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Conference Abstracts

This Book of Abstracts represents the preliminary version of accepted abstracts for the MedRi 2023 Conference. Therefore, the content of all abstracts in this book is published in their original form as was submitted by authors, and has not been subject to proofreading nor graphical design. The final Book of Abstracts will be published as a supplement in the scientific journal Liječnički vjesnik.

Session C1: Faculty Development (Hall Lauriana)

Not an afterthought: How faculty development can drive innovation in medical education

Authors: Rachel Levine

Johns Hopkins School of Medicine, Session C1 Faculty Development

Corresponding author: Rachel Levine, rlevine3@jhmi.edu

Abstract text: Faculty Development (FD) refers to activities designed to enhance knowledge, skills and behaviors of health professionals in their various faculty roles. Depending on the context, these roles may include: education such as teaching and facilitating learning, curriculum development, learner assessment and program development; research and administrative and leadership roles.

FD is critical for the satisfaction and success of individual faculty and is also necessary for the success of educational programs within larger medical institutions such a schools of medicine and academic health centers.

Unfortunately, most faculty do not have access to robust FD to build skills and expertise for key educational roles. Furthermore, many educational programs and curricula are designed without significant consideration for the development of faculty who will be responsible for teaching and assessing learners or evaluating programs. This can limit the success of educational programs, stifle change in medical education and frustrate faculty leaders and frontline teachers.

Faculty development is a burgeoning discipline within academic medicine. Best practices for FD, specifically using a competency framework to design programing exist and can be adapted for local context and needs. Effective FD programs as measured through participant satisfaction and reported changes in teaching by participants and learners, are grounded in learning theory, promote reflection, feedback and collaborative learning based on participants own teaching experiences. These programs also incorporate a variety of learning strategies. Communities of practice (CoP) are a model in which to situate FD to promote a sustained setting for social learning among individuals with a shared understanding and set of beliefs related to education. FD especially through vibrant CoP can create momentum for faculty to advocate for innovation and change in medical education through knowledge mobilization where educational research interfaces with educational practice.

Key Words: medical education; faculty development

Transforming professional development through faculty development programs: TTUHSC El Paso experience

Authors: Sanja Kupešić

Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center El Paso, El Paso, Texas, USA

Corresponding author: Nina Pereza, nina.pereza@uniri.hr

Abstract text: This presentation aims to introduce the Texas Tech University Health Sciences Center El Paso (TTUHSC EP) Institutional Faculty Development Program (IFDP). This competency-driven, 8-month program is recommended to all new junior and mid-level faculty members. The goals of our program are to improve their teaching and assessment, research, administrative, and leadership skills. Our interactive online tutorials and face-to-face activities are organized into four modules: Teaching and Assessment, Research, Clinical Skills and Simulation, and Leadership Development. The Teaching and Assessment module consists of six courses: Adult Teaching and Learning, How to Build and Teach an Online Course, Technology of e-Learning, Library Skills, and Interprofessional Education courses. The Research module is comprised of five courses: Fundamental Research Skills course, Clinical Trials course, Institutional Review Board (IRB) Skills course, Writing Interest Group course, and the Grantsmanship Training course. The Clinical Skills and Simulation module focuses on the best practices of teaching and learning in the clinical simulation environment, assessment and feedback, debriefing, guided reflection, and curriculum integration. Finally, four courses are offered in the Leadership Development module: Succeeding and Advancing as Faculty, Conflict Resolution and Negotiation, Leadership Skills, and Faculty Wellness in the Workplace courses. Every year, a broad spectrum of health sciences topics relevant to basic sciences, undergraduate, and graduate medical, nursing, and dental education are introduced in synchronous onsite activities and workshops or interactive teleconference sessions. Requirements for graduation from the IFDP are attendance of a minimum of 40 contact hours and successful completion of three projects: an oral presentation, the creation of an online module, and a written proposal for a scholarly or research project. The fact that the current IFDP offers approximately four times the number of contact hours required to graduate allows faculty participants to customize their professional development experience.

Key Words: faculty development; academic career; teaching skills; teaching in simulation environment; research skills; administrative and leadership skills

Transforming professional development in medical education through faculty and student development programs at the Faculty of medicine in Rijeka, Croatia

Authors: Nina Pereza

Faculty of Medicine, University of Rijeka, Rijeka, Croatia

Corresponding author: Nina Pereza, nina.pereza@uniri.hr

Abstract text: The higher education system in the healthcare profession is unique because professionals involved in delivering education have three simultaneous roles, including that of the healthcare provider, medical educator and scientist. However, while current mandatory programs are focused mostly on delivering education on how to become a healthcare provider, the increasing demands on professionals to acquire both teaching and research excellence imposes challenges for organizing new concepts for additional training. These highly organized professional development activities are known as faculty development programs, but are currently underrepresented in the European higher education systems. The aim of this presentation is to highlight the innovative approach to how the Faculty of Medicine in Rijeka, Croatia transformed professional development activities through the Centre for Improving Teachers' Competencies and Communication Skills, a specialized organizational unit, the activities of which are aimed at both healthcare professionals, as well as students. The Centre provides a plethora of faculty development programs, which are primarily focused on educational development for improving teachers' competencies, introducing innovative learning methods, conducting peer review and organization of international meetings. In addition, our rich student development programs include primarily research development, which is conducted in association with the scientific journal *Medicina Fluminensis* and represents an internationally and nationally awarded program for encouraging student scientific activities. Finally, as the result of the international collaboration between the Faculty of Medicine in Rijeka and Texas Tech University Health Sciences Center El Paso, this presentation emphasizes the importance of establishing international collaborative faculty and student development programs. The intention of such programs is to share best practices and provide support for the establishment of an international platform for improving professional competencies in the healthcare higher education system.

Key Words: medical education; faculty development; teachers' competencies; research education; medical students

Development of teaching competencies at the University of Split School of Medicine

Authors: Joško Božić

University of Split School of Medicine, Split, Croatia

Corresponding author: Joško Božić, josko.bozic@mefst.hr

Abstract text:

Excellence in medical teaching and knowledge transfer is essential in order to educate future generations of healthcare workers. Moreover, it can be said that competent teaching is a core expectation from physicians in an academic setting. Hence, emphasis in higher education institutions should be put into expanding scope of knowledge, usage of new educational technologies and active problem-solving learning approaches. This approach is constantly discussed, developed and upgraded at the University of Split School of Medicine. The teaching staff is trained through various formal forms of education for teachers organized by the School, as well as other institutions. Since 2009, we have been continuously conducting a course called Skills of Medical Education and Scientific Work, in which teachers are taught the techniques of knowledge transfer, presentation making, exam questions writing, and public speaking. Some of the covered topics also include index publications search, learning outcomes, problem based learning, team learning and microteaching. The course lasts for three days, and so far more than two hundred teachers have successfully completed it. During the COVID-19 pandemic and changes in the organization and implementation of classes, workshops were organized for all teachers on the use of distant learning applications - Microsoft Teams platform as well as the Merlin/Moodle system. Information about continuing medical education courses is regularly published on the website. Further assessment and improvement of teaching competencies at our School is managed through peer-to-peer and self-evaluation. In peer-to-peer evaluation, a colleague attends one lecture and makes a detailed assessment of teaching through a structured questionnaire, which is shown to the assessed teacher, while in self-assessment, comparisons are made with student surveys in order to self-reflect on our own competencies. These processes are carefully managed and constantly evaluated by the Committee for quality improvement. Finally, teacher education is maintained through organisation of the continuing medical education courses, which is managed by a Committee for Continuing Medical Education and a Rulebook on Continuing Medical Education, which regulates all forms of postgraduate training outside regular postgraduate study.

key words: teaching competencies; learning; medical education; medical student

The role of entrusted professional activities in the education of doctors and specialists

Authors: Rado Žic

School of Medicine, University of Zagreb

Corresponding author: Rado Žic, davorz123@yahoo.com

Abstract text:

Medicine is one of the earliest, most respected, highly selective and sought-after professions. Since it deals with human health, education and control systems have been developed from the onset in order to produce experts who can competently perform their work.

Today, medical education is based on knowledge and competences. The basis of any medical education is how to put together a system of education, based on knowledge and competences, in order for it to create a doctor or specialist who will be able to competently solve the problems encountered in everyday practice.

The time frame for education is set and for now quite rigid, and the question arises how to educate individuals who do not have the same predispositions within this time framework.

Doctors today require not only knowledge and skills from their profession, but also to be a good communicator, associate - team member, health promoter, leader, scientist and professional. One of the ways of education that is directly involved in the normal process of work and takes into account the differences between individuals is education through mastering entrusted professional activities (EPA). The concept of the EPA was developed in 2005 by Ollen ten Cate who believed that competency-based education frameworks were too abstract and theoretical for practical application in everyday practice, or in assessment of a medical student or resident. Entrusted professional activity is a key task of the profession entrusted to an individual in a particular health unit. Entrusted professional activity represents a description of the work that operationally defines the profession. They represent a job description, not a description of a person. They include a list of tasks that each clinical department or healthcare professional may have for that day, week, or any period of time. Using EPAs, educators teach students and residents and assess their progress. What is expected from the completion of education through a system of entrusted professional activities is the demonstration of the competence of performing an activity that was the subject of the entrusted professional activity that is being taught and assessed without supervision. The entire learning process is divided into a set of entrusted professional activities that fully define the curriculum or individual specialization. A student or resident should have the ability and focus and to successfully perform individual stages of the procedure independently. When a student or resident completes all the individual entrusted professional activities provided for by the program of study or specialization, he has achieved the requirements for the final exam, and the issuance of a diploma and a license for work.

Development of Teaching Competencies at the University of Split School of Medicine

Author: Joško Božić

Corresponding author: Joško Božić, josko.bozic@mefst.hr

Abstract text: Medicine is one of the earliest, most respected, highly selective and sought-after professions. Since it deals with human health, education and control systems have been developed from the onset in order to produce experts who can competently perform their work.

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Challenges in Implementation of European Standards in Training Requirements (ETR)

Authors: Nada Čikeš

University of Zagreb School of Medicine, Zagreb, Croatia; European Union of Medical Specialists, Brussels, Belgium

Corresponding author: Nada Čikeš, ncikes@mef.hr

Abstract text: Postgraduate specialty training is a highly standardised segment in the continuum of medical education in Europe. It is presented in the document European Training Requirement, European Standards of Postgraduate Medical Specialist Training (ETR), which defines the requirements for trainees, trainer and training institutions. In the European Union of Medical Specialists (UEMS) specialist sections create new and/or revised ETRS that are subject to a review and approval process in which the final decision is made by the National Medical Association from the EU/EEA member countries.

Implementation of the ETRs in national specialty training systems brings a number of challenges in the area of trainee education (especially assessment) as well as trainers' responsibility (process for recognition as trainer and quality management of trainers). Demanding is the process for recognition as training institution (requirements on staff, clinical activities, equipment) and quality management (accreditation, clinical governance, manpower planning, external auditing etc).

The main challenge is in achieving the goal of specialty training in accordance with competency-based medical education (CBME), oriented towards trainee's progress in the acquisition of competencies. In new ETRs the implementation of the Canadian Framework of Competencies (CanMEDS) is recommended. Special attention is paid to methods of workplace-based assessment of competencies, including clinical and procedural skills, and professional behaviour evaluation. To assess the progress of trainees the Entrustable professional Activities (EPAs) are introduced, developed for the specialty training programmes. To achieve harmonisation of the specialist training in Europe and high standards of health care, UEMS is developing the European specialist examinations that can be taken by trainees in the last year of specialty training, can be an equivalent to the national exam.

The pandemic crisis has emphasised the need to further advance the specialty training and requires the development of new contents and standards.

Key Words: postgraduate education; medical specialty; competencies; assessment; trainee; mentor

The Added Value of UEMS EU Specialist Assessment

Authors: Vesna Kušec

Childrens' Hospital Srebrnjak, Zagreb, Croatia

Corresponding author: Vesna Kušec, kusec958@gmail.com

Abstract text: European Union of Medical Specialists (UEMS, Union Européenne de Médecines Spécialistes) has its goal to develop the highest standards in the education of medical specialists, promote harmonization of specialist training in Europe and consequently ensure similar healthcare framework for the EU populations. The UEMS was established more than 60 years ago and is now with membership of National Medical Associations from 41 countries and includes 43 medical specialties. There is a long tradition of specialist assessment conducted by specialist sections together with respective EU Boards as a part of the quality assurance process for specialist training and currently includes almost all specialties. One of the UEMS bodies, the Council for Specialist Medical Assessment (CESMA) is dedicated to this task and performs appraisals for the exam process. The exam is constructed to assess the application of knowledge, and consists of a written part (multiple choice questions) and sometimes oral and practical parts. Inspection of the candidate's logbook is an important criterion for the exam. The UEMS exam is a mark of excellence and career progress for the successful candidate and is respected as proof of the highest healthcare specialist competencies in the EU and also in the rest of the world. UEMS has signed agreements with many countries and the UEMS exam is recognized as an equivalent to the national specialty exam or an equal alternative to national certification. The UEMS EU diploma or certificate of successfully passing the exam is not a license for work. On the national level, medical specialists awarded the EU UEMS diploma/certificate (or fellowship) represent a quality mark for the highest specialist training standards as practiced in their country.

Key Words: Competencies; Medical Specialist; Specialist Assessment; Specialist Training

Translational Medicine: Motivating Junior Doctors with Translational Science

Authors: Prof. Dr. Zsolt Molnar^{1,2,3}

¹Department of Anesthesiology and Intensive Therapy, Semmelweis University, Budapest, Hungary

²Department of Anesthesiology and Intensive Therapy, Poznan University of Medical Sciences, Poznan, Poland

³CytoSorbents Europe, Berlin, Germany

Corresponding author: Zsolt Molnar, zsoltmolna@gmail.com

Abstract text: Although the iron curtain was lifted more than 30 years ago, countries in Central and Eastern Europe are still struggling to catch up with our Western European counterparts as far as quality of care and teaching standards in medicine are concerned. This is reflected in a one-way traffic of health care professionals from the East to the West and in the very low, both in number and quality, research output of the region as compared to the West. Science and research are not a l'art pour l'art activities. Applying up-to-date research results at the bedside has become an everyday tool over the last 20 years. Without translating evidence-based medicine into clinical routine one cannot provide the best possible care for our patients. Beyond the importance of patient management embedding research in our daily work could have a profound effect on motivating our team and especially those who are open for answering appropriate and important research questions in order to make health care better. However, learning the tools of how to perform high quality research is mandatory. This requires a completely new structure and paradigm change that is almost completely missing from Central and Eastern Europe. Translational Medicine is aiming to fill this gap. Founded in 2015 at the University of Pécs, Hungary, the program trains PhD students and teaches them how to analyse and interpret the results of already published studies by the mathematical tools of meta-analysis and systematic review, how to form an appropriate and important research question and which are the tools that help us to answer these questions. During the training of 2 years the students have to perform one meta-analysis and develop 1 or 2 other research projects, let it be registry or clinical trial. Most importantly they learn the language of clinical science, develop the ability to perform clinical research on their own and present it in such high quality that is accepted by highly ranked international journals and forums. Over the first 5 years the program produced 300 articles with an average impact factor of 4.21. Currently there are more than 150 new students in the program in year 1 and 2 at the Semmelweis University, Budapest, Hungary. Spreading this mission all over the country and beyond the borders of Hungary may help motivating junior doctors in our region and make them feel equal to their colleagues in the West.

Key Words: clinical research; motivation; training in medicine; translational medicine

The role of mentor during specialty training

Author: Venija Cerovečki

School of Medicine, University of Zagreb

Corresponding author: Venija Cerovečki, venija.cerovecki@mef.hr

Abstract text:

Mentorship during specialty training, particularly during competency-based specialty training, is fundamental to the intellectual and professional growth of the mentee; mentees often look for astute guidance regarding career pathway from their mentors, based on an assessment of their skills and attitude. Mentoring is a time-proven strategy that can help young physicians to achieve their fullest potential, with good mentorship being a prerequisite for success in any medical specialty. The most beneficial forms of mentoring include positive relationships with attending physicians that result in trustworthy, nurturing environments that facilitate learning. There are five types of mentors that can be instrumental for a mentee: educator, challenger, moderator, career planner and connector. A truly great mentor often embodies more than one of these mentorship characteristics. It is important to understand that mentees may often find more than one mentorship attribute in a single mentor, mentor who knows when to push, when to act with caution, when to teach, and when to inspire. It is also possible for mentees to find these individual attributes in different mentors, in which case they should define the role and the impact of each mentor. A mentor–mentee relationship is defined as a dynamic reciprocal relationship environment between an advanced career incumbent (mentor) and a beginner (mentee), aimed at promoting the development of both. The mentor-mentee relationship is a dynamic, multifaceted relationship wherein both parties have responsibilities and stand to gain if the relationship functions optimally. Mentor should use a way to train mentee that is not only effective, but also friendly and collegial. This easy-going environment fosters learning and ensures optimal performance. Every mentee desires a mentor that maintains an “open-door policy” to address concerns and questions that arise during the course of training. Maintaining the sustainable trainer's network is essential for successful specialty training programme implementation.

Key Words: Medical education; mentor; specialty training

Emergency department mentoring program for young physicians

Author: Martina Pavletić

Emergency Department, Head, Clinical Hospital Center Rijeka
Department of Anaesthesiology, Reanimatology, Emergency and Intensive Care Medicine, Faculty of Medicine, University of Rijeka, Rijeka

Corresponding author: Martina Pavletić, martinapp@medri.uniri.hr

Abstract text:

Emergency medicine is a very complex and unique medical specialty and very often emergency medicine departments are the only entrance for many patient into the healthcare system. Specialists in emergency medicine have to have broad knowledge in acute illnesses, special medical conditions as intoxications, injuries and more complex as politraumatic patients or resuscitation. In emergency medicine, decisions for the patient's life and health are made based on limited informations in a short period of time, which requires a high level of competence and skills from medical to communication ones. Medical students have their first encounter with emergency medicine during college. Following the internship abolition in 2019 and the introduction of mentoring program from our Ministry of Health, an opportunity has been created for newly graduated physicians to start initial education and acquire practical skills in highly "busy" enviroment such as emergency departments. In November 2019, Clinical Hospital Center Rijeka admitted first group of young doctors for the "Work under supervision program". We started with the education program from the first generation and gradually improved it. It is carried out through four educational modules, and after each module there is a written and oral test followed by mentor's meeting. Currently we are under developing proces of completely new module, Module V (5th module), that will be dedicated to mastering basic skills in the point-of-care ultrasound in emergency medicine. We take the education of young physicians seriously, which is why we conducted an evaluation of our work and program through a survey - the opinion of young physicians about the training method and their work with positive feedback which gave us reasure to continue in the same direction. In the presentation Modules and survey analysis will be showed and explained in more details.

Key Words: education; emergency medicine; modules

Why Faculty Mentoring Matters?

Author: Sanja Kupešić

1Texas Tech University Health Sciences Center El Paso, El Paso, TX, U.S.A.

Corresponding author: Sanja Kupešić, sanja.kupesic@ttuhsc.edu

Abstract text:

This presentation aims to introduce the Texas Tech University Health Sciences Center El Paso (TTUHSC EP) Faculty Mentoring Program (FMP). This comprehensive, outcome-driven two-year FMP assists junior and mid-career faculty in improving their teaching, research, and administrative/leadership skills to succeed in their academic career. Before enrollment, mentors undergo training to develop their mentoring, time management, and communication skills. They are informed about their mentorship responsibilities in providing structured guidance and constructive feedback to their mentees. The orientation session helps both parties establish a psychological connection, set the goals of their mentoring relationship, and communicate the expectations. The effectiveness of faculty mentoring programs is measured by comparison of the key performance indicators (e.g., number of peer-reviewed publications and presentations at local, regional, national, and international conferences, teaching evaluations, and administrative roles and experiences) before enrollment in the FMP (baseline data), over time (e.g., achievements outlined in the quarterly progress reports), and at separation. Anonymous surveys are used for subjective assessment of the mentoring relationship and experiences. Long-term objective data, such as scholarly productivity and indicators of career advancement (e.g., promotional paths), available from different sources (e.g., PubMed, public information on promotion success), are regularly evaluated by the TTUHSC EP Office of Faculty Development. A thorough evaluation of TTUHSC El Paso FMP indicated that most mentees achieved or exceeded their goals, meaning that institutional investment was successful.

Key Words: Academic Career; Administrative Skills; Faculty Mentoring; Leadership Skills; Research Skills; Teaching Skills

Implementation of the 6-Year Longitudinal Course on Fundamentals of Medical Skills in the Core Curriculum: Impact on Students/Graduates and Educators

Authors: Vesna Degoricija

University of Zagreb School of Medicine, Zagreb, Croatia

Corresponding author: Vesna Degoricija, vesna.degoricija@gmail.com

Abstract text: Setting standards in undergraduate medical education is a crucial but still developing research area in Croatia. Improvement and innovation in teaching and education are primary goals of the University of Zagreb School of Medicine program. A definite step in this direction was made by the introduction of the 6-year longitudinal course Fundamentals of Medical Skills (FMS) in 2011. The course content follows the core curriculum subjects. FMS is focused on communication as well as practical and clinical skills. It delivers content through a combination of simulation on mannequins, role-play and meet-my-patient scenarios. The course involves 212 tutors and 1,800 students (sds) in each academic year. It comprises practical skills such as washing hands; basic, advanced, paediatric and trauma life support; drawing blood; urinary catheter and nasogastric tube insertion; intravenous/intramuscular/subcutaneous injection; out-of-hospital labour; immobilisation; clinical case simulations; role-playing situations and standardised patients - all with the aim to prepare sds for residency or clinical practice as graduated junior doctors. Participants get the opportunity to experience the advantages of teaching methods including practical, clinical and communication skills by participating in prepared scenarios. The Calgary-Cambridge model was adopted and sds are expected to take an active role in the learning process. The same tutor follows a group of 10 sds throughout all six years, for 30 teaching hours per each academic year.

Tutor/mentor characteristics are also an important component of the process. They should have basic core teaching skills, be trained for their role and provide high-quality education. Standardisation of the teaching is ensured by two-day courses for tutors, followed by pre-course training every academic year, teaching session plans and a tutors' guidebook including a detailed teaching plan, materials, aims and learning outcomes. Each year ends with an exam comprising 3 Objective Structured Clinical Examination (OSCE) stations.

Assessing sds' and tutors' attitudes toward learning is essential. Their feedback provides awareness as to which aspects of the course could be enhanced or changed. In five generations 83.7% sds found the course useful, 92.9% favoured practical over communication skills, 86.5% preferred to be taught on patients, 62.4% were able to use the skills acquired through FMS in other courses during the study, 82.3% found practical skills more useful in the higher years and reported implementation of the skills acquired through FMS in other courses during their study, 75.2% found that more time for practice on mannequins would be desirable. However, they appeared to underestimate the importance of communication skills. 78% preferred OSCE stations to traditional oral exams. Among lecturers' qualities, knowledge (89.4%), communication skills (75.2%) and approachability (73%) were most valued.

Key Words: education development; undergraduate; medical education; communication; clinical skills

Designing classes for medical students with little or no experience in simulation

Authors: Erika Šuper-Petrinjac

Faculty of Medicine, University of Rijeka, Rijeka, Croatia
Clinical Hospital Centre Rijeka, Rijeka, Croatia

Corresponding author: Erika Šuper-Petrinjac, erikask@uniri.hr

Abstract text: In Croatia, not a single Faculty of Medicine has a standardized multidisciplinary simulation centre. Simulation is present throughout all the years of studying but significantly varies between Faculties and between Departments. Students unfortunately, for the most time throughout all the years of study, do not practise simulation systematically. Due to the lack of simulation experience, trying to copy simulation protocols from different curriculums usually means problems and hardly achieves wanted goals. The author provides the experience of Kabinet vještina (Skills Lab), a small simulation centre of the Department of Anaesthesiology, Reanimatology, Intensive Care and Emergency Medicine at the Faculty of Medicine at the University of Rijeka in creating classes for such students and the ongoing evolution of advanced simulation courses for final year medical students with minor experience in simulation.

Key Words: advanced simulation courses; adapting simulation; healthcare simulation; Kabinet vještina (Skills Lab); medical simulation

Challenges in implementing OSCE at the University of Split School of Medicine Pharmacy program

Authors: Doris Rusic

Department of Pharmacy, University of Split School of Medicine, Split, Croatia

Corresponding author: Doris Rusic, drusic@mefst.hr

Abstract text: The preparation of the first Objective Structured Clinical Examination (OSCE) introduced at the University of Split School of Medicine Pharmacy program will be described. OSCE is held as the last or sixth partial exams of the 6-month Professional training course of pharmacy students. This OSCE comprises of seven stations, five of which are interactive. Starting point was to define the skills that will be examined for which we used the Croatian Competency Framework for Pharmacists as template. Furthermore, it was necessary to ensure adequate number of rooms in which the examination will be held in the way that communication among students is not possible and to prepare adequate number of qualified professors and staff members that was needed to conduct the examination. For this, support from the Faculty was critical. Duration of exam was taken into consideration as it should not be too overwhelming for students, actors or examiners. Finally, predicting possible problems that may occur during the examination and means to overcome them were developed. This OSCE was first pilot-tested and this pilot led to some modifications in number of tasks per station as well as the point threshold at some stations. Finally, it was necessary to make substantial changes in the program to ensure students were prepared for this type of exam. Areas in which today's OSCE is limited and where it may be improved will also be presented and analysed.

Key Words: OSCE ; Pharmacy ; Professional training

Student-centred learning in the context of external quality assurance

Authors: Irena Petrušić

Agency for Science and Higher Education, Zagreb, Croatia

Corresponding author: Irena Petrušić, irena.petrusic@azvo.hr

Abstract text: Quality assurance and management of higher education institutions and programs is in the centre of attention of various policies at the European and national level. The paradigm focusing solely on the quality of teacher and teaching process is transforming into one aiming at student learning. According to this approach, students have an active role which enables the effective learning process and taking responsibility for one's own learning. Within the quality assurance framework, the learning-centred approach was emphasized throughout the 2015 version of Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) and translated into the national quality assurance context through external institutional evaluation standards. The aim of the analysis of 7 SCLT elements (inclusive curriculum and pedagogy; flexible learning pathways; technology-enhanced learning; learning and teaching support; inclusive learning spaces and libraries; community engagement and partnerships) related to student-centred learning deriving out of institutional accreditation reports is to indicate institutional practices and obstacles related to the implementation and improvement thereof. As the review teams' findings indicate, SCLT is present at Croatian universities in various forms, however, a systematic approach to its implementation and evaluation is still lacking. Institutional quality mechanisms aimed at encouraging the autonomy and responsibility of student learning ultimately leads to the improvement of institutional and program quality so higher education institutions as well as evaluation methodologies should consider implementing this approach in a more harmonized and systematic manner.

Key Words: student-centered learning; quality assurance; institutional evaluation

Application of Peer-Assisted Learning Model in Anatomy Practical Laboratories to Improve Medical Education

Author: Hakkı Dalçık

Istanbul Aydın University, School of Medicine, Department of Anatomy, Küçükçekmece, Istanbul, Türkiye

Corresponding author: Hakkı Dalçık, hakkidalcik@aydin.edu.tr

Abstract text: “Peer-Assisted Learning Model”, can be defined as a learning method in which the students are placed in a multimodal learning, teaching, and discussion environment. In the present study we applied this this teaching method to our medical students in the Anatomy labs. The aim of this teaching approach is to get the highest efficiency from the models and the cadavers used in the demonstrations and overall to improve our medical education. To investigate the outcome of “Peer-Assisted Learning Model” a survey was applied to the first- and second-year medical students in the Anatomy practical labs. “Peer-Assisted Learning Model” is applied in each table of 5 students. After each amphitheater class the presenter gets prepared for the next couple of days and the presents their topic to the lecturer. The lecturer fills the gaps and makes the necessary corrections and makes the presenter fully prepared for his lab presentation by using the Anatomic models and cadavers. At the end of the year a survey of ten questions was applied to total of 270 medical students at Istanbul Aydın University. The results were evaluated using the ANOVA-T test. The results show the followings: (1) due to the secure environment formed by the students the students can ask their questions without any hesitation, (2) since the presentation proceeds in a Q&A format it was possible to analyze the topic in depth, (3) it was obvious that the presenter learned and assimilated the topic much better, (4) the presenter established a behavior of self-confidence and sense of responsibility was developed. The present results were found to be statistically significant. In conclusion, application of “Peer-Assisted Learning Model” in the Anatomy labs is more beneficial than the classical sessions.

Key Words: peer, anatomy, medicine, education, laboratory

Innovative Pedagogical Approaches in Medical Education

Author: Mirza Žižak

Medical Faculty University of Zagreb, Zagreb, Croatia

Corresponding author: Mirza Žižak, zizak@mef.hr

Abstract text: Medical education has undergone significant development in the last three decades, with advancements in digital technology playing a critical role. These technologies have opened entirely new fields in medical education, such as artificial intelligence, deep learning, telemedicine, learning analytics, gamification, virtual patients, and augmented and virtual reality, facilitating significant changes in how students, physicians, and other primary care professionals are educated and trained. Incorporating these technologies effectively into teaching requires a significant effort to redesign the curriculum, provide teacher training, and develop the necessary infrastructure. However, the introduction of digital technology in medical education requires a fundamental shift in the pedagogical approach to teaching and learning. Teachers need to become familiar with the new tools and strategies and learn how to use them effectively to engage and motivate students and promote their learning. Flipped classroom (FC) model is an innovative pedagogical approach, that has been gaining substantial attention in the last decade because it put the student at the center of the teaching process and assigns them an active role in the learning process. This approach is in accordance with the learning theory of Bloom's revised taxonomy, as students first gain basic knowledge and comprehension (the lower levels of cognitive work) outside of the classroom which frees up class time for active learning (the higher forms of cognitive work) when they have the support of their teachers and classmates. The advantage of the FC model is its scalability and adaptability to meet students' learning needs. It can include flipping just a particular learning unit, only a part, or even the whole course. Despite the fact that there is no single model for the flipped classroom, core features generally include: providing content in advance (generally a pre-recorded lecture), educators' awareness of students' understanding, and higher-order learning during class time. In order to implement the FC, educators need to redesign their curriculum to integrate pre-class activities into f2f classes with active learning pedagogies founded upon a constructivist theory. Introducing the FC approach in our physiology course had a significant impact on teaching and learning. Our students expressed high levels of satisfaction with the FC approach because it increases their motivation to learn and enhances their level of engagement, and interest in the subject matter.

Key Words: medical education; flipped classroom; Flipped learning

Meaningful Learning Design and Learning Analytics

Author: Blaženka Divjak

University of Zagreb, Faculty of organization and informatics, Croatia

Corresponding author: Blaženka Divjak, blazenka.divjak@foi.hr

Abstract text: Learning analytics (LA) has been opening new opportunities to support learning in higher education (HE). LA dashboards are an important tool in providing students with insights into their learning progress, and predictions, leading to reflection and adaptation of learning plans and habits. There is a growing interest in coordinating learning design (LD) with LA, as the two can mutually provide valuable input and enhance quality of teaching and learning. Furthermore, to ensure the validity of an assessment program, it is essential to align it with the intended learning outcomes (LO).

Therefore, a comprehensive LD concept and tool is needed that considers the needs of educators. The Balanced Design Planning (BDP) concept and tool (learning-design.eu) aim at implementing contemporary research findings and theory to support balanced LD planning and development. The student-centered BDP concept and tool provide innovation to LD planning by strongly focusing on learning outcomes LOs and student workload, aligning study program and course level LOs, ensuring constructive alignment and assessment validity, enhancing LD by using learning analytics, and enabling flexible use in different contexts and pedagogical approaches.

Moreover, even though the BDP concept and tool can support the implementation of various pedagogical models and approaches, as they are based on LOs and student workload, they are envisaged as student-centered with the constructivist theoretical approach, and therefore not completely pedagogically neutral. Flipped classroom (FC) approaches, work-based learning and other innovative teaching and learning approaches have been proved successful when planned, implemented and monitored with care and based on LD and LA. Finally, well-planned innovative learning approaches are invariant of mode of delivery. For example, research findings indicate that those who had used FC approaches in face-to-face or blended learning environments more successfully continued to use them more successfully in online environments than those who had not used it before.

Key Words: flipped classroom; learning analytics; learning design; work-based learning

Perspectives of Using Learning Analytics in Medical Education

Authors: Iva Bojić

Nanyang Technological University, Lee Kong Chian School of Medicine, Singapore

Corresponding author: Iva Bojić, iva.bojic@gmail.com

Abstract text: The purpose of medical education is to enhance the abilities of doctors, nurses, and allied healthcare professionals to meet the health needs of patients, communities, and populations. Digital education, which is learning through electronic technology, is becoming a popular form of continuing education in both academic and clinical settings. With the onset of COVID-19, learning through digital platforms has become the standard worldwide. These platforms are online systems that automate the management, delivery, tracking, and reporting of learning activities, thus generating large amounts of data about student learning, which can be further analyzed with Learning Analytics (LA). LA can be defined as the "measurement, collection, analysis, and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning and the environments in which it occurs." In this lecture, we will first present a life cycle of LA starting from digital education content creation, followed by the data collection process, the use of analytics to process the collected data, and the purposes for which LA was used. Then we will present the identified gaps in the current practice and finally propose how to close them.

Key Words: Cooperative/collaborative learning; COVID-19; Data science applications in education; Distance education and online learning; Distributed learning environments; 21st century abilities

eAcademy of the Croatian Medical Chamber

Author: Alen Babacanli

Abstract:

The eAcademy of the Croatian Medical Chamber represents an innovative e-learning platform designed for physicians and medical professionals, providing free access to professional education and continuing medical education. The platform consists of two key elements: Hemed, an education management system, and Panopto, a platform for videoconferencing and recording lectures.

E-learning offers numerous advantages, such as flexibility, accessibility, and individual customization. The goals of the eAcademy of the Croatian Medical Chamber include promoting continuous education, integrating membership, encouraging personal development, improving knowledge and skills, creating a knowledge base, and informing members.

The content of the eAcademy encompasses professional education, access to electronic medical publications (HeMED), education in law and medicine, skill development, and information from healthcare and the medical profession. The future of e-learning in medicine suggests greater integration with advanced technologies, which will enable a better learning experience and improved competencies for medical professionals.

In conclusion, the eAcademy of the Croatian Medical Chamber provides advanced tools and resources for e-learning, offering numerous advantages compared to traditional educational methods. Through free access to various forms of education, the eAcademy enables professional and personal development for its members, enhancing healthcare quality and promoting the medical profession.

KeyWords: Croatian Medical Chamber; innovative e-learning platform; professional education

Interactive teaching materials in the Moodle system

Authors: Martina Mavrinac, Maja Marković

Faculty of Medicine, University of Rijeka, Rijeka, Croatia

Corresponding author: Martina Mavrinac, martina.mavrinac@uniri.hr

Abstract text: Education is a continuous and flexible process that requires great investment and effort from both sides, from us who teach, but also from the students who learn. Information and communication technology (ICT) has been used for educational purposes for many years, and since Pandemic 2020, any teaching and learning process is unthinkable without the use of ICT. However, the use of new technologies primarily requires a high level of digital literacy on the part of lecturers, as well as the motivation and willingness to improve and perfect their own ICT skills in order to create a new teaching environment. To meet the needs of lecturers and the education system, a free online teaching platform, Moodle, was created. The Moodle system is used for the creation of electronic educational content and distance learning. It has been used at the University of Rijeka since 2006, first under the name MUDRI and today under the name Merlin. What is special and useful about such a system, apart from the provision of online courses, are the various forms of interactive teaching it offers. The most commonly used interactive tools in the Moodle system are: UCL Connected Learning Baseline; Discussion Forums, Glossary, H5P, Hot Question, Group Choice, Lesson, Wiki, Workshop, Collaborate, Book, Questionnaire, Activity Completion, Chat and Quiz. Considering the purpose and application for which we use them, each of these tools has certain advantages and disadvantages that need to be known in order to make the most of them and use them in online courses.

Key Words: education; information and communications technology; interactive teaching material; moodle system; online learning

e-Learning for Teaching and Improving Ultrasound and Clinical Skills Competencies

Author: Sanja Kupešić

Paul L. Foster School of Medicine, Texas Tech University Health Sciences Center El Paso

El Paso, Texas, USA¹

Corresponding author: Sanja Kupešić, sanja.kupesic@ttuhsc.edu

Abstract: This presentation discusses the best practices for using virtual reality (VR) and artificial intelligence (AI) in e-Learning and simulation in healthcare. A review of the examples for incorporating VR and AI to improve ultrasound, clinical, and surgical skills competencies enables participants to understand the importance of technology-assisted training across the continuum of medical education. VR provides a realistic environment to learn and improve clinical, imaging, and surgical skills. Advantages include using realistic virtual patients and virtual instructors, quick and objective assessment of multiple students, and improved patient safety. Because AI may examine a large volume of medical images, assess patterns consistently, and save costs, it could be efficiently used for screening and initial image interpretation. Pattern recognition is useful for the rapid evaluation of patient history and the introduction of standardized management and therapeutic procedures consistent with the most current algorithms and protocols. Deep learning algorithms may be utilized to model expert clinicians' skills during patient encounters and surgeons' skills during surgical procedures. Extracted real-time haptic signals could guide instructing trainees to perform the procedure or assist supervisory physicians in providing objective feedback. Models for intraoperative guidance based on tissue tracking are already implemented in robotic surgery, which improves instrument positioning and manipulation of surgeon novices. Computer-assisted surgery may use preoperative planning based on the patient's medical records and MR/CT surface models for optical tracking of instruments and anatomy, which is advantageous for trainees. Superposition of anatomy landmarks to real-time ultrasound images is an example of providing learners and clinicians with real-time support and guidance during ultrasound-guided procedures (e.g., regional anesthesia) to enhance precision, leading to improved clinical and patient outcomes.

Key Words: e-Learning; clinical simulation; virtual reality; artificial intelligence; ultrasound skills; clinical competency

Community – based prevention and destigmatization: a practical view

Authors: Igor Salopek

General hospital Karlovac, Karlovac, Croatia

Corresponding author: Igor Salopek, igor.salopek@bolnica-karlovac.hr

Abstract text: The lifelong prevalence of psychiatric disorders in the general population is twenty-five percent. At the same time, it is mostly about conditions from the anxiety-depressive spectrum and the spectrum of addiction. Timely recognition, as well as adequate multidisciplinary professional interventions, enable better outcomes of treatment and recovery. Therefore, prevention, health literacy programs and destigmatization of people with psychiatric disorders are essential and necessary activities in the community with the aim of mentally empowering society and individuals. The Integrative Centre of Mental Health was founded in Karlovac in 2017, and represents a platform for a range of programs, projects, campaigns and activities for the promotion and protection of mental health and public health. On the other hand, by developing the concepts of community-based psychiatry, the best approaches to people with experience of psychiatric disorders are possible.

Key Words: mental health; health literacy; destigmatization

Puzzles of Heredity: Educating Children in Genetic Literacy through Interactive Workshops

Authors: Nina Pereza¹, Mia Radošević²

¹Department of Medical Biology and Genetics and Centre for Genetic Education, Faculty of Medicine, University of Rijeka, Rijeka, Croatia

²CroMSIC, Faculty of Medicine, University of Rijeka, Rijeka, Croatia

Corresponding author: Nina Pereza, nina.pereza@uniri.hr

Abstract text: Puzzles of Heredity is a project conducted since 2021 by the Centre for Genetic Education at the Faculty of Medicine in Rijeka and CroMSIC - Croatian Medical Students' International Committee. The workshop is intended for children of preschool and early school age (grades 1-4), and the aims are to introduce children to the hierarchical structure of the human body, as well as the basic concepts of genetics and principles of inheritance, and raise awareness in children about the importance of respecting differences between humans and other living beings. The workshop is conducted by genetic educators from the Centre for Genetic Education, as well as specifically trained student genetic educators from CroMSIC. Genetic educators use different types of educational materials for the workshop, including a picture book and three didactic toys, which were designed by a preschool teacher, Montessori pedagogue.

The Puzzles of Heredity workshop encourages the development of genetic literacy in children from an early age, enabling the acquisition of knowledge about basic genetic concepts, developing positive attitudes towards the appreciation of differences between living beings, as well as developing respect for life in general. Genetic diseases are not exclusively rare diseases and low levels of genetic literacy among healthcare professionals and the general population are the main cause of discrimination and mistreatment of people who are born “different”. Therefore, increasing genetic literacy in children is of the utmost importance because knowledge is the only way to release fear and development of negative attitudes.

The aim of this lecture is to present the aims, concept, results and significance of conducting the Puzzles of Heredity workshop in children of preschool and early school age. In addition, the aim is to emphasize the important role medical educators and medical students have in the transfer of highly specific knowledge to the general public.

Key Words: medical education; genetic education; medical students; genetic literacy

Teaching pharmacology for learning in practice in medicine & pharmacy degrees

Authors: Maria Cecilia Giron¹, Giuseppe Scarsi², Barbara Gatto¹, Stefano Moro¹, Girolamo Caldò¹

¹Department of Pharmaceutical & Pharmacological Sciences, University of Padova, Italy

²International Mobility & Relationships Service, University of Padova, Italy

Corresponding author: Maria Cecilia Giron, cecilia.giron@unipd.it

Abstract text: The International Student Mobility has become a feature of higher education policy across all disciplines. Due to increasing individual tourism and migration, physicians and pharmacists progressively require intercultural skills in their home country. The University of Padova (UniPD) has various international student mobility initiatives. Overall, 80% of outgoing and incoming students come under the Erasmus+ Studio, Erasmus+ Traineeship, Erasmus Mundus and Arqus schemes, or bilateral agreements. In 2016-2017 compared to other Italian Universities, UniPD ranked second for its proportion of outgoing students (2.8%) and third for incoming (2.2%). With the about 200 Erasmus cooperation agreements, the number of incoming students has increased constantly from 4.9% to 7.5% in UniPD Medicine and Pharmacy Courses between 2019 and 2023. In this respect, the PhD program in Pharmacological Sciences strongly promotes international exchanges, with about 35% of graduate students' participation on the different initiatives. In parallel, the UniPD Department of Pharmaceutical & Pharmacological Sciences (DPPS) has organized various international summer programs (ISPs) for medical and pharmacy students with the financial support from UniPD Internalization Program and scientific nonprofit organizations. These ISPs are characterized by clinical sessions on drug information, healthcare delivery and patient cases as well as scientific sessions on pharmacological mechanisms and drug design. The main topics ISPs ranged from *Drug misuse and related clinical and toxicological issues to Theranostic Radiopharmaceuticals for Implementing Precision Medicine*, highlighting the pharmacological mechanisms and drug effects from scientific and clinical perspectives. One virtual ISP, denominated *MINDinGUT*, was launched during COVID-19 pandemic which enrolled over 65 young participants from the four continents, interested in understanding research on the microbiota-gut-brain axis. These different mobility initiatives trigger innovative effects on medicine & pharmacy education and clinical practice offering the opportunity of sharing ideas on an international level and helping students in their professional careers.

Key Words: education; mobility; pharmacology; clinical practice; scientific perspectives

Internationalization of Medical Study Programs

Authors: Lara Batičić, Vlatka Sotošek

University of Rijeka, Faculty of Medicine, Rijeka, Croatia

Corresponding author: Vlatka Sotošek, vlatkast@uniri.hr

Abstract text: "The art of medicine consists in amusing the patient while nature cures the disease", the famous writer and philosopher Voltaire once said. In order to heal patients, the key is to educate future medical doctors that will be capable of integrating different aspects of medicine and education. Accordingly, the main vision of the Faculty of Medicine Rijeka is internationalization as one of the most powerful ways to create a world without borders, a world where medicine knows no frontiers. With its scientific, professional, and general intellectual capacity, based on tradition and continuous development, the Faculty of Medicine Rijeka is an important factor on the biomedical map worldwide. We widely open new doors of cooperation and partnership with the international academic community by promoting the input and output of scientific and educational mobility and rapid flow of information, education, and ideas. Our mission is to educate, inspire, and encourage future physicians to create a better and healthier world focused on humanity and altruism. Internationalization is a bridge that connects people to the world of science and education. Since the academic year 2017/2018, the Faculty of Medicine at the University of Rijeka introduced the University integrated undergraduate and graduate study program of Medicine in English. Today we count more than 250 students from different parts of the world, including many European countries, the United States, Canada, the United Kingdom, China, Africa, Brazil, the Middle East, and many others, who study together and grow as a unique part of the educational process, constantly expanding our horizons and international visibility.

Key Words: Education; Internationalization; Medical Studies; Mobility

Lessons Learned from Curriculum Redesign

Authors: Thomas DeFer

Washington University School of Medicine, St. Louis, USA

Corresponding author: Thomas DeFer, tdefer@wustl.edu

Abstract text: Washington University school of Medicine in St. Louis, Missouri has undertaken a major curriculum renewal over the past 4 years. The recommendations of the so-called Flexner 2.0 report were incorporated into the curriculum design, one of the most important is curricular integration. The review describes the methods of integration incorporated in a horizontal and vertical fashion. Each of the three phases is described as well as the integration components in each phase.

Key Words: education; curriculum; integration

Challenges in implementing Clinical rotations at the University of Split School of Medicine

Authors: Renata Pecotić

University of Split School of Medicine, Split, Croatia

Corresponding author: Renata Pecotić, renata.pecotic@mefst.hr

Abstract text: The core curriculum of the University of Split School of Medicine (USSM) sets the standards for knowledge, skills, and attitudes that medical students should acquire. Clinical rotations as the final act of acquiring clinical skills at the USSM consist of four courses: Emergency (3 ECTS); Internal Medicine (5 ECTS); Surgery (5 ECTS); and Mother and Child (5 ECTS), and are organized in the sixth academic year involving 540 hours. In a group of two, students spend time in outpatient clinics of the University Hospital of Split, the Emergency Department of Split-Dalmatia County, and on other teaching bases. A traditional rotation involves a supervising faculty member (mentor) making assignments and working with a limited number of medical students. Students work as part of the medical team and actively participate in diagnosing and treating the patient by applying the knowledge they have acquired and improving their clinical skills to enable them to practice independently. In addition, students participate in interactive seminars where they are expected to apply their knowledge in managing clinical cases. Seminars are organized in the form of problem-based learning (PBL). Finally, the formative OSCE with immediate feedback is performed at the end of the Clinical rotations to evaluate students' clinical competence when taking the history, performing the physical examination, and in clinical reasoning. Internal SWOT analysis performed following the student's survey revealed that acquisition of skills and knowledge in small groups of students, thorough familiarization with the hospital treatment protocol of the patient, a unique opportunity for the student to participate actively under the supervision of the mentors in the patient care in different clinical scenarios, and flexibility of performing practical from clinical rotations that do not require additional material costs for the USSM and/or the University Hospital of Split are the main strengths. On the other hand, mentors are not paid for this work, and they are overloaded with regular clinical work. Variability in the quality of clinical rotation between departments and the disproportion in duration and scope of individual components are the main weaknesses. Differences in organization of clinical skills and capacity across medical schools are acknowledged. Still, constant improvement and steps toward in clinical decision-making of future physicians become a crucial features of the core curriculum of medical schools.

Key Words: clinical skills; curriculum; medical education; medical student; OSCE

Clinical teaching in dentistry

Authors Sonja Pezelj Ribarić

University of Rijeka, Faculty of Dental medicine, Rijeka, Croatia

Corresponding author: Sonja Pezelj Ribarić sonja.pezelj.ribaric@fdmri.uniri.hr

Abstract text: In the study of dentistry, teaching is organized by lectures, seminars, pre-clinical exercises and clinical exercises. Before the clinical part, students acquire skills in the preclinical exercises by working on

models. Both in the preclinical and later in the clinical part, the work task is important because it forms the basis for the learning process and stimulates further learning.

Three people are involved in this process: the patient, the student, and the teaching clinician.

In this process, the student must acquire theoretical knowledge, the ability to perform clinical examinations and communicate with patients, receive comprehensive dental education that can be applied in all areas of clinical dentistry, and collaborate with other health professionals in solving everyday dental cases.

While working on clinical cases, students are exposed to a typical or common problem, acquire new knowledge about a previously known problem, and sometimes have the opportunity to encounter a rare problem in dental casuistry.

In the sixth year of study, they deepen their skills in the context of professional practice in cooperative institutions of the faculty, where they meet and work on various case studies

The Doctor of Dental Medicine is qualified to engage in activities involving the prevention, diagnosis, and

treatment of anomalies and diseases of the mouth, oral cavity, and associated tissues.

In small learning groups, student teams examine real patient cases that represent key concepts in the curriculum. The cases represent typical clinical scenarios they will encounter in their 3rd and 4th years of study and throughout their dental careers. This learning approach helps students develop valuable critical thinking and problem solving skills that are in high demand in today's health care professions.

Key Words: clinical; dentistry; teaching

How to write a study program?

Authors: Daniela Malnar

Faculty of health studies, University of Rijeka, Rijeka

Corresponding author: Daniela Malnar, daniela.malnar@uniri.hr

Abstract text: When creating new study programmes, we need to take into account the programme's compatibility with the labour market. When we know the needs of the labour market, we start creating a study programme whose learning outcomes are the basis for key jobs within the health system. The study programme should be in accordance with the qualification standard of the Croatian Qualifications Framework (CQF), which clearly defines the learning outcomes and competencies a person must have. Learning outcomes are the basis for creating occupational standards and qualifications, and they are acquired by mastering the material. Competencies are shown through the knowledge and skills that a person acquires upon completing the study programme. Learning outcomes and competencies often overlap, which is especially the case in health professions.

The study programme must contain learning objectives and outcomes that ultimately lead to a qualification of a certain level. Imprecise verbs are used to describe the course's objectives (to have the knowledge, to learn, etc.). The American psychologist Bloom defined three areas of intellectual behaviour during learning, and he systematised each area from the lowest to the highest level of knowledge acquisition. Active verbs of levels 4 and 5 of Bloom's taxonomy, which correspond to level 5 of CQF, are used for the purpose of creating learning outcomes, while verbs of level 6 of Bloom's taxonomy correspond to levels 6 and 7 according to CQF. When creating the study programme, it is necessary to define about 20 learning outcomes of the study programme, which must be linked to the learning outcomes of each individual course. When describing each course, 4 to 10 expected learning outcomes must be specified (the number of learning outcomes depends on the teaching load of the course), at least one of which must be related to the learning outcomes of the study programme. Every outcome must be measurable and verifiable.

KeyWords: Bloom's taxonomy; learning outcomes; study program

As interdisciplinary as it gets - the role of medical doctors as teachers in Speech and Language Pathology Studies

Authors: Maja Kelić

University of Rijeka, Speech and Language Pathology Studies, Rijeka, Croatia

Corresponding author: Maja Kelić, maja.kelic@uniri.hr

Abstract text: Speech and language pathologists (SLPs) provide treatment, support and care for children and adults who have difficulties with communication, hearing, or with eating, drinking, and swallowing. In most countries SLPs are allied health professionals guided by the idea and mission immanent to medicine: therapy is an attempted remediation of a health problem, usually following a medical diagnosis. Speech and Language Pathology is however, immensely interdisciplinary field that encompasses a wide range of disciplines: from linguistics, phonetics and acoustics, to psychology, education and number of medical disciplines as neurology, otorhinolaryngology or genetics. This makes the discipline particularly attractive, but also challenging when it comes to creating a programme of study. This presentation will highlight some of these challenges, but also advantages and distinctives the programme comprises. Particular emphasis will be placed on the role of medical doctors as teachers in Speech and Language Pathology Studies and opportunities for knowledge transfer between disciplines, in both directions.

KeyWords: education in allied health professions; speech and language pathology; study programmes

Institutional framework for improving quality of L&T at University of Rijeka

Authors: Marta Žuvić

Vice-rector for students, studies and Quality Assurance, University of Rijeka

Corresponding author: Marta Žuvić, marta.zuvic@uniri.hr

Abstract text: The quality of learning and teaching is assessed, as is customary worldwide, on the basis of the results of surveys of student satisfaction with the teaching and teachers after completion of the courses. UNIRI has long gone beyond this and conducts regular and comprehensive surveys of recent graduates at all levels (Bachelor, Master and PhD), as well as surveys of academics and administrative staff, the results of which are used as a basis for decisions to introduce measures to improve not only the quality of L&T and student satisfaction, but also measures to improve the skills and competences of students, academics and support services. In this context, UNIRI launched the UNIRI CLASS programme in 2021, which consists of 5 project lines with the sole objective of supporting all education stakeholders to achieve the University's strategic objectives in L&T. The project lines are: A1. Open personalised education (development of subsidiary subjects / micro-credits offered as electives within the study programme or the LLL programme), A2. Digital Society - Innovations in L&T (developing innovative applications of digital tools and pedagogical approaches for L&T), A3: Practical Skills for the Future (developing an industry-academia network for co-supervision of 3-6-month internships), B: Student Wellbeing (supporting student counselling centre services - psychological support, career counselling) and C. UNIRI - Coursera partnership in L&T. All project lines have started and the results will be presented.

KeyWords: Quality of L&T, Innovations in L&T, Strategic objectives in L&T