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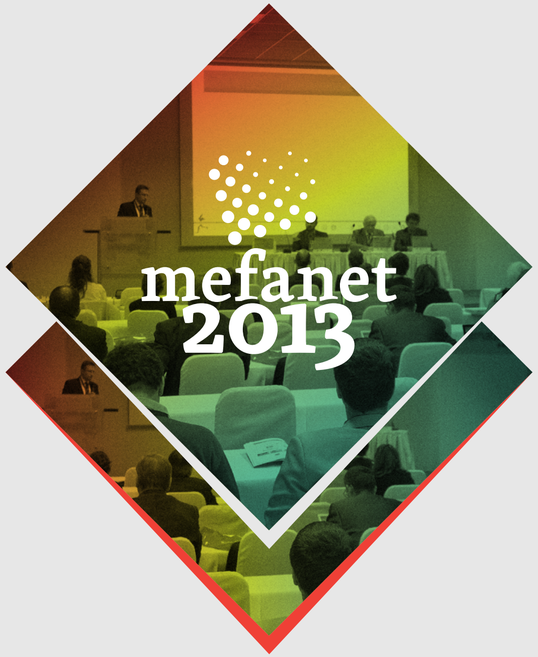

7th international conference of Czech and Slovak faculties of medicine

focused on e-learning and medical informatics in the education of medical disciplines

November 26–27, 2013, Brno, Czech Republic

esf european social fund in the czech republic

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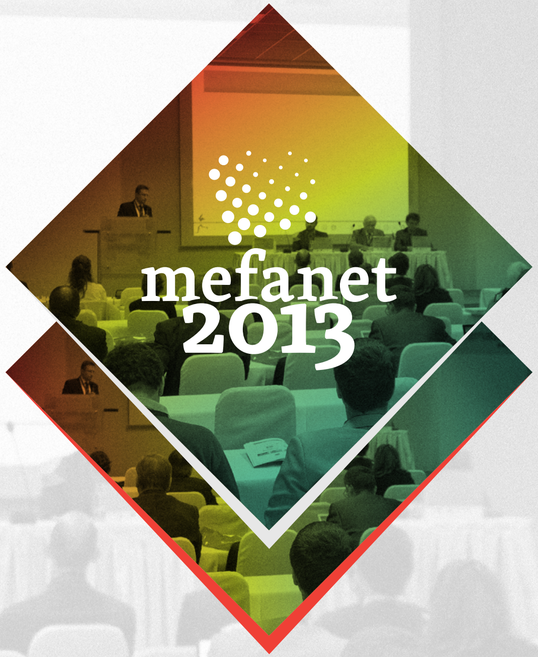

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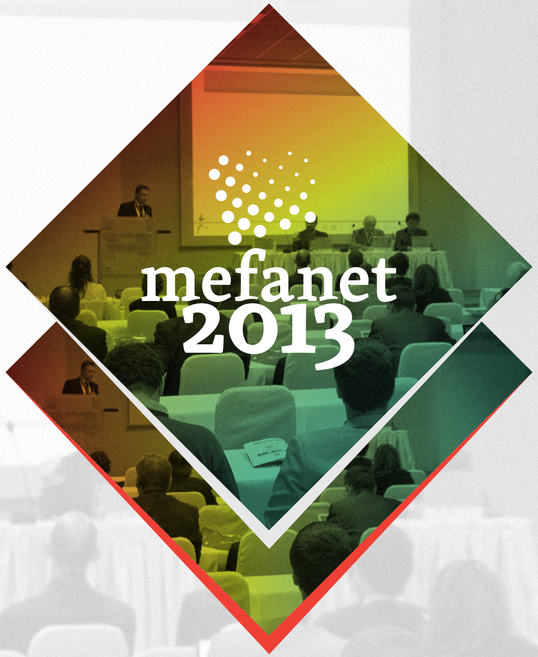

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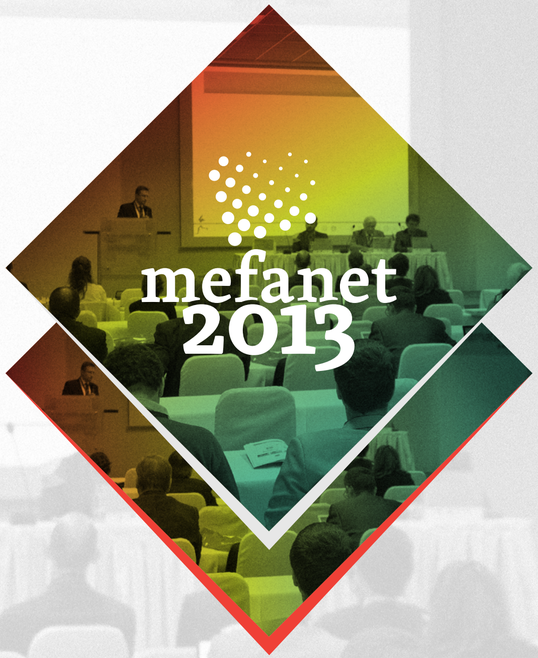

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WELCOME WORD

Dear colleagues and students,

we are pleased to welcome you to the 7th 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 biophysics and medical informatics“.

Besides the standard lecture sessions, the conference programme also includes several special sessions. One interactive workshop is focused on gamification in medical education and the participants will be introduced to the world of serious games and virtual patients. Special sessions are devoted to the field of e-assessment – we expect interesting debates about item banks, methods of psychometric evaluation, etc. One discussion panel will be conducted with a goal of exchanging ideas about recent and current movements in e-publishing and open access policy in research and education. 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 big data, learning analytics and e-assessment. An important space in the MEFANET 2013 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

Daniel Schwarz, Ladislav Dušek, Stanislav Štípek

On behalf of the Organization Committee

Daniel Schwarz, Martin Komenda, Jaroslav Majerník

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GENERAL INFORMATION

CONFERENCE VENUE

Best Western Premier Hotel International Brno

Husova 16, 659 21 Brno, Czech republic

GPS: 49°11'41.55"N, 16°36'17.24"E

CATERING

Lunch is included in the registration fee and will be provided to all conference participants on the 26 and 27 November 2013 in the hotel restaurant.

REGISTRATION OF PARTICIPANTS AT THE CONFERENCE VENUE

26 November 2013 from 7:30 to 16:00 h

27 November 2013 from 8:00 to 11:00 h

INFORMATION FOR AUTHORS

- Data projector and PC will be available to the lecturers.
- The lecturers are invited to test the technical equipment before the conference start or during coffee breaks.
- Technical assistance will be available for the whole time of the conference.

WE ASK LECTURERS TO STAY WITHIN THE TIME LIMIT FOR THEIR PRESENTATIONS.

TUESDAY, 26 NOVEMBER

Hall		Meeting room
	9:00	
Conference opening	9:30	
D1.1 PLENARY SESSION	9:45	
Coffee break	11:00	
D1.1 PLENARY SESSION	11:30	
Lunch	12:15	
D1.2 SHARING, INTEGRATION AND DATA SECURITY IN HEALTHCARE	13:30	
Coffee break	15:30	
D1.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION I	15:45	**D1.4 Workshop** Guide to medical app research, design and implementation
D1.5 VIRTUAL CASES AND SIMULATIONS	17:00	
D1.6 THE FUTURE OF PUBLISHING: E-BOOKS, OPEN ACCESS POLICY	18:00	**Meeting** MEFANET's coordination committee for health science faculties
Conference dinner	19:00	
Foyer POSTERS		

WEDNESDAY, 27 NOVEMBER

Hall		Meeting room
D2.1 eASSESSMENT IN MEDICAL EDUCATION	9:00	
Coffee break	11:00	
D2.2 E-LEARNING IN BIOPHYSICS AND MEDICAL INFORMATICS	11:15	
Lunch	12:45	
D2.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION	13:45	
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D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING	15:15	
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THE ROLE OF BIG DATA AND LEARNING ANALYTICS IN MEDICAL EDUCATION

PANAGIOTIS BAMIDIS
ARISTOTLE UNIVERSITY OF THESSALONIKI

D1.1 PLENARY SESSION
TUESDAY, 26 NOVEMBER, 09:45–12:15
KEYWORDS: BIG DATA, LEARNING ANALYTICS, MEDICAL EDUCATION

In the ever expanding and demanding world of medical education, the overall aim is to improve and enhance the experience of the learner. The grand challenge is to empower the learner with knowledge and skills to navigate and meaningfully interact with the vast wealth of available educational resources as well as connecting with other learners. Consequently the learner is encouraged to adopt active learning using self-directed, personalised collaborative learning environments.

Latest endeavors of research teams aim to provide the medical learner with appropriate toolkits that will help navigation through these resources, using the resources best to his/her needs. Such environments are powered by what we define as Medical Learning Analytics. The very allure of analytics would be prediction of student's performance using data readily available in e-learning environments. To achieve this, relevant interaction/attention metadata are required to enable tagging learning analytics suitable for medical education in the light of contemporary learning models and tomorrow's doctor's skills. Big educational data structures are deemed necessary for such an attempt; therefore, a Linked-Data approach must be followed with an Open, Standards-Based Service Architecture in mind, so as for Multi-Faceted Data Analysis to be facilitated.

The talk will focus on extending currently existing tools and processes for collecting, storing, exploring and reasoning on large-scale educational data from scenario based learning accessible in open educational or federated and syndicated educational environments; this gives rise to a massive collection of (big) data from medical students' learning activities. The challenge is to transform their data into information aiming to substantially improving learning and teaching.

It is easily inferred that such efforts will contribute towards innovation in Europe as well as policy formation and standardisation activities in the framework of 21st century skills and towards the objectives of the forthcoming Horizon 2020 programme.

USING OF VISUAL FEEDBACK FOR TEACHING OF GAIT KINESIOLOGY

PETRA BASTLOVÁ, ZUZANA JURUTKOVÁ, LUCIE SZMEKOVÁ, ALOIS KROBOT
FACULTY OF HEALTH SCIENCES, PALACKÝ UNIVERSITY IN OLOMOUC

D1.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION I
TUESDAY, 26 NOVEMBER, 15:45–17:00
KEYWORDS: VISUAL FEEDBACK, KINESIOLOGY, GAIT EVALUATION

Walking is the basic human mobility. It is not only the way of transfer from one place to another, but maintain it is instrument of social integration. The knowledge of biomechanical and neurophysiological aspects of gait in physiological and pathological situations is essential for students of physiotherapy. Gait impairments are associated with the severity of deficiency in various functional neurological and movement systems. Clinical gait assessment is one of the most difficult evaluation in physiotherapy, but it is one of the basic tool for therapy planning. Instrument assessment is the best way and modern tool for student education of spatio-temporal gait parameters.

Lectures of the subject "Kinesiology" (which means: Science of movement) for students of study program Physiotherapy on Faculty of Health Sciences Palacky University (FHS PU) in Olomouc were extended to instrumental, experimental analysis of movement, especially gait. Kinesiology laboratory is the facility of the Rehabilitation department of the University Hospital in Olomouc and Department of Physiotherapy of FHS PU in Olomouc. It possesses motor function analysis equipment which is absolutely unique in the Czech Republic. The kinesiology lab includes the dynamic posturography system Noraxon and surface electromyography (EMG) systems (MyoSystem 1400 and TeleMyo). A recent addition to the measuring technology is treadmills with built-in force plate C-Mill and Zebris, which enable the objectification of walk cycle evaluation, walking speed measurement, step length, forces during walking and walking over obstacles with simulated video feedback. EMG compatible video cameras for synchronized EMG signal and image are used for graphic presentation and easier results interpretation in the studies performed by researchers and students. The highly specialized technical equipment offers unique practical experience to students and researchers to work with a wide spectrum of objectification measures and to use them for motor function analysis in a practical setting.

Through practical sessions in kinesiology lab are students familiar with instrument gait assessment. They can monitor spatio-temporal characteristics of gait cycle of their colleagues in real time and compare it with physiological parameters, which are included in an equipment software or with pathological parameters. Datas are saved in database of the equipment from last measurements, which were made in laboratory in the past. Students can use visual feedback of spatio-temporal characteristics of different impairments to find main problems during the gait cycle and propose solutions for movement therapy of concrete patient.

Treadmill gait analysis system is proposed as an attractive and alternative tool for walking measurement. The instrumented treadmill enables collection of gait performance over long distances and/or long periods of time using standardized conditions, namely distance, belt speed, and inclination. Instrumented treadmills provide basic spatio-temporal gait parameters and ground reaction forces in near real–time. Students are able to easily know regularities of gait cycle in physiological and pathological situations. Teaching using visual feedback and experimental gait assessment instruments extend the possibilities of teaching and learning methods in all the subjects, which goal is understanding of movement functions, especially gait.

ACKNOWLEDGEMENT

Support of Human Resources in Science and Research in Healthcare at the Faculty of Health Sciences at Palacký University in Olomouc, CZ.1.07/2.3.00/20.0163.

INFORMATION NETWORK OF COMPREHENSIVE CANCER CENTERS IN THE CZECH REPUBLIC – I-COPedu PROJECT

MILAN BLAHA, PETR KLIKA, JAN MUŽÍK, LADISLAV DUŠEK
FACULTY OF MEDICINE, MASARYK UNIVERSITY

D1.2 SHARING, INTEGRATION AND DATA SECURITY IN HEALTHCARE
TUESDAY, 26 NOVEMBER, 13:30–15:30
KEYWORDS: I-COP, ONCOLOGY, DATA ANALYSES, MEDICAL EDUCATION

Over the last two years, the main objective of the project "Education and information platform for cancer centres aimed at support and modernisation of education in medicine and allied health professions" was to create a cooperating network of health care facilities that would share specific information.

Project objectives have been met: a fully operational infrastructure has been developed, making it possible for involved centres to share their experience. The cooperation among centres has two basic levels. The first level was purely technological and was aimed at the creation of IT and database infrastructure. The second level utilized the above-mentioned infrastructure for a mutual sharing of experience and consisted in the organization of local and nationwide seminars as well as educational stays for Ph.D. students. A strong tool for data sharing has been thus developed, represented mainly by decentralized databases I-COPedu, which are located on the servers of invididual partners. These local databases are filled with data of the Czech National Cancer Registry from a given hospital, and with data reported by that hospital to health care payers.

Setting and implementation of an analytical educational reporting over this data is an essential part of the project. A strict standardization of individual analytical outputs of the project is a strong benefit, making it possible for each involved health care facility to compare its own outputs with reference values, thus providing an opportunity for that centre to learn from its own results and from other centres' results. In case of approval by the involved centres, the database developed within the I-COPedu project might be used for a mutual comparison of those centres' results.

Information from the I-COPedu database can be readily used to support research publications in specific areas of health care (not necessarily dealing with cancer patients only), such as the assessment of treatment costs or treatment effectiveness.

ACKNOWLEDGEMENT

ESF CZ.1.07/2.4.00/31.0020

ELECTRONIC EDUCATIONAL DATABASE – ASSESSMENT TOOLS IN GERONTOLOGICAL NURSING

IVANA BÓRIKOVÁ, MARTINA TOMAGOVÁ, KATARÍNA ŽIAKOVÁ

COMENIUS UNIVERSITY IN BRATISLAVA, JESSENIUS FACULTY OF MEDICINE, DEPARTMENT OF NURSING,

D2.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION II

WEDNESDAY, 27 NOVEMBER, 13:45–15:00

KEYWORDS: GERONTOLOGICAL NURSING, ASSESSMENT, DOMAINS OF ASSESSMENT, ASSESSMENT TOOL, ELECTRONIC DATABASE, EDUCATION

Demographic prognoses predict ageing of population and upgrowth of chronic diseases. That changes will require increase cost on health and nursing care and quantity and quality of services for senior population. Priority of support health status and prevention of diseases will be serve self-care, to stabilize functional status and general to improve quality of life. Assessment as component nursing process can detect changes in health status of older people/geriatric patients, to predict high of risk, and lead on to selection of intervention. An integral part of the assessment process is the assessment tool. Valid and reliable tools used in clinical practice help to quantify and objectify patient's functional capacity, help to process of nursing diagnostics and evaluate efficiency of interventions.

The aim of project of electronic educational database assessment tools for gerontological nursing is to present selected tools on assessment domains generally in seniors' population and population of geriatric patients with specific health problem. Used was method bibliographic search, analysis and compare literary works relate with gerontological assessment. We have described background of project – demographic, legislative and educational. The strategy focused on quality of care about senior population with chronic diseases accented adaptation on specific domain of assessment patient with chronic diseases, on evidence practice based, and training reviewers with aspect on their professional competencies. Domains of assessment priority will be oriented on physical (e.g., nutrition, activities of daily living, pain, risk of pressure ulcers, risk of falls) and mental health (e.g., cognitive functioning, dementia).

A content of database is divided on four basic sections: Gerontological Nursing, Assessment of senior/geriatric patient, Assessment tool and Selected assessment tools. Main part is final section, which contents relevant information about each tool – description, psychometric characteristics, strengths, limitations, instructions for administration, bibliographic references, and free assessment form ("open tool"). Assessment tools are describe for assessment domain, which are in competences nurse – activities of daily living, pain, nutrition, risk of pressure ulcers, risk of falls, dementia, delirium, and depression. Student obtains uniform theoretical information about everything tools. It increase objectivity of nursing diagnosing and supported their cognitive and technical skills.

Electronic educational database supplements conventional methods of teaching, improve the quality of teaching student of nursing study and supports using assessment tools as component of standard assessment of senior/geriatric patient. Database will be presented for students of nursing study on Jessenius faculty of Medicine in Martin of Comenius University in Bratislava (JLF UK). Database will be serve as other those interested about assessment tools after free registration on educational portal MEFANET. Content of database is possible continuously supplement and update information also after finish of project.

ACKNOWLEDGEMENT

Supported by project KEGA registration number 054UK-4/2012 (New Technologies, methods and forms in education) – Assessment Tools in Gerontological Nursing – to create of electronic database.

COMPARISON OF CLASSICAL AND VIRTUAL SLIDE TEACHING METHODS OF MORPHOLOGICAL SUBJECTS BY MEDICAL STUDENTS

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POSTERS

KEYWORDS: HISTOLOGY, PRACTICAL VIRTUAL, SLIDES, EVALUATION

The e-learning format of histology practical based on virtual microscopy provides many benefits over observation of classical glass histology slides. We have developed and applied a new format of histology practical with virtual slides observation and photography. Additional supporting documents are also available for each of the histology topic. Students evaluated positively the use of PC for observation of virtual slides and teachers benefited from a uniform quality of presented slides and also from a straightforward and personal communication with students. In this report we present student's comparison and evaluation of both, the classical and computerized teaching sessions.

We have designed a questionnaire comprising four questions aimed at student's experience with virtual and classical histology teaching sessions. This questionnaire was presented to students of 3rd year of general medicine program that already passed histology course with PC-based practicals, and at that time they were attending pathology practical in classical format of slide presentation. All together 152 students responded to this survey.

Although 46% of responding students experienced some discomfort when they switched to manual examination of glass slides in pathology, most of pathology students (90%) still preferred examination of virtual slides on PC monitors over the observation of glass slides. With regard to histopathology practical, 51% of attending students preferred virtual microscopy, 45% opted for a mixed observation of virtual and glass slides, and only 4% of respondents preferred the classical microscope observation method. Students also appreciated their active learning during observation of virtual slides, as they could take digital shots of important parts of displayed images and create their own presentations for later revisions. This corresponds to this survey in which 69% histopathology students replied that they use their histology presentations for revisions in following morphological studies.

Based on this survey as well as on teacher's experience, we are concluding that the PC-based practical teaching method is attractive and beneficial to today's computer – trained generation of future medical professionals that is able to utilize fully the capability of modern PC technology and absorb information from new software applications easily. They are also capable to create their own presentation records of observed structures that can be used in later revisions or seminars. In this way students are also educated in making scientific records and their application to professional reports or dissertations.

ACKNOWLEDGEMENT

Introduction of Histology practical with virtual slides was supported by ESF-OPVK grant n.CZ.1.07/2.2.00/28.0089.

DENTISTRY AND ORAL DISEASES E-LEARNING SYSTEM FOR DENTISTS AND PHD STUDENT

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2ND FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE

D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING
WEDNESDAY, 27 NOVEMBER, 15:15–17:00
KEYWORDS: DENTISTRY, ORAL DISEASES, DENTISTS, PHD PROGRAM, E-LEARNING

The change in pedagogy relates partly to the development of electronic media and communication possibilities that are available in networked environments. The new technology dominates and supports the international educational content and learning. The aim of our study was to present this progress in e-learning dental pre and post gradual education.

The education system was prepared parallel for two groups of Czech and international pre and post- gradual students. Materials were published on the portals of the individual dental study programs (http://dl.cuni.cz). The lectures had different access levels, ranging from materials that were freely available to all International WEB dental faculties' sources to materials that were accessible only after receiving permission from the authors. A number of software tools were used for the creation of e-learning courses, such as, e.g., WebCT, Blackboard, Adobe Connect or Microsoft Class Server. The goal of our study was to support student activities during the educational process, namely online work – lessons, articles, videos, literature, quizzes and direct Internet access to literature databases (scopusm, WOS etc.), experts systems (http://dlcv.cuni.cz).

The e-learning courses, direct links to research databases, expert support systems have a direct influence on learning experiences, dental information, opinions and comments. The findings highlighted the importance of e-learning to training in dentistry and maxillofacial surgery in pre and post gradual education. The e-learning system demonstrates interoperability between clinics and helps to prepare students for practical training and also PhD programs.

The e-learning course had a direct influence on learning experiences, dental information, opinions and comments.

ACKNOWLEDGEMENT

The study was supported by project No.CSM 54.

THE ISSUE OF PUBLISHING MULTIMEDIA PRESENTATIONS ON THE PORTAL MEFANET

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D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING
WEDNESDAY, 27 NOVEMBER, 15:15–17:00
KEYWORDS: MULTIMEDIA, MEFANET, FLASH, HTML5

PowerPoint presentation is not equal educational material! From authors who publishon the Mefanet portal in Pilsen in the MODIM project we tolerate only presentation accompanied by text and audio commentary on the slides, graphics, movies, etc. To ensure maximum compatibility across operating systems, we looked fort a suitable format and tool for finalizing these materials.

Plain PPT format we are rejected at the beginning due to backward compatibility and needs of one single-file output for publishing on the Mefanet portal. Multimedia PDF files created with Adobe Presenter respectively Adobe Captivate meet the criteria of single-file output and in case you are using recent version of Adobe Acrobat there was not a problem in Windows and OS X with these presentations. Multimedia PDF can not be opened properly in Linux distributions, especially in the Debian 7 OS installed in educational kiosks. Through these educational kiosks (42" touchscreen with buitin PC) can students access the materials on the Mefanet portal in some areas of the Faculty and Hospital in Pilsen. Proper viewing of learning materials on such devices was a priority for us.

Due to the mentioned compatibility across operating systems and especially because of the proper display of multimedia learning objects on the educational kiosks we decided to export materials to SWF (need to support Adobe Flash in a web browser), or HTML5. In both cases there was necessary to modify the functionality of the Mefanet portal to be able to open directly in the browser archives containing a many of separate files (HTML, MP3, XML, JS, etc.) with the preservation of authorized access to study materials. We thank for the cooperation in this to Institute of Biostatistics and Analyses, Faculty of Medicine and Faculty of Science, Masaryk University (MU IBA), which added this functionality to Mefanet portal installation.

The HTML5 is still a new technology that evolves and once becomes a standard for multimedia and interactive content publishing on the Internet.

Unfortunately, even the use of SWF format is not completely without problems. Adobe company announced the end of the Flash development for mobile devices and from the beginning is this technology rejected by Apple company.

We have reached a solution, but still not 100%. Due to the need for the implementation of individual key activities in the MODIM project was chosen from our point of view most functional solution. Currently there is still not 100% support all the features of HTML5 in Web browsers. We also did not find a suitable tool for export to this format. Although it is not currently clear the future of Flash, we chose for us the export of multimedia educational materials to SWF format. But now the question is, how to display mentioned educational materials on mobile? What is your experience with publishing of similar materials?

ACKNOWLEDGEMENT

„Modernizace didaktických metod cestou podpory systému elektronického vzdělávání" (MODIM). Registrační číslo: CZ.1.07/2.2.00/28.0198.

PREPARING A MULTIMEDIA TEXTBOOK OF NURSING TECHNIQUES

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D1.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION I
TUESDAY, 26 NOVEMBER, 15:45–17:00
KEYWORDS: MULTIMEDIA, NURSING TECHNIQUES, EDUCATION

Currently, the multimedia is a part of our everyday life. It must necessarily spill over into education. Current students use modern technology and naturally expect its use in the educational process. The role of modern education is to incorporate these technologies into teaching and offer students an alternative to traditional learning. The purpose of presentation is to introduce selected parts of upcoming multimedia textbook of nursing techniques and skills. The aim of this textbook is to make teaching and learning more attractive, to strengthen independent student activity and thereby contribute to the improvement of achievement of students' learning objectives.

Multimedia textbook composed of audio-visual educational elements helps the students to better understanding of the themes studied and allows verification of their own knowledge and skills in the absence of teacher. It is useful particularly for students who have no previous experience with the theme studied. Interactive multimedia systems are a combination of two elements: multimedia and interactivity. Multimedia information is presented through various media, such as sound and animation videos. Interactivity allows the users to participate in and control the information and allows the user to decide when and what information will be presented. Research confirms that the brain processes information through two channels: visual and auditory. If the information is used by the two channels, the brain can process more new information. The basic principle of multimedia learning can be described as follows: people learn better from words and pictures than from words alone. In this context, the word is written and spoken text, images includes static images, animations and videos. Simultaneous use of the words and images allows the brain to process more information by working memory.

The main textbook themes are as follows: Infection Control; Vital Signs; Personal Hygiene; Wound Care and Bandages and Binders; Physical Mobility and Immobility; Nutrition and Fluid Balance; Bowel and Urinary Elimination; Specimen Collection; Medication Administration and Selected Therapeutic Procedures. These are further divided into main chapters, for example, theme Specimen Collection is divided into chapters: General principles of collecting biological material; blood specimens, urine specimens, stool specimen, sputum collection, swab specimens. We present processing of one nursing procedure - phlebotomy. This procedure is one of the basic skills of nurses, midwives and physicians. It is important the students fully master the technique of withdrawing venous blood by phlebotomy during their studies. Thereby in upcoming multimedia textbook the procedure of withdrawing the blood is described in text form and video form. Text contains hyperlinks to glossary, where critical points are explained, the list of equipment for the procedure with its detailed description and images. Procedure is presented by its step-by-step description in text format but also in the form of video that is interactive with the text and is divided into sequences. Independent activity of student is supported by inclusion of review questions and tasks for critical-thinking application at the end of each chapter.

Besides presentation of selected parts of multimedia textbook of nursing techniques and skills the authors offer also insight to problems arising within the process of preparing the textbook, particularly in relation to EBP implementation, such as efforts to look for consensus and balance between best available research evidence and stereotype routine practice in our conditions, and in relation to technical processing of the educational content.

ACKNOWLEDGEMENT

Supported by project Virtual and Simulation Tuition as a New Form of Education at JFM CU in Martin, ITMS: 26110230071, co-funded from EU sources and ESF and KEGA 056UK-4/2013 Multimedial textbook of nursing techniqes and skills.

MULTIMEDIA E-TEXTBOOK SPECIAL PROCEDURES IN SURGICAL NURSING

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D2.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION II
WEDNESDAY, 27 NOVEMBER, 13:45–15:00
KEYWORDS: E-LEARNING, SPECIAL SURGERY, NURSING, NURSING PROCEDURES, PERIOPERATIVE CARE

The surgery and surgical nursing have a specific positions resulting from the invasion and apparent damage to the integrity of the individual. The small error on the part of health care can have fatal consequences for the patient. The essential requirement for the student during undergraduate acquaintance to meet with “n” situations, “n” cases, sometimes in natural conditions in the hospital is not possible to demonstrate a number of reasons: disagreement patient, short hospitalization, a rare, unique, an unusual case etc. In this context, we can used the simulation in simulation centers and to use other means of modern education – e-learning education.

The project is aimed to create a university multimedia e-books, which will implement the new knowledge of special surgery and surgical nursing in the educational process through modern trends in higher education e-learning named the blended learning. It will be the combination of information and communication technology with traditional classroom-learning. A multimedia textbook is intended primarily for the undergraduate nursing students as well as for the students of medicine who are well acquainted with the practice of perioperative care in the surgical propedeutics. E-learning textbook will be published on the portal MEFANET Jessenius Faculty of Medicine in Martin and exported to the Central Gate MEFANET. The prerequisites for the use of the e-learning book are the experiences of the students with the information and communication technology. The student has to demonstrate knowledge in the field of general surgery (surgical patient assessment, operational risk, wound care, etc.). The creation, distribution and administration of e-textbooks will be used in a software package Moodle Learning Management System.

The content of multimedia textbook will be organized into chapters (Chapter 1 to n) and lessons (lessons 1 to n) according to the structure and teaching plans for teaching contact hours of lectures and practical exercises. The chapters and lessons will have the opportunity to browse through books or pagination structured menu. The individual lessons will contain text (interpretation section) and graphics (diagrams, tables, graphs). The animations section allows the better understanding of the problems by viewing images and videos. The case studies will include the problems and instructions for their solution. Each chapter is concluded by a set of control questions “test drive” that allows students to test, how to handle the issue.

The structure of interpretative parts will contain: the current state of the problem at home and abroad, minimum of the theoretical - conceptual issues of definition, history, physical examination, diagnosis, treatment, dispensary, prognosis, specific nursing assessment (interview, physical examination), evaluation and measurement techniques, analysis of documentation, nursing diagnosis, nursing interventions specifically (using modern tools, equipment), a multidisciplinary team collaboration, education of the patient and family.

Using information and communication technologies will multimedia textbook supplement traditional face-to-face manner of education the students of branch nursing, bachelor degree, pregradual preparation of nurses. Multimedia textbook as one of the possible modules e-learning education will present the curriculum together with audio and video, case studies, problem solving tasks and self-test as a form of feedback.

ACKNOWLEDGEMENT

Supported by grant KEGA No. 050UK-4/2013 Multimedia e-textbook Special procedures in surgical nursing.

CONTROLLED NURSING PRACTICE OF MEDICAL STUDENTS AT THE UNIVERSITY OF OSTRAVA

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D2.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION II
WEDNESDAY, 27 NOVEMBER, 13:45–15:00

KEYWORDS: NURSING PRACTICE, MEDICAL STUDENTS, CLINICAL LEARNING ENVIRONMENT, MENTORING, EVALUATION

Nursing practice is a one of compulsory subjects of study program General Medicine. This subject folows the subject Basic nursing and is realized in the summer months after the third year of study of General Medicine. Nursing practices are standardly organized as a controlled mentored practice at University of Ostrava. Each student (max. 2 as “own” mentor (nurse - graduate of certified mentoring course) who accompanies the student throughout his/her nursing practice. Medical students evaluated the quality of teaching and learning environments standardized questionnaire after completing their nursing practice.

The aim of study was to find out how medical students evaluate their nursing practice, co-operation with the mentors, what aspects affect their satisfaction with the practice and how the evaluation of practice varies from wards and hospitals. The sample comprised of 54 medical students of the third year of study. The survey was realized by standardized Clinical Learning Environment and Supervision instrument CLES (Saarikoski, 2002) after the completion of students nursing clinical practice (2013). Students evaluated on Likert scale (1–5), higher ratings mean higher level of quality and satisfaction. Data were analyzed by statistical software SPSS v. 21 (Mann-Whitney test, Kolmogorov-Smirnov test, Kruskall-Wallis test, Mediánový test, Pearson Chí2 test).

Students evaluated the best the nursing care in the department including management style of ward nurse (mean 4.27 to 4.35), then the worst teaching/training in the department (mean 3.81). Better was evaluated nursing practice in internal wards (mean 4.15) compared to surgical wards (mean 3.97), in the evaluation of hospitals was not find significant difference. Students’ satisfaction was influenced by the quality of nursing care ($p = 0.015$) and physical stress of nursing staff ($p = 0.000$). Statistically significant correlations were also identified between nurses load and evaluation of students – with medium physical stress of nurses was evaluated more favorably clinical learning environment ($p = 0.018$) and the relationship between the mentor and the student ($p = 0.044$).

The results of survey show the importance of mentoring and quality of clinical learning environment also for nursing practice of medical students. Positive feedback of medical students confirmed the assumption of higher quality and benefits of controlled nursing practice. Experience and reflection of students will be annually monitored and evaluated by the same measurement tool.

BREAST SURGERY

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POSTERS

KEYWORDS: BREAST, SURGERY, PREGRADUAL EDUCATION, E-LEARNING COURSE

Inflammatory breast processes are a typical complication of post child birth time period and some special complication of injuries in this region. Breast cancer is the most frequent malignancy in women in Europe and so in the Czech Republic. The incidence of this disease is about 115 new cases per 100 000 inhabitants yearly in our country and it has increasing tendency. This medicinal problem must be explained intensively for medical students for their daily clinical practice in postgraduate time period. The e-learning course can help them for understanding of its basic etiologic factors, symptoms, diagnostics, management and its complication.

Building of this course is based on essential morphologic, physiological and pathologic physiology knowledge which students are demonstrated during the first four years of their general medicine studies. A theory of all problems is explained with a help of texts, pictures, photos and schemas with use of textbooks, own lectures, anatomic atlases a next materials. Clinical part of management breast surgery focused on surgery of breast cancer and its complication was constructed with videos of essential operations performed for diagnostics and therapeutic processes. A knowledge gift by the educational process can be tested by special questions in a test with one right answer from a few suggested possibilities. A validity of knowledge is explained with a help of knowledge scale during individual students preparation at home themself.

This e-learning course is introduced in study process now and during one year can be announced the first results of quality, usability and preferences of this multimedial learning information source.

We can believe in a successful incorporation of above-mentioned learning method and medium in preparation process of medical pre-gradual students for their exams and practical life as medicine doctors in future.

ACKNOWLEDGEMENT

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BENEFITS OF INFORMATION SECURITY MANAGEMENT COMPLIANT WITH ISO 27001

MARTIN KNOTEK
Q-COM, SPOL. S R.O.

D1.2 SHARING, INTEGRATION AND DATA SECURITY IN HEALTHCARE
TUESDAY, 26 NOVEMBER, 13:30–15:30
KEYWORDS: ISMS, INFORMATION SECURITY, ISO 27001

The aim of this paper is to introduce the benefits of implementing an information security management system (ISMS).

Information security is an important part of each information processing in all sectors of human activity. IT managers at health facilities is more than anywhere else placed importance on ensuring the confidentiality, availability and integrity of processed data. Particularly personal data of patients.

A suitable tool for information security management is the implementation of ISMS in accordance with ISO/IEC 27000 standards.

Most security managers and top managers identified ISMS as an appropriate tool for security and risk management. The main benefits of ISMS is in implementation of procedures, definition of responsibilities and identification of assets and information processing.

Implementation and certification of ISMS (ISO 27001) leads to a comprehensive information security management and ensure the confidentiality, integrity and availability of information.

STUDENT ASSESSMENT IN MEDICAL EDUCATION: EXPERIENCES AND FUTURE VISIONS

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FACULTY OF MEDICINE, MASARYK UNIVERSITY, 3RD FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE, 2ND FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE

D2.1 EASSESSMENT IN MEDICAL EDUCATION
WEDNESDAY, 27 NOVEMBER, 09:00–10:45
KEYWORDS: ASSESSMENT, MEDICAL EDUCATION, MEFANET

Construction and analysis of tests play a key role in the educational process. An appropriate construction of assessment agenda should aim at being a practical aid and guideline for teachers and faculty management.

The primary aim of the presentation is to introduce new opportunities how to manage assessment agenda in an effective way. To achieve this goal, the MEFANET expert working group for assessment was established. It provides methodological know-how related to the preparation of well-designed questions and tests in medical and health care education. This activity ties in with the book Student Assessment in Medical Education, which describes in detail all important aspects of test construction and analysis.

A brief overview of the assessment agenda from several faculties involved in the MEFANET will be introduced. It covers a summary of assessment approaches used, numbers of test given and the feedback from students and teachers.

The fundamental principles of knowledge assessment methods have been already described. The theoretical background with the support of the expert working group is ready to be shared and to assist all academic staff from the educational network MEFANET.

E-LEARNING AND MEDICAL INFORMATICS IN BIOPHYSICS AT MEDICAL FACULTY IN HRADEC KRÁLOVÉ

DAVID KORDEK, JOSEF HANUŠ, JIŘÍ ZÁHORA, VLADIMÍR MAŠÍN, ALEŠ BEZROUK
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D2.2 E-LEARNING IN BIOPHYSICS AND MEDICAL INFORMATICS
WEDNESDAY, 27 NOVEMBER, 11:15–12:45
KEYWORDS: E-LEARNING, MOODLE, TEACHING

This contribution informs the reader about the medical biophysics teaching process at the Faculty of Medicine, Charles University in Hradec Králové, during the whole semester, from the introductory lecture to the granting of credits to the students. This process combines the conventional contact form of instruction with elements of e-learning, which mainly consists in the use of the e-learning training course "Biophysics and biostatistics – general medicine" and some independent monothematic courses, created in Moodle software. Some parts of the contact form, such as practical laboratory measurements, and some additional e-learning courses, including a statistics textbook, are described in more detail in this contribution. Furthermore, the reader is made familiar with selected e-learning elements which are implemented into the medical biophysics course, e.g. automatically evaluated reports and databases for the collection of self-studies.

The classical form of teaching at the Medical Biophysics Department consists of collective instruction (lectures) and teaching in groups (practical training and seminars). This division is defined in relation to the student's personality. Teaching can be categorised with respect to the teaching room as "teaching in a lecture hall" or as teaching in "specific lecture rooms and laboratories". Practical training is organised specifically as "laboratory measurements", where the students work in teams of 4 under the supervision of an assistant professor. This training, though, also contains some elements of e-learning: for instance, the students have available instructions for the laboratory measurements in the form of independent e-learning courses. Reports from the laboratory measurements are created as interactive Excel files, which, once completed, are sent by the students for uploading and the numerical values from the reports are uploaded to the dedicated database. The students' e-learning materials include an electronic textbook of statistics, to be used as a supporting tool during group teaching in practical statistics training. The textbook, along with other information about the study, is part of the comprehensive "Biophysics and biostatistics – general medicine" course (consisting of 8 topics), during which the students sit for partial tests, submit their self-studies to the database, etc.

The approach where conventional teaching is combined with e-learning has been practised by the Medical Biophysics Department for many years. The above Excel reports have been mandatory for 4 years now. This allows the teacher to inspect retrospective values measured by any student in their group. Hence, we have also available statistically "usable" data from various measurements. Last year we offered our students for the first time the mandatory course "Biophysics and biostatistics – general medicine" in Moodle. Owing to that, we have available a comprehensive table of students' results from all tests for 1 year, as well as the assessment of all students in the activities which are subject to assessment within the entire one-semester course. Among the assets of the outputs so obtained is the fact that the outputs are summarised in a single table for the course.

It must be admitted, though, that apart from the advantages, the combination of conventional teaching and e-learning has some drawbacks as well. The major shortcomings concern the transfer of the courses when Moodle is updated and backup of the old courses including the user data. The initial Moodle's "user-unfriendliness" to the students is also a shortcoming.

ELECTROMAGNETIC METHODS IN DIAGNOSTICS AND THERAPY – AN ADJUNCTIVE E-LEARNING COURSE

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D2.2 E-LEARNING IN BIOPHYSICS AND MEDICAL INFORMATICS WEDNESDAY, 27 NOVEMBER, 11:15–12:45

KEYWORDS: UNIVERSITY STUDY, OPTIONAL COURSE, BIOELECTROMAGNETISM, PHYSICS, E-LEARNING

New methods and applications of electronics, computers, engineering and information technologies and biotechnologies used in medicine are continually increasing. During their education, medical doctors should acquire some basic skills how to use these devices and technologies. They should understand the functioning of the instrumentation, mainly the physical principles, to be able to choose correctly the most appropriate diagnostic or therapeutic techniques including the correct interpretation of obtained results.

This possibility is given to the students in the optional course "Electromagnetic Methods in Diagnostics and Therapy" which is given in the classical form. To make it more attractive and more flexible for students, we decided to prepare an e-learning version of this course.

The course in the classical form is lectured at the Faculty of Medicine, Comenius University in Bratislava during one term within 12 weeks for over 13 years. It consists of lectures and a short practical training. The e-learning course is prepared in MOODLE at the Comenius University in Bratislava (https://moja.uniba.sk/). It is organised in three basic parts – the introduction, the main part and the concluding section. The main part comprises several themes starting from anatomical, physiological and physical basis of bioelectromagnetism, bioelectric sources and conductors and their modelling, theoretical methods in bioelectromagnetism, electric and magnetic measurement of electric activity and stimulation of neural tissue and the heart, measurement of intrinsic electric properties of biological tissue, principles of electric and magnetic therapeutic methods. Each theme is supported by literature links and control questions. The student can continue to the next theme only after passing a short control test if the topics are linked. Interactions of the student with other students as well as the teacher are involved in each section based on the discussion board. The concluding part involves a final test as this e-learning course is intended be used in conjunction with face-to-face teaching (blended learning).

For lack of study literature in Slovak language, in which this course is given, the students had to study either from the given lectures or, predominantly, from more textbooks in English language. To avoid this disadvantage, we prepared a set of lectures – multimedia presentations comprising physical principles of bioelectromagnetism, transport processes across the membrane, principles of thermodynamics, biophysics of excitation processes, biological signals as the basis of diagnostic methods – their types, ways of registration, pre-processing, processing, and display and storage, basics of biomedical electronics, proper electric and magnetic biosignals, passive electric and magnetic properties of cells, tissues and organs as the physical basis of the therapeutic methods and their description, electromagnetic spectrum and its properties, biological effects of non-ionising radiation, safety rules during recording and application of electromagnetic methods. The presentations are available at the MEFANET Portal of the FM CU in Slovak as well as in English language (http://portal.fmed.uniba.sk/). Therefore, they can be used in both the classical and in electronical form of the course and/or for other courses.

With education over the internet, the student can work at his own pace. He can better organise his time, finish the work quickly or, if necessary, pay longer time to the issue. And, since the e-learning is an educational technology that electronically or technologically supports learning and teaching, we hope, that the proposed e-learning course will increase not only the knowledge on bioelectromagnetism but also some technical skills of the students.

ACKNOWLEDGEMENT

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QUESTION FORMATS FOR ELECTRONIC TESTING OF PRACTICAL KNOWLEDGE IN MORPHOLOGY

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D2.1 EASSESSMENT IN MEDICAL EDUCATION

WEDNESDAY, 27 NOVEMBER, 09:00–10:45

KEYWORDS: ELECTRONIC, TESTING, QUESTIONS, HISTOLOGY, ANATOMY, PRACTICAL

Examination of student's practical knowledge and skills with the help of electronic media is being more frequently used in recent years. When introducing an e-learning environment into our histology teaching methods, we have started to test practical skills on personal computers using electronic pictures in MCQ-formatted tests. Due to the specific requirements of morphological subjects (histology, anatomy, pathology) the applicable formats of questions had to be carefully selected in order to test student's understanding and recognition of structures of tissue and organs.

Electronic tests were created in Articulate Quizmaker 09 software application using imported photos accompanied by stems and up to five distractors. This software was selected because it allows electronic pictures to be added to questions and displays them in high quality and zoomable format. From the variety of selectable question formats available in Quizmaker 09, we preferred to use "True/False" (TFQ), "Multiple choice" (MCQ), "Multiple Response" (MRQ) "Matching Drag & Drop" (DDQ) and "Hotspot" (HSQ) formats. In this report we analyze specific features of these question formats and their impact on morphology testing.

True/False Questions (TFQ) is the simplest type of question that requires the student the single correct choice from two choices. When combined with a picture this type of question can be used for identification of complete objects like bones and organs. Most frequently used are standard Multiple Choice Questions (MCQ) with a stem referring to a displayed picture and one correct answer supplemented with four distractors. Using five or more options to select the correct answer from substantially decreases possibility of student's guessing. More rigorous than MCQ is the format of Multiple Response Question (MRQ) that allows for five and more options to be offered from which any number could be either correct or wrong. These questions are highly valuable, unpopular with students and are expected to bear higher question point values. The Matching Drag and Drop Question (DDQ) format does not allow for insertion of an image, and as such, it is mostly used for testing a knowledge related to structures and their functions. It may display up to 10 matching pairs of statements and is considered difficult and valued. The Hotspot Question (HSQ) format is the most suitable for morphology recognition testing as it requires the student to click on the correct area within the displayed image as specified in the stem of this question.

Toady's hardware and software provide optimal environment for electronic testing of morphology topics with high accuracy, automated scoring and immediate reporting of results. These tests can be used as graded examinations or self-testing surveys attached to websites. They enhance the e-learning capability of morphological departments.

ACKNOWLEDGEMENT

Acknowledgements: Creation and application of electronic testing was supported by ESF-OPVK grant n.CZ.1.07/2.2.00/28.0089.

LEGISLATIVE BOUNDARIES OF IDENTIFIABILITY PATIENT

VLADISLAVA KŘIVOVÁ, KONSTANTIN LAVRUSHIN

D1.2 SHARING, INTEGRATION AND DATA SECURITY IN HEALTHCARE

TUESDAY, 26 NOVEMBER, 13:30–15:30

KEYWORDS: PERSONAL DATA, IDENTIFIABILITY OF PATIENT, PERSONAL DATA PROTECTION

The topic of this paper is legal protection of personality with a focus on collecting and sharing data about patients of medical facility in the Czech Republic. This data is often being highly sensitive information and therefore a handling of such information is the subject of legal regulation. The main aspect of the topic is a finding out a definition of “personal data”, which will be clarified in the presentation and in this paper below. Likewise, the legal conditions for the transfer and sharing of personal data of patients are included in the presentation and in this paper below. The aim of the presentation is a partial clarification of the obligations in processing, preservation, dissemination and other use of personal data of patients, set by current legislation in the Czech Republic.

Introduction of the article is devoted to the topic of a foundation questions that will be answered later. As already indicated, it will be mainly a question of the definition of “personal data” with regard to Act No. 101/2000 Coll., and then to relate this information to the person of the patient. It will set the boundaries between personal data and data anonymous.

Then will be analyzed the problem of handling personal data, i.e. data collection and processing. It will be necessary to define the duties of controllers and processors of personal data, resp. to determine when medical facility becomes a mandatory entity. There will be also discussed the process of registration with the Office for Personal Data Protection.

Then will be discussed about the situation, when the processing of personal data may affect to the copyright. This opens up another level of the topic.

Furthermore, we must not forget the Commercial protection. Therefore it will be dealt with the business secrecy and to relate this concept to the issue of protection of personal data.

In conclusion, the article will then be offered a summary of the above sub-themes and offered practical recommendations for medical facilities.

In this article were used standard methods of interpreting laws; in particular, language interpretation and systematic interpretation. Furthermore, we used the methods in propositional logic.

Act No. 101/2000 Coll. defines personal data fairly widely. At the same time there is no entirely clear boundaries between personal data and anonymous data. The consequence of this may be legal uncertainty of health facilities for the collection and management of patient data.

Generally it can be said that in some cases personal data may be protected by copyright or to be a trade secret.

With regard to the current legislation it is not possible to unambiguously draw the line between personal and anonymous data. It is therefore necessary always to address the specific designation of the patient, i.e., whether it is possible to identify the person according with the data.

Medical facilities must consider what data and in what form do absolutely need when working with patients (for example on research). The correct choice of designation a patient is possible to prevent the impact of legal regulation on the protection of personal data.

WEB SIMULATOR OF MODEL OF COMPLEX HUMAN PHYSIOLOGY SUPPORTED BY CLOUD COMPUTING

TOMÁŠ KULHÁNEK, JIŘÍ KOFRÁNEK, MAREK MATEJÁK
1ST FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE

D1.5 VIRTUAL CASES AND SIMULATIONS
TUESDAY, 26 NOVEMBER, 17:00–18:00
KEYWORDS: MODELING, SIMULATION, CLOUD COMPUTING

The HumMod model and simulator was presented as most complex integrative model of human physiology in a set of well defined XML files (R.Iliescu et al. – HumMod ... Mefanet 2011). The HumMod Golem-edition implements this model in a standardized modeling language – Modelica. However, simulation capabilities of tools for Modelica language are limited and not well designed for educational purposes in the non-technical field.

We designed and exported the HumMod model into independent simulation library conforming one of the Modelica standard – FMU and wrapped with web based aplication allowing to simulate and access simulation variables via REST protocol. This independent service can be deployed on the web server or cloud infrastructure and accessed as a remote simulator.

The HumMod web simulator is web application using HTML5 and Javascript with AJAX technology to access remote instance of HumMod simulator deployed on the web server and in case of need multiple instances are started in virtual machines in a cloud computing infrastructure provided by Czech NGI – CESNET (MetaCloud). The prototype application contains several screens inspired from the original HumMod model and simulator and offers an editor to define a screen with relevant control elements, variable values and graphs related to a specific topic. A scenarios for serious games are being prepared for this simulator.

These methods separate the concern of technology about mathematical modeling, simulation execution from the concern of control and visualize only relevant variables. This is typical for application utilizing cloud computing paradigm – to offer a service in user friendly way, but hide the complexity of technologies involved.

ACKNOWLEDGEMENT

Acknowledgement to CESNET Large Infrastructure, MPO FR-TI3/8.

TESTING OF KNOWLEDGE OF HIGH SCHOOL PHYSICS OF 1ST YEAR STUDENTS OF MEDICAL FACULTIES IN THE CZECH REPUBLIC

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D2.2 E-LEARNING IN BIOPHYSICS AND MEDICAL INFORMATICS

WEDNESDAY, 27 NOVEMBER, 11:15–12:45

KEYWORDS: KNOWLEDGE TESTING, ANOVA, IRT (ITEM RESPONSE THEORY)

Teachers of Institutes of Biophysics of medical faculties in the Czech Republic (1st and 3rd Faculty of Medicine in Prague, Faculty of Medicine in Pilsen and Faculty at Masaryk University in Brno) have organized a survey / testing of knowledge of high school physics of 1st year students. The aim of the testing was to provide a summary chart of general and specific knowledge of students in the eight thematic areas addressed in teaching of physics at high schools.

The test consisted of 30 questions with four prompted answers and just one correct. Questions were from following areas: optics, electricity, heat, acoustics, radioactivity, magnetism, pressure and physical quantities. The test also comprised basic geo-demographic characteristics of the students that were later used for sorting in formal analysis of differentiation of found knowledge.

The best overall results were achieved at Masaryk University in Brno (mean ± SEM = 18.99 ± 0.25 of the 30 issues tested with N = 285 students 1.r. at the end of the semester), followed by a , Third Faculty of Medicine, Charles University in Prague (18.00 ± 0.29 at N = 169), First Faculty of Medicine, Charles University in Prague (17.24 ± 0.17 at N = 502) and Faculty of Medicine in Pilsen, Charles University in Prague (16.78 ± 0.37 for N = 95). In an analogous sense, aggregated best results were found for graduates of multi-years and four-year high schools (18.33 ± 0.16 resp. 17.61 ± 2.00) compared to other high school graduates (15.18 ± 0.43). It was also confirmed (see also [1]) that, on average, men achieved better results (19.44 ± 0.22) than women (17.06 ± 0.14) in the physical knowledge tests. Specifically best knowledge was identified in the areas of electricity and physical quantities; the worst knowledge was in Optics and Pressure. Both those area pairs were statistically significantly different from the average knowledge found in other areas of physics.

Detailed formal analysis was performed by BioStat department at Institute of Biophysics and Informatics, First Faculty of Medicine, Charles University in Prague, by classification groups (ANOVA) and by the degree of question difficulty in terms of their membership to factor “general knowledge of physics” (IRT) .

IMPLEMENTATION OF SIMULATION EDUCATION TO TRAINING PROGRAMMES OF HEALTHCARE PROFESSIONALS

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JESSENIUS FACULTY OF MEDICINE, COMENIUS UNIVERSITY IN MARTIN

D1.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION I
TUESDAY, 26 NOVEMBER, 15:45–17:00
KEYWORDS: INNOVATIVE TEACHING, CLINICAL PRACTICE SIMULATIONS, TRAINING PROGRAMMES

In real practice patients' deterioration is not always recognised, not appreciated and not acted upon quickly enough. Early recognition and appropriate response to acutely deteriorating patient is highly specific process requiring knowledge, clinical competence, and confidence. Need for systematic education and training in this field is stressed, thus intensive educational Erasmus programme (IP) EU RADAR for nursing students was developed. Authors highlight innovative teaching methods used within EU RADAR programme, present integration of simulation education into training programmes of next generation of healthcare professionals at JFM CU in Martin and introduce visions for the future.

Multiple innovative teaching methods were implemented to deliver EU RADAR 1st IP at the University of Salford, UK, all of them introduced under the idea "increase learning, decrease risks". By systematic implementation of advanced simulation educational methods (simulations of patients' scenarios, case study group works, practical workshops, intensive clinical skills workstations) and dramatic educational techniques (role-play, communication games, drama) accompanied by discussions, debate, debriefing and reflections on actions, clinical decision making process in recognition and response to deteriorating patient was promoted in nursing student participants.

Simulation educational methods bridge the gap between theoretical studies and clinical experience. Particularly in undergraduate students with no clinical experience, lack of clinical skills, competence and confidence, it is crucial to create learning environment promoting experiential vicarious learning to achieve their learning objectives. Thus at JFM CU in Martin in cooperation with Simulation Education Center we use partial task trainers, simulated patients and human patient simulators within the subjects Nursing Techniques (nursing programme) and Basics of Nursing (general medicine programme) to help the students to train proper implementation of selected nursing procedures and interventions in laboratory conditions to be able to apply them later on within real clinical practice.

In EU RADAR 1st IP the success of integration of project aim and objectives was monitored. Evaluation forms for student participants used Likert type scale from 1 to 5 to measure what is overall evaluation of IP and how satisfied they were with selected aspects (1-poor/not at all; 5-excellent /very much). Students proved high level of satisfaction with IP (4,43 ± 0,53) and agreed their academic learning outcomes as well as personal outcomes were met (4,43 ± 0,59; 4,44 ± 0,59 respectively). The highest satisfaction was achieved in items concerning the equipment used while training (4,79 ± 0,44) and the overall quality of teaching (4,75 ± 0,43).

To evaluate the quality of integration of simulation educational methods into the subjects Nursing techniques and Basics of Nursing at JFM CU we need to prepare quantitative and qualitative methodology. Up to date, based on students' feedback at the end of practical seminars we can conclude the students are satisfied with the opportunity to train the procedures on simulators again and again in safe, controlled environment with no risk of harming real patients and feel they will be more confident and competent to experience them in clinical practice.

The crucial features of EU RADAR programme are its international and multi-disciplinary dimension, innovative and systematic learning (ABCDE approach, SBAR reporting approach – AIM© Assessment and Management Tools) – a combination of clinical simulations, blended learning and the use of digital and creative media. Based on our experience with methods and approaches used within EU RADAR 1st IP we started negotiation with Greater Manchester Critical Care Skills Institute (responsible for Acute Illness Management Course - AIM©) to try to integrate aspects of AIM© course into undergraduate study programmes of nursing and general medicine and later on make them possibly accessible for nurses within programmes of continual nursing education.

ACKNOWLEDGEMENT

Supported by project Virtual and Simulation Tuition as a New Form of Education at JFM CU in Martin, ITMS: 26110230071, co-funded from EU sources and ESF and grant KEGA 056UK-4/2013 Multimedial textbook of nursing techniqes and skills.

ESTABLISHMENT OF PAEDIATRIC VIRTUAL HOSPITAL AND PROGRESS IN EDUCATION AT FACULTY OF MEDICINE AND DENTISTRY PALACKY UNIVERSITY IN OLOMOUC

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D1.5 VIRTUAL CASES AND SIMULATIONS
TUESDAY, 26 NOVEMBER, 17:00–18:00
KEYWORDS: VIRTUAL HOSPITAL, EDUCATION, E-LEARNING, PAEDIATRICS

The Paeditatric clinic of the University Hospital in Olomouc under the patronage of the Faculty of Medicine and Dentistry, Palacky University has been in the long run a respected clinical and educational department with long-lasting education of Czech as well as foreign students. Education in this department has been assessed very positively and some of our students become members of the clinic after graduation. Thanks to new educational opportunities the teaching of paediatrics at the Faculty of Medicine, Palacky University, Olomouc has been improved and innovated.

The new aspects of student education aim to establish closer links to theoretical knowledge and practical skills. The courses previously provided in our department were beneficial to students but were limited to a large extent by the theoretical level and did not allow sufficient development of students skills and did not include work with patients. In this work, we follow up the achieved progress and their contribution to additional use of graduates of the Faculty of Medicine. We managed to reach many changes in the study curriculum, in which we considerably interconnected theoretical component with practical one. This fact brings more possibilities for students to work with patients. In our work we try to educate students in terms of evidence base medicine and using e-learning education, multimedial virtual case studies and also trainers that faithfully simulate working with a real child patients.

The aim of the innovations is to link all above described components together and develop ‘a virtual hospital’ concept that would gradually combine all available e-learning models and provide students with top quality education limited only by internet access. At the same time this will not be a mere learning text. From our experience we found out that students are very satisfied with all these new possibilities and the receieved inforamations also utilize in other medical subjects.

In the presentation we will show all the progress that was made in our deparment and which we think is very beneficial to continous eduacation of our students´and could be heplfull and usefull in their furhter posgradual education to.

ACKNOWLEDGEMENT

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APPLICATION OF ELECTRONIC TESTING IN PRACTICAL ANATOMY

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D2.1 EASSESSMENT IN MEDICAL EDUCATION

WEDNESDAY, 27 NOVEMBER, 09:00–10:45

KEYWORDS: ELECTRONIC, TESTING, ANATOMY, PRACTICAL

Testing of medical student's practical knowledge and skills is a standard teaching method at Anatomy department in Olomouc. It requires prepared anatomy specimens to be displayed for student's examination and to be identified by them in oral or written forms. When introducing an e-learning environment into our anatomy teaching methods this year, we started to test practical anatomy on personal computers using electronic pictures in MCQ-formatted tests with automated evaluation and reporting of results.

Topics of electronic tests were selected to follow the standard systems-based curriculum of anatomy practical sessions and accordingly human anatomy specimens were prosected, photographed and quality shots were further edited by Zoner Photo Studio application. Electronic tests were created in Articulate Quizmaker 09 software application using imported photos accompanied by stems and up to five distractors. From the variety of selectable question formats available in Quizmaker 09, we preferred to use "True/False" (TFQ), "Multiple choice" (MCQ), "Multiple Response" (MRQ) "Matching Drag & Drop" (DDQ) and "Hotspot" (HSQ) formats. The finalized electronic tests were presented to volunteering 1st year medical students. Results of their answer scores as well as student's evaluation of this method of practical testing were collected using prepared questionnaires.

In this pilot study, all together 11 tests covering anatomy topics of skeletal, muscular and nervous systems were prepared and applied. About 70% of tested students passed the test successfully in the first session. Although the tests were ranked by students as difficult, most of them evaluated this format of tests as helpful in revisions and self-examinations of their practical skills. Considering the used formats of questions, students preferred the MCQ and MRQ questions over the other formats. Based on student's evaluation and comments, the structure of test questions, timing and question point values were adjusted.

The positive student's and teacher's response to the application of electronic tests proves this method being useful and effective tool in teaching practical skills in anatomy. They can be easily used for revisions and examinations in e-learning courses.

ACKNOWLEDGEMENT

Creation and application of electronic testing in practical anatomy was supported by ESF-OPVK grant no.: CZ.1.07/2.2.00/28.0089 in cooperation with Department of Histology and Embryology, Faculty of Medicine and Dentistry, UP, Olomouc.

CREATION OF EDUCATIONAL VIDEO-CLIPS FOR HUMAN ANATOMY

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PAVOL JOZEF SAFARIK UNIVERSITY IN KOSICE, FACULTY OF MEDICINE

D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING
WEDNESDAY, 27 NOVEMBER, 15:15–17:00
KEYWORDS: EDUCATION, VIDEO, ANATOMY

Nowadays, the modern information and communication technologies are used to support education of almost all study branches. The benefits, resulting from their proper implementation into the curriculums were proved also at medical faculties. Here, we decided to create a series of educational video documents intended for preparation to human anatomy exercises.

To develop anatomically demonstrative and useful educational video-clips we started with recording of dissections realized at the Department of Anatomy. These new and raw video record are realized in both 2D and 3D forms to be able to select the best scenes for the final educational version. Individual video-clips, describing particular human body parts and systems will be later used in faculty's multimedia atlas of human body.

The anatomical structures of upper and lower limbs are processed as first. Then, additional material is added into the video sequences to explain particular terms, specifications and relationships. This is done as combination of descriptive texts as well as audio comments of teachers. The video-clips are available to all students in local computers of department's PC room.

The combination of 2D and 3D movies represent an optimal way how to offer students modern and first of all illustrative educational material. The students can watch scenes as many times they need, even before exercises in dissecting rooms, so it makes our teaching process easier. However, better 3D cameras will be needed to improve our outputs and to be able to capture as small details as possible.

ACKNOWLEDGEMENT

Results presented in this work were obtained with the support of the national grants KEGA 005UPJS-4/2012 and KEGA 004UK-4/2011.

INNOVATION IN THE CONTENTS, FORMS AND METHODS TO PROMOTE PRACTICAL SKILLS IN MIDWIFERY

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POSTERS

KEYWORDS: E-LEARNING, NURSING TECHNIQUES, MIDWIFERY, SKILLS, INFORMATION AND COMMUNICATION TECHNOLOGY

Considering the continuous development of information technology, the introduction of e-learning in the midwifery courses is a suitable method that helps to improve quality, efficiency and attractiveness of the teaching process. The aim of this paper is to present a proposal for the creation of educational material aimed at the mastering of practical midwifery techniques through an e-learning course which, until now, has been absent in our country. We would like to provide a dynamic blend of theory and practice aimed at developing practical skills of midwives.

For the creation, distribution and administration of the course, the software package of Moodle Learning Management System will be used, which allows creating the courses of different levels of segmenting and layout, and is provided via the university server. The structure of the course itself will be composed of the instructions how to work with the course, some course activities, individual lessons and bibliography. The reading section will be structured into chapters and subchapters, and will comprise of introduction, learning objectives, timetable, guide, throught the cours material and the expository text itself. Clarity and comprehension of theoretical knowledge will be increased with the use of graphic elements (pictures, diagrams, tables, animations, videos). Feedback between students and the subject of their study will be provided in the form of tests, self-tests, case report solutions, etc.

Kega project “Innovation in the contents, forms and methods to promote practical skills in midwifery (e-learning education)” with the financial support of the Ministry of Education, Science, Research and Sports of the Slovak Republic (Kega registration number 0579-4UK/2013) is aimed at creating educational material for nursing techniques in the form of e-learning course for midwifery students of the bachelor programe at Jessenius Faculty of Medicine in Martin. The courses will include basic theoretical knowledge and practical training in general and special care for women during pregnancy, labour, puerperium under both physiological and pathological conditions. When teaching the nursing techniques in midwifery, the teachers as well as the students often get into situations where they have no access to some diagnostic, therapeutic procedures and nursing interventions. Completing the attendance form of education with e-learning, using various ways of presenting the teaching passages, allows providing the students with a comprehensive view of the issue.

Creating the module for nursing techniques in midwifery will enable the midwifery students to verify whether they are ready to virtually handle specific practical skills in the natural, genuine environment of Gynecology and Obstetrics. This will make it possible to demonstrate various diagnostic and therapeutic procedures and interventions, the access to which is restricted under natural conditions. Creating the course will contribute to a more attractive way of teaching as well as improving the quality of education, in particular by extending the self-study for full-time students.

ACKNOWLEDGEMENT

Supported by grant KEGA No. 057UK-4/2013 Innovation in the contents, forms and methods to promote practical skills in midwifery (e-learning education).

E-LEARNING COURSE BASIS OF HARVEST AND PRESERVATION OF TISSUES – DESIGN AND INITIAL EXPERIENCE

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D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING
WEDNESDAY, 27 NOVEMBER, 15:15–17:00
KEYWORDS: TISSUE DONATION, TISSUE PREŠSERVATION, QUALITY AND SAFETY ASSURANCE, TISSUE ESTABLISHMENT, CLINICAL TRANSPLANTATION

The design and intial experience with the electronic course: “Basis of Harvest and Preservation of Tissues” used as a support of an elective subject is presented. Its schedule traditionaly included lectures, practicals and a final seminar. To receive a credit the student was obliged to write a final test consisting of 30 questions and to present theses at the seminar. The aim of the electronic course was to enable the students to learn individualy the theoretical principles of the subject and to present the gained knowledge at the final seminar.

The course is divided into 3 main topics corresponding with topics of lectures:

1. Principles of tissue and organ donation in the European Union member states
2. Low temperature preservation of cells, tissues and organs
3. Quality and safety assurance in practice of tissue and procurement establishments. A test consisting of 5 questions selected randomly from the bank of questions follows each topic. If the student answers correctly at least 3 questions he is alowed to pass to the next topic.

The fourth topic “Basic processes in the tissue establishment and principles of their validation” was added in the electronic version as a tooll to enlargment and repeating of knowledge. The fiths topic is represented by a database for loading theses presented by students at the final seminar. The final test consists of 15 questions (5 ones from each basic topic). It is necessary to answer correctly at least 10 questions to receive a certificate of completing the course.

The course materials consist of electronic study supports (at least one to each topic) written in Czech, full texts of chapters from textbooks or other publications in Czech or English and audio and video materials in Czech and English.

The course study materials contain 9 electronic study supports (the total of 242 slides with text and 84 slides with photos),the total number of references being 34. The full texts contain 33 pages in the Czech language and 11 pages in English. The bank of questions contains 115 questions.

The course was put into operation during the summer term of the school-year 2012/2013. To the date 15 of September the total of 23 students enrolled (17, i.e., all students of the elective subject in the Czech version, 2 students of this subject in the English version, 2 postgraduate students and 2 medical doctors).

All enrolled students used the course for on-line learning or downloading course study materials. All undergraduate students were obliged to use it for preparation, consultation or presentation seminar theses, i.e., 10 minute ppt presentations followed by 5 minute discussion. Verification of the course is planed during the summer term of the school-year 2013/2014. Before verification enlargment of number of questions in the bank and of video presentaions of processes used in the tisue establishment is planed.

The first experince showed that the presented electronic course can serve as a usefull support of the elective subject „Basis of Harvest and Preservation of Tissues“. It enlarges substantially the choice of study materials ,that can be regularly updated,so that the students receive the newest information. It can be attractive also for students that are not enrolled in the elective subject because of its limited capacity (not more than 20persons) The effíciency of such form of education must be however a subject of further verification.

ACKNOWLEDGEMENT

CZ.1.07/2.2.00/15.0164

MULTIMEDIA TOOLS IN EDUCATION OF NURSES

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D2.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION II
WEDNESDAY, 27 NOVEMBER, 13:45–15:00
KEYWORDS: NURSING, ELEARNING, TEACHING, MULTIMEDIA

Methods of Nursing is an essential subject for all the health care professions other than physicians. In such a practical subject like Methods of Nursing, multimedia tools are an important constituent of teaching. The students learn about a particular treatment through instruction and theoretical description, however, watching the treatment in a multimedia tool helps them get better acquainted with the method. E-learning with multimedia tools will enhance the teaching process.

The aim of the project has been to design e-learning for the subject Methods of Nursing. Every topic contains a multimedia tool consisting of an animation of a nursing treatment, a video, photograph, presentation, text and a test for the final self-evaluation of the student.

E-learning contains:

1. Videos of nursing methods
2. Photographs of nursing instruments, equipment, materials and tools
3. Animation of nursing treatment
4. Presentation
5. Theoretical materials related to the nursing methods
6. Evaluation system in e-learning

The result of the project is the multimedia support of teaching the Methods of Nursing. Multimedia tools are a component of e-learning for the students of Faculty of health and social studies University of South Bohemia.

ACKNOWLEDGEMENT

FRVŠ 201 /2013

APPLICATION OF E-LEARNING IN CLINICAL SUBJECT NEUROLOGY AND NURSING

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D1.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION I
TUESDAY, 26 NOVEMBER, 15:45–17:00
KEYWORDS: E-LEARNING, NEUROLOGY, NEUROLOGICAL NURSING, ELECTRONIC EDUCATION, E-TEXTBOOK

One of the reasons for using e-learning in subject neurology and nursing is the limited access of nursing students to some nursing interventions in the provision of care to neurological patients. The other is the provision of high-quality nursing care. The nurse should have knowledge about the medical background and nursing care. The last reasons are the demands put on the teaching process and the student in university education. The emphasis is placed on self-study training, on the implementation of the information media and communication technologies, and the student assumes the role of an active agent in teaching process.

The multimedia study material will be structured according to the requirements for the creation of an e-learning tutorial, as instructions on how to work /study guide material, interpretation section and references. Interpretation section will contain the text (medical background from neurology, specifics of neurological nursing care), case studies, problem tasks, glossary and references/list of literature. Graphics will be used for better comprehensibility, clarity and clearness. The multimedia textbook will be inserted into the online environment, at the web pages that it creates with the programming and scripting languages. At the beginning of the education of the clinical subject, students will be introduced to the environment and the tools of e-textbook and its using during the study. Information about this multimedia textbook will be published at the portal MEFANET JFC UK and exported to the central gate of MEFANET thus it will be available to all users from medical faculties in the Slovak and Czech Republic.

Project KEGA “E-textbook: nursing in neurology” supported by Ministry of Education, Science, research and Sport of the Slovak Republic (KEGA registration number 049-4UK/2013) is focused to make the multimedia study material for the students of pre-graduate study programme in nursing at Jessenius Faculty of Medicine in Martin – bachelor’s programme in topics of neurological nursing. The e-textbook will integrate the latest medical and nursing background in neurology focusing on solutions the problems of child and adult patients. Electronic education (e-learning) in combination with face-to-face learning is confirmed to be the most suitable and effective. It allows creating of eye-catching, addressing, individual and interactive learning process with the emphasis on the student’s independent work. In training of professional nurses it is necessary to take advantage of advances in science and technology too.

This type of textbook will contribute to effective, interactive, interesting, efficient and modern way of education within the clinical subject neurology and nursing in training of professional nurses. At the same time it will contribute to higher quality of education particularly by the means of expanding and support the self-study of students’ face-to-face form of study.

ACKNOWLEDGEMENT

Supported by grant KEGA No. 049UK-4/2013.

MEDICAL INFORMATICS AND E-LEARNING AT THE DEPARTMENT OF MEDICAL BIOPHYSICS, MEDICAL FACULTY, BRNO

MORNSTEIN V., VLK D., BOUREK A.
MASARYK UNIVERSITY, MEDICAL FACULTY

D2.2 E-LEARNING IN BIOPHYSICS AND MEDICAL INFORMATICS
WEDNESDAY, 27 NOVEMBER, 11:15–12:45
KEYWORDS: MEDICAL INFORMATICS, E-LEARNING TOOLS, BIOPHYSICS

This contribution shortly describes the history and present state of teaching in the field of Medical Informatics as well as utilisation of e-learning tools. Our first steps in this field were done, similarly to other departments of Medical Biophysics in the Czech Republic (and Slovakia), in early 1980'. At that time the first 8-bit microcomputers appeared in practicals, and theoretical lessons on principles of computer technology and programming begun. Development grew faster after the purchase of the first IBM PC compatibles in late 80'. In 1994 we started using Internet services and the content of teaching gradually approached today´s features.

At present we try to show our students how to use computer technology and the whole complex of Internet services to enable their effective use in the healthcare. The informatics literacy of our students coming from almost any kind of high schools is still very low and we have to cope with it – for example, we have to explain them what is "digitisation" or where and how to find reliable sources of electronic information of any kind.

In general, we do not think that a computer could replace a „human teacher" in close future. However, we started to offer basic set of our lectures plus some additional study resources on our web pages about 10 years ago. Furthermore, instructions for practical lessons are available only in electronic form in last decade. Students of Masaryk University have to use a very complex information system, which they can use, e.g., for communication with teacher, for handing in the records of measurements or different presentations etc.

On the other hand, for example, we do not see any enough convincing reasons (advantages) to start the electronic testing instead of using classical paper form of multichoice tests or to publish our textbooks in electronic form only. At present it is still easier to copy or simply steal an electronic text than to do the same with its printed equivalent.

MANAGEMENT OF EDUCATIONAL KIOSKS

MARTIN NAVRÁTIL, M. WIMMER, M. DVOŘÁK, T. JUNEK, L. BOLEK
FACULTY OF MEDICINE IN PILSEN, CHARLES UNIVERSITY

D1.2 SHARING, INTEGRATION AND DATA SECURITY IN HEALTHCARE
TUESDAY, 26 NOVEMBER, 13:30–15:30
KEYWORDS: EDUCATIONAL KIOSK, ETHERNET, FIREWALL, LINUX, XSERVER, PROXY SERVER, ICINGA, CAIRO, FLORENCE

The network of educational kiosks (the EK) is a complex computer system composed of individual sub-systems and running services. The entire infrastructure is consist of master computer and family of the EK placed in separate computer network. The EK is a computer with a 42" touch screen that runs debugged operating system. The functionality of the EK is closely connected with the master computer called KGate, which ensures the availability of particular services for the whole family of EK. (educational sites and resources on the Internet). Operation of the entire system is monitored and failure of any kiosk or service of master computer is alerted.

The main purpose of the EK project is the installation of the device in the appropriate area of the Faculty and the Hospital. There will students find educational materials and information placed on the MEFANET, Wiki, Moodle, Study Information System (SIS) as well as free access to the Internet.

The idea of creation a completely separate computer infrastructure of EK emerged for several reasons. The primary was security and certain isolation within the faculty intranet. A secondary reason was convenient operation and control, which could not be implemented due to the complexity of the existing faculty intranet. In the path are sorted many firewalls and other network parts that are not under our control.

The current solution consists of four basic elements:

- Computer network, virtual data network at the L2 Ethernet
- EK itself
- Master computer KGate
- Monitoring systems for service and availability tracking of EC and KGate

THE CONFIGURATION OF EK

EK Hardware is composed of touch screen 42" with built-in PC. The operating system running on this hardware is specifically debugged version of the Linux distribution Debian Linux 7.0 3.2.0-4-amd64, which is modified so to be "unbreakable" – at startup the device has intact fully functional system. Installation contains only the necessary software components. Basis is a graphical desktop environment that we have created by the Xserver, openbox window manager, control environment Cairo, Florence virtual keyboard and web browser Mozilla Firefox. EK is controlled by a finger, so we expanded the Firefox of add-Grab Drag which the touch control makes easier. The Configuration of Firefox environment we protect against unauthorized users with locking accessory called Public Fox. The automatic operation of EK is controlled by scripts, which controls the startup and shutdown, run screensaver, etc.

MASTER COMPUTER KGATE

Construction of the IT system infrastructure is necessary for the production operation of the entire kiosks family. All EK's are connected to a separate network segment of the faculty at L2 Ethernet. This segment will be separated from the Internet by gateway – Kgate. The Kgate serves as a firewall and network service provider for the entire segment of EK: DHCP, DNS, proxy server-user authentication, WWW server, SSL tunnels.

MONITORING SYSTEMS

Thewhole infrastructure is monitoring by a system that is able to monitor the availability of EK and services of master computer – KGate. The service provides open source system called Icinga.

On the master computer KGate we monitor these services:

- System network services: DHCP, DNS, functioning network cards eth0, eth1, MEM, NTP, syslog, SSH
- Necessary services of the EK: SQUID, LDAPS, HTTP

Other services of the EK:

- HDD usage, functionality of network card eth0, NTP (time synchronization), ping, operation of the Firefox, devices temperature, uptime

PHYSIOLOGY AS AN EXPERIMENTAL SCIENCE – MULTIMEDIA SOURCES IN TUITION

NOVÁKOVÁ ZUZANA, NOVÁKOVÁ MARIE, FIALOVÁ KATEŘINA
FACULTY OF MEDICINE, MASARYK UNIVERSITY

POSTERS

Human physiology is a science studying the functions of the living human organism. Information currently used in human physiology was, however, not always obtained from studies conducted directly on humans – very often one has to proceed from knowledge obtained from animal studies, and that is one of the reasons why physiology is considered as an experimental science. The aim of this study was to show the physiology as an experimental science, supported by multimedia technique.

Department of Physiology, Masaryk University Brno is attended by a more than 800 students in pregradual (bachelor and magister) study programme. The forms of tuition are: lectures, seminars, and practicals. The research using experiments on animals has to comply with strict legislative rules. One of the most important is the "Three R's" concept: Reduction – Refinement - Replacement. According to this concept 3 instruction films were prepared which present Medical Physiology to students as an experimental science in the historical context of gaining knowledge of human body functions. The films are focused on presentation of basic methods in experimental cardiology and on the experiments explaining the functions of gastrointestinal and respiratory systems.

Three instruction films were prepared. The first - Isolated heart perfused according to Langendorff –has been created for presentation of the basic methodologies used in experimental cardiology, based on isolated hearts perfused according to Langendorff. The video recording offers a complex overview of the experimental methods carried out in accordance with the current world trends. The second film is concentrated on problem of gastrointestinal tract and its motility. It consists of three parts: theoretical introduction (briefly summing up the structure of the GIT, innervation and types of movements in the digestive tube), an experiment on an isolated loop of the small intestine of a laboratory rat (reaction to a mechanical stimulus and to acetylcholine, atropine, and epinephrine) and on experiment on the stomach and small intestine in situ in rabbit. The last film presents experiments explaining the role of respiratory system (e.g. Herring-Breuer reflexes, effect of prolongation of dead space).

Multimedia technique is a good way for application the knowledge based on animal experiments to a lot of students. Our experience is positive and in accordance with the current world trends.

ACKNOWLEDGEMENT

Jaroslav Winkler – CIT SUKB MU; FRVŠ G31271/2008; FRVŠ 839/2012/; FRVŠ 1851/2012.

EDUCATIONAL E-COURSE “DECISION-MAKING SUPPORTIVE SYSTEM IN DENTAL IMPLANTOLOGY”

ALEXANDRA POLASKOVA, TATJANA DOSTALOVA, JITKA FEBEROVA, JAN POLASEK
2ND FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE

POSTERS

Educational e-course “Decision-making supportive system in dental implantology” is placed in virtual learning enviroment, where is accesible for students and dentits for their clinical training in dental implantology and their improve in theoretic knowledge.

This e-course increases quality of educational process and develop specialist knowledge. Dentists apply a series of complex protocols and work with different materials and tools to perform quality dental works. This protocols and data have to be classified, evaluated and interpreted. E-course is divided into four parts, include Theoretical introduction, presentations and expert system for treatment planning (Clinical Decision Support System) and Card (databases for select results in expert system).

The aim of study is describe tool for treatment planning. This tool is web-based application developed for using knowledge base (expert knowledge) and for solving included data by user and for making decisions and recommendations in treatment. The tool is kind of DSS (Decision support system) that is classified as clinical DSS (using knowledge base and inference engine). Decision support system is built on Expert system. It is interactive software which provides clinical recommendations and treatment planning. Expert systems are knowledge-based computer programs designed to provide assistance in diagnosis and treatment planning. These systems are used for health care. The application contains the medical history analysis used to obtaining information useful in formulating a diagnosis and providing implant insertion and prosthetic reconstruction to the patient; the diagnostic examination of dental implant procedure; implant positioning diagnosis – 3-D measurement; diagnostic information for treatment planning; treatment plan in the form of objective measurement of implant placement that helps surgeon and prosthodontics .The decision algorithm is implemented by programming language. Core of program is an expert knowledge program which implements algorithm like a decision tree. There is the analysis of the decision-making process for implant treatment in general practice prepared and analyzed.

MEDICAL IMAGES – SHARING, STANDARDS AND SECURITY

VÁCLAV POROD
IKEM PRAHA

D1.2 SHARING, INTEGRATION AND DATA SECURITY IN HEALTHCARE

TUESDAY, 26 NOVEMBER, 13:30–15:30

KEYWORDS: DICOM, HL7, PACS

Digital images (almost radiological) are in hospitals stored in systems called PACS (Picture Archiving and Communication System). One part of PACS communicates with the other using the DICOM (Digital Imaging and Communications in Medicine) standard. To communicate with hospital information system, the HL7 standard is used.

DICOM is standard, which describes format of data files and the communication between parts of PACS. In the DICOM communication, there are allways two roles. One of them is user of service (SCU – service class user) and the other is provider of the service (SCP – service class provider).

DICOM standard is used also for sharing images. Images are sent, using DICOM and secured tunnel via internet, from one to other hospital. In Czech Republic we have two systems implementig this. The systems are ePACS and ReDiMed. Sometimes the images are sent using personal e-mail of physicians. In this case, the security of image transfer is very low. Some hospitals have their own system of image sharing. To improve security, they for example use anonymization of patient information.

In conclusion we will compare several sharing methods, their security level a ease of use.

GUIDE TO MEDICAL APP RESEARCH, DESIGN AND IMPLEMENTATION

ADRIAN RAUDASCHL
MEDIKIDZ LIMITED, UK

D1.4 WORKSHOP: GAMIFICATION OF MEDICAL EDUCATION
TUESDAY, 26 NOVEMBER, 15:45–17:00
KEYWORDS: GAMIFICATION, MEDICAL EDUCATION

The aim of the workshop series is to teach absolute beginners – those who have never programmed – how to put together a simple app (experienced programmers also welcome!). By the end of the workshop, participants will

- Gain an overview of the use of medical apps use in hospitals, the community and in education.
- Gain a solid understanding of app design and development lifecycle.
- Understand app design capabilities and constraints.
- Personal case studies on the production of medical apps.
- How to be able to develop, deploy, and test a basic prototype app.

INFORMATIONAL SECURITY IN PRACTICE OF LARGE HEALTHCARE FACILITY

VLADIMÍR ROUS
MOODLE MEFANET

D1.2 SHARING, INTEGRATION AND DATA SECURITY IN HEALTHCARE
TUESDAY, 26 NOVEMBER, 13:30–15:30
KEYWORDS: INFORMATIONAL SECURITY, CYBER-ATTACK, EDUCATION, USER TRAINING, CRISIS SITUATIONS, ATTACK ELIMINATION, CRISIS PLAN FOR HOSPITALS

This paper is focused on solving issues attached with security of informational and communicational hospital systems against cyber-attack threats.

Besides a general list of threats, we discuss practical steps of hospital management, which will help to protect informational infrastructure against such attacks. Our experience shows that education and user training are playing the most important roles in prevention and manage crisis situations.

In the conclusion, we would like to point out, that for successful defence and elimination cyber-attack, it's necessary to incorporate this issue as a part of hospital crisis plan.

This paper is based on author's experiences working as CIO in large healthcare facility.

MEFANET – STATE OF THE UNION AFTER SEVEN YEARS OF NETWORKING

DANIEL SCHWARZ, MEFANET COMMUNITY
FACULTY OF MEDICINE, MASARYK UNIVERSITY

D1.1 PLENARY SESSION **TUESDAY, 26 NOVEMBER, 09:45–12:15**

KEYWORDS: MEFANET, MEDICAL EDUCATION, E-LEARNING, E-PUBLISHING

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 tools for technology-enhanced learning have been introduced to the MEFANET network besides the common e-publishing portal platform: Sandbox, WikiLectures, Moodle-MEFANET and Serious Games. These tools complement the portal platform suitably, as they provide higher level of interactivity for students during their self-study process.

Four new extensions, which complement the e-publishing portal platform standardized in MEFANET, are usable independently; however, their complex application in conjunction with the portal platform as a tool for final e-publishing will allow more effective repurposing of the materials created with the use of the extensions, as well as broader integration of the digital education contents among the MEFANET community. Further development aims to encourage the publication of materials for the teaching of clinical reasoning based on the concept of interactive algorithms or virtual patients. Such simulation-based learning objects are aimed to help the student in developing the much-needed confidence to manage acute conditions, to react accurately and to avoid distraction by secondary issues.

High-quality digital education contents production has become a matter of prestige at medical schools in the Czech Republic and Slovakia, and the volume of teaching and learning materials available is growing rapidly – thanks to the MEFANET project and its ICT platforms, which have been continuously developed and adopted to the needs of the MEFANET community during the last seven years.

ACKNOWLEDGEMENT

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UTILIZATION OF ONLINE APPLICATIONS IN THE PRACTICAL COURSES OF MEDICAL BIOLOGY AND GENETICS

ANTONÍN ŠÍPEK, FRANTIŠEK LIŠKA, ROMANA MIHALOVÁ, ALEŠ PANCZAK, ONDŘEJ ŠEDA, MARTIN VEJRAŽKA
1ST FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE

D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING
WEDNESDAY, 27 NOVEMBER, 15:15–17:00
KEYWORDS: MEDICAL GENETICS, VIRTUAL MICROSCOPY, WIKILECTURES

Medical genetics is one of the most dynamically developing branches of modern medicine. Various software tools became essential for both laboratory and clinical practice. Since the biology and genetics are very important topics in medical students training – we have decided to innovate regular practical courses with new types of PC-based tasks and activities.

Several biologic and genetic preparations (e.g., mitotic and meiotic cell division) were digitalized thanks to the special Olympus dotSlide visualization microscope. Virtual microscope for the students was enabled using OlyVIA software (Olympus Corporation).

The instructions for special PC-tasks were created using standard web development techniques (XHTML, CSS, JavaScript) and enabled on our institute website (ublg.lf1.cuni.cz/vyukove-pomucky).

Finally – several interesting topics (including texts, images and even casuistics) were made available using the preexisting WikiLectures portal (www.wikiskripta.eu).

We have successfully implemented various PC activities – including virtual microscopy (mitotic and meiotic cell division), interactive karyotyping, in silico restriction analysis and others. In addition – we have completed number of genetic education texts (and helped to improve the previous ones) in the WikiLectures portal. All these activities (including the virtual microscope) are freely available online for all students – so they can be accessed repeatedly from home PC or mobile devices.

New tasks and activities were quickly and successfully implemented in our regular practical courses for medical students. Up to now we have received many positive feedbacks from the students' evaluation. PC based activities are welcome additions for the practical courses of medical biology and genetics.

APPLICATION OF MOODLE LMS INTO THE TEACHING OF BIOPHYSICS AND MEDICAL INFORMATICS AT THE FACULTY OF MEDICINE OF THE UNIVERSITY OF OSTRAVA

HANA SOCHOROVA, HANA MATEROVA
FACULTY OF MEDICINE, UNIVERSITY OF OSTRAVA

D2.2 E-LEARNING IN BIOPHYSICS AND MEDICAL INFORMATICS
WEDNESDAY, 27 NOVEMBER, 11:15–12:45
KEYWORDS: E-LEARNING, BIOPHYSICS, MEDICAL INFORMATICS, EDUCATION

Teaching method of e-learning is the commonly used tools in distance education and recently it also plays an important role in full-time education. At the University of Ostrava LMS Moodle is used for a long time, first courses started in the academic year 2006/2007.

Medical students of the University of Ostrava met with the System of Moodle during the entrance examination and subsequently in selected subjects in their field of study. After the onset of the study all medical students are offered a Moodle course for students of University of Ostrava, which get them familiar with the principles of communication, registration of courses, tests, correspondence tasks and other activities used in Moodle.

At the beginning of the winter semester of the academic year 2013/14 first year students of General Medicine were given few questions regarding the inclusion of e-learning teaching in full-time of study. This inquiry was realised in the Moodle course. Public inquiry investigation was attended by 97 students (31 male and 66 female). At Faculty of Medicine of the University of Ostrava there has been implemented five courses in various modifications for teaching medical biophysics and informatics, which are guaranteed by the Department of Biomedical Sciences. Courses of Biophysics I (computer technology and biostatistics) and Biophysics II (single laboratory tasks) are intended for first year students of General Medicine. The course Introduction to Medical Biophysics for paramedics has been implemented from the academic year 2011/2012 and is designed for full-time and part-time students in physiotherapy, radiographer and rescue ranger. IT Systems in Health Care is the course realized with the support of e-learning for all non-medical fields of study.

The first question concerned whether the students have ever previously met with lesson supervised through e-learning. This was answered positively by 41 % of students. Another question even specified the previous answer – 87 % of the students have already met with e-learning at high school, 10 % at another university and one student within another education.

In the next question students chose advantages of teaching course with the support of e-learning, which is most appreciated. The first place has included the fact that they have all the learning materials in one place, followed by the “all processed tasks/reports/essay on a given subject can be seen in one place.” The students appreciated the benefit that they can see demonstrations of how to solve selected exercises, in case of absence; they can see what they have to learn, get an overview of the content of teaching and immediately can see the results of the tests they have written. On the contrary, students voted as the least beneficial the ability to communicate on-line and communication with the teacher and other students in groups.

Next two questions relate to the possible use of LMS courses for other subjects – 40 % of student could not decide whether this option would be beneficial also in other subjects, 46 % of students would like to have LMS courses in other subjects.

Based on several years of experience using Moodle to enhance learning in part-time and full-time study, we can conclude that the method of blended learning has been very effective in practice, and we consider it as a step in the positive direction.

In practice that means that teachers must constantly keep teaching materials up to date, as well as add new information during the course, thoughtfully divide materials and display it in the way so as to motivate the students and force the students to be active not only during the lessons, but also during self-study at home. Appropriately selected learning methods lead to the achievement of educational goals.

ELECTRONIC SUPPORT OF TEACHING IN OPHTHALMOLOGY, OPTOMETRY AND ORTHOPTICS

SVATOPLUK SYNEK, PETR VESELÝ
FACULTY OF MEDICINE, MASARYK UNIVERSITY

D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING
WEDNESDAY, 27 NOVEMBER, 15:15–17:00
KEYWORDS: EYE, REFRACTION, CONTACT LENS, GLASSES

Refraction, optical aids, quality of binocular vision present aim of education in ophthalmology, optometry and orthoptics. We project our currents and future project.

We work on e-learning courses which represent theoretical basis of refraction, survey of visual aids and binocular vision. These courses were offered to medical students, to future optometrists and orthoptists. The basis of education process is theoretical knowledge which can be evolving on practical trainee-ship. Medical students must know principal of examination visual acuity, and anterior segment of the eye, first aid treatment in ophthalmology, optometrists must exact determine refractive errors, must advice suitable visual aids, must apply contact lenses. Ortoptists must know pathology of binocular vision and possibility of correction by means of optical aids and special pleoptic and orthoptic training. All of these subjects can be learn in advance before practice.

E-learning courses mean progress in education of special ophthalmology problematic in related branches, e.g., ophthalmology, optometry and orthoptics.

OPEN ACCESS AS “CATALYTIC CONVERTER” FOR UNIVERSITY TRANSFORMATION?

STANISLAV ŠTECH
CHARLES UNIVERSITY IN PRAGUE

D1.6 THE FUTURE OF PUBLISHING: E-BOOKS, OPEN ACCESS POLICY
TUESDAY, 26 NOVEMBER, 18:00–19:00
KEYWORDS: OPEN ACCESS, OPPORTUNITIES, THREATS

Based on our experience with preparations for the new editorial policy of the Charles University in Prague, principles of open access (OA) will be introduced by means of opportunities (O) and challenges (T). These will be presented in the form of deep-rooted clichés and prejudices:

- professional / relating to research (OA implies a phase-out of the editorial process and of the guarantee of quality; OA fundamentally changes the science community and the means of communication within it),
- legal (by publishing in OA, authors lose their intellectual property rights; after publishing in OA, plagiarism is out of the question if someone else uses the work without citing the original author),
- economic (OA is free of charge; authors must even pay to publish in OA; OA can be misused by publishing houses which might blackmail universities etc.).

Finally, some concerns of universities to be addressed primarily will be mentioned. Dealing with these issues correctly will make OA a “good servant” but not a “bad master”, i.e., will catalyze the university transformation in an acceptable direction.

EXPERIENCES WITH IMPLEMENTATION OF PROBLEM BASED LEARNING AND OTHERS MODERN EDUCATIONAL TRENDS IN ACUTE MEDICINE EDUCATION

ŠTOURAČ PETR, SCHWARZ DANIEL, HARAZIM HANA, KOSINOVÁ MARTINA
MEDICAL FACULTY OF MASARYK UNIVERSITY

D1.5 VIRTUAL CASES AND SIMULATIONS
TUESDAY, 26 NOVEMBER, 17:00–18:00
KEYWORDS: INTERACTIVE ALGORITHMS, PROBLEM BASED LEARNING, ACUTE MEDICINE

Problem Based Learning, Team Based Learning, Flipping Classrom and others are modern trends in interactive medical education. Tools for interactive teaching can be found on the AKUTNE.CZ (part of MEFANET) and SEPSIS-Q portals. Portals aim to be a comprehensive source of information and educational materials, covering all aspects of acute medicine for under- and postgraduate students of medicine and other health professionals. This presentation describes implementation of interactive lessons to medical curriculum and student's evaluation after completing of PBL Anaesthesia lessons performed during March 2013.

A PBL session in the courses that use algorithms and/or scenarios takes 3 hours with some elements of Team Based Learning (TBL). It consists of two parts. The first half of the lesson comprises of presenting the theoretical context. In the second part, students use their computers and play with selected interactive algorithms to complement the discussed topic. Clinical experience as well as tips and tricks for the specific situation are added by the teacher. Evaluation and debriefing along with a short questionnaire is conducted at the end of each PBL session; see further details. We asked the students about their attitudes and interests in using the interactive algorithms as part of their medical and/or healthcare studies after completing the Anaesthesia lessons with the implemented PBL.

The questions were focused on the attractiveness of PBL, memory footprint fixation during PBL, its complexity, the quality of PBL (the professional level, presentation, preparation for dealing with real situations) and on using PBL tools in preparing for the final exams. Data collection took 2 days in April 2013. Questions had answer options on a 5-point Likert scale aimed at seeking feedback on the use of our interactive algorithms in the studies of acute medicine topics. Data were then expressed descriptively.

Interactive teaching tools and methods were implemented into some courses with acute medicine topics during first, third, fourth and fifth year of study of General Medicine or Stomatology as well as in some courses during Nursing curriculum. In the feedback survey, 35 participants out of the addressed 35 completed the questionnaire (two groups of medical students after finishing the Anaesthesia lessons with implemented PBL, response rate 100%). In general, there were given very positive answers (258 answers out of 280 belonged to the Agree/Strongly agree category). Only one question: "PBL Tools I used in preparation for the final exam" was answered with Disagree, five times (14.3%).

The methodological aspects of our interactive algorithms in the learning and teaching of acute medicine were presented as well as great student's satisfaction with modern forms of teaching.

ACKNOWLEDGEMENT

"MEFANET clinical reasoning" reg. n.: CZ.1.07/2.2.00/28.0038.

E-ASSESSMENT TOOLS

ČESTMÍR ŠTUKA, PATRÍCIA MARTINKOVÁ, JITKA FEBEROVÁ, EUGEN KVAŠŇÁK

1ST FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE, 2ND FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE, 3RD FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE, ACADEMY OF SCIENCES OF THE CZECH REPUBLIC

D2.1 EASSESSMENT IN MEDICAL EDUCATION

WEDNESDAY, 27 NOVEMBER, 09:00–10:45

KEYWORDS: ASSESSMENT, EDUCATIONAL PROCESS, TESTING

Testing of students' knowledge is a key moment in the educational process. Well-designed and correctly administered tests are important tools for good education. Huge number tools can be found for formative testing, but the number of available and appropriate tools for high-stakes assessment is significantly lower. A short overview of most popular assessment tools will be presented including possibilities of written and electronic testing. Software tools usually offer not only knowledge assessment but test and item quality analysis too. Only few of them, however, cover the whole cycle of test preparation including the setting of teaching goals, test blueprinting, appropriate item construction, item review and test piloting.

We would like to discuss our experiences with testing in Moodle and Rogo, problems with their interoperability and the extent of item bank support.

DEVELOPING INTERACTIVE AND COMMUNICATIVE COMPETENCES IN STUDENTS OF HEALTH AND SOCIAL NON-MEDICAL SPECIALIZATIONS AT TERTIARY LEVEL WITH THE HELP OF E-LEARNING

RADKA ŠULISTOVÁ
FACULTY OF HEALTH AND SOCIAL STUDIES, UNIVERSITY OF SOUTH BOHEMIA IN ČESKÉ BUDĚJOVICE

D1.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION I
TUESDAY, 26 NOVEMBER, 15:45–17:00
KEYWORDS: TERTIARY EDUCATION, INTERACTIVE COMPETENCES, E-LEARNING, BLENDED LEARNING, SUPPORTING PROFESSIONS

Universities represent tertiary level of education and provide the highest grade of qualification. The range of knowledge and skills should be aimed not only at obtaining special qualification but also at developing key competences, which are integrated in curricula documents. The paper "Developing Interactive and Communicative Competences in Students of Health and Social Non-medical Specializations at Tertiary Level with the Help of E-learning" deals with university education focused on developing key competences in students of health and social non-medical specializations, i.e., developing social and interpersonal competences used in a direct teaching process with the help of e-learning. The work is based on comparing e-learning and blended learning possibilities within tertiary education. The contribution, which the authoress presents, is based on an applied qualitative research that she conducted in 2011–2012 and where she examined the possibilities of e-learning on the development of interactive and communication skills of students of non-medical health disciplines in tertiary education.

The starting point in handling this issue was the possibility of the implementation of ICT in education at the tertiary level that can support traditional teaching. The most appropriate methodological approach has been chosen a qualitative research, the so-called "action research" (Argyris, 2009). Creating a course based on university teacher user skills in working with the information technology, which is the Learning Management System – LMS MOODLE.

The basis of the course were distance learning texts and tests. Direct instruction was devoted to a training in communication skills. The research sample for this survey consisted of 54 students of the University of South Bohemia Faculty of Health and Social Studies Study Program Nursing who have completed training in the full-time and part-time study. For an objective evaluation of the reached level of the respondents' interactive behaviour were used both analytical methods and analogue methods and the modified method of 360-staged evaluation feedback in particular.

Completed research confirmed that the efficiency of the course, based on the distance learning texts and tests, has not increased. Due to the outputs of the previous implementation of the e-learning course, the respondents agreed that individualized form of teaching through e-learning is satisfactory. The results in this area agree with the study authors M. Klement and J. Dvorský (2011), who satisfaction with teaching through e-learning indicate 86% of respondents. For this reason it was decided to a more challenging solution, a course on the principle of blended learning. This course called "Interactive training" was connected with traditional contact teaching. Video sequences on the basis of which students perform tasks in order to develop interactive skills have been implemented into the e-learning course. During particular tasks the students were assigned to deal with unexpected situations in a certain time limit. The course has become flexible this way, integration work within the contact hours was achieved by developing interactive skills of the students. The respondents rated the increase in the time required in a high degree. This time demand is put on both - the participants and the teacher himself/herself. At the same time, however, to increase the benefits of teaching as a career point of view and in terms of the personal development.

The issue of interaction in communication between the nurse and the client is more than timely, since the communication, which is done without any interactive skills leads to a distortion of the nursing process and its subsequent inefficiency. Based on the survey results it can be stated that the use of the blended learning opens the door to the development of interactive skills of non-medical health workers to compensates for the low numbers of hours on subjects focused on the development of these competencies.

VIRTUAL CASES IN INTERNAL MEDICINE EDUCATION

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D1.5 VIRTUAL CASES AND SIMULATIONS

TUESDAY, 26 NOVEMBER, 17:00–18:00

KEYWORDS: VIRTUAL CASES, MEDICAL EDUCATION, INTERNAL MEDICINE

Practical classes represent an important part of medical undergraduate education. In majority of clinical subjects, they are based mostly on face-to-face contact with patients, enabling presentation of a wide range of clinical symptoms, syndromes and diseases. Organization of practical training in medical schools, however, faces several significant problems, such as limited spectrum of patients, who are currently available for demonstration of their symptoms. Simulation of clinical cases using various tools of information technology is thus an excellent option how to overcome these barriers.

The authors present herein a project using an interactive problem-based learning system in medical education – e-kazuistiky.cz. Students are engaged in diagnosing virtual clinical cases from various subspecialties of internal medicine. Once enrolled in the system, each user receives a unique login. The system randomly generates a set of virtual patients (clinical cases), provided to be as much realistic simulation of actual clinical practice as possible. The spectrum of diagnoses, number of patients, and criteria for passing the course may be all predefined by a tutor. Personal data, medical history, and current disease are generated for each virtual patient. Students must suggest an optimal diagnostic algorithm and determine the correct diagnosis for successful completion of each case. Clinical findings and results of diagnostic tests are presented not only as text, but in fully multimedial manner - as photographs, videos, virtual histological slides, etc. The evaluation of students' performance is based on positive (so called "bonus") points, negative (so called "malus") points and assessment of the financial costs of each diagnostic test. Another key feature of the system is also the original evaluation algorithm allowing assessment of optimal/acceptable/incorrect sequence of suggested diagnostic methods.

During the second year of the Mefanet project – clinical reasoning (supporting development of virtual cases and creating new case studies), the first 20 clinical cases were published in the system and the program is routinely used in the 4th year of undergraduate medical curriculum (internal medicine) at the Medical Faculty of Charles University in Hradec Králové. The quality and user friendliness of the project as well as hands-on experience were evaluated through anonymous questionnaires completed by teachers and students, resulting in mostly positive feedback. The most appreciated attribute of the system from the student's perspective is the game-like involvement and multimedia-supporting environment; from the teacher's perspective it is the possibility of detailed analysis of each student's performance and clear identification of weakest areas of the tution system. Teachers can objectively evaluate the diagnostic capabilities, diagnostic approach and the strengths and weaknesses leading to the success or failure of each individual student. Furthermore, the authors have developed a completely new interactive authors' form, enabling much easier input of new patients into the system without requirement of detailed knowledge of the back-office of the system. We expect that this form will help to further increase the number of authors who will be willing to contribute with new clinical cases.

The system e-kazuistiky.cz is designed to provide medical undergraduate education in internal medicine. The basic characteristics are maximum flexibility with a great potential for expansion into other clinical disciplines, modification and completion of unlimited number of virtual patients without any restrictions as to type of disease and type of diagnostic procedure.

ACKNOWLEDGEMENT

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CREATING MULTIMEDIA MODELS AND ANIMATIONS FOR THE PRACTICAL EXERCISE IN BIOPHYSICS

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POSTERS

KEYWORDS: MIND MAPS, MINUTE KNOWLEDGE BASE, COMPUTER MODELS

Based on the results of the analysis of the multi-annual survey among students of Comenius University in Bratislava and confrontation with foreign universities, we have created an efficient algorithm of minute didactic knowledge base, based on a “memory maps” method (mind maps) in electronic form. The algorithm increases the possibility of variability of teaching topic units simultaneously for publication on effective portal (MEFANET) and can easily helps the student using ICT obtain detailed information about the technical issues.

Minute knowledge base (MKB) is created by a core set of information that can be read in a minute. Each set of knowledge representing a particular professional subject can be structured and expressed in graphical form as a network of nodes that lie on radials and meridians. The name of the topic knowledge circuit is located in the center of a structured network. Nodes represent the key concepts that can be expanded into a hypertext theorem. Then, from the network center of meridians and radials at several levels, each theorem can be developed at various levels of difficulty.

For various thematic areas it is possible to prepare an MKB model with a specific content in the form of a network. Each level in the network, radially from the center downwards, can be assigned a knowledge issue facing target with different forms of solution and with different scales of difficulty. It can also be used to support flexible training creative thinking, to foster long-term memory (as a mnemonic – storage hook), but also as the dynamic updating of content of the course at the time, based on new scientific and technical knowledge.

The MKB model is suitable for the implementation of web technology using the principle of hypertext. This implementation assumes that the model is programmed as an interactive network, where in the meridians and radial nodes there are placed icons that represent different proposition, objects or concepts. Choice of individual icons displays hierarchically lower levels of a model. The electronic form of utilization of the model MKB allows its use in e-learning.

We have designed and developed several models of MKB in electronic form, which can help not only college students but also students at lower levels of education (secondary, primary and even nursery schools). As an example can be the below offered detailed model of MKB concerning the problem of “Blood Circulation model.” On the ground of the already existing electronic model of the cardiovascular system, we first made a diagram in text (book) form. Then we created from this scheme a multimedia model with lots of hyperlinks and electronic sources of information (video, audio) on a given issue. By a simple choice of icons hierarchically lower levels of the model are displayed. MKB created computer models and animations are compatible with simulation models and they are successfully used in practical exercises in Biophysics, using interactive whiteboards.

OPEN ACCESS AS "CATALYTIC CONVERTER" FOR UNIVERSITY TRANSFORMATION?

PETR VALO
CHARLES UNIVERSITY IN PRAGUE, KAROLINUM PRESS

D1.6 THE FUTURE OF PUBLISHING: E-BOOKS, OPEN ACCESS POLICY
TUESDAY, 26 NOVEMBER, 18:00–19:00
KEYWORDS: ACQUISITION, REVIEW, EDITORIAL WORK, ASSESSMENT, PUBLICATION, DISTRIBUTION, SUSTAINABILITY

TRADITIONAL AND/OR ELECTRONIC PUBLISHING IN ACADEMIA

The current university publishing world presents a wide variety of publishing methods. The role of a university press includes the selection of the proper form of publishing relevant to the published text, materials and its links within the covered area and field of knowledge.

The discussion should not be too abstract so the presentation will concentrate on case studies. The first study will be a scholarly journal covering psychology and aiming at Czech readership, the second study will be the language textbook environment in the form of printed material as the core platform, complemented by on-line electronic material (MP3, teachers' manuals, a variety of additional exercises etc.), the third case represents an academic monograph based on anthropological research (in situ).

The presentation will discuss the printed as well as electronic forms of publishing, the principles of editorial work, forms of presentation and dissemination of knowledge by a Czech university publisher.

ASSESSMENT IN MEDICAL EDUCATION – SCIENCE, CRAFT OR ART?

MARTIN VEJRAŽKA, STANISLAV ŠTÍPEK, ČESTMÍR ŠTUKA
1ST FACULTY OF MEDICINE, CHARLES UNIVERSITY IN PRAGUE

D2.1 EASSESSMENT IN MEDICAL EDUCATION
WEDNESDAY, 27 NOVEMBER, 09:00–10:45
KEYWORDS: ASSESSMENT, WRITTEN TESTS, EXAMINATION

Assessment belongs to key activities in medical education. Decisions on progress of every individual student are made according to marks at exams and scores in tests. In fact, all high-stakes decisions in medical education, including awarding a diploma, are based on assessment of knowledge, skills and performance.

Every medical educator faces the need to assess and evaluate the sudents. Much effort is done to prepare valid, fair and interpretable exams. However: do we really know how to set up a good test? How to score it and how to set the pass/fail limit? Does the test really measure knowledge or skills at a specific medical field? How can we verify it?

Construction of a test and evaluating it has several distinct steps. It is essential to take appropriate care of each of them in order to reach considerable quality and reliability of the whole testing process. It starts with defining the objectives of learning and assessment. Proper format of test items and sampling of assessed knowledge and skills is reflected in a blueprint of the test. Construction of test items follows together with their review. Then, the test can be piloted and aministred. Scoring and marking the test is tightly connected with proper standard setting. Finaly, it is necessary to evaluate the performance of every test item as well as of the test as a whole. Completing the whole process is quite demanding. However the value of test results is compromised in case any of these steps is missing.

Creating a well performing tests and test items is a demanding and expensive. On the other hand, properly written, reviewed and calibrated test items are valuable. It is therefore appropriate to share them among schools and cooperate when preparing them. In this symposium, we will show tools that are avilable for the members of MEFANET and discuss current as well as future ways of cooperation.

MAKING E-ASSESSMENT WORK: A LEAN MANAGEMENT APPROACH

SIMON WILKINSON
UNIVERSITY OF NOTTINGHAM, UK

D1.1 PLENARY SESSION
TUESDAY, 26 NOVEMBER, 09:45–12:15
KEYWORDS: ASSESSMENT, EXAM LIFECYCLE

Conducting large-scale summative assessments online is a dream of many institutions. Increasing student numbers coupled with growing pressures on academic staff are driving the search for smarter ways of conducting assessment. The University of Nottingham has taken a lean management approach to this problem because only by understanding all aspects of the process can a successful solution be developed. Simple software installation is not the answer to e-assessment, instead institutions should re-analyse their Purpose, Processes and People to ensure maximum Performance. Nottingham has been developing an open source e-assessment platform called Rogō using an iterative development lifecycle where support for the 4P's is built into the core of the product, not as an afterthought. Today the University of Nottingham is supporting many parts of the exam lifecycle including: item banking, external and peer review, crash recovery, cohort/item analysis, curriculum mapping and student feedback. By concentrating on a robust framework for e-assessment the university has successfully delivered more than 21,000 student papers across 360 online exams in the 2012/13 session.

ELECTRONIC SUPPORT OF “MEDICAL MICROBIOLOGY” COURSE FOR ENGLISH-SPEAKING STUDENTS

ONDŘEJ ZAHRADNÍČEK
FACULTY OF MEDICINE, MASARYK UNIVERSITY

D2.4 MULTIMEDIA-SUPPORTED TEACHING AND LEARNING
WEDNESDAY, 27 NOVEMBER, 15:15–17:00
KEYWORDS: GENERAL MEDICINE, DENTAL MEDICINE, ENGLISH SPEAKING, MEDICAL MICROBIOLOGY

English-speaking students at medical faculties in Czechia use to study the same programmes as Czech-speaking (and Slovak-speaking) students. Despite the facts that the programmes are supposed to be the same, there are some understandable differences. A notable advantage of English-speaking students is that they may choose of big amount of textbooks published in the UK, USA, Australia and many other countries, while the amount of books in Czech (or Slovak) language is limited, especially for smaller branches of medicine like Medical Microbiology. On the other hand, the local textbooks in Czech are usualy adapted to the volume and structure of requested knowledge better than those in English. Therefore, English students are more than students studying in Czech requiring local, mostly electronic, support for their study.

In Medical Microbiology blended-learning courses we have always tried to give the same conditions for both Czech-speaking and English-speaking students. The English version “protocols” for practical sessions are (with very rare exceptions) simply a mirror of those in Czech. Therefore we try to do the same for all other elements of electronic study. Study materials for practical sessions have also almost identical versions in Czech and English, and the same may be constated for interactive syllabi and electronic self-checking tests. Nevertheless, there exist some minor differences. In some materials the materials in English do not contain some “surplus” parts. The reason is that majority of English speaking students are not English native speakers and therefore we do not wish to complicate them the learning by adding such less important data. Some other materials are not availavble because they are still not translated, as the translation is very time consumpting.

As to mere study results, those of English speaking students are something worse in average. Nevertheless, it is quite difficult to compare results of Czech-speaking and English-speaking students without being biased by many factors. An important factor is definitely the language barrier and also knowledge of students entering our courses, that is not identical for Czech-speaking and English-speaking students (also because of different systems of primary and secondary schools absolved by the students). Nevertheless, at least good and motivated students are able to have good results in our courses and we have some positive feedback for our electronic support tools.

We conlude that the electronic support of English speaking students is even more important than that of Czech and Slovak speaking ones. We take as necessary to have majority of materials, if not all of them, in both language versions. In that case the blendend learning course functions quite well in both languages and it is also simplier to organize it than if the language versions would be different.

EDUCATIONAL PARADIGM CHANGE AND FOSTERING SUSTAINABLE SUCCESS OF HEALTHCARE ORGANIZATION WITH THE AID OF WEB BASED INTERACTIVE TRAINING

ZGODAVOVÁ KRISTINA, BOUREK ALEŠ
FACULTY OF MEDICINE, MASARYK UNIVERSITY

D2.3 ICT ADVANCES IN HEALTH SCIENCES EDUCATION II
WEDNESDAY, 27 NOVEMBER, 13:45–15:00

KEYWORDS: WEB BASED LEARNING, MANAGING SUSTAINED SUCCESS, ROLE PLAY SIMULATION, GLOSSARY BASED LEARNING, REMOTE LABORATORY, TEACHING HABITS AND ATTITUDES, VIRTUAL TRAINING, COMPETENCE TRAINING

Presentation focuses on necessary improvement of existing education process and presents comprehensive insight into the methodology of acquiring skills for managing healthcare organization for sustained success through interactive WEB based training with special attention to simulations in virtual learning environment. We describe functions and properties of the IMPROHEALTH® portal, as well as services pertaining to integrated e-Learning, e-Implementation of the quality management system with the added bonus of role play simulation, e-Improvement of provided healthcare services, and present the way how knowledge accumulated can be glossary-based learning presented in the form of a WEB-log book. Approaches augmenting the possibilities of traditional e-Learning options are presented.

Objective of the integrated e-Learning course is to develop the abilities, skills and practical expertise of the participant in order to gain:

- Professionalism, as the skill of dealing with various tasks and problems of a healthcare organization using modern managerial tools and methods;
- Flexibility, meaning the ability to manage successfully redesign and change of identity in a healthcare organization (thus assuring robustness of the organization);
- Ethical integrity, meaning the ability to tackle tasks and problems of a healthcare organization in a way which respects the dignity of the patients/clients and personnel, in a way which ensures that the organization is viewed positively by the public and in the way that assures excellent economic results.

The following e-Learning course modules have been produced and used in accredited training process:

M 01: Managing Change in Healthcare Organization

M 02: Healthcare Organization Quality Management

M 03: Healthcare Organization Performance Management

M 04: Healthcare Organization Human Resource Management

M 05: Healthcare Organization Economics

M 06: Customer Satisfaction and Decision Making in Healthcare Organization

M 07: e-Health: Systems Organization and Management

M 08: Quality of Life and Well-Being

For the implementation of management systems a basic handbook and environment for on-line consultation with a MS advisor based on FAQ was prepared. This part of the VHCQC is able to use the technology of the Role Play Simulation WEB generator developed in the course of the project.

The constructed portal has grown to become a complex tool for WEB based online education focused on improving quality, performance and cost-effectiveness of healthcare organizations, and at the same time offering the general public, including individuals with impaired sight and/or hearing, the possibility to extend their knowledge and skills and in attaining the sense of enhanced well-being. Existing IT infrastructure was used for online training courses enabling previously impossible (or strongly limited) approaches, namely teaching of a virtual community, online mentoring (individual or collective), role-play, scenario play, efficient collaboration based on a set of unambiguous terms included in the project glossary, online storage and retrieval of model examples of best practices produced by course participants and active incorporation of the lay-community based on issues concerning and relating to well-being as a part of healthcare environment. The portal has also demonstrated the feasibility of online support by a real human mentor either to a whole study group or an individual trainee, overcoming one of the major obstacles in healthcare quality training – lack of time of key health management personnel to physically get together at a given time in a given place.