (which must be prepared by an expert – the teacher) will set its inner parameters in a way that it will get, after having gotten new data, put this data into the the class with sufficient exactness (with en error statistically insignificant).

The most typical problem, which may be solved with the help of SA, is diagnostics. Of course, these systems can not function individually, but only as supportive means. They and the rest of health care professionals will provide the doctor complementing and secondary information necessary for a quick and precise diagnostics, especially in cases of diagnosis of a specific and rare diagnosis. The results of the check up and data on diagnosis are available in the form of health record in hospitals and surgeries. Currently this data is being put into the local hospital information systems.

On the basis of the saved data it is possible to set up the classificator. This, afterwards, can be used by the doctor with results in order to make a decision in diagnosting a new patient in speeding up the setting of diagnosis, accuracy and reliability.

Optimal results in diagnostics or the management of proceedings, at setting up some supportive diagnostic methods making use of apparatuses and fittings equipped commonly with a PC (X-ray, CT, NMR and other imagining methods) depened on the right setting of the parameters. Which characterize the given patient, e.g., his or her anthropometry. In such a case its possible to make use of SA, as it is possible for it to remember these parameters and assign them to concrete patients, so the setting of diagnosis will speed as well as the reliability of the check up.The SA can secure that in the background of a day routine there will be a large file of internet links which will cover its specific needs.

The concept of electronic education (eLearning) depicts a kind of distance education which takes place through communication and information technologies in the sphere of their actual possibilities. Knowledge is processed in the form of multimedia teaching programs which join the text, sound and picture. It makes use of training, case studies and simulation of real situations, differ-

ent types of studies, animated teaching programs, etc. The programs can be distributed on CDs, or through the Internet, or combined.

IPV6 PROTOCOL

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Keywords: ipv6, protocol, www

The Internet is now an essential source of information in science and education. For basic Internet operations are required IP addresses. Pool of old IP addresses is now exhausted. To continue development of the Internet and its applications, a new format of IP-addresses was founded. The aim of this paper is a basic introduction to the new IPv6 protocol.

Currently most of teaching and scientific information available via the Internet. Schools have on their website tutorials and verification systems of acquired knowledge. Currentlymost of end-user devices (computers, tablets, Smartphones) are connected through a private IPv4 address format that does not allow a direct bidirectional communication. Deploying the new IPv6 each device gets its unique and public address. Internet will again be totally free environment for communication.

Pool of public addresses at the central level (IANA) was depleted in early 2011, in the summer of 2011 and were exhausted local pool in Asia (APNIC). Pool of public IPv4 addresses in Europe (RIPE-NCC) depleted in September this year. If you do not want to lose competitiveness, it is high time to start using the new protocol IPv6.

The new protocol IPv6 has been deployed at FEE CTU in Charles Square complex. For this area was reserved prefix / 56. The most important implementation steps consider:

1. mapping of new prefixes to the existing network topology (both public and private segments)
2. rule that everyone (even small) network segment must get prefix size / 64 – Never splash
3. prohibition of privacy-mode
4. if possible – all in DNS
5. creation of address maps (division according to departments and character segment)
6. establishing rules for numbering of fixed addresses, DHCP blocks
7. all new devices must support IPv6

The basic implementation not need huge financial costs – was only needed new L3 router. The new router was connected in parallel to an existing router, so the initial attempts did not jeopardize existing operations. All other components in the network remain original, there was no need of replacement (L2 switches, servers, etc.).

Deployment of the new IPv6 protocol does not require a large financial cost. Implementation can be done step by step. It is advisable to start from several local PC, then gradually launch a new protocol on the servers. Until the end of the run the new protocol on all end PC. Information for implemenatci is sufficient, in Czech there is an excellent book from doc.Satrapa. This new technology will become an essential element of the Internet – gradually he sees every user. They should know it also administrators.

E-LEARNING SUPPORT FOR THE INTERDISCIPLINARY INTEGRATION OF EDUCATIONAL THEME "CONSCIOUSNESS" AS STUDIED AT THE PALACKY UNIVERSITY IN OLOMOUC

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POSTER SESSION | 27–28 NOVEMBER 2012

Keywords: e-learning, consciousness

Problem of consciousness is one of the most significant medicinal, philosophical and scientific problems. In universities, learning this topic is spread over different faculties and disciplines, each of them dealing with specific aspects of consciousness. Understanding this phenomenon requires a highly disciplinary approach. Yet, there is little concerted effort of both teachers and their students to bring the rather isolated groups in individual faculties together. They mostly deal with the problem of consciousness as if some of its selected aspects were totally separable from the others, lacking a common platform for mutual communication, exchange of knowledge and/or learning strategies.

Poster presents an information on the project Reg. No. CZ.1.07/2.2.00/15.0334 started from the year 2010 and currently entering the last third of its solution. Project's goal is the elaboration of LMS environment for interdisciplinary integration of the topic "Consciousness" in accredited medical study programmes. E-learning environment is represented by complex, generally accessible educational portal built on wikipedia principle. The portal's frame are textual lessons completed by graphic and pictorial materials and multimedial entries.

Predominant character of our e-learning platform is more complex multidisciplinary view. This project aims to create, on the University scale, a network of active teachers and students in the domain, to foster interactions between individual disciplines in different faculties as well as between students and their teachers so as to contribute to the creation of a "consciousness" community in the Palacky University in Olomouc.

The portal can be reached from public internet. It will be connected with other study resources relevant to target groups of students. It enables study support either in course of instruction or in self study and by education of other potentially concerned persons.

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