

# 18. Grazer Konferenz

## Salzburg | 3. - 5. April 2014

Education for Medical Future



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Unter dem Ehrenschatz von  
**Prim. Univ.-Prof. Dr. Herbert Resch**



**Conference Venue:**

Paracelsus Medical University  
Salzburg, Austria  
Stubergasse 21-22, 5020 Salzburg, Austria

**Organisers:** Paracelsus Medical University, Salzburg  
Österreichische Gesellschaft für Hochschuldidaktik

**Scientific Program:**

Jörg-Ingolf Stein, Innsbruck  
Gilbert Reibnegger, Graz  
Waltraud Eder, Salzburg  
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## 2 Welcome

Sehr geehrte Damen und Herren!  
Liebe Kolleginnen und Kollegen!

Ich darf Sie im Namen der Paracelsus Medizinischen Privatuniversität zur „Grazer Konferenz – Qualität der Lehre“ hier in Salzburg herzlich willkommen heißen!

Ich freue mich, dass für diese Tagung das Thema „Education for Medical Future“ gewählt wurde und damit der Frage „Wie sollen zukünftige Mediziner ausgebildet werden um sie auf die Aufgaben des Arztberufes in den nächsten Jahrzehnten vorzubereiten?“ nachgegangen wird.

Die sozialen und politischen Veränderungen in unserer Gesellschaft haben zu einem sicht- und spürbaren Wandel des Arztberufes geführt. Die Fortschritte in der medizinischen Forschung und die Entwicklung neuer Technologien haben zahlreiche Fachgebiete und eine bisher noch nie dagewesene Spezialisierung ermöglicht. Diese Entwicklung verbunden mit hohem Anspruchsverhalten der Gesellschaft haben auch die Grenzen der Finanzierbarkeit des Gesundheitssystems aufgezeigt und Einschnitte in die Behandlungsfreiheit des Arztberufes mit sich gebracht. Diese ökonomischen Zwänge des „Freien Berufes des Arztes“ werden durch Vorschriften und Gesetze verstärkt und bergen das Risiko zunehmender Defensivmedizin.

Um sich diesen Herausforderungen zu stellen, ist von Medizinern während der Ausbildung eine Reihe von Qualifikationen zu erwerben, um Patientensicherheit und individuelle Ansprüche mit dem Interesse der Allgemeinheit zu verbinden. Ein Arzt soll stets medizinischer Experte mit hoher sozialer und kommunikativer Kompetenz sein, Teamfähigkeit und Managementqualitäten zeigen, aber auch seine soziale Verantwortung zu gesundheitspolitischen Themen wahrnehmen und bereit zu lebenslangem Lernen sein.

Ich wünsche Ihnen alles Gute für diese Konferenz, lebhaftes Diskussions und einen schönen Aufenthalt in Salzburg!

Waltraud Eder  
local Organisier



### 3 Programmübersicht - Program Overview

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Donnerstag - Thursday  
3. April 2014

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9:00	Registration	
10:30	Begrüßung/Welcome	Stein, Eder
11:00	Lecture	Fischer
11:45	Lecture	Osterbrink
12:30	Lunch	
14:00	Workshops 1	
15:30	Coffee	
16:00	Short Lectures	
18:00	Posterparty	Eder, Stein (Moderation)

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Freitag - Friday  
4. April 2014

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9:15	Lecture	Pierer
10:00	Lecture	Beil-Hildebrandt
10:30	Coffee	
11:00	Workshops 2	
12:30	Lunch	
14:00	Lecture	Ross
14:30	Lecture	Frey
15:30	Coffee	
16:00	Workshops 3	
19:30	Conference Dinner	

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Samstag - Saturday  
5. April 2014

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9:00	Lecture	Reibnegger
9:30	Lecture	Hampe
10:00	Lecture	Studnicka
10:30	Coffee	
11:00	Round Table	
12:00	Abschluß/Closing Remarks	März
12:15	End of Conference	

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## 4 Workshops

Workshop	Facilitator	Location	Page
Donnerstag/Thursday 14:00			
1a	Fischer	Haus C/ Auditorium Süd	no abstract
1b	Osterbrink	Haus C/ Auditorium Mitte	no abstract
1c	Breckwoldt	Haus C/ CRCS- Simulationszentrum	12
Freitag/Friday 11:00			
2a	Beil-Hildebrandt	Haus A /HS 4	13
2b	Ross	Haus C/ Auditorium Nord	14
2c	Stein	Haus C/ Auditorium Mitte	no abstract
Freitag/Friday 16:00			
3a	Körmöczy <i>et al.</i>	Haus A/ HS 4	15
3b	Pierer	Haus A/ HS 2	16
3c	Kastaller	Haus A/ HS 5	17

Workshop 1c, 3. 4. 2013, 14:00

## **Bedside Teaching**

Jan Breckwoldt

Studiendekanat der Medizinischen Fakultät, University Zurich, Switzerland

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**Background:** Bedside teaching (BST) is getting out of use in undergraduate medical education, as some authors complain. Reasons are diverse, including shorter hospitalisation times of patients, less time for clinical teachers devoted to bedside teaching, and the emergence of simulated and virtual patients. On the other hand, working together with patients is the ultimate purpose of clinical physicians. Some important aspects of clinical teaching are exclusively reserved to BST, and these should be focussed on during the session. These include communication while role modelling, presenting clinical signs and symptoms, practicing clinical skills, and giving specific and timely feedback. If not during undergraduate education, there is no structured opportunity to practice and reflect these patient encounters. Therefore BST remains a crucial element of clinical teaching, perhaps with a higher importance than ever before. We might have to encourage younger clinician teachers to re-vitalise this teaching format.

**Workshop Outline:** In this workshop a pragmatic concept of BST will be presented. On this background, a practical example of teacher training for BST will be worked on, including strengths and weaknesses. Participants will be provided with a pragmatic approach to train young faculty for BST at their home institutions.

Workshop 2a, 4. 4. 2013, 11:00

### **What should medical students learn from a the nursing perspective?**

Margitta Beil-Hildebrand

Institut für Pflegewissenschaft, Paracelsus Medical University Salzburg, Salzburg, Austria

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*This workshop will be held in German language*

- Welchen Zwecken dienen Gesundheitsorganisationen und welchen Zwecken sollen sie dienen?
- Welche Praktiken setzen Mediziner und Pflegekräfte zur Erreichung dieser Zwecke ein und welche Praktiken sollen sie in Gesundheitsorganisationen einsetzen?
- Welche erkenntnis- und wissenschaftstheoretischen Überlegungen entstehen beim kritischen Umgang mit der Medizin und Pflege und deren Anwendung in Gesundheitsorganisationen?

Zur Beantwortung dieser Fragen wird auf die aktuellen und zukünftigen Herausforderungen von Gesundheitswesen innerhalb von Industriestaaten westlicher Prägung eingegangen und dabei die Bedeutung von Medizinerinnen sowie Pflegekräften als klinische Experten innerhalb ihrer Alltagspraxis berücksichtigt.

Margitta B. Beil-Hildebrand nähert sich diesen Themen aus Sicht der Pflege unter Berücksichtigung anglo-amerikanischer Perspektiven und benennt Praktiken die die organisationale Leistungsfähigkeit und die Qualität des Arbeitslebens im Sinne von institutionellen Spitzenleistungen sicher stellen.

Workshop 2b, 4. 4. 2013, 11:00

## **Peer Teaching**

Michael Ross

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Doctors and medical students are increasingly expected to learn to teach, yet it is often not clear in practice precisely what this means or how it can be achieved. The facilitator will draw on the existing literature, original research findings and experiences of faculty development and peer assisted learning, to help participants critically reflect on different conceptions of teaching and their implications; various brief and systematic approaches to faculty development; and an approach to defining, addressing, recording and rewarding faculty development for fully-qualified doctors which is being implemented in Scotland. Participants will then consider issues around medical students learning to teach, ways to implement peer assisted learning activities, and an example of how learning to teach is being embedded as a core component for all students in an undergraduate medical curriculum. The workshop will be interactive, with plenty of opportunity for questions and discussion.

Workshop 3a, 4. 4. 2013, 16:00

### **Assessment of clinical competence by OSCE**

Günter Körmöczi<sup>1</sup>, Monika Himmelbauer<sup>2</sup>, Stefanie Seitz<sup>2</sup>

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Die Prüfungsform der Objective structured clinical examination (OSCE) ist ein probates Mittel zur Überprüfung praktischer Fertigkeiten, welche im klinischen Alltag relevant sind. Damit eine OSCE mit ihrer umfänglichen Logistik reibungslos verläuft, ist detaillierte Planung im Vorfeld unabdingbar. In diesem Workshop wird die Möglichkeit zum Erfahrungsaustausch bezüglich OSCE-Umsetzung geboten. Dabei werden grundlegende Aspekte der OSCE-Projektplanung, Stationsdesigns und Prüfungsfallerarbeitung, Tutoren- und Prüferschulung sowie prüfungsmethodische Gütekriterien erläutert. Ergänzend dazu werden Standard-Setting und verschiedene Beurteilungsmöglichkeiten dargestellt.

Workshop 3b, 4. 4. 2013, 16:00

## **DOPS MiniCEX**

Karen Pierer

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Durch die Einführung des klinisch praktischen Jahres im letzten Studienjahr des Diplomstudiums Humanmedizin ist das arbeitsplatzbasierte Lernen und Assessment ins Bewusstsein der Lehrenden gerückt. Anforderungen an die Gestaltung des klinisch praktischen Jahres werden aufgezeigt. Aufgaben und Methoden des Assessments im klinisch praktischen Jahr werden erarbeitet. An Hand von MiniCEX und DOPS werden mögliche Wege der Implementation überlegt.

Workshop 3c, 4. 4. 2013, 16:00

## **Analysis of Multiple Choice Exams**

Michaela Kastaller

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European educational reforms have tightened quality requirements for examinations by focusing on students' competence acquisition. Competence-oriented learning involves new roles for both teachers and learners. The current approach is directed towards the application of knowledge, targeting interdisciplinary and problem-based methods. Competence-oriented examination formats are structured around both knowledge- and application-based quality assurance standards that correspond with teacher expectations.

In practical terms, this means that teachers should pay particular attention to the coherence of the level of difficulty of what they teach and test. Based upon the students' intended learning outcomes, multiple-choice examination tasks should primarily consist of case vignettes of prototypical patient reports.

Through a discussion of the interpretation of quality indicators such as task difficulty, the 20th-percentile histogram, distractor analyses, the 33% item discrimination index and the point-biserial correlation coefficient, workshop participants will become familiar with specific quality criteria. Additionally, hands-on tips and tricks in the design of high-quality multiple-choice examination tasks will be provided.





## 5 Lectures, Panel Discussion

Alle Veranstaltungen finden in HausC/ Auditorium statt  
All events will take place in Haus C/ Auditorium

	Tag Day	Zeit Time	Seite Page
Fischer	Donnerstag/Thursday	11:00	no abstract
Osterbrink	Donnerstag/Thursday	11:45	no abstract
OSCE Experience	Donnerstag/Thursday	16:00	
	<i>Breckwoldt</i>		22
	<i>Körmöczsi</i>		23
	<i>Hofer</i>		24
	<i>Prodinger</i>		25
Pierer	Freitag/Friday	9:15	26
Beil-Hildebrandt	Freitag/Friday	10:00	28
Ross	Freitag/Friday	14:00	29
Frey	Freitag/Friday	14:30	30
Reibnegger	Samstag/Saturday	9:00	32
Hampe, Knorr	Samstag/Saturday	9:30	34
Studnicka	Samstag/Saturday	10:00	no abstract
Round Table	Samstag/Saturday	11:00	

3. 4. 2013, 11:00

**Challenges to Physicians in the next 10-15 years – point of view from physicians**

Martin Fischer

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Medical education should serve the needs of the respective society and its health care delivery systems. It should also be in congruence with the legal frameworks as well as with quality assurance standards. All stages of medical education need reflection and permanent adaptation to changing needs and new challenges in health care. Competency- or outcome-based medical education defines the profile of graduates from our medical faculties. These profiles should be in alignment with post-graduate training, that builds on the foundation of medical knowledge, skills and attitudes that medical students acquire during their studies. Internationally, the physician's roles derived from the CANMeds-Framework have set a standard also for undergraduate training e.g. in the Netherlands and in Switzerland. Since 2009, the German national competency-based catalogue of learning objectives ("Nationaler Kompetenz-basierter Lernzielkatalog Medizin - NKLM") is under development as a joint undertaking of the German Association of Medical Faculties ("Medizinischer Fakultätentag - MFT") and the Association for Medical Education in the German-speaking community ("Gesellschaft für Medizinische Ausbildung - GMA"). It has also adopted the CANMeds-roles and has adapted them to the German context. The key element of the NKLM is its sound science orientation. The role of the scholar is composed of four competences focusing on life-long learning, teaching, critical appraisal of scientific knowledge and innovation. Furthermore, all knowledge, skills and attitudes underlying these roles from normal structure and function of the body to scientific, clinical and communication skills are defined. All key signs, symptoms and findings as a starting point for consulting a physician and disease related prevention, diagnostics, therapy and management of care are contained. Presumably, a revised version of the NKLM will be approved by the German medical faculties by mid 2015.

What will physicians need 10 to 15 years from now? Well, we should actually teach exactly in a way that meets those needs, as it takes 10 to 15 years until our 1st semester students will be expert physicians in the system. Some assumptions are, that physicians in 2030 more than today

- (1) will be flexible information managers,
- (2) will need to protect themselves against continuous availability,
- (3) will either be even more specialized or more integrative generalists to serve as pilots for patients route through the system,
- (4) will be resource managers in a competitive system of care providers,
- (5) will be constant teachers and learners at the same time,
- (6) will be more accountable for their actions,

- (7) will be team leaders and team members in multiple health care contexts as well as in research and education,
- (8) will use scientific reasoning and argumentation in conjunction with information technology,
- (9) will be clinical decision makers and communicators as partners of patients, and
- (10) ) will need to communicate errors and limitations of health care to patients and society.

This list is of course not complete. At any rate, medical education will mirror the respective society's view on the needs of its patients. It seems key, that the patient remains in the center as health care should be for patients and not primarily against diseases.

3. 4. 2013, 16:00

### **Experiences in OSCE: at the University of Zurich**

Jan Breckwoldt

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This presentation will give an example of the curricular immersion and function of two OSCEs at the University of Zurich (UZH). The first OSCE is located at the end of the fourth academic year, its character is formative. It assesses competencies, which are relevant within the clinical electives taking place in the fifth academic year. The second OSCE is the practical component of a highly standardised nationwide licensing examination, which is coordinated by a national institute (IML, Berne), but carried out by local staff and faculty. The presentation will focus on the specific situation at UZH, describing preparation, management of the assessment process, and work-up. Special attention will be paid to crucial steps and potential pitfalls.

3. 4. 2013, 16:00

### **Experiences in OSCE: at the University of Vienna**

Günther Körmöczi

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Im Jahr 2013 wurde die Objective structured clinical examination (OSCE) zur Überprüfung klinisch-praktischer Fertigkeiten für achtsemestrige Studierende an der MedUni Wien implementiert. Dieses Großprojekt umfasste die OSCE-Logistik für 640 Studierende, welche an 16 Prüfungsstationen in über 10.000 einzelnen Prüfungsereignissen ihr Können unter Beweis stellen konnten. Die organisatorischen und prüfungsmethodischen Details dieses Großereignisses werden ebenso präsentiert wie Kriterien der Stationsauswahl, Ergebnisbeispiele und Evaluationsdaten. Darüber hinaus werden die vielfältigen Folgewirkungen der OSCE-Einführung auf die Qualität der medizinischen Lehre diskutiert.

3. 4. 2013, 16:00

### **Experiences in OSCE: at the University of Graz**

Angelika Hofer

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Further development of objective structured clinical examinations (OSCE) in Graz since 2002

In 2002 an OSCE with 12 stations was implemented in the human medicine curriculum at the Medical University of Graz. As a part of the final year examination students of their 5th year of training have to pass the exam before attending the clinical practical year. The topics of the 10 minutes stations, such as performance of practical and communicative skills, physical examinations and interpretation of diagnostic material, can be practiced in a clinical skills centre. At the beginning most of the practical skills were integrated in OSCEs however, as many of the skills should be handled earlier, a pre clinical training was introduced in the first and second year of study, which is required before attending the clinical training in hospital. Altogether in the past years thirty OSCE stations have been developed and also the clinical skills centre has shown continuous increments. In 2012 the MUG joined the German Prüfungsverbund and started to use their Item Management System for OSCEs. An evaluation of the OSCE parcours found a strong trend of rankings towards „very good“ and „good“ (760 out of 847 students). Besides some of the OSCE stations did not hit the new learning objectives and from questionnaires given to medical students we learnt that the acceptance of OSCE was reduced because of the missing feedback. Due to these results a working group was established in 2013 that defined a continuous process for OSCE quality assurance and initiated the review of all OSCE stations.

#### **Main points of action:**

1. OSCE based on the recently defined learning objectives
2. Blueprint of the 12 station OSCE parcours covering the whole spectrum of skills
3. Complex design of OSCE stations (clinical symptoms / diagnostic methods / practical procedures)
4. Standard setting carried out with a modified Angoff method
5. Short feedback at the end of each station

**Summary:** To ensure high quality standards of assessment tools such as OSCEs, close re-evaluations and a continuous process for quality assurance are essential.

3. 4. 2013, 16:00

### **Experiences in OSCE: at the University of Innsbruck**

Wolfgang Prodinger

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Currently, Innsbruck Medical University has implemented one OSCE at the end of year two, positioned in the curriculum as an entrance exam for the obligatory clerkships to ensure the mastery of basic medical skills. The OSCE content is based on Level 1 of the Austrian Catalogue of Practical Medical Learning Objectives and comprises history taking, physical exam and basic medical skills such as surgical wound dressing, venipuncture or hygienic OT preparation. The clerkship-OSCE in 2013 encompassed three 10-minute stations for each of 320 students (3 out of 5 possible stations were assigned ad hoc).

Conclusions drawn after the clerkship-OSCE were that

- (i) inter-rater variability for specific stations was acceptable, although need for rater-training for particular stations exists
- (ii) students prepared sufficiently well (still 12% had to retake the OSCE once)
- (iii) scoring using E-checklists worked efficiently
- (iv) resource allocation (space, time, material) continues to be the most critical factor on the long run

4. 4. 2013, 9:15

## **Assessment in medical education**

Karen Pierer

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Unter dem allgemeinen Begriff „Assessment“ können verschiedenste Überprüfungen zusammengefasst werden, die von einem generellen Auswahlverfahren mit Ranking der Teilnehmenden bis hin zu einem individuellen, formativen Feedback zur Förderung des Lernprozesses reichen. „Medical Education“ hingegen ist ein Begriff, der die Bereiche der Aus-/Weiter- und Fortbildung in formellen und auch informellen Kontexten umspannt.

Es geht daher um eine Standortbestimmung, wo die Curricula der österreichischen Medizinischen Universitäten in diesem weiten Feld stehen. An Hand der Begriffe „Seriosität, Kreativität, Mut und Freude“ wird der Prüfungsauftrag der Universitäten hinterfragt. Stellen wir uns die richtigen Fragen und treffen wir die richtige Wahl für unsere Assessmentmethoden? Seriosität meint die Gewinnung der Prüfungsdaten und deren Interpretation nach wissenschaftlich fundierten Methoden in transparenter und nachvollziehbarer Weise. Prüfungserstellung ist ein kreativer Prozess und keine lästige Pflicht. Es braucht Mut liebgewonnene Traditionen zu hinterfragen und unangemessene Methoden aufzugeben. Den Fortschritt der Studierenden verfolgen zu können muss ein Anliegen sein und Freude machen.

Die Behauptung „assessment drives learning“ wird häufig zitiert – aber hat diese Annahme auch Auswirkungen auf die Gestaltung unseres Prüfens? Es gibt nur wenige Publikationen, die dieses didaktische Dogma untermauern, trotzdem ist es in den Köpfen vieler Lehrender verankert. Bei der Erarbeitung von Studienplänen wird zuerst viel über Inhalte diskutiert, der Einsatz einer breiten Palette unterschiedlicher Lehrmethoden findet dann bereits sehr eingeschränkt statt und der letzte Schritt der Erstellung eines umfassend abgestimmten Prüfungsplans mit verschiedenen Assessmentmethoden wird erst gar nicht durchgeführt. Wir können jedoch diesen nächsten Schritt wagen, da wir durch die Beschäftigung mit MCQ – Prüfungen viele Erfahrungen sammeln konnten und das notwendige Verständnis für Reliabilität, Validität und Objektivität vorhanden ist. Für die Verantwortlichen bedeutet dies die Funktionen des Prüfens bei der Überarbeitung von Curricula bereits mitzuplanen. Dabei sind die Inhalte nicht mehr das allein dominierende Element, sondern Lehrformate und Assessmentmethoden müssen gleichwertig diskutiert werden.

Curriculum und Assessment sind zwei wesentliche Teile eines Studienplans, welche Studierenden ermöglichen sollen das definierte Studienziel (Outcome) zu erre-



ichen. Methoden wie die Miller'sche Pyramide, die CanMeds Rollen oder das Dreyfus Model sind hilfreiche Mittel um das Outcome (Qualifikationsprofil) für Curricula im Bereich Medical Education kompakt darzustellen. Durch die Transformation der Behauptung „assessment drives learning“ zur Aufforderung „assessment for learning“ wird für die Studierenden eine Grundlage geschaffen mitverantwortlich ihr Qualifikationsprofil zu erlangen.

Eine Weiterentwicklung der medizinischen Aus-/Weiter-/ und Fortbildung wird nur durch die Aufnahme von adäquaten Assessmentmethoden als ein gleichberechtigter Teil des Studienplans möglich.

4. 4. 2013, 10:00

**Competencies of physicians required from the perspective of nursing – international development**

Margitta Beil-Hildebrand

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*This lecture will be held in German language*

Was bedeutet Kompetenz in der Medizin und Pflege? Was macht die Kompetenz von Gesundheitsorganisationen insbesondere im Verhältnis zu den hoch qualifizierten Fachkräften in der Medizin und Pflege aus?

Zur Beantwortung dieser Fragen wird auf verschiedene sozialtheoretische Perspektiven zurück gegriffen und dabei die Bedeutung von gesundheitsbezogenen Arbeitsprozessen in (internationalen) Gesundheitsorganisationen berücksichtigt.

Margitta B. Beil-Hildebrand nähert sich dem Thema Kompetenz aus Sicht des Pflegepersonals unter Berücksichtigung anglo-amerikanischer Perspektiven und formuliert daneben Kompetenzen für die Mediziner mit einem Blick nach vorn.

4. 4. 2013, 14:00

## **Bologna Process for Medical Curricula**

Michael Ross

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European Higher Education institutions are expected to adopt a three-cycle degree structure as part of the Bologna Process, however there remains wide variation in the structure and content of medical training across the European Union. The Tuning Project started in 2000 as a consensus-based approach to identify core learning outcomes (LO) / competencies for the three Bologna cycles, in disciplines other than medicine. This methodology was first used in medicine by the MEDINE Thematic Network to gain consensus on core learning outcomes for Bologna second cycle (the primary medical degree, or Master of Medicine), and the results have been very influential internationally. The approach was then used by the MEDINE2 Thematic Network to gain consensus on core learning outcomes for Bologna first cycle (the Bachelor of Medicine), and also core learning outcomes in research for all three cycles. Methods and findings from all three of these projects will be presented in this lecture, along with insights on how to use these learning outcomes when designing and delivering an undergraduate medical curriculum, and areas for future research.

4. 4. 2013, 14:30

## **Bologna Reform in Switzerland - Innovation or Burden?**

Peter Frey

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In Switzerland the Swiss conference of university rectors' decided that all curricula at the universities had to implement the Bologna reform until the end of 2010. The medical curricula started the Bologna implementation between 2005 and 2007.

In Switzerland the implementation of the Bologna principles in medicine functioned as catalyst to trigger reflections on the structure and quality of the curriculum as well as a starting point for curriculum reforms. The swiss 6-year medical curricula was partly restructured and a master thesis beside the doctor thesis was introduced.

The presentation shows the influence of the bologna reform to the academic governance (new intrauniversal regulations, new educational committee) to the structure (modules and there sequence), to new learning units, new formative and summative assessments and other effects like evaluation and quality control. The study time in average became shorter.

The challenge was to lead the faculty through the changing process . The only burden are some more administrative tasks like controlling the ECTS-points of students or the evaluation of the curriculum. The mobility of students became not better because of bologna although it is high in the elective year. In this retrospect nevertheless the advantages of the bologna reform outweigh the burden.

### **References:**

- 1: Patricio M, de Burbure C, Costa MJ, Schirlo C, ten Cate O. Bologna in Medicine Anno 2012: experiences of European medical schools that implemented a Bologna two-cycle curriculum—an AMEE-MEDINE2 survey. *Med Teach.* 2012;34(10):821-32. doi: 10.3109/0142159X.2012.716181. Epub 2012 Sep 11. PubMed PMID: 22967184.
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Since 2005, Austrian medical universities are legally entitled to restrict the number of their study places and, hence, to select their students. While until 2012, the Medical Universities Vienna and Innsbruck employed the Swiss medical admission test (EMS, Eignungstest für Medizinische Studien), the Medical University Graz developed an own admission test consisting mainly of a knowledge test in basis scientific disciplines (biology, chemistry, mathematics and physics), a text comprehension test and a situational judgement test. The validity of this procedure in terms of enhanced study progress [1] and reduced rate of premature study dropout [2] has been published.

Meanwhile the three universities have decided to apply, and to develop further, a common admission procedure. As a basis, a Delphi process was initiated attempting at defining personal abilities and strengths of potential medical students which are deemed important by a broad selection of medical professionals and teachers at medical universities.

In order to guarantee the development of an internationally competitive high-quality admission procedure, an International Board of Advisors was established. The first round of the common admission procedure was realized in 2013: the procedure consisted in a combination of a basic science knowledge test and a text comprehension test, both according to the model employed already previously at the Medical University of Graz. In addition, a new cognitive test part was added consisting of four sub-tests: figure assembly, number series, memory and retentiveness, and mathematical reasoning. The weighting of the test constituents was 40% for basic scientific knowledge, 10% for text comprehension, and 50% for the cognitive test parts.

All test parts were presented in Multiple-Choice format (1 out of 4) and realized as paper-pencil tests on a single day common for all three participating universities. Each test item contributed a score of either 1 (correct) or 0 (false). For each of the three test parts (knowledge test, text comprehension test and cognitive test) the test scores were added and normalized according to the maximum possible scores of the respective test part. The resulting numbers were then added using the respective weighting factors (40%, 10% and 50%). Thus, in each of the three test parts the maximum normalized scores possible were 100%, and the final test score was weighted correctly according to the pre-defined weighting scheme.

Besides the ranking of the applicants, the evaluation of the test results included extensive testing of different aspects of psychometric quality and test fairness (reliability, ranking fairness and group fairness) using classical test theory as well

as descriptive and exploratory models of item response theory. Moreover, using confirmatory factor analyses, also the dimensional structure of the test procedure was investigated. The final report on the 2013 admission procedure was approved by the participating Medical Universities and was also made available to the International Board of Advisors.

In 2014, the cognitive test part will be slightly modified, now consisting of six sub-tests: figure assembly, number series [3], memory and retentiveness, verbal fluency [4], and two tests of critical thinking. The knowledge test and the text comprehension test parts will be employed in the same way as in 2013.

### References:

- [1] Reibnegger G, et al. Progress of medical students after open admission based on knowledge tests. *Med Educ* 2010; 44: 205-214
- [2] Reibnegger G, et al. Dropout rates in medical students at one school before and after the installation of admission tests in Austria. *Acad Med* 2011; 86: 1040-1048
- [3] Arendasy M, et al. Investigating the 'g'-saturation of various stratum-two factors using automatic item generation. *Intelligence* 2008; 36: 574-583
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5. 4. 2013, 9:30

### **Admission of medical students in Germany**

Wolfgang Hampe, Mirjana Knorr

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In Germany, admission to all governmentally funded medical schools is organized by a central agency called Stiftung für Hochschulzulassung (hochschulstart). Candidates are required to directly send their application to hochschulstart including a rank ordered list of preferred universities.

Forty percent of the available university places are directly allocated, 20% based on high-school grade point average (GPA) and another 20% on the basis of the waiting period since high-school graduation. The remaining 60% of the places can be assigned by the individual faculties. These select their students by very heterogeneous methods, mainly written aptitude tests, grades of individual high-school subjects, work experience, or traditional panel or multiple mini-interviews, all of which have to be combined with GPA as the dominant factor. For the selection process hochschulstart forwards the personal data of the applicants to the faculties at the beginning of August. At the end of September all universities return ranking lists to hochschulstart which now assigns the places for all universities with respect to the prioritization of the candidates.

At Hamburg University we apply two subsequent tests: In a first step more than 1000 applicants preselected by GPA are invited to the HAM-Nat, a multiple-choice test of natural sciences on high-school level. The best 115 participants directly receive a university place. The following 200 applicants with borderline results are invited to a multiple mini-interview which consists of at least eight short interview stations and aims to assess psychosocial skills. At each of the five-minute stations candidates either talk to an interviewer or interact with an actor. The station performance is evaluated by two independent observers on standardized rating scales. Based on the multiple mini-interview results the rank order is modified and the remaining 115 university places are assigned.

Since the past three years the second stage of the admission process includes a situational judgement test (SJT) in addition to the multiple mini-interview. The SJT is a less resource-intensive instrument for measuring psychosocial skills. We will present data on three different types of SJT and discuss their pros and cons.



4. 4. 2013, 11:00

**Round Table: Admission Procedures/Aufnahmeverfahren**

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Participants

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Matthäus Ch. Grasl	Vienna
Martin Arendasy	Wien
Simon Fandler	Graz
Wolfgang Hampe	Hamburg
Peter Loidl	Innsbruck
Matthias Schlehta	Wien
Michel Studnicka	Salzburg

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## 6 Posters

Posterparty: Donnerstag, 18:00, “Haus C”, Foyer

Die Poster können Donnerstag zwischen 09:00 und 12:45 Uhr aufgehängt werden und müssen bis Freitag 14:30 Uhr entfernt sein!

Posterparty: Thursday, 18:00, “Object C”, Lobby

Please mount your posters on Thursday between 09:00 and 12:45 and remove them at the latest by Friday 14:30!

- |           |  |       |
|-----------|--|-------|
| Poster 1  | <b>Hoinoiu et. al.:</b> Self-assessed Clinical Skills Competency in Medical Students – results of a pilot module within the eMediqual project                                  | p. 39 |
| Poster 2  | <b>Fandler et. al.:</b> Parents’ educational background as a predictor for results in a Medical Student Admission Test   | p. 41 |
| Poster 3  | <b>Gruber, Ehlers:</b> Qualitätsmanagement meets Medical Education – Ein QM-Tool aus der Wirtschaft in der veterinärmedizinischen Ausbildung                                   | p. 43 |
| Poster 4  | <b>Habersack et. al.:</b> Medical University Admission Test: a confirmatory factor analysis of the results   | p. 45 |
| Poster 5  | <b>Kapocsi et. al.:</b> Unterricht der Medizinischen Anthropologie an der Medizinischen Fakultät von der Universität Szeged  | p. 47 |
| Poster 6  | <b>Kofler et. al.:</b> Combined PhD and medical specialist training at the Salzburger Universitätsklinikum / Paracelsus Medical University                                     | p. 51 |
| Poster 7  | <b>Močnik et. al.:</b> Bladder Catheterization Procedure on a Manikin and a Hybrid Simulation Model  | p. 55 |
| Poster 8  | <b>Mundt et. al.:</b> Anamnesis Groups’ Exam Strategies Based on Creative Media  | p. 59 |
| Poster 9  | <b>Pabinger et. al.:</b> Why changes in principles of teaching in IT-related courses of studies are necessary  | p. 61 |
| Poster 10 | <b>Panaiteescu et. al.:</b> Modular teaching – a pilot study in Timisoara  | p. 63 |
| Poster 11 | <b>Pansy et. al.:</b> Implementation of neonatal simulation-based education at the Medical University of Graz  | p. 65 |
| Poster 12 | <b>Nemeth et. al.:</b> A new online testing program in training of cytotechnologists   | p. 67 |
| Poster 13 | <b>Pocivalnik et. al.:</b> Simulation-based education as part of the pediatric curriculum - Comparison of self-assessment and theoretical knowledge in neonatal resuscitation. | p. 68 |

Poster 14	<b>Werkgartner <i>et. al.</i></b> : Virtual liver planning systems in surgical teaching reality	p. 69
Poster 15	<b>Preusche</b> : What do we need for shaping the intention to show empathic behavior? Using the Theory of Planned Behavior (TPB) for identifying relevant factors for medical undergraduate students	p. 71
Poster 16	<b>Kiesslich <i>et. al.</i></b> : ‘PhD ScientMed’ – an interdisciplinary PhD curriculum for physicians and natural scientists	p. 73
Poster 17	<b>Schuster</b> : Options for practicable update of an existing face-to-face course with e-learning methods	p. 77
Poster 18	<b>Wagner-Menghin <i>et. al.</i></b> : A metacognitive perspective on self-judgments in practising of history taking	p. 79
Poster 19	<b>Wenninger</b> : Vocational Emigration of Young Physicians	p. 83
Poster 20	<b>Schenk <i>et. al.</i></b> : Evaluation of the first five years of the post-graduate master course “Clinical Embryology”	p. 85



## Self-assessed Clinical Skills Competency in Medical Students

### - results of a pilot module within the eMediqual project

Teodora Hoinolu, Iosif Florin Cobzariu, Bogdan Hoinolu,  
Raluca Dumache, Simona Dragan, Marius Raica

Victor Babes University of Medicine and Pharmacy Timisoara Romania



**Introduction.** Practical skills and abilities represent an important target for medical education. These skills are necessary for diagnosis of diseases and therapeutic maneuvers. By now, simulation is a widely used training method, especially in the area of practical skills. During the last years Romanian medical school curricula have been reformed by building in modules to put more focus on students' practical skills.

This study was designed for evaluation of the proposed modules for a new discipline of Clinical Skills, which has been established at the "Victor Babes" University of Medicine and Pharmacy Timisoara. The evaluation was piloted within the POSDRU project eMediqual.

**Methods.** 108 medical students (yrs II-IV) were selected randomly to take part in 5 modules of 18h of tuition, which included stations for communication, examination of vital signs, basic life support, immobilizations, gloving and gowning, knots and sutures, bandages, ECG-recording, injections and infusion set-up on manikin. All the students received the theoretical support in advance. In the practical sessions they were split in groups of three: one was the provider of the maneuver, one was the beneficiary (potential patient) and one was the observer. After each exercise they switched roles in order that everyone be evaluated by colleagues and achieve best practical skills in shortest amount of time. At the end of each module data was collected by questionnaires.

**Results.** 35.5% of the students were from clinical clerkship and the rest from preclinical years. From the clinical clerkship only 12.96% of the students have attended similar modules in the past. They recognized that the modules changed their interpretation on clinical skills to be achieved at graduation from medical school. The peer-to-peer evaluations revealed that previous theoretical knowledge and increased awareness during procedures, significantly contribute to identify and correct mistakes. 93.1% of medical students believed that education on simulators was the best method to achieve the practical skills needed during their clinical clerkship.

**Conclusion.** This study showed that practical skills education is necessary before entering clinical clerkship for all medical students. Practicing clinical skills on manikins makes students feel competent enough to face real situations. On the other hand, certain technically demanding or invasive procedures performed by clinicians on real patients need to be observed by students, until they feel confident about performing them independently, under supervision.






## Poster 1

**Self-assessed Clinical Skills Competency in Medical Students – results of a pilot module within the eMediqua project**

Teodora Hoinoiu, Iosif Florin Cobzariu, Bogdan Hoinoiu, Raluca Dumache, Simona Dragan, Marius Raica

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**Introduction:** Practical skills and abilities represent an important target for medical education. These skills are necessary for diagnosis of diseases and therapeutic maneuvers. By now, simulation is a widely used training method, especially in the area of practical skills. During the last years Romanian medical school curricula have been reformed by building in modules to put more focus on students' practical skills. This study was designed for evaluation of the proposed modules for a new discipline of Clinical Skills, which has been established at the "Victor Babes" University of Medicine and Pharmacy Timisoara. The evaluation was piloted within the POSDRU project eMediqua.

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Medizinische Universität Graz

## Parents' educational background as a predictor for results in a Medical Student Admission Test

Simon Fandler<sup>1</sup>, Hans-Peter Dimai<sup>1</sup>, Eva Rasky<sup>1</sup>, Philipp Zoidl<sup>1</sup>, Gilbert Reibnegger<sup>1</sup>

<sup>1</sup> Medical University of Graz, Austria

### Introduction

Since 2013 the three public Medical Universities in Austria use a new, uniform student selection procedure for students of Medicine (MedAT-H). In 2013 the assessment consisted of tests of basic science knowledge (40 %), text comprehension (10 %) as well as cognitive skills and capabilities (50 %).

### Methods

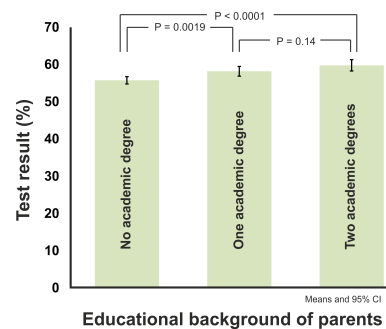
For this study all 1,737 participants of the MedAT-H 2013 at the Medical University of Graz were asked for their parents' educational and professional background in a short questionnaire on the day of the admission test. Thereby, a high response of 1,241 questionnaires (71.44 %) could be reached.

The data analysis was conducted in context of the participants' results at the admission test; the total result was correlated with the educational background of the participants.

### Results

Three main groups were formed – applicants with a university degree of both parents, university degree of only one parent and applicants whose parents did not have any university degree. Those three groups were correlated with the total result of the admission test, expressed as %.

Between the groups without and with one or two degrees, significant differences in the average values were found ( $p < 0.0001$  for two degrees versus no degrees,  $p < 0.0019$  for one degree versus no degrees). However, between the groups of one or two parents' university degrees, no significant difference was found ( $p = 0.140$ ).



### University degree of both parents (N=278)

Average test result: 59.79 % (58.26 %-61.31 %; 95% CI)

### University degree of one parent (N=298)

Average test result: 58.19 % (56.88 %-59.51 %; 95% CI).

### University degree of neither parents (N=618)

Average test result: 55.77 % (54.78 %-56.76 %; 95% CI).

### Discussion

The study revealed an interesting result which showed that socioeconomic background might indeed be a predictor for results at a medical admission test.

However, further studies are necessary to investigate potential correlations between test results and, for example, different testing formats and sub-tests in more detail.

## Poster 2

**Parents' educational background as a predictor for results in a Medical Student Admission Test**

Simon Fandler, Hans-Peter Dimai, Eva Rasky, Philipp Zoidl, Gilbert Reibnegger

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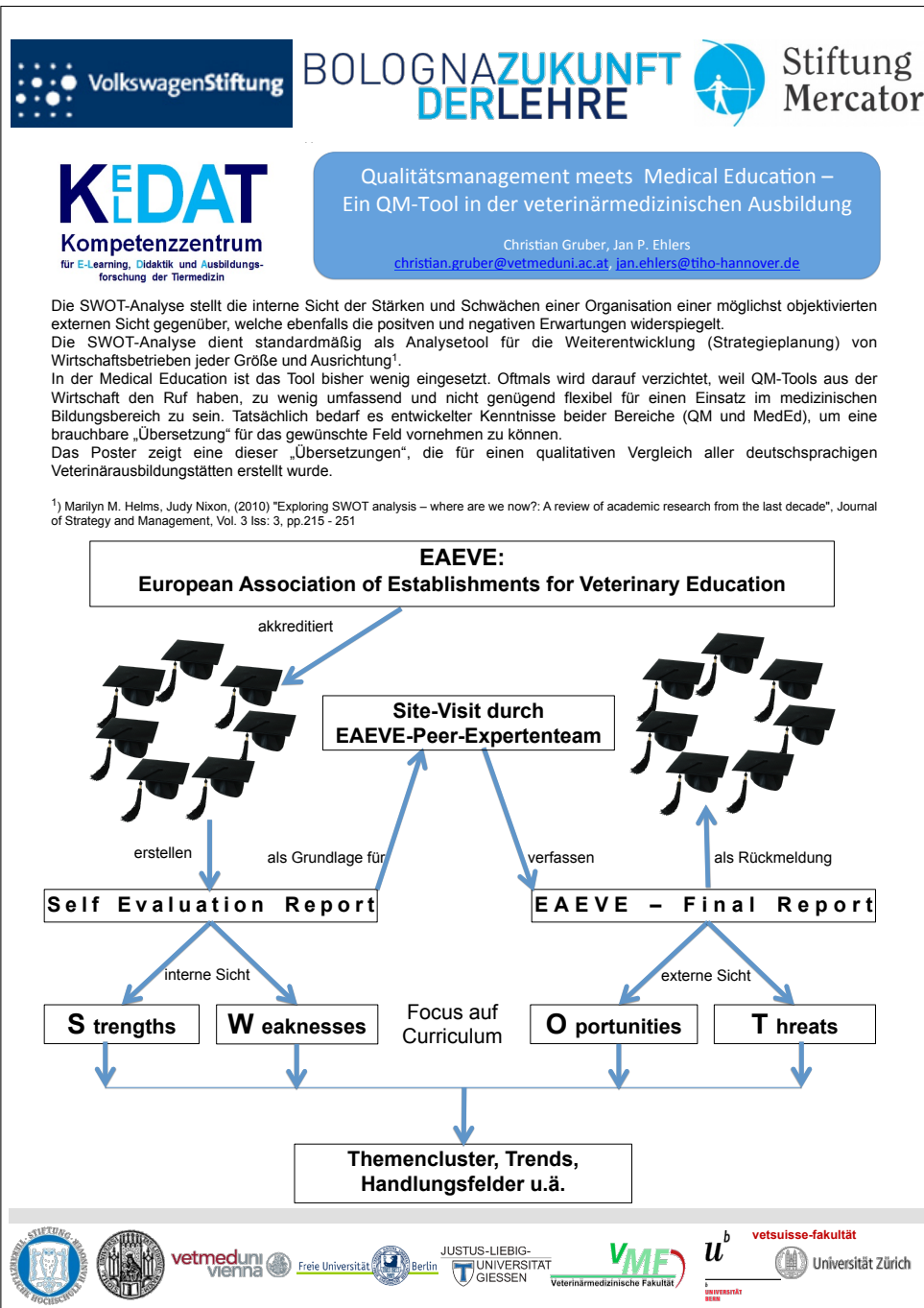
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**Methods:** For this study all 1.737 participants of the MedAT-H 2013 at the Medical University of Graz were asked for their parents' educational and professional background in a short questionnaire on the day of the admission test. Thereby, a high response of 1.241 questionnaires (71.44%) could be reached. The data analysis was conducted in context of the participants' results at the admission test; the total result was correlated with the educational background of the participants.

**Results:** Three main groups were formed – applicants with a university degree of both parents, university degree of only one parent and applicants where their parents did not have any university degree. Those three groups were correlated with the total result of the admission test in %. For applicants with parents who both have a university degree (N=278), the average test result value was 59,79% (58,26%-61,31%; 95% CI), for one university degree (N=298) the average result was 58,19% (56,88%-59,51%; 95% CI). For applicants with parents without any university degrees (N=618), the average result was 55,77% (54,78% - 56,76%; 95% CI). Between the groups without and with one or two degrees, significant differences in the average values were found ( $p < 0,0001$  for two degrees versus no degrees,  $p < 0,0019$  for one degree versus no degrees). However, between the groups of one or two parents' university degrees, no significant difference was found ( $p = 0,140$ ).

**Discussion:** The study revealed an interesting result which showed that socioeconomic background might indeed be a predictor for results at a Medical admission test. However, further studies are necessary to investigate in more detail potential correlations between test results and, for example, different testing formats and sub-tests.







## Poster 3

**Qualitätsmanagement meets Medical Education – Ein QM-Tool aus der Wirtschaft in der veterinärmedizinischen Ausbildung**

Christian Gruber, Jan P. Ehlers

Kompetenzzentrum für E-Learning, Didaktik und Ausbildungsforschung der Tiermedizin (KELDAT)

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Die sieben veterinärmedizinischen Bildungsstätten des gesamten deutschsprachigen Raumes betreiben gemeinsam das von der VW/Mercator-Stiftung geförderte Kompetenzzentrum für E-Learning, Didaktik und Ausbildungsforschung der Tiermedizin (KELDAT). Das KELDAT soll die Expertise der Projektpartner im Bereich der Medical Education fördern. Ein Projektziel ist der Vergleich der Curricula aller Projektpartner. Dieser Vergleich sollte nicht die Stundenzahlen und Fächer gegenüberstellen, sondern den Projektpartnern die Möglichkeit geben, anhand eines größeren Überblicks strategisch wertvolle Situationen zu erkennen.

Aufgrund dieser Anforderung entschieden wir uns für ein strategisches Qualitätsmanagement-Tool, das bisher üblicherweise eher in der Wirtschaft als an Universitäten verwendet wird: die SWOT-Analyse. Bei der SWOT (Strengths Weaknesses Opportunities Threads)-Analyse wird die interne Sicht der Stärken und Schwächen einer möglichst objektivierten externen Sicht gegenübergestellt.

Die veterinärmedizinische Ausbildung wird seit Mitte der 1990er Jahre im Auftrag der EU-Kommission auf die Einhaltung einheitlicher Standards hin überprüft. Dies geschieht in einem sog. „Site-Visit“ an den teilnehmenden Institutionen, dem die Erstellung eines „Self Evaluation Reports“ durch die entsprechende Bildungsstätte vorausgeht. Dem „Site-Visit“ folgt der „Final Report“, der die Einschätzung der Expertengruppe beinhaltet.

Die einheitliche Vorgehensweise und Strukturierung ermöglicht einen inhaltlichen Vergleich, wobei die „Self Evaluation Reports“ in der SWOT-Analyse die interne Sicht darstellen, während die „Final Reports“ die externen Bewertungen wiedergeben.

Mit Hilfe der SWOT-Analyse konnten gewisse Themen-Cluster identifiziert werden, die für alle Ausbildungsstätten von Bedeutung zu sein scheinen.

Die SWOT-Analyse scheint im gegebenen Kontext ein probates Werkzeug für die Identifikation gemeinsamer Anliegen zu sein, wenngleich die „Übersetzung“ des aus der Wirtschaft stammenden Tools fundierte Kenntnisse im Qualitätsmanagement erfordert.



Medizinische Universität Graz

# Medical University Admission Test: a confirmatory factor analysis of the results

Habersack M, Dimai HP, Ithaler D, Neges HM, Reibnegger G

## Introduction

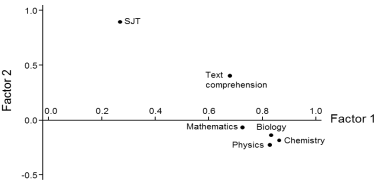
The *Graz Admission Test* was developed based on secondary school knowledge in natural science disciplines and has been applied since the academic year 2006/2007 at the Medical University of Graz, Austria (1). The validity of the *Graz Admission Test* was demonstrated by a significant improvement of study success and a significant reduction of dropout rate (2). The purpose of this study was a detailed analysis of the internal correlation structure of the various components of the *Graz Admission Test* over three academic years. In particular the question was investigated whether or not the various test parts constitute a suitable construct (a latent variable) which might be designated as “Scientific Proficiency”.

## Methods

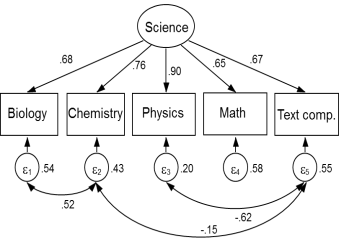
This study is an observational investigation, analyzing the results of the *Graz Admission Test* for the study of human medicine and dentistry, obtained in the academic years 2010/11, 2011/12 and 2012/13. 4741 applicants were included in the analysis. Principal component factor analysis (PCFA), specifically confirmatory factor analysis (CFA), as well as techniques from structural equation modeling (SEM) were employed to detect potential underlying latent variables governing the behavior of the measured variables (3).

## Results

PCFA showed good clustering of the science test parts, including also text comprehension. A putative latent variable “Scientific Proficiency”, investigated by CFA, was shown indeed to govern the response behavior of the applicants in biology, chemistry, physics, and mathematics as well as text comprehension.



The analysis of the correlation structure of the various test parts confirmed that the science test parts together with text comprehension constitute a satisfactory instrument for measuring a latent construct variable “Scientific Proficiency”.



$\chi^2(2) = 11.65$   
 $P = 0.0030$   
RMSEA = 0.032  
CFI = 0.999  
N = 4741

## Discussion

The present results suggest the fundamental importance of basic science knowledge for results obtained in the framework of the admission process for medical universities.

## References

1. Reibnegger G, Cuhls HC, Ithaler D, Marthel S, Neges HM, Sendl J. Progress of medical students after open admission or admission based on knowledge tests. *Medical Education*. 2010;44(2):205-14.
2. Reibnegger G, Cuhls HC, Ithaler D, Marthel S, Neges HM, Sendl J. Dropout rates in medical students at one school before and after the installation of admission tests in Austria. *Academic Medicine*. 2011;86(9):1040-4.
3. Asensio AC. *Discovering Structural Equation Modeling Using Stata*. Revised Edition. Texas: Stata Press; 2013.

## Poster 4

**Medical University Admission Test: a confirmatory factor analysis of the results**

Marion Habersack, Hans P. Dimai, Daniel Ithaler, Heide M. Neges, Gilbert Reibnegger

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**Introduction:** The *Graz Admission Test* was developed based on secondary school knowledge in natural science disciplines and has been applied since the academic year 2006/2007 at the Medical University of Graz, Austria (1). The validity of the *Graz Admission Test* was demonstrated by a significant improvement of study success and a significant reduction of dropout rate (2). The purpose of this study was a detailed analysis of the internal correlation structure of the various components of the *Graz Admission Test* over three academic years. In particular the question was investigated whether or not the various test parts constitute a suitable construct (a latent variable) which might be designated as “Scientific Proficiency”.

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**Results:** PCFA showed good clustering of the science test parts, including also text comprehension. A putative latent variable “Scientific Proficiency”, investigated by CFA, was shown indeed to govern the response behavior of the applicants in biology, chemistry, physics, and mathematics as well as text comprehension. The analysis of the correlation structure of the various test parts confirmed that the science test parts together with text comprehension constitute a satisfactory instrument for measuring a latent construct variable “Scientific Proficiency”.

**Discussion** The present results suggest the fundamental importance of basic science knowledge for results obtained in the framework of the admission process for medical universities.

**References:**

1. Reibnegger G, Caluba HC, Ithaler D, Manhal S, Neges HM, Smolle J.: Progress of medical students after open admission or admission based on knowledge tests. *Medical Education*. 2010;44(2):205-14.
2. Reibnegger G, Caluba HC, Ithaler D, Manhal S, Neges HM, Smolle J.: Dropout rates in medical students at one school before and after the installation of admission tests in Austria. *Academic Medicine*. 2011;86(8):1040-8.
3. Acok Ac.: *Discovering Structural Equation Modeling Using Stata*, Revised Edition. Texas: Stata Press; 2013.

**Unterricht der Medizinischen Anthropologie an der Medizinischen Fakultät von der Universität Szeged**

Dr. Erzsébet Kapocsi PhD, Dr. habil. Katalin Barabás MD, PhD, Gergely Tari PhD-Student

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**Einleitung:** Die Förderung von interkultureller Kompetenz gewinnt auch im Medizinstudium immer mehr an Bedeutung. In einer pluralistischen und multikulturellen Gesellschaft ist es für die kommenden Ärztinnen und Ärzte wichtig, sowohl den Menschen in der Gesamtheit seiner biologischen, psychologischen und sozialen Gegebenheiten wahrzunehmen, zu verstehen und zu behandeln, als auch die im Einzelfall relevanten soziokulturellen Aspekte in Betracht zu ziehen. Das Fach Medizinische Anthropologie steht seit 1998 auf dem Lehrplan der Medizinischen Fakultät der Universität Szeged. Gemeinsam mit anderen Fachgebieten der „medical humanities“ (Medizingeschichte, Medizinische Ethik/Bioethik, Psychologie, Soziologie) wird es von den Mitarbeitern des Instituts für Verhaltenswissenschaften für Studenten der Humanmedizin und der Zahnmedizin gelehrt; mit dem gleichen Kursprogramm für den ungarischen und für den englischsprachigen Studiengang.

**Aufbau des Studiums:** Medizinische Anthropologie wird im zweiten Studienjahr (Semester 4) als Pflicht-Wahlfach unterrichtet in insgesamt 14 Stunden; 6 Stunden Vorlesungen, 8 (4X2) Stunden Seminare.

**Themen:** Die Bedeutung der kulturellen und medizinischen Anthropologie in der Medizin; diverse kollektive und persönliche Erklärungsmodelle und Konzepte über Gesundheit und Krankheit, über Krankheitsursachen und Krankheitsentstehung sowie über Krankheitsbewältigung, Diagnostik und Therapie; Krankheit als Symbol; Medikalisierung des Alltags; Experten- und Laienwissen vom menschlichen Körper; Körpervorstellungen und Körperkonzepte; Ernährung aus anthropologischer Sicht; Ernährungskrankheiten; Anthropologie der Sexualität, Schwangerschaft und Geburt - Bräuche, Rituale, Zeremonien und Tabus in anderen Kulturkreisen; Anthropologie der Medizin und Pflege; Komplementäre und Alternative Medizin, das Konzept der Integrativen Medizin; Gesundheitssysteme, Versorgungsstrukturen.



**Methodik:** Vorlesungen für das ganze Studienjahr; Seminare in Kleingruppen; Interaktive Seminargespräche, Kurzreferate von Studenten; Fallbesprechung; Videofilme

**Lernziele:** Ziel ist eine die ärztliche Ausbildung und Tätigkeit begleitende Sensibilisierung für die soziokulturellen Faktoren mit medizinischer Relevanz. Durch den Erwerb von theoretischen Grundlagen und mit Hilfe von praktischen Beispielen sollten Medizinstudenten interkulturelle Kompetenz erwerben, die ihnen den konstruktiven Umgang mit kultureller Vielfalt und unterschiedlichen Werthaltungen ermöglicht und so zur Effizienz einer angemessenen medizinischen Behandlung beitragen kann.

**Leistungsnachweis:** Anfertigung einer Projektarbeit während des Semesters (fünfstufige Beurteilung); im vierten Studienjahr komplexes Rigorosum in den Fächern von „medical humanities“.

**Erfahrungen**

**Probleme:** Konkurrenzsituation naturwissenschaftlicher und psychosozialer Fächer; Wirkung des sog. „hidden curriculum“ (heimlichen Lehrplans); relativ wenig praktische Erfahrungen im vorklinischen Studienabschnitt.

**Erfolge:** Medizinische Anthropologie-Unterricht in das Medizinstudium integriert; Interesse und positive Rückmeldungen von Studenten.

**Aufgaben:** ständige Weiterbildung von Lehrenden; die Erfahrungen von Studierenden mit Migrationshintergrund in den Unterricht integrieren; Ärzte und Experte zum Unterricht einladen.

**Literatur:**

- 1.) Lázár I., Pikó B. (szerk.): Orvosi antropológia. Medicina, Budapest, 2012.
- 2.) Barabás K.: A magatartástudomány tárgyak oktatása az orvosképzésben. Magyar Tudomány, 2003/11.
- 3.) Helman C.G.: Kultúra, egészség és betegség. Medicina, Budapest, 2003.
- 4.) Helman C.G.: Culture, Health and Illness. Oxford University Press, 2000.



## Poster 5

**Unterricht der Medizinischen Anthropologie an der Medizinischen Fakultät von der Universität Szeged**

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**Einleitung:** Die Förderung von interkultureller Kompetenz gewinnt auch im Medizinstudium immer mehr an Bedeutung. In einer pluralistischen und multikulturellen Gesellschaft ist es für die kommenden Ärztinnen und Ärzte wichtig, sowohl den Menschen in der Gesamtheit seiner biologischen, psychologischen und sozialen Gegebenheiten wahrzunehmen, zu verstehen und zu behandeln, als auch die im Einzelfall relevanten soziokulturellen Aspekte in Betracht zu ziehen.

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**Methodik:** Vorlesungen für das ganze Studienjahr; Seminare in Kleingruppen; Interaktive Seminargespräche, Kurzreferate von Studenten; Fallbesprechung; Videofilme

**Lernziele:** Ziel ist eine die ärztliche Ausbildung und Tätigkeit begleitende Sensibilisierung für die soziokulturellen Faktoren mit medizinischer Relevanz. Durch

den Erwerb von theoretischen Grundlagen und mit Hilfe von praktischen Beispielen sollten Medizinstudenten interkulturelle Kompetenz erwerben, die ihnen den konstruktiven Umgang mit kultureller Vielfalt und unterschiedlichen Werthaltungen ermöglicht und so zur Effizienz einer angemessenen medizinischen Behandlung beitragen kann.

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**Erfahrungen:**

Probleme: Konkurrenzsituation naturwissenschaftlicher und psychosozialer Fächer; Wirkung des sog. „hidden curriculum“ (heimlichen Lehrplans); relativ wenig praktische Erfahrungen im vorklinischen Studienabschnitt.

Erfolge: Medizinische Anthropologie-Unterricht in das Medizinstudium integriert; Interesse und positive Rückmeldungen von Studenten.

Aufgaben: ständige Weiterbildung von Lehrenden; die Erfahrungen von Studierenden mit Migrationshintergrund in den Unterricht integrieren; Ärzte und Experte zum Unterricht einladen.

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- 4.) Helman C.G.: Culture, Health and Illness. Oxford University Press, 2000.



18<sup>th</sup> Graz Conference on Medical Teaching, April 3-5, 2014

## Combined PhD and medical specialist training at the University Hospital Salzburg / Paracelsus Medical University

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### INTRODUCTION

Medical graduates often face the challenge of whether to commit oneself to training in a medical speciality or to pursue a scientific project in frame of a postgraduate doctorate study. As current doctoral curricula assume full-time engagement, these paths are rather mutually exclusive. The aim was to design an organisational framework allowing for parallel medical specialist training and the conduct of a postgraduate research doctorate.

### RESULTS

#### Initial Situation

- **PhD Molecular Medicine** - as of 12-2013:  
21 active students, 11 graduates, 8 drop-outs
- **3-yr full time curriculum** (180 ECTS):  
- formalised courses: 60 ECTS  
- dissertation workload: 120 ECTS
- 21 institutes / departments at PMU supervise PhD students

#### Implementation criteria of the model

- the full individual workloads (as defined in the curriculum) are generated by the students
- the total workload corresponds to that in the traditional full-time model (i.e. 180 ECTS)
- workload generated within medical specialist training is not part of the curricular workload

#### Essential features of the model

- temporal distinction between periods devoted to either PhD work or medical training
- such alternating periods comprise 3-6 months
- in phases of full-time medical training, PhD lectures (e.g. seminars) are attended extra-occupationally as well as literature research and research project planning can be imputed to a plausible extent as curricular workload.
- with a total 50-50% allocation of PhD work and medical training, the total time required is 4.5 yrs.
- individual planning and documentation is needed to allow full traceability of the curricular workload.

Table 1: Prototype time planning **medical training** and **PhD work**

Year	Semester	Month	Time plan (example)	Workload corresponding to the curriculum PhD Molecular Medicine	ECTS*		
					Individual	Sum	cumulative
1	1	Oct-Mar	Obligatory PhD lectures, preparations dissertation	BasicLab Clinical Studies Signal transduction Biochemistry course Bioinformatics Biostatistics Scientific documentation Dissertation seminar Elective courses Dissertation (preparation)	2.0 4.0 4.0 3.0 4.0 2.0 1.0 0.5 8.0 1.5	30.0	30.0
	2	Apr-Sep	Medical training: 6 months	Dissertation seminar Dissertation (preparations in free time)	0.5 2.5	3.0	33.0
2	3	Oct-Mar	Dissertation: 3 months Medical training: 3 months	Lecture series Mol. Medicine Dissertation seminar Seminars, advanced training Elective courses Dissertation (full year)	8.0 3.0 2.0 6.0 18.0	37.0	70.0
	4	Apr-Sep	Dissertation: 3 months Medical training: 3 months				
3	5	Oct-Mar	Dissertation: 3 months Medical training: 3 months	Dissertation seminar Seminars, advanced training Elective courses Dissertation (full year)	3.0 2.0 2.0 29.0	36.0	106.0
	6	Apr-Sep	Dissertation: 3 months Medical training: 3 months				
4	7	Oct-Mar	Dissertation: 3 months Medical training: 3 months				
	8	Apr-Sep	Dissertation: 3 months Medical training: 3 months				
5	9	Oct-Mar	Dissertation: 3 months Medical training: 3 months				
	10	Apr-Sep	Dissertation: 3 months	Dissertation (full year) Rigorosum	33.0 5.0	38.0	180.0

\* ECTS: European Credit Transfer and Accumulation System

#### Advantages of the model

- + full concentration on either PhD work (thesis) or medical training
- + no difference to traditional model by full traceability of curricular workloads
- + mostly continuous clinical engagement (no loss of clinical experience / expertise)
- + mostly continuous scientific engagement (continuous involvement in PhD project)
- + comparably time-efficient (compared to sequential PhD, then medical specialist training)

### DISCUSSION

With respect to (inter)national comparability, any organisational elaboration of an established PhD study must preserve the full workload (180 ECTS) as defined in the curriculum. This is achieved here by strict separation of either PhD work or medical training. By allowing curricular workload to be imputed in free time or extra-occupationally, the PhD study can be completed in about 4.5 yrs – instead of 6 yrs provided that only 50% working time is available for PhD work. Highly individual scheduling and middle-term commitment of both students and supervisors seem crucial for a successful implementation.

### CONCLUSION

The current model provides a reasonable, traceable and time-efficient scheduling for parallel pursue of a scientific PhD and medical specialist training.

### MATERIAL AND METHODS

Adhering to the current doctorate at PMU (PhD Molecular Medicine), the formal requirements of the curriculum were translated into a model defining working periods allotted to either PhD work or medical training while ensuring full traceability of the particular workloads.



## Poster 6

**Combined PhD and medical specialist training at the Salzburger Universitätsklinikum / Paracelsus Medical University**

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<sup>1</sup> Department of Pediatrics, Laura Bassi Centre of Expertise THERAPEP

<sup>2</sup> Department of Pneumology

<sup>3</sup> IGGM - Research Institute for Basic and Frontier Questions of Medicine and Biotechnology

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<sup>8</sup> Department of Trauma Surgery and Sports Traumatology

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Medical graduates often face the challenge of whether to commit oneself to training in a medical speciality or to pursue a scientific project in frame of a postgraduate doctorate study. As current doctoral curricula assume full-time engagement, these paths are rather mutually exclusive. The aim was to design an organisational framework allowing for parallel medical specialist training and the conduct of a postgraduate research doctorate.

Adhering to the current doctorate at PMU (PhD Molecular Medicine), the formal requirements of the curriculum were translated into a model defining working periods allotted to either PhD work or medical training while ensuring full traceability of the particular workloads.

The organisation for a combined education (scientific PhD and medical training) is based on a temporal distinction between periods devoted to either PhD work or medical training. In a prototype time schedule, these phases are separated (collectively 50/50%) as alternating periods of 3-6 months. In the phases of full-time medical training, PhD lectures (e.g. seminars) are attended extra-occupationally as well as literature research and research project planning can be imputed to a plausible extent as curricular workload.

With respect to (inter)national comparability, any organisational elaboration of an established PhD study must preserve the full workload (180 ECTS) as defined in the curriculum. This is achieved here by strict separation of either PhD work or medical training. By allowing curricular workload to be imputed in free time or extra-occupationally, the PhD study can be completed in about 4.5 years –

instead of 6 years provided that only 50% working time is available for PhD work. Highly individual scheduling and middle-term commitment of both students and supervisors seem crucial for a successful implementation.

The current model provides a reasonable, traceable and time-efficient scheduling for parallel pursue of a scientific PhD and medical specialist training.




 University of Maribor  
Faculty of Medicine

## Bladder Catheterization Procedure on a Manikin and a Hybrid Simulation Model

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### Introduction

Retention of early-taught knowledge and fundamental clinical skills, essential in medical education, has not been extensively investigated. Available evidence indicates that the nonuse or non-practice of previously taught knowledge and skills seems to be the main determinant of the degree of loss.

### Methods

Students (N=19) were randomly divided into 2 groups (M and HSM group), trained BC procedure on male and female M and assessed by OSCE. OSCE 1 was done 6 weeks and OSCE 2 12 weeks after training, using blueprint validated checklists

### Research questions

- Is there significant difference in Year-6 medical students' objective structured clinical examination (OSCE) performance, long term knowledge retention and their assessment of the usefulness of the simulation training in bladder catheterization (BC) procedure on M and HSM?
- Is the OSCE score affected by gender, the repetition of BC protocol, clinical practice of BC, having the clinical skills training during the 3rd year elective or by being a peer tutor?



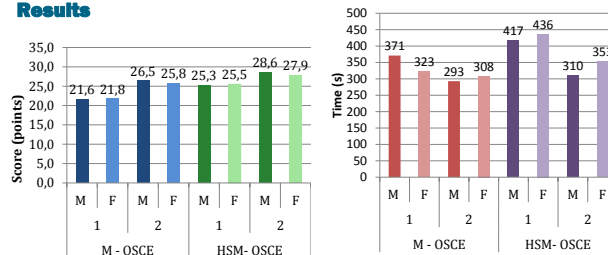
Picture 1 – Hybrid simulation model (HSM)



Picture 2 – Mannequin (M)

**Repetitio est mater studiorum!**

### Results



Figures 1 and 2 – Descriptive statistics of students OSCE scores of BC on male and female M and HSM

#### OSCE 1 vs. OSCE 2:

- male score on M ( $p=0.008$ )
- female score on M ( $p=0.04$ )
- Male score ( $p=0.02$ ) and time ( $p=0.036$ ) on HSM

#### M vs. HSM:

- Female OSCE 1 score ( $p=0.013$ )
- Rank of usefulness M-OSCE = 3.8, HSM - OSCE = 4.9, ( $p=0.009$ )

### Conclusions

Students performed better in OSCE 2. Beside the learning factor, HSM themselves could also affect student's performance as students ranked usefulness of training on HRS as much more useful. Repetition of protocol before OSCE 1 and 2, at least once, improved the score, however, it seems that real life experience is still very different and either does not influence or worsens the score. Whether having the clinical skills training during the 3rd year elective or being a peer tutor influences students score is inconclusive.

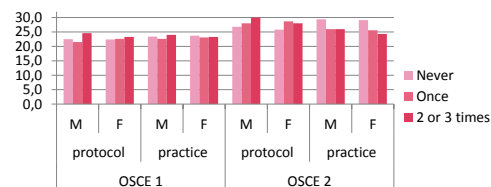


Figure 3 – Mean student score according to repetitions of protocols or clinical practice

## Poster 7

**Bladder Catheterization Procedure on a Manikin and a Hybrid Simulation Model**

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**Introduction:** Simulation has been widely adopted as a training and assessment tool in medical education. Mannequin (M) usually represents a specific body part needed for the practice and lack in doctor – patient communication. Hybrid simulators models (HSM) could offer greater realism. Retention of early-taught knowledge and fundamental clinical skills, essential in medical education, has not been extensively investigated. Available evidence indicates that the nonuse or non-practice of previously taught knowledge and skills seems to be the main determinant of the degree of loss. Our research questions:

1. Is there significant difference in Year-6 medical students' objective structured clinical examination (OSCE) performance, long term knowledge retention and their assessment of the usefulness of the simulation training in bladder catheterization (BC) procedure on M and HSM?
2. Is the OSCE score affected by gender, the repetition of BC protocol, clinical practice of BC, having the clinical skills training during the 3rd year elective or by being a peer tutor?

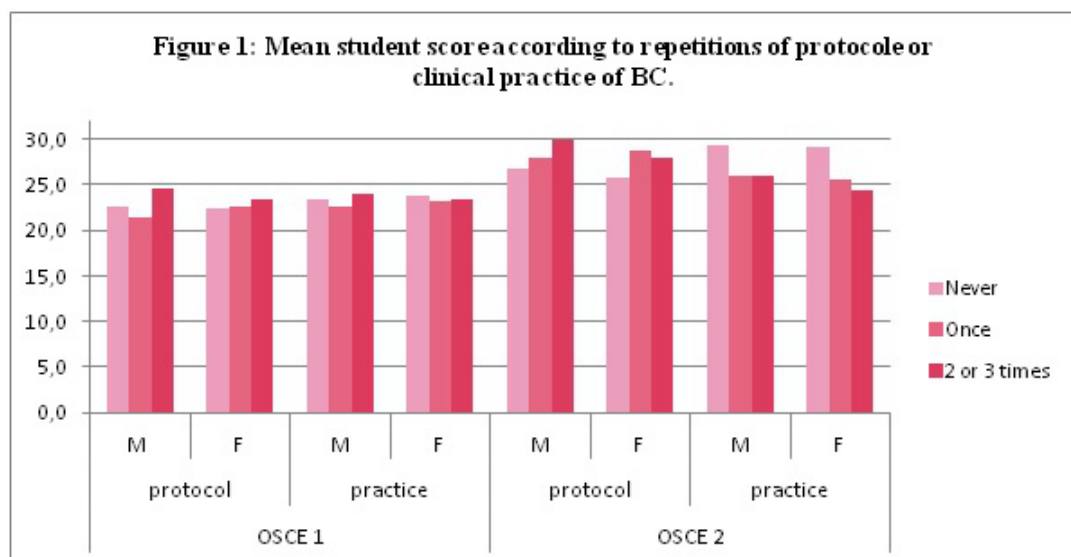
**Methods:** Repeated measures design was used. Students (N=19) were randomly divided into 2 groups (M and HSM group), trained BC procedure on M and assessed by objective structured clinical exam – OSCE. OSCE 1 was done 6 weeks and OSCE 2 12 weeks after training, using blueprint validated checklists. Additionally, students were asked to fulfill the questionnaire related to their repetitions of protocol or clinical practice of BC procedure. Statistics were done by SPSS.

**Results:** Using Wilcoxon signed-rank test we made a comparison between OSCE 1 and OSCE 2 mean gained scores and elapsed time and found significant difference between mean points for both male ( $P=0.008$ ) and female ( $P=0.04$ ) BC procedure on M. A significant difference in mean points ( $P=0.02$ ) and time ( $P=0.036$ ) for male, but not female BC procedure on HSM was found. When comparing score on M and HSM we found a significant difference only in OSCE 1 BC procedure score on female ( $P=0.013$ ) and students' rank of usefulness of BC procedure training ( $P=0.009$ ) (Table 1). Peer tutors scored statistically significantly better in male and female M and female HSM, however, gender of students or having clinical skills as a 3rd year elective did not make a difference. The results of the questionnaire are presented in Figure 1.

MEAN	M-OSCE				HSCE-OSCE			
	1		2		1		2	
	male	female	male	female	male	female	male	female
SCORE (points)	21.6	21.8	26.5	25.8	25.3	25.5	28.6	27.9
TIME (s)	371	323	293	308	417	436	310	353
USEFULNESS (rank 1-5)	3.8				4.9			

Table 1: Descriptive statistics of students OSCE scores of BC on male and female M and HSM

**Conclusions:** Students performed better in OSCE 2. Beside the learning factor, HSM themselves could also affect student's performance as students ranked usefulness of training on HRS as much more useful. Peer tutoring improves the success on OSCE 1, however, there is no statistical significance in favor of OSCE 2, which emphasizes the learning factor. Repetition of protocol before OSCE 1 and 2, at least once, improved the score, however, it seems that real life experience is still very different and either does not influence or worsens the score.





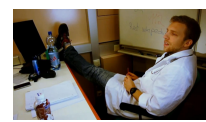
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## Anamnesis Groups' Exam are Based on Creative Media

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### Background

Founded more than 25 years ago, the Anamnesegruppen at the Medical University of Vienna have conducted more than 5000 patient interviews. Each year more than 200 students apply for admission. In May 2008 the Anamnesegruppen received the universities' "Teacher of the Month" award.

### Objectives

The **high transdisciplinarity** of the groups evolves from the participating students of *medicine, psychology, the humanities, drama and literature studies*.

These participants enable the group to focus on exam strategies based on:

- **creativity**
- **individual authorship**
- **group as an expert audience**
- **free flow of information.**

### Questions:

- Which kind of creative media (genre) do students use for their exam?
- Can a creative exam work provide informations for the larger group?
- Do female or male students prefer a certain creative media?
- Is there a relationship between the discipline of the students and the chosen creative media?

### Methods

We chose from all the exam works (n=105) of the summer/winter term 2012/13 the works which used **creative genres**. The **genre** was determined as well as its relation to the **students sex and discipline** (1=medicine, 2=psychology, 3=other study). We selected certain showcase works to describe the students' conflict in encountering the patient and how the students dealt with this conflict by creative media.

- | a.   | b.  | c.   | d.  | e.  |
|--|---|--|---|---|
| a. Marius Menholz, Anna Renner, David Jäckle, Raik Thiele (2013). Anamnesomat, Performance, Video, min: 4: 03. | b. Annalena Bottmann (2014). Du im Gespräch mit den Patienten. Ein Entscheidungsroman zur medizinischen Anamnese. Ferstl&Perz Verlag, Wien. | c. Daniel Haas, Julia Deinsberger, Claudia Furian, Claas Ole Lueder, Lea Paulus, Sebastian Promintzer, Vanessa Scholl (2013). Zwei Stühle, Photography and Text. | d. Lisa Mundt, Nina Gross (2013). S.A.M.P.L.E., One-Act Play. | e. Felix Hinker (2013). Sadistic Anamnesis, Video, min: 4:58. |

### Results

28 (29%) of the 105 students works examined used creative media. In detail, following genres were chosen:

- **Drama** (n=3),
- **Performance** (n=4)
- **Video** (n=4)
- **Literacy** (n=8)
- **Text & Visual** (n=9)

Between media and individual sex (w=35; m=17;  $r=.048$ ) no correlation were chosen and background discipline of students and media ( $r=.034$ ) were found. Main topics of the works (n=5) used for further descriptive analysis were authenticity and empathy, soulless and mechanized anamnesis, proximity/distance- conflicts and sadistic impulses towards the patient.

### Conclusion

The creative media used by the students of the Anamnesegruppen indicate that **students prefer certain genres to reflect on their problems** when encountering the patient for the first time. Participation of students of the humanities, drama and literature, might be an appropriate method to support medical and psychological students to engage with creative media. Thereby they **reflect on conflicts in a playful manner**. The presentation of the proposal and the final exam work provides an additional flow of information about the subject 'encountering a patient' between all the students involved.



## Poster 8

**Anamnesis Groups' Exam Strategies Based on Creative Media**

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**Background:** Founded more than 25 years ago, the Anamnesegruppen at the Medical University of Vienna have conducted more than 5000 patient interviews. Each year more than 200 students apply for admission. In May 2008 the Anamnesegruppen received the universities' "Teacher of the Month" award.

**Objectives:** The high transdisciplinarity of the groups evolves from the participating students of the humanities, drama and literature studies. These participants enable the group to focus on exam strategies based on creativity, individual authorship and the group as an expert audience with free flow of information. Archiving in social media as well as on the Anamnesegruppen-website were provided. In this study, we raised the question of which creative media the students use to address the margin which is evoked by the absence of patients during the exams. We hypothesized that the creative media exams offer the student to playfully express and reflect unconscious conflicts related to the students' encounters with their patients.

**Methods:** For analysis we chose from all the exam works (n=105) of the summer/winter term 2012/13 the works which used creative genres. The genre was determined as well as its relation to the students sex and discipline. We selected certain showcase works to describe the students' conflict in encountering the patient and how the students dealt with this conflict by creative media.

**Results:** 20 (19%) of the 105 students works examined used creative media. In detail, students drew on: Drama (n=3), Performance (n=4) Video (n=4) Literacy (n=8) Text Visual (n=9) No correlation between sex and background discipline of students and media were found. Main topics of the works (n=5) used for further descriptive analysis were authenticity and empathy, soulless and mechanised anamnesis, proximity/distance- conflicts and sadistic impulses towards the patient.

**Discussion and Conclusion:** The creative media used by the students of the Anamnesegruppen indicate that students prefer some genres to reflect on their problems when encountering the patient for the first time. Participation of students of the humanities, drama and literature, might be an appropriate method to support medical students to engage with creative media to reflect on conflicts in a playful manner. Although also an exam, creative media can also be considered as a group based exam method which provides an additional flow of communication between all the students involved.



Postgraduate School

Medical University of Graz

**UNIVERSITÄTSLEHRGANG**  
**PUBLIC HEALTH**  
 Management in der Krankenversorgung  
 und Gesundheitsförderung

## Why changes in principles of teaching in IT-related courses of studies are necessary

Christof Pabinger(1,2), Claudia Heu(1,2), Martina Hackenauer(2)

### BACKGROUND

More and more people spend most of their professional life sitting in front of the computer. A variety of orthopaedic problems can be found in IT-related workers, named as the „sitting disease“. On the opposite there is a huge number of health promoting measures, which, due to qualifications of the people concerned, counteract these risk factors.

The aim of this study is to find out, if there is a requirement for health promotion topics in the education of IT-students. Therefore, at first knowledge about potential risks and health promoting measures to offset these risks is necessary. Moreover investigation of the target group IT-students in regard to their state of health and existing know-how concerning the display workstation is needed to answer the question.

### METHODS

Reviews, studies, scientific articles and specialist literature have been used for conducting literature research. Assessment tool is a questionnaire with the focus on general health situation, general movement behaviour, know-how and wishes of students in IT-related degree programmes.

### RESULTS

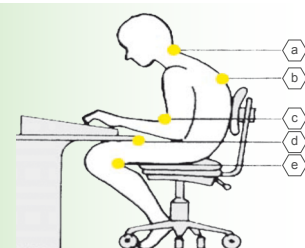
Exemplarily, 217 students from IT-related degree programmes of an University of Applied Sciences and an University were surveyed, gender-specific differences indicated. 70% have an excellent to very good subjective health situation. Only 24% of the persons surveyed have preliminary knowledge on ergonomics and prevention concerning display workstations due to lectures, 69% have dealt with these topics on their own. More than a quarter of the students spend more than 8 hours a day sitting in front of the PC, another 40% between 6 and 8 hours a day. Only 9% follow the recommendation for high intensity movement of 75min/week, 60% the recommendation for moderate intensity movement of 150min/week. A great number of students are already suffering seldom to frequently from afflictions caused by screen handling, also in high pain intensity (VAS>5/10). Nearly 70% of the students surveyed wish to learn more about health promotion on display workplace, 60% wish this to be treated in terms of lectures. Perspectives of implementation are multifarious and reach from accomplishing awareness about these themes among teachers to free guest lectures of health experts or to cooperation with physiotherapy study courses.

### CONCLUSION

Despite of limitations a recommendation for integration in the curriculum can be declared. For the ability to make more valid statements about the concerned target group more comprehensive investigation would be necessary. Therefore we recommend to implement orthopaedic teaching and learning contents into IT related studies.

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Unsuitable sitting posture:

a neck pain  
b thoracic spine pain  
c pressure on the stomach  
d pinched thighs  
e non-ergonomic knee position, venous congestion

#### The wish to learn more about health promotion on display workplace (n=217)

YES	NO	I DON'T KNOW
143 (66%)	50 (23%)	24 (11%)

#### The wish to be treated in terms of lectures (n=217)

YES	NO	I DON'T KNOW
131 (60%)	48 (22%)	38 (18%)

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**OPZ**

 ORTHOPÄDISCH  
 PHYSIOTHERAPEUTISCHES  
 ZENTRUM  
 GRAZ

GRATKORN

## Poster 9

**Why changes in principles of teaching in IT-related courses of studies are necessary**Christof Pabinger<sup>1,2</sup>, Claudia Heu<sup>1,2</sup>, Martina Hackenauer<sup>2</sup><sup>1</sup> Orthopädisches Zentrum Graz, Austria<sup>2</sup> Medical University of Graz, Austria

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**Background:** More and more people spend most of their professional life sitting in front of the computer. A variety of orthopaedic problems can be found in IT-related workers, named as the „sitting disease“. On the opposite there is a huge number of health promoting measures, which, due to qualifications of the people concerned, counteract these risk factors.

The aim of this study is to find out, if there is a requirement for health promotion topics in the education of IT-students. Therefore, at first knowledge about potential risks and health promoting measures to offset these risks is necessary. Moreover investigation of the target group IT-students in regard to their state of health and existing know-how concerning the display workstation is needed to answer the question.

**Methods:** Reviews, studies, scientific articles and specialist literature have been used for conducting literature research. Assessment tool is a questionnaire with the focus on general health situation, general movement behaviour, know-how and wishes of students in IT-related degree programmes.

**Results:** Exemplarily, 217 students from IT-related degree programmes of an University of Applied Sciences and an University were surveyed, gender-specific differences indicated. 70% have an excellent to very good subjective health situation. Only 24% of the persons surveyed have preliminary knowledge on ergonomics and prevention concerning display workstations due to lectures, 69% have dealt with these topics on their own. More than a quarter of the students spend more than 8 hours a day sitting in front of the PC, another 40% between 6 and 8 hours a day. Only 9% follow the recommendation for high intensity movement of 75min/week, 60% the recommendation for moderate intensity movement of 150min/week. A great number of students are already suffering seldom to frequently from afflictions caused by screen handling, also in high pain intensity (VAS>5/10). Nearly 70% of the students surveyed wish to learn more about health promotion on display workplace, 60% wish this to be treated in terms of lectures. Perspectives of implementation are multifarious and reach from accomplishing awareness about these themes among teachers to free guest lectures of health experts or to cooperation with physiotherapy study courses.

**Conclusion:** A recommendation for an integration in the curriculum can be declared. For the ability to make more valid statements about the concerned target group more comprehensive investigation would be necessary. We recommend to implement orthopaedic teaching and learning contents into IT related studies.



## Modular teaching – a pilot study in Timisoara

Carmen Panaiteanu Bunu, Carmen Pitic, Daniela Puscasu, Carmen Tatu  
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### THE BUILDING BLOCKS OF A NEW CURRICULUM

Within eMediqual project, we have evaluated the impact of a modular teaching system.

A pilot study was initiated to assess whether a modular medical curriculum would fit students' needs.

This poster highlights the results obtained in three of these courses.



The Physiology Department organised 2 summer schools and 1 integrated modular course.

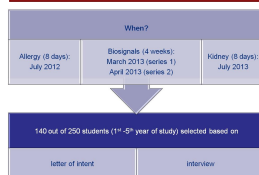
Allergic Respiratory Syndromes: from Molecule to Therapy (2012)

Urinary system: Malpighi in 2013

Biosignals-Clinical Applications (2 series, 2013)

### METHODS AND RESULTS

#### AT A GLANCE



#### DESIGN

- The modular courses were designed to ensure both vertical and horizontal integration so that to offer students an integrated view of:
  - respiratory allergies,
  - urinary system,
  - clinical applications of biosignals.
- Each modular course comprised:
  - academic lectures
  - practical applications in clinical settings

#### TEACHING METHODS

Besides the novelty of learning in a modular way, the students enrolled to the Biosignals - Clinical Applications modular course also benefited of the use of SMART Notebook programme and of the Smart Response PE interactive response system.



### EVALUATION

- Questionnaires comprised 10 – 14 questions, basically looking to obtain the same information, yet adapted to each modular course.
- Answer scale: 1 – 5 (where 5 = strongly agree).
- Questionnaires of the 2 summer schools also included open-ended questions.

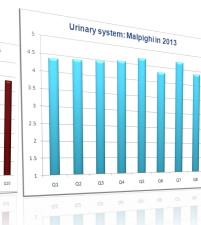
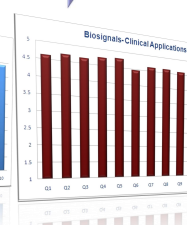
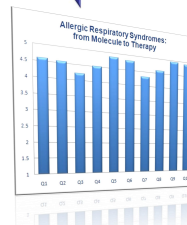
Evaluation of student knowledge (MCQ)

Evaluation of modular course by students

- Questionnaires were analysed per each modular course.
- The analysis of students' answers showed a good level of satisfaction at the end of each modular course.
- Results were subsequently centralised to get an insight on students' views about the modular teaching system.

#### QUESTIONS - SYNTHESIS

- Expectations fulfilled.
- Lectures' effectiveness.
- Workshops effectiveness.
- Well structured lectures/workshops/ Interactive teaching.
- Clear module objectives/Good course support materials.
- Adequate teaching methods/Well equipped lecture halls and laboratories.
- Module has raised interest/knowledge in the field.
- MCQ helpful to better understand theory.
- Recommendation of module to colleagues.
- Modular curriculum preferred.



### CONCLUSION

- Cooperation and communication between teachers from different disciplines (preclinical and clinical) is required to develop a comprehensive module and to avoid overlapping information.
- Small groups teaching enhances the quality of learning process.
- Close interaction with students enables appropriate feedback for improvement of teaching process adjusted to permanent evolving needs.



The great gain of this particular experience for the students is that they are now able to compare the modular against the traditional education, as they study the same subjects in both ways.

Acknowledgement: POSDRU /86/ 1.2/ SI 63815 , eMediqual

## Poster 10

**Modular teaching – a pilot study in Timisoara**

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**Introduction:** In order to evaluate the impact of a modular teaching system to be implemented in our university, a pilot study was initiated with the aim to assess whether a modular medical curriculum would fit students' needs. This poster highlights the results obtained following organisation by the Physiology Department of two summer schools (Allergic Respiratory Syndromes: from Molecule to Therapy, 2012 and Urinary system: Malpighi in 2013) and one integrated modular course (Biosignals-Clinical Applications, 2013).

**Methods and Results:** The modular courses were designed to ensure both vertical and horizontal integration so that to offer students an integrated view of respiratory allergies, urinary system and clinical applications of biosignals, respectively. A total number of 140 students out of 250 candidates (1st to 5th years of study) were selected based on a letter of intent and an interview. Each modular course comprised both academic lectures and practical applications in relevant clinical settings, while the methods used were: lectures, workshops, problem-based learning and small group discussions. Besides the novelty of learning in a modular way, the students enrolled to the Biosignals-Clinical Applications modular course also benefited of the use of SMART Notebook programme and of the Smart Response PE interactive response system. At the end of each modular course, students' knowledge was assessed by MCQ, and the modular courses were then evaluated by questionnaires for students. The questionnaires comprised 10 – 14 questions, basically looking to obtain the same information, yet adapted to each modular course. All the questionnaires were analysed per each modular course and the results were subsequently centralised in order to get an insight on students' views about the modular teaching system.

**Conclusions:** (1) cooperation and communication between teachers from different disciplines (preclinical and clinical) is required for a comprehensive module without overlapping information; (2) small groups teaching enhances the quality of learning process; (3) close interaction with students enables appropriate feedback for improvement of teaching process adjusted to permanent evolving needs. This way of teaching has the potential to improve the quality of both teaching and learning processes. But the great gain of this particular experience for the students is that they are now able to compare the modular against the traditional education. **Acknowledgement:** The courses were supported by the POSDRU /86/1.2/S/63815 project.

## Implementation of neonatal simulation-based education at the Medical University of Graz



Medical University of Graz

J. Pansy, M. Pocivalnik, LP. Mileder, W. Raith, B. Urlsberger

Division of Neonatology, Department of Pediatrics and Adolescent Medicine, Medical University of Graz, Austria

### Background

Medical simulation, defined as a situation or environment that allows students and medical staff to experience, practice, learn, evaluate, test and understand life-saving procedures, has been widely implemented into under- and postgraduate medical education within the past decades. Simulation-based medical education (SBME) may consist of computer-based virtual reality, part-task-trainers for the training of technical skills, static manikins (Figure 1a), and high-fidelity integrated patient simulators (Figure 1b). An elective simulation-based course has been introduced at the Department of Pediatrics at the Medical University of Graz to improve skills and expertise in neonatal resuscitation.

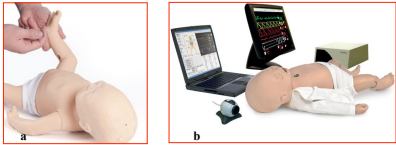


Figure 1 a and b: Low-fidelity patient simulator (a) and high-fidelity patient simulator (b) (www.laerdal.com).

### Methods

An interdisciplinary work group, established in January 2013, has designed the course. Teaching contents, course time, and educational objectives have been defined and coordinated with current pediatric courses (Figure 2 and table 1).



Figure 2: Planned course structure  
(Adapted from: Laerdal Medical – The Circle of Learning)

Basics in neonatal assessment
Neonatal resuscitation algorithm (3:1)
Adaptation
Transitory tachypnea of the infant
Wet lung
Bacterial infection
Hypoglycemic seizure
Meconium aspiration syndrome

Table 1: Teaching contents.

### Results

The presented elective course has started as pilot project in autumn 2013. The number of participants has been limited to guarantee hands-on training for every student. Students learn structured assessment and resuscitation of newborns and common neonatal diseases (see table 2). After theoretical introduction (lecture/oral presentations) on neonatal assessment, resuscitation and diseases, and active training of resuscitation algorithms on low-fidelity manikins, students familiarize with a high-fidelity infant simulator. Subsequently, students actively train practical skills on high-fidelity simulators and participate in simulated clinical scenarios with video-assisted debriefings.

### Conclusion

Neonatal SBME with low- and high-fidelity simulators has been implemented as pilot project in the pediatric curriculum of the Medical University of Graz. The impact of the described course will be determined through objective assessment of cognitive and technical skills. **If SBME results in significant improvement of cognitive and technical skills, this educational pilot project should be established for all medical students.**

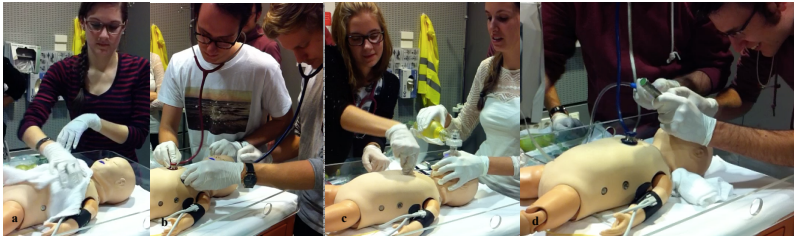


Figure 4: Students practicing neonatal supply in a newborn (a), neonatal assessment (b), cardio-pulmonary resuscitation (c) and intubation with meconium suction adapter in a meconium aspiration syndrome scenario (d).



## Poster 11

**Implementation of neonatal simulation-based education at the Medical University of Graz**

Jasmin Pansy, Mirjam Pocivalnik, Lukas Peter Mileder, Wolfgang Raith, Berndt Urlesberger

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**Introduction:** Medical simulation, defined as a situation or environment that allows students and medical staff to experience, practice, learn, evaluate, test and understand life-saving procedures, has been widely implemented into under- and postgraduate medical education within the past decades [1]. Simulation-based medical education (SBME) may consist of computer-based virtual reality, part-task-trainers for the training of technical skills, static manikins, and high-fidelity integrated patient simulators [2]. An elective simulation-based course has been introduced at the Department of Pediatrics at the Medical University of Graz to improve skills and expertise in neonatal resuscitation.

**Methods:** An interdisciplinary work group, established in January 2013, has designed the course. Teaching contents, course time, and educational objectives have been defined and coordinated with current pediatric courses.

**Results:** The presented elective course has started as pilot project in autumn 2013. The number of participants has been limited to guarantee hands-on training for every student. Students learn structured assessment and resuscitation of newborns and common neonatal diseases (e.g. transitory tachypnea of the infant, wet lung, bacterial infection, hypoglycemic seizure, meconium aspiration syndrome). After theoretical introduction (lecture/oral presentations) on neonatal assessment, resuscitation and diseases, and active training of resuscitation algorithms on low-fidelity manikins students familiarize with a high-fidelity infant simulator. Subsequently, students actively train practical skills and participate in simulated clinical scenarios with video-assisted debriefings.

**Conclusion:** Neonatal SBME with low- and high-fidelity simulators has been implemented as pilot project in the pediatric curriculum of the Medical University of Graz. The impact of the described course will be determined through objective assessment of cognitive and technical skills. If SBME results in significant improvement of cognitive and technical skills, this educational pilot project should be established for all medical students.

**References:**

1. Issenberg SB, McGaghie WC, Petrusa ER, et al. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. *Med Teach*. 2005;27(1):10–28.
2. Cook DA, Hatala R, Brydges R, et al. Technology-enhanced simulation for health professions education – a systematic review and meta-analysis

# Qualitative improvement in training of cytotechnologists

## A new online testing program



M Nemeth<sup>1</sup>, HG Wiener<sup>2</sup>, J Stani<sup>2</sup>, C Dusek<sup>1</sup>, T Pekar<sup>1</sup>  
<sup>1</sup> University of Applied Sciences Wiener Neustadt  
<sup>2</sup> Medical University Vienna



Biomedical Science

## Background

In 2008 a course for gynaecological and extragynaecological cytodiagnosics was established at the University of Applied Sciences Wiener Neustadt. All biomedical Scientists, Laboratory Technicians, Biologists, medical practitioners and Pathologists attending the course have been already working in the field of cytology/pathology. The training has included several different educational methods, but was always based on small student groups. Theoretical input via lectures, conventional microscopic work partly combined with computer-aided e-learning parts and team based learning at the microscope entered the curriculum. Since then 5 courses have been held and all participants were periodically asked for their feed back (Table 1). Data were anonymised. Age of students and feed back entered computerized files. The evaluation indicated the need for an improvement of the present e-learning system.

Box 1 (0.0%)

Box	Slide	Versuche	Prozent
1	1	1215	0
1	2	217	0
1	3	1218	0
1	4	219	0
1	5	1303	0
1	6	106	0
1	7	316	0

Fig. 1

## Problem

Since the beginning feedbacks from the students have been collected to evaluate the contentedness with the didactics used in the courses. It has been shown that handouts, Power Point presentations, talks and team-based learning were considered very helpful, whereas the used online-training and online feedback were classified less helpful. Reflecting on these results the first version of the e-learning system was replaced by a new program.

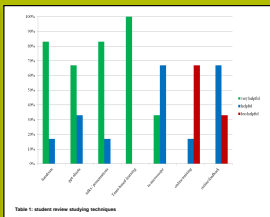


Table 1: student review studying techniques

## Method

A Learning Management System has been developed making entirely use of open source products as the Django framework using PostgreSQL as ORDBMS and Debian Linux as supporting OS platform. Due to the MVC paradigm, template based views and the object-oriented paradigm supported by the underlying Python programming language, the system can easily be adopted to changed work-flow or grading requirements. The system presents a consistent work-flow through the assessment including statistics of their individual performance, the possibility to display annotations or resubmit the assessment if required by the didactic concept. Multiple images can be annexed to every cytogram giving the possibility to guide the attention to peculiarities of the specific specimen. The images can be presented in arbitrary resolutions allowing to accommodate different requirements of technical infrastructure at the students accommodation. For the lecturer an asset management system allows quick overviews of every specimen's whereabouts and detailed reports of the students' performance. Figure 1-3 show screenshots of the modified online training.

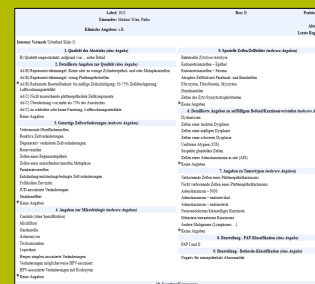


Fig. 2



Fig. 3

## Conclusion

Since half a year the new open source system is used by the trainees. Screening a specimen includes now a selection of special diagnostic features. Classifying those via the system gives the opportunity to reach high knowledge level without loss of time waiting for any tutor's answer. The new system is used for half a year now and preliminary feedback of the students is very positive. And at the same time the tutor's on spot workload is reduced. Within the next two years an evaluation will take place to get a feedback of the new system.

Fig. 1: clip to the overview of the slide-box  
 Fig. 2: online cytogram with single and multiple choice  
 Fig. 3: annexed image with peculiarities of the specific specimen with single choice testing

## Acknowledgements

The authors want to thank the open source community, especially the supporters of the Django framework and the PostgreSQL software.



## Poster 12

**A new online testing program in training of cytotechnologists**

Marlies Nemeth<sup>1</sup>, Helene G. Wiener<sup>2</sup>, Josefine Stani<sup>2</sup>, Christian Dusek<sup>1</sup>,  
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**Introduction:** In 2008 a course for gynaecological and extragynaecological cytodiagnosics was established at the University of Applied Sciences Wiener Neustadt. All biomedical Scientists, Laboratory Technicians, Biologists, medical practitioners and Pathologists attending the course have been already working in the field of cytology/pathology. The training has included several different educational methods, but always has been based on small student groups. Theoretical input via lectures, conventional microscopic work partly combined with computer-aided e-learning parts and team based learning at the microscope entered the curriculum. Since then 5 courses have been held and all participants were periodically asked for their feedback. Data were anonymised.

**Problem:** The collected feedbacks demonstrated that handouts, Power Point presentations, talks and team-based-learning were very helpful, whereas the used online-training and online feedback was considered less helpful. Reflecting on the results the first version of the e-learning system was replaced by a new program. In 2013 the microscopic work combined with computer-aided e-learning was modified.

**Methods:** A Learning Management System has been developed making entirely use of open source products as the Django framework using PostgreSQL as OR-DBMS and Debian Linux as supporting OS platform. Due to the MVC paradigm, template based views and the object-oriented paradigm supported by the underlying Python programming language, the system can easily be adopted to changed work-flow or grading requirements. The system presents a consistent work-flow through the assessment including statistics of their individual performance, the possibility to display annotations or resubmit the assessment if required by the didactic concept. Multiple images can be annexed to every cytogram giving the possibility to guide the attention to peculiarities of the specific specimen. The images can be presented in arbitrary resolutions allowing to accommodate different requirements of technical infrastructure at the students accommodation. For the lecturer an asset management system allows quick overviews of every specimen's whereabouts and detailed reports of the students' performance.

**Conclusio:** Since half a year the new open source system is used by the trainees. Screening a specimen includes now a selection of special diagnostic features. Classifying those via the system gives the opportunity to reach high knowledge level without loss of time waiting for any tutor's answer. The preliminary feedback of the students is very positive. And at the same time the tutor's on spot workload is reduced.

Poster 13

**Simulation-based education as part of the pediatric curriculum - Comparison of self-assessment and theoretical knowledge in neonatal resuscitation.**

Mirjam Pocivalnik, Jasmin Pansy, Lukas Peter Mileder, Wolfgang Raith, Berndt Urlesberger

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**Introduction:** Simulation has been widely implemented into under- and post-graduate medical education within the past decades [1]. Therefore, we implemented an elective simulation-based course aiming to teach structured assessment and cardiopulmonary resuscitation (CPR) of newborns, and common neonatal diseases (e.g. transitory tachypnea of the infant, bacterial infection, hypoglycemic seizure, meconium aspiration). We evaluated student's self-assessment and their theoretical knowledge of neonatal resuscitation at the beginning of the elective simulation-based course.

**Methods:** We performed a survey, utilizing a questionnaire with 7 self-assessment questions and 10 theoretical resuscitation guideline questions. After finishing the elective simulation-based course, the same questionnaire will be administered.

**Results:** 20 questionnaires were analyzed. 10/20 students already participated in basic neonatal and infant resuscitation training prior to our elective simulation-based course. Except one, all other students estimated their basic knowledge in neonatal assessment, resuscitation and most common diseases to be little or zero. Except for 4 students, the majority estimated their knowledge in neonatal CPR and mask ventilation to be poor. Only half of the students (53%) were able to answer questions concerning resuscitation guidelines for newborns (e.g. ratio of ventilation and heart compression, depth of heart compression, first steps in treatment) and assessment of the newborn (Apgar score) correctly.

**Conclusion:** Self-assessment of medical students was in accordance with basic theoretical knowledge in neonatal assessment, resuscitation and most common diseases. We emphasize the need for both theoretical as well as simulation-based skills training to improve and consolidate resuscitation procedures in neonates.

**References:**

1. Issenberg SB, McGaghie WC, Petrusa ER, et al. Features and uses of high-fidelity medical simulations that lead to effective learning: a BEME systematic review. Med Teach. 2005;27(1):10–28.

## Poster 14

**Virtual liver planning systems in surgical teaching reality**

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**Introduction:** In order to alleviate the correct planning of liver resections various liver planning systems have been tried in the past couple of years. Of all established systems the in between correlation of those using 3D and augmented reality with the real surgical situs has been reported to be best. The aim of the presented study was to investigate if students who are provided different surgical planning platforms are able to locate the tumor.

**Methods:** Students were provided a 2D and a 3D as well as a virtual reality (VR) liver surgery planning system which consisted of 15 scenes. The included scenes were created in an afferent modus – starting from simple 2D imaging ending up in virtual reality. Several standardized tasks and measurements had to be performed in each scene in a defined time span of 5 minutes each.

**Results:** Forty students were included into the presented analysis. Overall skilled students (last 2 years of medical university) needed less time to perform the tasks (mean time all scenes: 3.1 0.5 min vs. 4.4 1.0 min,  $p=0.003$ ), whereas students in the second and third year needed less time to perform tasks in virtual reality as compared to 2D and 3D imaging (mean time 2D: 1.9 0.4 min vs. 4.0 0.9 min,  $p=0.001$ ; mean time 3D: 2.5 1.6 min vs. 3.2 0.5 min,  $p=0.05$ ; mean time VR: 4.5 0.9 min vs. 2.5 1.2,  $p=0.001$ ).

**Conclusion:** Students are definitely able to locate and even diagnose a tumor based on 2D, 3D or augmented reality. There might be an application of 2D/3D or augmented reality scenes to enhance teaching especially in the surgical field.

# What do we need for shaping the intention to show empathic behavior?

Using the Theory of Planned Behavior (TPB) for identifying relevant factors for medical undergraduate students

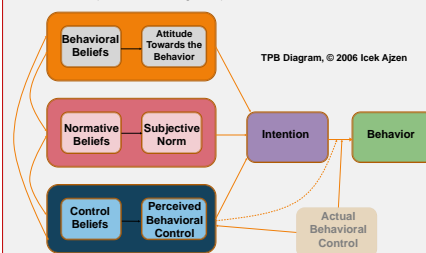


**Ingrid Preusche**  
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## Background

Learning objectives for communication skills courses in medical curricula often comprise "showing empathic behavior". But how can this behavior be defined, assessed or trained as there exists a multitude of different approaches towards the concept of empathy? The *Theory of Planned Behavior (TPB)*<sup>[1]</sup> is a well established and validated model for prediction of behavior (see TPB Diagram).



## Purpose

As for now, there is lack of knowledge regarding relevant factors for medical undergraduate students influencing their intention of "always displaying empathic behavior in a communication setting with standardized patients (SPs)". Using the TPB, we seek to reveal relevant influencing factors (behavioral beliefs, normative beliefs and control beliefs) for students with no patient contact.

## Methods

- self-constructed questionnaire:
  1. „attitudes towards the (empathic) behavior“ (advantages and disadvantages): 3 questions
  2. „subjective norm“ (important others: approving or disapproving attitudes and behavior): 4 questions
  3. „perceived behavioral control“ (preventing and facilitating factors): 2 questions
- inductive & deductive qualitative content analysis<sup>[2,3]</sup>

## Study sample

N=48 randomized undergraduates (26 male, 22 female) in their 2<sup>nd</sup> year before their first clerkship

## Results

- students' entries are often linked to aspects of (anticipated), real situation or (experienced) „SP-setting“
- entries partly categorized in more than one category
- for each question: 6 to 9 resulting categories

ADVANTAGES ... ...to always show empathic behavior in a communication setting with standardized patients (SP)			WHO WOULD ENDORSE YOU DISAPPROVE WITH YOU... ...to always show empathic behavior in a communication setting with standardized patients (SP)		
Categories (related to either real or SP-setting)	N	Example Quotes	Categories (related to either real or SP-setting)	N endorse / N disapprove	Example Quotes on endorsement / Quotes on disapproval
TRAINING (of different techniques/behaviors)	39	„Training in paraphrasing“, „I practice for correct behavior“	PHYSICIANS	4/11	„psychiatrists“, „physicians with patient contact“ / „clinicians“, „emergency Physician“
VALUE OF REAL AND STANDARDIZED PATIENT ROLE	16	„SPs can mirror and vary different emotional situations“	TEACHERS	15/0	„teacher“, „Jutor“ / -----
OTHER SETTING RELATED ADVANTAGES	11	„Getting feedback to improve behavior“	PSYCHOSOCIAL PROFESSIONS	16/0	„psychologists“, „nurses“ / -----
ESTABLISHING TRUST	11	„patient shows more trust“	PATIENTS	18/3	„patients with bad experiences with physicians“ / „anxious patients“ / „individuals with inferiority complex“
VALUE OF SP-SETTING AS OPPOSED TO REAL SITUATION	10	„In an artificial situation like in our training, you can be more „of ease“, because there are no real patients“	OTHERS	7/6	„introverted individuals“ / „Peers“, „colleagues“ / „some peer students“
INSIGHTS BASED ON PRACTICE SETTING	6	„to experience how patients can react“	FAMILY, FRIENDS	5/0	„girlfriend“, „parents“ / -----
SPECIFIC TRAINING OUTCOME	4	„more information, better diagnosis/treatment, (better) understanding of patient“	OTHER	2/6	„myself“ / „myself“
OTHER	4	„to receive empathy for yourself“			

Example 1: Categories perceived advantages

Example 2: Categories endorsing/disapproving important others

## Conclusions

- students' beliefs mirror level of education, i.e. no patient contact
- indirect and unintended feedback on students' knowledge of learning objectives in communication skills course
- effective empathy training should consider elicited beliefs

## Future directions

- using elicited beliefs in TPB-questionnaire to examine strengths of beliefs' influence on (1) intention, and (2) actual behavior
- eliciting students' beliefs with patient contact (different factors?)

## Take home message

The intention to show empathic behavior is influenced by specific factors related to the level of training in medical curricula

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**Literatur:** [1] Ajzen I. The theory of planned behavior. In: Lange PAM, Kruglanski AW, Higgins ET (eds). *Handbook of theories of social psychology*. Volume 1. London, UK: Sage, 2012:438-59.  
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## Poster 15

**What do we need for shaping the intention to show empathic behavior? Using the Theory of Planned Behavior (TPB) for identifying relevant factors for medical undergraduate students**

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**Background:** Learning objectives for communication skills courses in medical curricula often comprise “showing empathic behavior”. However, there is a lack of knowledge regarding relevant factors for medical undergraduate students influencing their intention of “always displaying empathic behavior in a communication setting with standardized patients (SPs)”.

**Summary of work:** Based on the Theory of Planned Behavior (e.g., Ajzen, 2012) data from 48 undergraduates in their 2<sup>nd</sup> year were analyzed regarding their behavioral, normative and control beliefs towards empathic behavior. A combined inductive and deductive content analysis was conducted.

**Summary of results:** The undergraduates’ answers regarding a certain belief were categorized separately, resulting in six to nine categories for each question. For example, patients, teachers and psychologists are seen as relevant person groups supporting empathic behavior, whereas medical student peers function as role models.

**Conclusions:** The answers mirror the level of education of the target group: Having no patient contact at this level, our medical students in their second year specifically name factors that are relevant to them – this is scarcely transferable to other levels or settings. However, to gain understanding on the development of empathic behavior and on effective training approaches these factors play an important role. Only with exact knowledge of the relevant factors, the examination of the concrete influence of these factors on the intention to show empathic behavior is possible, and only then the linkage to actual behavior can be subsequently analyzed.

**Take-home message:** The intention to show empathic behavior is influenced by specific factors related to the level of training in medical curricula.

**References:**

Ajzen, I. (2012). The theory of planned behavior. In P. A. M. Lange, A. W. Kruglanski E. T. Higgins (Eds.), Handbook of theories of social psychology (Vol. 1, pp. 438-459). London, UK: Sage.

Considering the experiences from currently offered doctoral studies at PMU, the formal (legislative) demands and the available (international) literature on this topic, a new curriculum 'PhD Medical Sciences' (PhDScientMed) has been developed (accreditation pending).

## Poster 16

**‘PhD ScientMed’ – an interdisciplinary PhD curriculum for physicians and natural scientists**

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Based on the demand and continuous interest by applicants and supervisors during the last years, there is an evident need for a doctorate (PhD) open for both physicians (MDs) and natural scientists (e.g. MSc) at our institution. The aim was to design a modern curriculum topically open to a broad spectrum of applicants encompassing current requirements in curricular organization and an optimal framework for the student’s research project.

Considering the experiences from currently offered doctoral studies at PMU, the formal (legislative) demands and the available (international) literature on this topic, a new curriculum ‘PhD Medical Sciences’ (PhDScientMed) has been developed (accreditation pending).

PMU has admitted a relatively constant number of 11.0+/-2.4 (mean+/-stdev) doctorate applicants during the last seven years at >25 departments (clinical departments, institutes) with a background in roughly 15 different science- or medicine-oriented disciplines. The curriculum comprises a 3-yr full time doctorate with a total workload of 180 ECTS – allocated to 80% vs. 20% for dissertation work (research project) and curricular work (lectures), respectively. Distinct measures for quality assurance for curricular lectures, study organization and supervision have been outlined.

One goal of this curriculum was to provide sufficient time and creditable workload to conduct original research as the chief component of a doctorate [1]. These are nevertheless accompanied by ‘formalised courses’ [2] providing sufficient i) subject-oriented background for non-medical graduates, ii) methodological background for medical graduates, and iii) courses regarding ‘transferable skills’ necessary for optimal presentation, publication and follow-up of research projects.

The current curriculum provides an attractive, interdisciplinary framework for medicine / science graduates to conduct doctoral projects as early stage researchers

[1].

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Medical University of Graz

## Options for practicable update of an existing face-to-face course with e-learning methods

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### Background

The scope of teaching content can not always correlate with the given time of face-to-face courses at medical universities. During classroom teaching it is usually difficult for lecturers to evaluate the knowledge and the achievement of learning objectives in large participant groups of students. In the meantime, at many universities there are offered online learning platforms and e-learning courses for students. But choosing the right e-learning methods for a course can be a challenge for lecturers.

### Question:

*Which e-learning methods can be integrated in an existing face-to-face course (eg seminar with integrated exercise) without much additional time for lecturers and students?*

### Methods

As introduction of a course an "advance organizer" can be used. This "learning map" provides an organizational framework for how the content will be presented. An "advance organizer" is an introduction and transition to learning content based on a student's prior knowledge. It includes pictures, diagrams, definitions and short texts, given by the lecturer. Students should print out the "advance organizer" and add their individual notes during the course. Before the face-to-face course an online-quiz (eg multiple choice questions) is offered to students as a self-test of their knowledge. After the face-to-face course, students are able to hear and see the lecture again as online-video on an online-learning platform. As closing activity, an online discussion forum can be used. The students are divided into groups, each group has to solve a clinical case in a given period. The lecturer acts as a "tele-tutor" and gives step-by-step additional information to the online forum. Also, another online quiz can be used for repetition of the teaching content.

### Conclusions

The combination of face-to-face classroom methods and computer-mediated activities offers students synchronous and asynchronous (location-and time independent) learning ("blended learning").

Apart from the technical infrastructure, the selection of e-learning methods is dependent on the course, the lecturers and the knowledge of the students.

But even existing face-to-face courses can be enhanced with e-learning methods with little additional time for lecturers and students.

Fig. 2 Example of an „advance organizer“

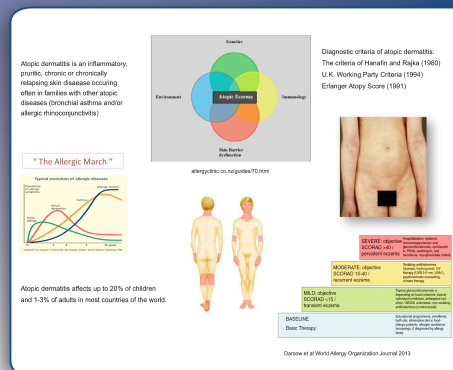
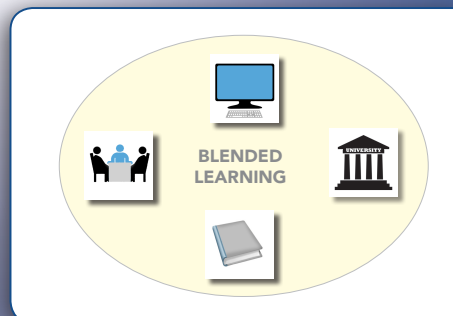


Fig. 1 „Blended learning“



Cook DA, Levinson AJ, Garside S, et al. Internet-based learning in the health professions: a meta-analysis. JAMA. 2008 10;300:1181-95.

Thistlethwaite JE, Davies D, Ekeocha S, et al. The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. Med Teach. 2012;34:421-44.

## Poster 17

**Options for practicable update of an existing face-to-face course with e-learning methods**

Christian Schuster

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**Background:** The scope of teaching content can not always correlate with the given time of face-to-face courses at medical universities. During classroom teaching it is usually difficult for lecturers to evaluate the knowledge and the achievement of learning objectives in large participant groups of students. In the meantime, at many universities there are offered online learning platforms and e-learning courses for students. But choosing the right e-learning methods for a course can be a challenge for lecturers.

**Question:** Which e-learning methods can be integrated in an existing face-to-face course (eg seminar with integrated exercise) without much additional time for lecturers and students?

**Methods:** As introduction of a course an "advance organizer" can be used. This "learning map" provides an organizational framework for how the content will be presented. An "advance organizer" is an introduction and transition to learning content based on a student's prior knowledge. It includes pictures, diagrams, definitions and short texts, given by the lecturer. Students should print out the „advance organizer“ and add their individual notes during the course. Before the face-to-face course an online-quiz (eg multiple choice questions) is offered to students as a self-test of their knowledge. After the face-to-face course, students are able to hear and see the lecture again as online-video on an online-learning platform.

As closing activity, an online discussion forum can be used. The students are divided into groups, each group has to solve a clinical case in a given period. The lecturer acts as a "tele-tutor" and gives step-by-step additional information to the online forum. Also, another online quiz can be used for repetition of the teaching content.

**Conclusions:** The combination of face-to-face classroom methods and computer-mediated activities offers students synchronous and asynchronous (location-and time independent) learning. Apart from the technical infrastructure, the selection of e-learning methods is dependent on the course, the lecturers and the knowledge of the students. But even existing face-to-face courses can be enhanced with e-learning methods with little additional time for lecturers and students.

**References:**

- Cook DA, Levinson AJ, Garside S, et al. Internet-based learning in the health professions: a meta-analysis. JAMA. 2008 10;300:1181-96.
- Thistlethwaite JE, Davies D, Ekeocha S, et al. The effectiveness of case-based learning in health professional education. A BEME systematic review: BEME Guide No. 23. Med Teach. 2012;34:421-44.

## A metacognitive perspective on self-judgments in practicing history taking

Michaela Wagner-Menghin<sup>1</sup>, Jeroen van Merriënboer<sup>2</sup>, Anique de Bruin<sup>2</sup>



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### Using their good communication skills to communicate skilfully is difficult for students

...

Because communicating with patients for gathering information is a key consultation competency medical students need to master, medical schools train students in complex simulation settings. Skills improve, but still students have difficulties in practice.<sup>1,2</sup>

### ... because of a mismatch between training setting and clinical setting.

Either training situations are said to mirror the clinical situation not realistically or taught skills are believed to be overwritten by different communication cultures in the clinics.<sup>1,2</sup>

### A metacognitive perspective on this transfer problem...

Transferring skills from one situation to another requires accurate metacognitions (=thinking about one's own thinking and doing). But only when using relevant cues metacognitive self-judgments are accurate, see Fig.1<sup>3</sup>. Thus weak performance in a new situation, albeit earlier demonstrated good skills, is in part due to students' metacognitive judgments being based on irrelevant cues.

### ... might help in overcoming it: Using relevant cues → more accurate self-judgments → improved transfer

Different types of cues – observable cues (OC), cues deriving from subjective experience (SE) or cues from memory (MC) – require different facilitation techniques<sup>3</sup>. Because cues are domain specific we need to know...

### How do medical undergraduates use cues when deriving a self-judgment in practicing history taking?

#### Which of the cues are relevant?

... before we can think of facilitating their usage. Cues emerge from several sources when communicating with patients to take their history (Fig. 2).

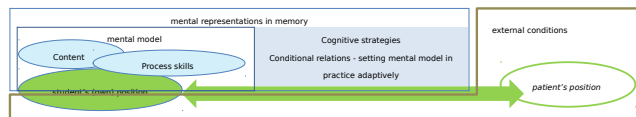


Fig 2: Sources of cues relevant for metacognitive judgments when communicating with patients as derived using the expanded framework of the medical encounter<sup>4</sup>, the framework for designing a complex simulation learning environment<sup>5</sup> and the cue-utilisation approach<sup>3</sup>.

### Medical students' use cues for 3 types of judgments

	judging satisfaction with content covered	judging satisfaction with process while exploring content	judging satisfaction with interplay between content & process
elaborations' subject	several content aspects	several process skills	content & process
positions mentioned in elaborations	majority of elaborations include student's own perspective only	majority of elaborations include student's own perspective only	Nearly all elaborations include student's own and patient's perspective
types of cues used	typically MC and SE or OC lead to the experience of "having forgotten to ask something" or "having done completely" leading to SWPJ	typically SE and OC (own behavior) lead to SWPJ	typically OC (own and patient's) lead to interpretation of patients' experience which lead to SWPJ
satisfaction-with-performance-judgments (SWPJ)	More dissatisfaction than satisfaction judgments	More dissatisfaction than satisfaction judgments	Equal amount of satisfaction and dissatisfaction judgment
relation with practical clinical clerkship entry exam	no systematic relation with students' performance	more often mentioned by high performing students	Nearly exclusively mentioned by high performing students

References: <sup>1</sup>Bombeke et al., 2012; <sup>2</sup>Wouda & van de Wiel, 2013; <sup>3</sup>Koriat, 1997; J. <sup>4</sup>Silverman et al., 2005; <sup>5</sup>van Merriënboer et al., 2003

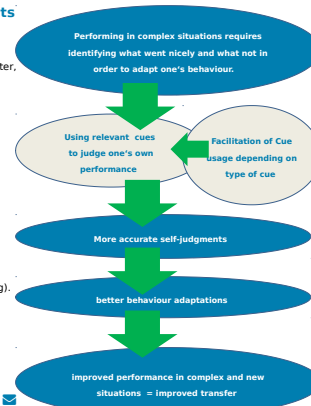


Fig.1: The metacognitive perspective on self-judgments: How accurate metacognitions influence performance.

#### Method:

**Procedure:** 2<sup>nd</sup> year students elaborate in writing how they infer metacognitive judgments (satisfaction-with-performance-judgments SWPJ) when practicing information gathering for a high stakes practical clinical clerkship entry exam

**Sampling:** 20 students (stratified purposeful sampling, informational representative)

**Analysis:** unitizing; qualitative content analysis with deductive category application on the following dimensions:

- elaborations' subject
- positions mentioned in elaborations
- types of cues used

#### Conclusion

→ All types of cues as specified by the cue-utilisation approach are used by the 2<sup>nd</sup> year students.

→ They underuse OC from the patient and SF relating to patient's experience in the situation in their attempts to implement their mental model in practice successfully.

→ All 3 types of judgments should have room during training. Training should be modified accordingly to support usage of relevant cues for each of them, depending on students' learning needs.

## Poster 18

**A metacognitive perspective on self-judgments in practising of history taking**Michaela Wagner-Menghin<sup>1</sup>, Jeroen van Merrienboer<sup>2</sup>, Anique de Bruin<sup>2</sup><sup>1</sup> Department for Medical Education, Medical University of Vienna, Austria// <sup>2</sup> School of Health Professions Education, Maastricht University, The Netherlandsmichaela.wagner-menghin@meduniwien.ac.at   j.vanmerrienboer@maastrichtuniversity.nl  
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**Background:** About 60% to 80% of diagnoses are derived after the initial history taking, provided it went well. Thus communicating well with patients is a key medical consultation competency. So medical schools provide carefully designed communication trainings. But despite improved skills, students still have difficulties in communicating skillfully in clinical settings. Made responsible for this is a mismatch between training setting and clinic (1). We seek for helping students to transfer their skills by proposing a metacognitive perspective to describe the problem more closely. This perspective states that applying skills adaptively in a complex situation requires the constant monitoring if the intended goal has been achieved. The self-judgments accompanying this monitoring have previously been shown to be based on cues such as observable behavior (OB) in the situation, information in memory (IM) and subjective feelings (SF) emerging out of the experience of performing (2).

**Method:** To access student's self-judgment process we developed a judgment task similar to those used in metacognition research (2) and subsequently prompt students to elaborate on their judgment. These written elaborations, verbalizing the self-judgment process, are analyzed using directed content analysis. Categories are arranged in three dimensions: elaboration's subject, positions mentioned in elaborations, cues mentioned in elaborations.

**Sampling:** Stratified purposeful sampling is used, to ensure that maximally informative cases (n=20 students) are included in the analysis. Collection of material took place during a self-directed fresh-up practice period preceding the practical clinical clerkship entry examination in year 2.

**Results:** 20 students provided 67 metacognitive judgments and 133 expressions elaborating them. Those can be grouped in three types. One focusses on content covered (32%), another the process skills used (56%). Elaborations of these types generally include student's own perspective only. The first type is often based on a combination of OB and IM cues leading to a "forgot to ask judgment" whereas the other often relies on combining OB and SF cues. A third type targets at the interplay between content and process aspects (12%), typically includes student's and patient's position and relies on OB for interpreting patient's behavior and experience.

**Conclusion:** All three types of elaborations are necessary for monitoring the learning process and for adapting skills for use in a new setting. Still, adapting something successfully requires not only to perceive one's own perspective but also the perspectives of other interactants – here being the clinical setting and the patient. Thus a first step in helping students to bridge the gap may lie in helping them to include patient's perspective and the requirements of a given clinical setting in their judgments when practicing.

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## Medizinische Universität Graz

### Berufliche Emigration von MedizinabsolventInnen

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#### Hintergrund:

Während die Zahlen der BewerberInnen für Medizinstudienplätze in den letzten Jahren beständig zugenommen haben, wird zunehmend die Vermutung geäußert, dass immer mehr MedizinerInnen aus Österreich aus berufsbedingten Gründen emigrieren. Um diese mögliche Entwicklung nachvollziehen zu können, wurden 2013 7 KollegInnen, die entweder seit kurzem ihr Studium abgeschlossen hatten und bereits ärztlich tätig waren oder kurz davor standen, interviewt. Zwei davon waren zu diesem Zeitpunkt bereits ausgewandert und in der Schweiz und der BRD tätig.

Die Interviews wurden transkribiert, mittels MaxQDA ausgewertet und nach Mayring (2008) qualitativ per Frequenzanalyse interpretiert.

#### Ergebnisse:

Als Gründe für Arbeitsmigration wurden die Arbeitsbedingungen in Österreich genannt, welche „abartig schlecht“ (Interview II) seien. Dies bezog sich auf die Arbeitszeiten, da es in Österreich „möglich ist, dass man 32 Stunden durcharbeitet ohne dass irgendwer das kontrolliert“ (I). Ebenso wurde angesprochen, dass in anderen Berufsgruppen dokumentierte Pausen verpflichtend vorgesehen sind (I). Die Medizin wurde als wunderbarer Beruf genannt, aber 60 bis 100 Stunden pro Woche verhindern auf Dauer die Freude daran (VII). Neben der streng hierarchischen Struktur im Krankenhaus wurde beklagt, dass AssistentInnen es sich „nicht richten“ können und im Gegensatz zu ihren OberärztInnen im Dienst nicht zum Schlafen kommen (II). Häufig wurde die Bezahlung genannt, die insgesamt als nicht schlecht bewertet wird, allerdings bei einem rechnerischen Stundenlohn von rund 12 Euro netto als zu niedrig empfunden wird. Kritisiert wurde die Turnusausbildung, in der man „keine so gute Ausbildung“ erfährt, vor allem „bürokratische Sachen“ erledigen muss und nur durchschnittlich entlohnt wird (V), keine individuelle ärztliche Weiterentwicklung würde gefördert. Man dürfe froh sein, nach ein paar Stunden der Blutabnahmen und „Flascherl“ hängen die Visite zu begleiten (IV). Hinzu kommt, dass für viele Sonderfächer der Turnus noch immer vorausgesetzt wird (II). Als Gründe für den Verbleib in Österreich wurden die Sonderfachausbildungsstellen genannt (VI), auch „bleiben die meisten in Österreich [...] wenn man in dieser Situation ist, akzeptiert man sie doch irgendwie“ (II).

Gewünscht wurden limitierte Arbeitsstunden (durchgerechnet nicht über 40 Wochenstunden) die ein Privatleben erlauben, flache Hierarchien, kollegialer Umgang in einem guten Team und gute Lernbedingungen (V).

#### Schlussfolgerungen:

Wie sich gezeigt hat, erfolgt nicht nur berufliche Emigration, sondern diese hat sich in den letzten Jahren aufgrund verschiedener institutioneller Entwicklungen, etwa der Einführung des *ius migrandi*, verstärkt. Allerdings werden keine Daten zur Auswanderung aus Österreich zentral (ÄK, Statistik Austria) erhoben; indirekt zeigt sich in Deutschland jedoch eine Zunahme an österreichischen Ärzten und Ärztinnen (2006 1.438 / 2008 1.802 / 2010 2.137 / 2012 2.491) mit einer Steigerung in dieser Zeit um 73%. Es ist anzunehmen, dass die Zahlen der Schweiz ähnlich sind. Kritisiert wurde vor allem das Ausbildungssystem. Es bleibt abzuwarten, bis wann in Österreich Gegenmaßnahmen getroffen werden. Empfehlenswert ist zudem die zentrale Erfassung von Auswanderungsdaten.



## Poster 19

**Vocational Emigration of Young Physicians**

Julian Wenninger

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**Introduction:** Whereas the number of applicants for medical studies has continuously increased over the last years, it is progressively assumed, that more and more physicians from Austria are emigrating due to vocational reasons. In order to understand this development, 7 colleagues, who had either recently completed their studies and were already working or were about to finish, were interviewed in 2013. Two of them had already emigrated and were working in Switzerland and Germany. The interviews were transcribed, evaluated by MaxQDA, and qualitatively interpreted by frequency analysis according to Mayring (2008).

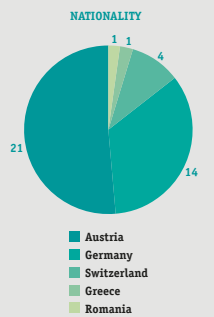
**Results:** The working conditions in Austria, which would be “abnormally bad” (Interview II), were cited as one of the reasons for vocational emigration. This referred to the working hours, since “it is possible to work 32 hours in a row without any kind of control” (I), while in other occupational groups documented breaks are obligatory. Medicine was mentioned as “a wonderful occupation”, but 60 to 100 working hours per week make you lose the joy of working in the long run.

Besides the strictly hierarchic structure in the hospital it was criticized that medical assistants are not “of the same value” and – contrary to an attending – seldom get to sleep when on night duty (II). Payment was frequently mentioned. Although it was not rated as poor altogether, an hourly rate of approx. € 12,- was perceived as too low. It was also criticized that during internship you “do not get a particularly good training”, are mainly occupied with “bureaucratic things”, only get an average remuneration (V), and individual medical advancement is not encouraged. If you are lucky you are allowed to accompany the round after a few hours of blood collection (IV). The medical internship is still a prerequisite for many specializations (II) and was mentioned as a reason for leaving Austria (VII); “most people stay in Austria [...] if you find yourself in this situation, you somehow accept it” (II). Interviewees requested limited working hours (not more than 40 hours per week) enabling a private life, flat hierarchies, working relationships in a good team and good learning conditions (V).

**Discussion:** It has been shown that vocational emigration has increased over the past years due to various institutional developments, for example the implementation of *ius migrandi*. However, data for emigration from Austria are still not centrally collected. Yet indirectly an increase of 73% of Austrian physicians in Germany has been noted (2006 1.438 – 2012 2.491). It is safe to assume that the numbers for Switzerland are similar. Especially the educational system was criticized. These are similar results as in Oberlander 2008. It remains to be seen when countermeasures will be taken in Austria.

## EVALUATION OF THE FIRST FIVE YEARS OF THE POSTGRADUATE MASTER COURSE „CLINICAL EMBRYOLOGY“

Schenk M<sup>1</sup>, Wenninger J<sup>2</sup>, Petek E<sup>3</sup>, Bauer M<sup>4</sup>



Clinical embryologists are much specialised scientists who work in fertility treatment and reproductive research. They perform routine diagnostic services and therapeutic embryological procedures, such as in vitro fertilisation (IVF), at hospitals and private clinics. Clinical embryologists need a practical and theoretical understanding of human reproductive biology, genetics, embryology, infertility and assisted reproductive technology (ART). They also need to keep up to date with current regulations and local legislation involving these subjects.

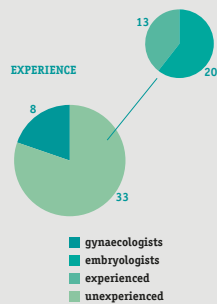
In the field of clinical embryology, professionals working in in-vitro fertilisation laboratories could in the past acquire skills nearly only by "best practice" and / or "learning by doing". However, clinical embryology needs new and science-based possibilities to further develop and to convey the required extensive knowledge to clinical embryologists.

The four semester university course "Clinical Embryology" meets these requirements. It has been developed according to the requirement profile for embryologists of the European Society for Human Reproduction and Embryology (ESHRE) and offers comprehensive training. The graduates will have acquired the necessary technical, scientific and ethical knowledge as well as the required soft skills to be able, already after a very short induction period, to work independently in an IVF laboratory and in all institutions dealing with reproductive medicine.

After 5 years and more than 30 graduates the training, the research quality and "job perspectives" of the students should be the central focus of graduate program evaluation.

### WE USED FOLLOWING CHARACTERISTICS FOR EVALUATION:

- Time-to-degree
- Student gender and age
- Student primary education/profession
- Work experience in clinical embryology before enrolment
- Percent international students
- Completion rate
- Publications
- Present job description



### CONCLUSIONS

In June 2014 the 5th master course in Clinical embryology will start at the University of Graz, still to be the only in German-speaking countries. Even though the course was designed to train new employees, most of the students of the first four courses were very experienced working as IVF gynaecologists (19,5%) or senior embryologists (60% of embryologists). Over the years we could recognise a decline in MDs and an increase in inexperienced students with a background in natural sciences.

85% are female students. This faces the reality of employees in IVF lab. The mean age of student when starting the master was 37 years (from 24 to 55 years).

Surprisingly, all the courses were very international with students from Germany (34%), Switzerland (10%), Greece and Romania (4%). All graduates are employed.

The Completion rate of 77,4% (24 students out of 31) in the minimum time of two years is high. The mean duration from start to graduation was 22,2 months. One masterthesis was published as poster at the ESHRE meeting 2012. Four thesis are admitted for publication at the moment.

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## Poster 20

**Evaluation of the first five years of the postgraduate master course „Clinical Embryology“**Michael Schenk<sup>1</sup>, Julian Wenninger<sup>2</sup>, Erwin Petek<sup>3</sup>; Martin Bauer<sup>4</sup><sup>1</sup> Das Kinderwunsch Institut Schenk GmbH, Dobl, Styria, Austria <sup>2</sup> Medizinische Universität Graz, Austria<sup>3</sup> Institut für medizinische Biologie und Humangenetik, Medizinische Universität Graz, Austria <sup>4</sup> Uni for Life, Universitätsplatz 3, Graz, Austriam.schenk@kinderwunsch-institut.at julian.wenninger@stud.medunigraz.at erwin.petek@medunigraz.at  
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Clinical embryologists are much specialised scientists who work in fertility treatment and reproductive research. They perform routine diagnostic services and therapeutic embryological procedures, such as in vitro fertilisation (IVF), at hospitals and private clinics. Clinical embryologists need a practical and theoretical understanding of human reproductive biology, genetics, embryology, infertility and assisted reproductive technology (ART). They also need to keep up to date with current regulations and local legislation involving these subjects. In the field of clinical embryology, professionals working in in-vitro fertilisation laboratories could in the past acquire skills nearly only by “best practice” and / or “learning by doing”. However, clinical embryology needs new and science-based possibilities to further develop and to convey the required extensive knowledge to clinical embryologists.

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After 5 years and more than 40 graduates the training, the research quality and “job perspectives” of the students should be the central focus of graduate program evaluation. We used following characteristics for evaluation:

- Time-to-degree
- Student gender and age
- Student primary education/profession
- Work experience in clinical embryology before enrolment
- Percent international students
- Completion rate
- Publications
- Present job description

**Preliminary conclusion:** In June 2014 the 5th master course in Clinical embryology will start at the University of Graz, still to be the only in German-speaking countries. Even though the course was designed to train new employees, most of the students of the first course were very experienced working as IVF gynaecologists or senior embryologists. Over the years we could recognise a decline in MDs and an increase in inexperienced students with a background in natural sciences. Surprisingly, all the courses were very international with students from Germany, Switzerland, Greece and Romania. All graduates are employed.



## 7 Teilnehmer/Participants

Teilnehmer der 18. Grazer Konferenz in Salzburg (Stand 1. April 2014)

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