Research in Medical Education - Evidence of Teaching - Teaching of Evidence
May 23rd - 25th 2013, Charité Berlin, Campus Mitte

Congress Abstracts
Impressum:
@ 2013
Prof. Dr. Claudia Spies
Dean of Education
Charité, Universitätsmedizin Berlin

Charité Campus Mitte
Charitéplatz 1
10117 Berlin
Dear participants of RIME 2013, Welcome at Charité!

During the following two days we will take the opportunity to explore in depth an exciting field of medical education, which will have significant impact on our future health systems: scientific (and health) literacy. Competencies in this part of the medical working field have been described with the role of the “scholar”, maybe also in part as the “health advocate”. Our knowledge of this theme is just beginning to develop, and concepts to deal with the topic are at the very first stages.

RIME 2013 will put a focus on the implementation of scientific (and critical) thinking into our curricula, specifically addressed by the keynotes of the conference. By selecting the topics we tried to represent all aspects of Kern’s cycle of curricular development. These keynotes will be given by internationally recognized specialists in their domains.

In addition, we received a substantial number of contributions from other topics in medical education. These will be discussed in free paper sessions, poster presentations and workshops to contribute to a deeper understanding of teaching and learning (“evidence of teaching”).

At the end of the day, the most important “intervention” is to meet, exchange and align positions. This is what science lives from: collaborative advancement of our knowledge, skills and attitudes. In this spirit, we wish all participants of RIME 2013 to stay curious and critical – and to have fun!

Jan Breckwoldt
Harm Peters
Claudia Spies
Martin Fischer
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• Elizabeth Armstrong, PhD, Dr.med.h.c., Harvard Macy Institute, Clinical Professor in Pediatrics, Harvard Medical School, Boston
• Prof. Dr.med. Martin Fischer, MME, Ludwig–Maximilians–Universität München
• PD Dr.med. Jana Jünger, MME, Medizinische Fakultät Heidelberg
• Dr. med. Jan Breckwoldt, MME, Medizinische Fakultät Universität Zürich
• Prof. Dr.med. Harm Peters, Dieter Scheffner Fachzentrum, Charité Berlin
• Prof. Dr. Eckhart G. Hahn, Universitätsklinikum Erlangen, Gesellschaft für Berufliche Fortbildung
• Prof. Dr.med. Sigrid Harendza, MME, Universitätsklinikum Hamburg–Eppendorf
• Prof. Dr. Reinhard Hickel, Ludwig–Maximilians–Universität München
• Prof. Dr. Peter Dieter, Medizinische Fakultät TU Dresden
• Prof. Dr. med. Franz Resch, Universitätsklinikum Heidelberg
• John J. Norcini, PhD, Foundation for Advancement of International Medical Education and Research, Philadelphia
Keynotes
Keynote 1 - Dr. Claudia Nicolai (Potsdam)

Scientific literacy: is it relevant to applied science?

Friday, May 24th 2013, 09:15 - 10:00
Location: Virchowweg 6
Room: Auditorium (level 1)

Dr. Claudia Nicolai is General Program Manager and Senior Researcher at the Hasso-Plattner-Institut für Softwaresystemtechnik GmbH - School of Design Thinking. She studied Business Administration, Economics, and Social Sciences at the University of Hannover. She got her Ph.D. in intercultural marketing at the University of Potsdam and worked as a senior researcher at the chair of strategic marketing of the University of Witten/Herdecke. Since then, questions concerning consumer trends, strategic innovation, and business design have been the focus of her scientific work.

Providing expertise on consumer-centered innovation processes and strategic change she also worked as a consultant for different companies of the consumer goods and service industry. Besides being a visiting professor for strategic communication at the University of Arts Berlin and at the Elisava - School of Design and Engineering in Barcelona/Spain, she has been teaching at the School of Design Thinking at Hasso-Plattner-Institute in Potsdam for the last four years.

In March 2010 Dr. Nicolai became General Program Manager of the D-School in Potsdam. In this context she is in charge of the one year program in Design Thinking, develops and designs teaching contents, and coaches students and teachers. She is also responsible for co-operations with project partners and academic institutions.

In addition, by hosting numerous workshops and developing Design Thinking strategies for companies Dr. Claudia Nicolai encourages executives and business leaders to experience and apply Design Thinking and loves to see how it is spreading into the corporate and academic world.
Keynote 2 - Dr. Odette Wegwarth (Berlin)

What should every student learn about science?

Friday, May 24th 2013, 10:00 - 10:45
Location: Virchowweg 6
Room: Auditorium (level 1)

Odette Wegwarth studied psychology at the University of Potsdam and earned the academic title “Doctor rerum naturalium” at the Humboldt University Berlin in 2007. She is currently a senior research scientist at the Max Planck Institute for Human Development and has been working at the Harding Center for Risk Literacy since April 2008.

Her current research focuses on how risk-related emotions and moral standards shape doctors’ and patients’ decision making as well as on the statistical formats that foster and limit the understanding of risk information in these groups. Insights from this research are incorporated into physicians’ continuing education as well as the development of patient brochures.
Keynote 3 - Prof. Dr. med. Johann Steurer, MME (Zurich)

How should we teach evidence-based medicine?

Friday, May 24th 2013, 13:30 - 14:15
Location: Virchowweg 6
Room: Auditorium (level 1)

After studying medicine at the University of Innsbruck, Johann Steurer specialised in internal medicine at the University Hospital of Zurich, where he was appointed as an associate professor in 1997. After research stays in Oxford and London, he completed a masters programme in medical education at Berne, Switzerland. In 2000 he was elected as the director of the “Horten Centre for patient-oriented research and knowledge transfer” at the University of Zurich.

His field of work focuses on diagnostic research, knowledge transfer and theory of medicine. He is author and co-author in numerous publications in the field of evidence based medicine and health care management.
Keynote 4 - John Norcini Ph.D. (Philadelphia)

Implement science into a curriculum: training medical teachers to teach scientific competencies

Friday, May 24\textsuperscript{th} 2013, 17:15 - 18:00
Location: Virchowweg 6
Room: Auditorium (level 1)

Before becoming the first President and Chief Executive Officer of the Foundation for Advancement of International Medical Education and Research (FAIMER) in 2002, John Norcini worked as Director of Psychometrics, Executive Vice President for Evaluation and Research, and Executive Vice President of the Institute for Clinical Evaluation for the American Board of Internal Medicine.

His principle academic interest is the assessment of physician performance. His research focuses on methods for setting standards, assessing practice performance, and testing professional competence as well as the impact of international medical graduates on the U.S. healthcare system.
Keynote 5 - Zineb Nouns, Physician, MD (Berlin)

How to assess scientific competencies?

Saturday, May 25th 2013, 09:00 - 09:45
Location: Virchowweg 6
Room: Auditorium (level 1)

Zineb Nouns is director of the working group “Progress Test Medicine” (PTM) at Charité - Universitätsmedizin Berlin. Inspired by the Maastricht Progress Test presented by Professor Cees van der Fleuten and the start of the reformed problem-based medical curriculum at the Charité Universitätsmedizin Berlin, the PTM was initiated in 1999. It is now a core element of assessment for all medical students at the Charité as well as at 14 other medical faculties in Germany and Austria.
Keynote 6 - Ara Tekian PhD, MHPE (Chicago)

How can we teach scientific thinking?

Saturday, May 25th 2013, 09:45 - 10:30
Location: Virchowweg 6
Room: Auditorium (level 1)

Ara Tekian is Associate Professor and Director of International Affairs at the Department of Medical Education (DME) since 1992, as well as the Associate Dean for the International Affairs at the College of Medicine, the University of Illinois at Chicago (UIC).

From 1983-1990 he worked as founding director of the Medical Education Department at King Saud University, College of Medicine in Riyadh, Saudi Arabia. He has also served as a consultant to the World Health Organization (WHO) Eastern Mediterranean Regional Office (EMRO) and to the Ministries of Health and Education in most of the Eastern Mediterranean countries.

Ara Tekian is an internationally recognized scholar and leader in health professions education. His work focuses on curriculum planning and evaluation for medical schools, student assessment and innovative testing methodologies, instructional technology, medical simulations, patient safety, and international health professions education.
Awards – Best Paper & Best Poster

The best paper (oral) and best poster presentation are to be selected in a two-step process. During the primary review of abstracts by the scientific committee, 6 papers and 6 posters gained the highest ratings. These were chosen as runners up for final decision during the course of the conference. Jury are the members of the Scientific Board. The best abstract will be awarded € 300, the best poster presentation € 100.

Winners will be presented before the beginning of the final penal discussion on Saturday May 25th, 2013.
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- **Poster Session 1** - 11:00 - 11:25
  - Title: Poster Session 1
  - Chair: Breckwoldt J

- **Poster Session 2** - 11:00 - 11:25
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  - Chair: Harendza S

- **Poster Session 3** - 11:00 - 11:25
  - Title: Poster Session 3
  - Chair: Nouns Z

- **Simulation Demo** - 11:00 - 11:25
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  - Chair: Sostmann K, Buron S

- **Paper Session 1** - 11:35 - 12:35
  - Title: Media based training in medical education
  - Chair: Harendza S

- **Paper Session 2** - 11:35 - 12:35
  - Title: Evaluation in medical education
  - Chair: Norcini J

- **Paper Session 3** - 11:35 - 12:35
  - Title: Communicating evidence to patients
  - Chair: Juenger J

- **Paper Session 4** - 11:35 - 12:35
  - Title: Development and implementation of medical curricula
  - Chair: Peters H

- **Workshop 1** (14:30 - 17:00, incl. 30min break)
  - Title: Critical Thinking as a method in ME
  - Chair: Pelz J

- **Workshop 2** (14:30 - 17:00, incl. 30min break)
  - Title: Competency-based medical education: frameworks and implementation
  - Chair: Peters H

- **Workshop 3** (14:30 - 17:00, incl. 30min break)
  - Title: Decision Aids
  - Chair: Neth H, Keller N

- **Workshop 4** (14:30 - 17:00, incl. 30min break)
  - Title: Social Media: Professionalism and Medical Education in Digital Age. A Practice-oriented, interactive course on necessity, options and tools of Web 2.0
  - Chair: Badakhshi H, Kaul D, Barellowski T, Lux H, Planitzer M

- **Keynote - Norcini J**
  - "Implement science into a curriculum: training medical teachers to teach scientific competencies."
  - Location: Virchowweg 6 – Room: Auditorium (level 1)

- **Social Evening**
  - Location: Virchowweg 16 – Room: Hörsaalruine
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<td>14:00 - 14:15</td>
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A Practice-oriented, interactive course on necessity, options and
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Chair: Badakhshi H, Kaul D, Barelkowski T, Lux H, Planitzer M
**Poster Session 1 (11:00 - 11:25)**

**Chair: Breckwoldt J**

**Location: Virchowweg 6**

**Room: Fenster d Wissenschaft (level 5)**

**58 Preliminary survey of teachers’ support in e-learning among German medical faculties**

*Back D ¹, Harms T ², Plener J ², Sostmann K ²*

¹ Bundeswehrkrankenhaus Berlin, Abteilung für Unfallchirurgie und Orthopädie, Berlin

² Charité Universitätsmedizin Berlin Dieter Scheffner Fachzentrum für medizinische Hochschullehre und evidenzbasierte Ausbildungsforschung, Berlin

**INTRODUCTION:**

Whereas electronic forms of learning (e-Learning) are increasingly implemented in medical teaching, there is not much data about the support that medical teachers who are involved in e-learning receive from their faculties. This preliminary survey was performed to provide first ideas of the situation of e-learning promotion in German medical faculties.

**METHODS:**

An online survey with 35 items was sent to all German medical faculties in the summer semester of 2011. The questionnaires and the analysis of the answers were provided by the program SurveyMonkey® (SurveyMonkey Inc., Oregon, USA).

**RESULTS:**

Of 24 faculties (69%) which participated in this study, 95% were offering e-learning to their students. 55% had firm employees for e-learning matters and support. Up to 74% offered e-learning training and qualification programs to their teachers. 84% provided performance-oriented resources for teaching in general, but only 25% for e-learning. A few faculties valued the implementation of e-learning offers for their teachers with awards and prizes or as an equivalent to face-to-face teaching (44%).

**DISCUSSION:**

This preliminary survey may not be representative for all German medical faculties. However, it can be postulated that the use of e-learning and the support of the teachers is not homogeneous throughout the institutions. A good infrastructure for the support of teachers is facing a lack of motivational incentives for teachers to deal with e-learning. In the future it will be necessary to get an overview of the existing conditions of all faculties and to enhance a more homogenous approach in the support of teachers to be and get engaged in e-learning.
Quality management systems in eLearning in medicine and dentistry: a German survey

Abrusch J¹, Joerg M², Heidemann D¹, Gerhardt-Szep S¹

¹ Goethe University of Frankfurt am Main, Dental Faculty, Frankfurt am Main, Germany
² University of Regensburg, Medical Faculty, Regensburg

In 2008, the German Council of Science had advised universities to establish a system to monitor the quality of tuition and learning at medical and dental faculties. The tool was required to meet international standards and was to be implemented within 5 years, i.e., by 2013 [1].

The aim of our study was to identify a quality management system suitable for assessing the effectiveness of electronic learning (eLearning), specifically for the use in dental medicine.

This was a prospective, cross-sectional pilot study using a specifically constructed questionnaire which was sent to all medical and dental university hospitals in Germany (n = 71). The questionnaire, based on two previous studies [2, 3], consisted of seven domains (i.e., general information, decision-making, satisfaction & clarity, expenditure (time), cost, staff, comments) comprising 50 items in total. We aimed to establish which quality management systems are employed by various universities to monitor the effectiveness of eLearning, and what experience has been made with the available tools. The pilot study was hoped to provide information on the system that is particularly appropriate for the use in dental medicine, and to assist universities in their selection of a suitable tool.

Among the participating universities, quality management systems are barely (10.3%) applied, and knowledge of such tools is limited (55.2%). The main reason named for failing to apply such tools was time constraints (17.2%). Only 10.3% of participating institutions named financial reasons as the cause of this omission. Because of the limited experience reported by the universities, the objective of our pilot study, i.e., to identify a quality management system particularly suitable for the use in (dental) medicine, was only partly met. Consequently, comparison of the various quality management systems in the field of eLearning remains impossible in the absence of relevant data.

REFERENCES:

Acknowledgement:
We thank Mr. Lars Kandsperger (eLearning coordinator of the Dental Faculty in Frankfurt am Main) for his support.

References
Blended learning: Combination of problem-based learning and electronic learning

Bärmeier J¹, Gärtner K¹, Quoß F¹, Petkov P¹, Knecht F¹, Dopfer S¹, Oddo G¹, Hintze J¹, Gerhardt T¹, Heidemann D¹, Gerhardt-Szep S¹

¹Goethe University of Frankfurt am Main, Dental Faculty, Frankfurt am Main, Germany

Problem-based learning (PBL) and electronic learning (eLearning) play an important role in medical training. The combination of the two methods, described as blended learning (BL), is mostly known in cases where PBL is offered in an online educational programme.

This study assessed the usefulness of the combination of analogue (offline) PBL and online eLearning tutorials from the students’ perspective. The study was conducted at the Dental School of the University of Frankfurt, during the academic year 2012/13. A total of 24 dental students in their first clinical year and 3 peer-tutors participated in this study within a hybrid curriculum. In a specialised course, the peer-tutors were trained in conducting BL tutorials. In addition, they were mentored by relevant experts during their activity with the student groups. Data were obtained from written student responses to a questionnaire consisting of general information (Part 1), concept of BL (Part 2), and effectiveness of their tutor(s) (Part 3). Possible responses ranged from 1 (= strongly disagree) to 5 (= strongly agree) for Part 1, and from 1 (= unsatisfactory) to 10 = excellent) for Parts 2 and 3.

From a total of 24 questionnaires, 23 were returned (response rate 95.8%). The mean grade obtained for the usefulness of the combination of analogue PBL and online eLearning amounted to 3.43 (SD = 1.07). A mean score of 3.39 (SD = 0.89) was awarded for the question whether BL was more effective than a lecture. Overall, the concept of BL scored a mean grade of 7.65 (SD = 1.79), and the tutors reached a mean grade of 6.96 (SD = 1.99).

BL beginners in a hybrid curriculum appreciated this novel educational approach. Peer-tutors were effective in their roles, but previous training and mentoring by experienced tutors was necessary to ensure a learning benefit for the students.

REFERENCES:
The study was financially supported by the “Stiftung für die Deutsche Wissenschaft”, Fellowship for the project “P@L”: 2013-2014.

Acknowledgement: We thank Mrs. Britta Schwalm and Mr. Lars Kandsperger (eLearning coordinator of the Dental Faculty in Frankfurt am Main) for their support.
TRACY - Gamebased Training for Disaster and Emergency Scenarios

Harms T¹, Behringer F¹, Sommer J², Bremer T², Sostmann K¹

¹ Charité Universitätsmedizin Berlin Dieter Scheffner Fachzentrum für medizinische Hochschullehre und evidenzbasierte Ausbildungsforschung Kompetenzbereich eLearning, Berlin
² Hochschule für Technik und Wirtschaft Berlin, Berlin

INTRODUCTION
TRACY is funded by the Federal Ministry of Education and Research (Project number 89115005. This is a game based learning project for the continuing education of medical and nursing staff. In cooperation with the Hochschule für Technik und Wirtschaft (HTW) we develop a serious game that simulates internal disaster management (fire scenario). This first study was based on a usability-test with medical staff that is generally not comfortable with technology and gaming. The aim of the study was to show which user input devices are the best to communicate with the computer and the learning environment.

METHODS
The study was done in February 2013 at the Charité Universitätsmedizin Berlin. 11 nurses tested 4 different input devices: mouse, keyboard, mouse-keyboard combination and gaming pad. We generated qualitative and quantitative data, like a questionnaire founding the technical experience, the NASA-Task-Load-Index, the computer log-files and video material for sampling the thinking loud method, to measure the load of the different interfaces.

RESULTS
For the conceptual and theoretical embedding of the data we used the Cognitive Load Theory. We could show that comfortable user interfaces like the mouse make it easier for the nurses to interact with the computer without high load (=extraneous cognitive load).

DISCUSSION
Extraneous cognitive load is caused by the form the information is presented to learners and it is under control of the instructional designers. It is important to have this in mind while developing a serious game, especially for people non comfortable with technic and gaming. The learning environment should not make high cognitive load, e.g. with distractions but let the user and the working memory enough resources for processing the information with high learning motivation and immersion.

REFERENCES:
Evidence-based dentistry as part of a CAL programme

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Computer-assisted learning (CAL) programmes are becoming more widely used in medical and dental training. However, the combination of CAL programmes and evidence-based education in dentistry has not previously been described. We aimed to determine the acceptance and user-friendliness of a CAL programme combined with evidence-based training.

This study was conducted at the Dental School of the University of Frankfurt am Main, during the academic year 2012/13. Data on acceptance and user-friendliness were collected from 24 dental students attending their first clinical semester. They used the “Toothache Walk-in Clinic: FOCUS” CAL, which can be downloaded via the Internet.

The instrument consisted of 64 statements. The first part addressed general information on the user (possible responses ranged from 1 = excellent until 6 = unsatisfactory). The second part contained 43 specific statements on the CAL programme. These included the factors A (handling and technical aspects), B (content and functional range), and C (didactics and suitability for education). Possible responses ranged from 0 to 3 (0 = strongly disagree, 3 = strongly agree).

From a total of 24 questionnaires, 21 were returned (response rate 87.5%). Most users (90.1%) considered the topics of evidence-based dentistry important for their training. Overall, the programme was rated with grade of 2.05 (SD = 0.67). Most students (95.2%) considered the programme useful for their training in patient therapy in clinical courses. Overall, 71.4% of students used tablet computers (iPhone, Android, Smartphone etc.), and 52.3% preferred the use of these tools. The mean scores for the 43 specific items amounted to 1.43 (factor B, SD = 0.51), 2.09 (factor C, SD = 0.41), and 2.18 (factor A, SD = 0.37).

Most students appreciated the availability of basic information on evidence-based education within the CAL programme. We therefore recommend this tool for evidence-based training in dentistry and medicine.

REFERENCES:
The study was financially supported by the “eLearning-Förderfonds 2012”, of the Goethe-University in Frankfurt am Main (studiumdigitale) for the project “Zahnschmerzambulanz: Fokus”.

How is the students’ individual learning outcome related to the attendance, the time investment and the duration of the modules in an organ-centered curriculum?

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The time investment and free time for self-study is of importance for students’ individual learning outcome [1][2]. Therefore, twelve organ-centered modules of the 2nd and 3rd year of the medical model study path in Aachen, Germany were analysed. Each of these modules has a duration from 9 up to 24 days and consists of several elements, such as lecture hours, practical training and small group tutorials and ends with an examination. The students’ contentment is evaluated continuously with an online-tool. The items we focus on are: overall grade of the organ-centered modules, individual subjective learning outcome (6-point-scale). With other scales – from low to high – attendance (3-point-scale) and learning time invested (5-point-scale) are evaluated. The relationship between the evaluation of these items and attributes of the modules (total hours, hours per day, percentage of different teaching elements) were investigated with Kendall’s rank correlation coefficient.

Preliminary results of the academic year 2011/12 show that the correlation is significant between the individual learning outcome and more attendance (r=-.595, p=0.007), a lower percentage of lecture hours (r=.455, p=0.040), more module hours (r=-.473, p=0.033) and a longer duration of the total module (r=-.492, p=0.027). The time investment correlates with less lecture hours (r=-.504, p=0.023) and more practical training (r=.595, p=0.007), but not with learning outcome. The overall grade is related to students’ attendance (r=-.508, p=0.023) and their individual learning outcome (r=.788, p=0.000).

CONCLUSION:
These results confirm former results of the academic year 2007/2008 [2]. In addition, the results show that a longer duration of a module with a low percentage of lecture hours supports the individual learning outcome, though not the overall grade.
REFERENCES:

14 Introducing the Course Evaluation Questionnaire (CEQ) to inform curricular development at the University of Regensburg

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INTRODUCTION:
Curricular development in medical education is a circular process, in which the definition of the curricular needs and the evaluation of new concepts are integral parts[1]. In order to identify educational needs at the University of Regensburg and to evaluate the effects of curricular changes on these needs, a translated and extended version of the Course Evaluation Questionnaire (CEQ) [2] was applied.

METHODS:
We translated the CEQ short form [2] and, as additional scales, the: “learning community scale” and the “graduate qualities scale” [3] into German and validated our translation by letting a linguist translate it back into English. An online link to the CEQ questionnaire was emailed via the student representatives of each semester to all medical students in their clinical rotation at the University of Regensburg. We asked for completing the questionnaire twice, first in November 2012 and then in March 2013. After three weeks, a reminder email was sent out.

RESULTS:
We received 174 valid responses in our first survey (out of 663). The factor analysis provided evidence for most of the underlying scales of the CEQ and validated our translation. No significant differences in regard of the educational level or the individual characteristics of the students could be detected. Further results including the results of the second data collection are presented at the conference.

DISCUSSION:
The CEQ seems to be a useful tool in the assessment of the potential for curricular development for informing further curricular planning. It remains to be seen whether the longitudinal results are an adequate means for accurately describing changes brought about by curricular development.
INTRODUCTION
Medical education is very challenging. Medical students often suffer from higher distress compared to other students [1, 2, 3]. In particular, international medical students face several challenges with regard to academic, cultural and social difficulties. Often they don’t speak enough German to attend courses successfully and are less integrated. So far, specific language courses related to the medical curriculum are not offered at most German medical schools. At the University Medical Center Hamburg-Eppendorf (UMC), 35 to 40 international students enroll every year. In order to improve their situation, the project “German as a 2nd language for international medical students (Deutsch als Zweitsprache für ausländische Medizinstudierende – DaZmed)” started in January 2013.

METHODS
In order to develop the DaZmed curriculum, need analyses were undertaken to formulate appropriate objectives.
1. A survey among the faculty in order to identify situations in which the lecturers perceive difficulties by students (e.g. physician-patient-dialog or multiple choice exams) and possible intervention strategies.
2. A survey among the students that applied for courses in order to identify situations in which the students perceive having difficulties and to gather information about the skills the students want to train.
3. Analysis of educational objectives during medical training by analyzing study and exam regulations.

RESULTS
104 members of the faculty answered the questionnaire (46% female, average teaching experience of 5 to 10 years). 16 students answered the questionnaire (31% female), most of them in 2nd semester. Lecturers and students show differences in specifying difficult situations.

REFERENCES:

38 How to improve integration of international medical students?
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DISCUSSION
• There is a need for courses for students in order to support their occupational
  and social integration, linguistic qualification and academic success. Increasing
  linguistic skills and student tutoring is a possible starting point.
• The different need analyses provide an excellent base to develop a curriculum
  related to medical studies.

REFERENCES:
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  students. Medical Teacher, 34: 840-847.

52 Striving for the ideal approach – Reflecting the underlying
conceptions and the theoretical basis of an new integrated,
competency-based medical curriculum at the Charité Berlin from
the planners’ point of view

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BACKGROUND
Establishing a reformed medical curriculum is a challenging encounter for
all medical faculties. Yet there is a lack of profound research on the reform
processes and success factors even though it could guide and facilitate the
introduction of curriculum reform in other places.

METHOD
The Charité – Universitätsmedizin Berlin introduced a new medical curriculum,
Modular Curriculum of Medicine (MCM), in 2010. The MCM attempted to
incorporate a large number of elements currently accounted as characteristics
for good teaching and learning, for instance being out-come and problem-based,
involving early patient contact, interdisciplinary modules and small group and
team-based learning. This research work focuses on the educational theory basis
of the MCM using a mixed-status focus group analysis with former key-players,
including students in the MCM-planning and decision-making process.
RESULTS
The data obtained are analysed via content analysis (Mayring 2007) of qualitative data and provides systematic insights into the multi-layered negotiation process of planning a medical curriculum. It formulates the implicit and explicit objectives and ideas of the planners in retrospect and allows a connection to their educational theory background.

DISCUSSION
The focus group analysis reveals the highly creative and dynamic process of building the basis of a new curriculum at the very beginning where there aren’t constraining organizational factors. It points out the vision of the new curriculum as well as educational understanding of the planners. Analysing and communicating curriculum planner’s plans may serve as tool to guide and foster reform of medical curricula.

56 Revision of PBL Training including preclinical and non-medical Docents

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INTRODUCTION
The introduction of Problem-based Learning (PBL) in the new model curriculum requires much more PBL docents (40 PBL groups per semester). Therefore, PBL docents from preclinical and theoretical disciplines, sometimes non-medical docents were recruited. This group did not feel adequately prepared for PBL after PBL Teacher Training (PTT). The PTT concept was revised and compared to old concept of 2012.

METHOD
16 units were planned for all docent groups, and theoretical inputs were reduced by 39,3%. Training with PBL cases used for students’ teaching was implemented and interactive phases increased from 25% to 62,5 %. In 2012, 101 (42,98%) of 235 docents who had passed the old concept were asked for evaluation. In 2013, 41 docents have passed the new concept in 2013, of whom 40 (97,56 %) evaluated the PTT with the same question sheet as in 2012.

RESULTS
87,1% of PBL docents of 2012 were experienced in teaching, 80,5% in 2013. Whereas 48,5% of docents participated voluntarily in 2012, it was 31,7% in 2013. Comparing the two concepts with a 6-step Likert scale, the following aspects turned out to show better acceptance (values 2012 and 2013, 1= best): Explanation of PBL principle (1,19 vs. 1,45), illustration of the new curriculum (1,78 vs. 2,17) and regular tasks of PBL docents (1,46 vs. 1,73). The motivation for PBL teaching among docents was higher after the new PTT concept (1,66 vs. 2,0). Average marks for PTT given by docents were 1,89 in 2012 and 1,26 in 2013.
CONCLUSION
The implementation of a new PTT with a higher degree of interactivity succeeded in preparing and motivating PBL docents. Although the number of volunteers was lower among PTT participants, the docents understood the principle of PBL and their tasks better in 2013. Therefore, the revised PTT concept will be continued.
Expert discussion to improve process management in developing a new modular medical curriculum

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INTRODUCTION
The Charité - Universitätsmedizin Berlin has introduced a new medical curriculum starting in fall 2010. It’s term-wise implementation is preceded by an interdisciplinary planning process for each module, involving varying sets of pre-clinical and clinical departments. This process is complex due to restricted structural, financial and human resources and accompanied by organizational, conceptual and institutional challenges. In order to inherent challenges and to identify issues in this process, there is need of an instrument, which evaluates important aspects of the planning related to the process management.

METHODS
After a set of modules had been designed, all physicians in charge and executives reflected the process itself in a group discussion. The responsible persons were interviewed in focus groups to generate reviews and recommendations for improvements. Data were analyzed by using a qualitative approach: the inductive qualitative content analysis according to Mayring (2003). In conclusion the results will be transferred directly and structured in the future planning process.

RESULTS AND DISCUSSION
The analysis showed multiple factors determining successful planning a modular curriculum. Key results were: meeting in a constant setting, e.g. time, participants and place, providing same base of knowledge among participants, early agreement on the topics of the module’s weeks, transparent, structured and independent style of leadership.

The proposed instrument delivers continuous information, allows systematic study to improve the implementation process of the new curriculum and provide immediate evaluation. It delivers differentiated and science-based information, reveals trends and the success of previous improvements. The expert discussion reproduces the perspectives of the planners and their process management creating a new curriculum.
40  PIA - Patterns of InterAction

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INTRODUCTION
PIA is a follow-on project based on SimMed (simulation of medical treatments), a new virtual patient software on a multitouch - tabletop environment. The aim is to evaluate if SimMed is an appropriate and effective tool for training teamwork and leadership skills and to analyze patterns of interaction. Therefore we developed the SimMed-based team training (SBMTT) using a pediatric emergency case. Teamwork and team leadership are of critical importance for patient safety. Recent reports recommended simulated based training of these non-technical skills. SBMTT is designed to bridge the gap between the prevalent, but cost-intensive human patient simulator and less interactive low-fidelity simulators. Linked with a Microsoft Kinect, SBMTT could lead to a better understanding of group processes according to the IPO-model of teamwork.

METHOD
The ongoing study takes place at Charité Universitätsmedizin Berlin and started in September 2012. The first data collection was carried out via participant observation and questionnaire during a 2-day pediatric emergency course. In the next step we’ve organized SBMTTs with 16 physician residents and nurses. All SBMTTs were reordered via sensors, integrated live recording, video and audio.

RESULTS
A total of 25 medical staff completed the evaluations. 84% rated the SimMed trainings system as good or excellent, 88% were satisfied with their own learning success. Both in terms of the training of medical content as well as in terms of non-technical skills SimMed performed well among users. 91.6% agreed that SimMed-based team training (SBMTT) is effective in training of leadership skills. Further results are in progress.

DISCUSSION
SBMTT is an appropriate teaching tool and can help to ensure that training methods of non-technical skills are more integrated into medical education. By incorporating new treatment options and instruments, SBMTT could be more immersive and be applied for other emergency cases.

REFERENCES:


“Blooming” - An educationalist’s activity with a small impact on students and faculty

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Bloom’s taxonomy of educational objectives has guided educational processes and curricula developments for more than half a century. It took some time till it was accepted and applied in medical education. Now it’s categorisation of the cognitive processes combined with the descriptors of outcome is widely in use. Descriptor verbs are believed to be important for the formulation learning objectives since they should specify the depth and the level of the learning process.

We choose 15 verbs - three at a time - out of 5 of Bloom’s 6 domains and asked members of our faculty as well as student to group them according to the depth of the thought/learning process that they felt was intended by the use of these verbs.

We received 47 questionnaires from faculty and 60 from students at the end of the 2nd semester. The variability of answers within both groups of participants was very high reaching from lowest to highest level of sophistication for all verbs with some more or less clustering for every verb respectively.

Using different dictionaries of synonyms we found a broad overlapping of descriptor verbs and their synonyms for Bloom’s domains. Since the synonyms represent the usage of verbs by native speakers there doesn’t exist any concise natural grouping.

The use of descriptor verbs has no face validity for faculty members or students during the process of the formulation of educational objectives. The practice reassures educationalist without reaching the targets of their effort. Great numbers of verbs become technical terms – this is contrary to their ‘natural’ usage. This together with epistemological concerns about the completeness and the usefulness of the taxonomy raise the question whether we are dealing with an “all-inclusive, all-purpose tool” [Furst] that we impose on our peers and students.

Teaching Humanities: -’No Evidence of Teaching’?
A special study module on Medical Theory and Practice in the reformed curriculum at the Charité

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The German “Approbationsordnung für Ärzte” declares that during medical education students should learn philosophical, historical and ethical foundations of physicians (code of) conduct. For their final examination students have to provide a major course assessment. The Reformed Curriculum of the Charité
introduced a special study module on Principles of Medical Theory and Practice which comprises four seminars (24 hours each) about Humanities (PMTP-H) - 96 hours in all. In the time of outcome based medical education it is necessary to justify time spent for learning activities: “What does this investment of effort yield in currency of competencies?”

A review of all the seminar descriptions of the PMTP-H (N = 177) and a preliminary content analysis were conducted as well as a broad critical literature review about humanities in medical education for the years 2009 - 2012 which resulted in nearly 400 publications.

Key humanities are philosophy, history and literature - in a broader sense one may add art, anthropology etc. Leading themes of the PMTP-H were medical ethics, medicine during the National Socialism, different philosophical sub-disciplines (especially epistemology) and their relation to medicine and theories of health and illness. Astonishingly more than a quarter of all seminars (N = 46) concerned clearly regular content: complementary medicine and medical care law, thus covering up flaws in the core medical curriculum and misusing time reserved for electives.

The literature review provided a grid for the classification of the uses of humanities for medical education. Leading in this context is the encouragement of students to develop their own personal values. Not a single publication showed a valid impact of the teaching of humanities on the competencies of doctors. With the exception of the knowledge domain it is beyond our control and it is highly sophisticated to measure or demonstrate testable outcomes of a complex learning activity on doctor’s performance. So let us enjoy and continue teaching Humanities with ‘No Evidence of Teaching’ - it may be worth it.

5 Integration of Gender-related knowledge and skills into the new modular medical curriculum at Charité Berlin

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SUMMARY OF WORK

Participation at the module design sessions and the meetings of the curriculum development team guaranteed the overall systematic integration of gender concepts. In cooperation with the Institute of Gender in Medicine at Charité, relevant findings of gender medicine were identified for each module of the new
curriculum. Selected specialty-specific faculty members were then approached and the identified concepts presented and evaluated. Following, the specialists were directly in charge of the generation of gender-sensitive core competences to their teaching and their incorporation.

SUMMARY OF RESULTS
By now, 28 out of 40 of the modules have been designed. The integration of compulsory gender-related courses as well as the integration of gender aspects into several lectures and seminars has found great acceptance within the general faculty.

CONCLUSIONS
In order to successfully integrate gender aspects into the medical curriculum, it is essential to integrate a designated person into the module design groups and the curriculum development team. In addition, a participatory approach to the subject-specific faculty is highly advisable.

TAKE-HOME MESSAGE
Institutional support, broad faculty involvement and designated specialists in key organizational groups facilitate the implementation of gender aspects into medical curricula.
41 iMED Textbook – A customisable approach to provide an electronic learning resource for novel integrated curricula

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INTRODUCTION
The introduction of novel, often integrated medical curricula in Germany will increase the demand of similarly integrated textbooks. The latter are so far only established in the Anglo-American market, but even those would not match the structure of each individual curriculum.

METHODS
At the University Medical Center Hamburg-Eppendorf, an expert panel A consisting of physicians and scientists discussed the development of an own textbook. Secondly, technical approaches were discussed by a different expert panel B consisting of curriculum developers and computer scientists. Finally, a small team covering expertise in preclinical and clinical teaching as well as in software development was established to develop an integrated electronic learning resource.

RESULTS & DISCUSSION
As first result, the deanery was provided with recommendations:
- to establish a customized, tailor-made learning resource for the integrated curriculum iMED Hamburg,
- to preferentially use an electronic, e-learning-type format, and
- to compile all relevant textbook contents to offer the students a comprehensive source during their time at the University.

After the selection of a suitable content management system, the team started to design iMED Textbook, an internet-based learning platform integrating learning content from own UKE-based authors and established textbooks. The content was selected by representatives of the respective preclinical or clinical subjects. Those individuals were most often also involved in the development of the integrated curriculum. In an editorial process, the content gets restructured with regard to didactic needs, is connected to the educational objectives of the curriculum and linked with corresponding content from different parts of the curriculum.
The primary type of content is text and images, resembling a classic textbook style. Using the advantages of an electronic platform, this is enhanced by multimedia-based and interactive elements.

iMED Textbook started in April 2013 and will grow with the developing curriculum iMED Hamburg.

43 The use of Video Tutorials to enhance medical student's preparation for laboratory courses in order to improve learning.

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INTRODUCTION
Practical laboratory-courses are an important instrument to teach preclinical medical students the basic natural sciences. During the courses the students not only have to understand the experiments and the observed phenomena. They also have to operate laboratory apparatus they never have worked with before. Together these tasks case a high Cognitive Load which can hinder learning. According to the Cognitive Load Theory, Intrinsic Cognitive Load, which depends on the complexity of the topic, can only be reduced through a higher prior knowledge.¹ The study examined ways to improve the students prior knowledge about the experiments through the use of short Video Tutorials.

METHODS: The study was focused on the physiological laboratory-course. Videos for the themes “Membrane Potential” and “Optics” were provided on the faculty’s eLearning Platform. They explained the experiments and the operation of the laboratory apparatus. Students could use the Videos voluntary for preparation. In a written survey at the beginning of each lesson the students where asked if they had used the videos (Users) or not (Non-Users). To test their prior knowledge, students where asked several questions about the experiments they where going to run. To compare the test scores of the Users and the Non-Users, the students where matched with regard to several variables which could bias the results, like for example their prior scores in Physiology.

RESULTS: In both themes the Users scored significantly better than the Non-Users (Membrane Potential: p=0.001, Effect Size=0.6; Optics: p=0.000, Effect Size=1.1)

DISKUSSION
The results clearly show that the use of Video Tutorials can lead to a higher prior knowledge. According to considered learning theories like the Cognitive Load Theory or the Cognitive Theory of Multimedia Learning, this is a way to improve understanding and learning during a practical laboratory course, which should be proved through further research.
REFERENCES:

23 SimMed -Learning effect and transfer due to training on a virtual patient learning environment on a multitouch surface

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SimMed is a learning environment. It was developed in 2010-2012 by the eLearning department at Dieter Scheffner Fachzentrum (DSFZ) Charité and Archimedes Exhibitions.
Learners can interact with the virtual patient displayed on a multitouch table by touching the surface of the table alike to an iPad. Multitouch makes it likely to interact simultaneously with as many touches as anyone wishes and in real time. Therefore it is possible to train complex situations for instance diagnose and treatments that require more than one person.
Main issue of the project was to create an environment that offers realistic situations and leads to immersion and thus to maximum learning effect and transfer.

In order to evaluate usability and immersion, users from the targeted user groups were invited to try the environment. They were interviewed afterwards and asked to answer a questionnaire.

By evaluating and modifying the usability we managed to downsize the time needed to learn the interaction with the environment to an absolute minimum.
The medium vanished and the content got accessible almost as natural as reality itself.

In 2012 we conducted a study to measure the effectiveness of the new simulation learning environment with special regards on learning effect and transfer.

It was conducted as randomized, single-blind intervention and control group study. Members of the control group went through a training process with a pc based virtual case trainer. SimMed and control group trainings took part in teams and consisted of the physical and laboratory examination and therapy of a paediatric patient with meningococcal disease. Accomplish skill acquisitions were assessed in an objective structured clinical examination (OSCE) based test.

We could show that participants trained using the SimMed learning environment showed a significant better performance than the control group and best results were obtained only in the SimMed group.
REFERENCES

4 Video-Assisted Examinations with Simulated Patients: Informed Consent Prior to Surgery
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BACKGROUND
Communication skills combined with sound knowledge are fundamental to the doctor-patient relationship. During a video-assisted examination, students were tasked with obtaining informed consent. The aim was to develop a reliable examination assessable by raters independent of both time and location.

METHODS
157 students (10th semester of medical school) participated in a summative exam within the framework of the teaching module “Operative Medicine”. Following a specific announcement (lecture) and subsequent self-study, students prepared themselves with information on the three clinical pictures presented and the surgical procedures involved. On examination, students obtained informed consent from simulated patients. Examination performance was determined by two independent raters using a 29-item checklist. Students were questioned on their prior experience (e.g. electives) as well as on their assessment of personal performance. Statistical tests were determined by SPSS.
RESULTS
The degree of inter-rater accordance was high (Pearson = 0.761, p < 0.01; intraclass-correlation coefficient 2.1 = 0.749). Cronbach’s alpha values for each clinical picture checklist were determined as being 0.421 (appendectomy), 0.561 (cholecystolithiasis) and 0.505 (inguinal hernia), respectively. A corrected item-total correlation (discriminatory index) of > 0.2 was determined for 10 items on the appendectomy, 9 items on the cholecystolithiasis and 10 items on the inguinal hernia checklists, respectively. Student scores as a whole were high, averaging 87.6% ± 3.97% (communication skills 95.6% ± 3.82%, content 86.23% ± 5.57%, weighting 3:7). Student self-assessment of communication skills correlated positively with the respective objective evaluation items (Pearson = 0.250, p = 0.011).

SUMMARY
Video-assisted examinations represent a practicable and reliable method of assessing communication skills when using appropriate checklists. They may be carried out in a time-saving fashion and with a high degree of inter-rater accordance. It is possible that this type of examination motivates towards self-study as a result of the clearly announced tasks and learning objectives.
INTRODUCTION:
Self-reported aspects of academic success and strain in a traditional and a problem-based learning medical degree program are investigated. Aim was to examine the influence of curriculum design on subjective measures of academic success and their relation to students’ characteristics.

METHODS:
A secondary analysis of data first published by Dettmer & Kuhlmey (2010) is presented. First and second year students of two medical degree programs at the Charité - Universitätsmedizin Berlin (traditional complete cohort, problem-based small cohort) answered multiple questionnaires. They were analysed in terms of measures of students’ performance, satisfaction and strain. Investigated outcome criteria (study satisfaction, career plans, thoughts about quitting, perceived stress and its consequences, work life balance) are in line with theoretical approaches to academic success (e.g. Oswald et al., 2004).

RESULTS:
517 first year and 332 second year students replied (response rate 53%). Results favor the problem-based learning curriculum in terms of study satisfaction ($p < .01$), stress perception ($p < .01$) and working as a physician in curative domains. Regression of anxiety and burnout symptoms on students’ self-efficacy beliefs confirms their negative relation ($p < .01$).

DISCUSSION:
Students of problem-based curricula present themselves as being less distressed, more satisfied and more motivated to choose specialties that highly involve communication and patient work. Educational and organisational differences of the three curricula are taken into account to discuss their benefits and strains. Students’ perception is key to the global outcome picture of problem-based curricula and adds to a theoretically founded analysis of academic success. An extension of the study covering a third medical degree program at the Charité (problem-based, outcome-oriented complete cohort) is presented.
REFERENCES:

16 Raising the effectiveness of students’ evaluations through didactic counseling - Students’ free text evaluations aren’t sufficient

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INTRODUCTION:
Students’ evaluation of teaching (SET) alone did not show any effect on course quality of future courses. Only combined with didactic counseling SET is effective. In our own practice as teaching consultants at the Medical Faculty of Heidelberg we observed that ratings and comments of SETs are rarely concrete and often contradictory. Therefore, we analyzed free text comments of SETs in order to examine how many of them provide helpful didactic recommendations.

METHODS:
We analyzed students’ free text comments of 28 courses of different medical subjects of the years 2012 and 2013. Each comment was categorized into 3 levels of concreteness: global statements concerning the teaching unit or the teacher, more specific statements concerning the teaching unit or teacher performance, concrete didactic recommendations.

RESULTS:
781 students evaluated the courses. Among these 348 (45%) answered open ended questions and gave 851 separate comments. Most of the statements addressed global statements (14, 6%) or more specific statements concerning the teaching unit or teacher performance (66, 4%). Only 19% of the comments contained concrete and helpful didactic recommendations for teachers. Furthermore, some students’ comments contradicted each other.
DISCUSSION:
Only a small proportion of students give concrete didactic recommendations. This may be one explanation why SET alone does not show any effect on course quality. Our findings support the need for didactic counseling to improve the effectiveness of SET. We have established a counseling concept toward this aim and will integrate its structure in the presentation. Moreover, future research should explore how evaluation items have to be formulated in order to increase the level of concreteness of students’ free comments.

REFERENCES:


49 Effects of a study related bonus program on response rates of online evaluations

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BACKGROUND
Evaluation is an important aspect in any quality management system. As it became increasingly resource consuming to continue with the traditional paper based evaluations, the Medical Faculty of Ulm decided to switch to an online based evaluation system. As an expected, yet negative side effect the transfer came along with reduced response rates which may result in reduced data quality. To overcome this disadvantage of online evaluations a study related bonus program has been installed during the winter term 2012/2013.

STUDY QUESTION
Is the newly introduced study related bonus program able to increase the response rate of the online evaluation system?
METHODS
A study related bonus was offered to all students of the Medical Faculty who completed the online evaluation forms for at least 80% of their courses. The bonus consisted of a preferential registration for the courses of the term to come. Such a preferential treatment could be attractive for the students because of its inherent options as to time slots, course selection etc. If the 80% mark had been fulfilled the preferential registration option was accorded to the respective students anonymously and automatically. The response rate of the online evaluation system was checked afterwards to determine if the introduction of the bonus program had positive effects.

RESULTS
The results show a clear-cut increase of the response rate after the implementation of the bonus program. As to lectures, the response rate was increased by 17% and for seminars by 15%. On average an overall response rate of approximately 60% could be achieved throughout the study course.

CONCLUSION
Because of the results shown above the bonus program will be continued. Further studies have to show if its beneficial effects are sustainable in the long run.

REFERENCES:

21 Managing the clinical environment Assessing the educational needs of final year students at the University of Regensburg

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INTRODUCTION:
Traditionally, medical education consists of a combination of training of medical skills and the acquisition of theoretical clinical knowledge [1, 2]. Skills necessary to manage the demands of a complex clinical environment are generally not addressed in formal medical curricula [3, 4]. To assess the need of knowledge and skills concerning basic process management in the setting of hospital patient care, we developed a questionnaire for students and physicians.
METHODS:
We conducted a survey among final year students and physicians with a paper-based questionnaire, which includes scales concerning: (1) knowledge about the flow of information and information gatekeepers at our hospital (2) necessary training level of students in the standard clinical data-processing software SAP (3) and knowledge about the organizational processes around ward rounds including the correct way of prescribing drugs and written documentation. In our survey, we also asked the students about their previous experience with the mentioned aspects of daily clinical practice and their overall confidence in their theoretical clinical knowledge as well as their clinical skills.

RESULTS:
The study was initiated in March 2013. Data-gathering and the statistical analysis will be completed and the results will be presented at the conference.

DISCUSSION:
We expect our study to broaden the understanding of the skills necessary to manage the complexity of the clinical environment and to gather information for the development of training of clinical management skills for final year students. Especially when considering that most physicians spend about half their time dedicated to non-patient communication instead of bed-side patient care [5, 6, 7], we anticipate that an early training in managing the clinical environment may result in in fewer mistakes and more time for patient care.

REFERENCES:
1. Flexner A. Medical education in the United States and Canada: a report to the Carnegie Foundation for the Advancement of Teaching. New York: Carnegie Foundation for the Advancement of Teaching, 1910
3. Hodges, B. D. (2010). A tea-steeping or i-Doc model for medical education?. Academic Medicine, 85(9), S34-S44.
How effective are graphical displays to communicate evidence?
The impact of graph literacy

Okan Y, Garcia-Retamero R, Galesic M, T. Cokely E, Maldonado A

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3 Michigan Technological University
4 University of Granada

INTRODUCTION:
Patients have severe problems grasping a host of numerical concepts that are prerequisites for understanding health-relevant statistical information. Graphical displays—including line plots, bar charts or icon arrays—can help overcome some of these difficulties. Yet people differ substantially in their ability to understand graphically presented information (graph literacy), which influences the extent to which they benefit from visual displays. We sought to examine the errors that are more prominent among less graph literate individuals, as well as to pinpoint the psychological mechanisms underlying such errors.

METHODS:
Participants were presented with a series of graphs depicting quantitative medical information (e.g., effects linked to different treatments), and were required to make judgments and decisions on the basis of the information presented in each graph. Graphs contained conflicts between information conveyed by salient spatial features (e.g., heights of bars) and information conveyed by conventional features (e.g., axes labels, values on scales). Additionally, participants’ eye movements were recorded while they explored and interpreted graphs.

Results: Results revealed the existence of important errors in the interpretations of graphs, which were more prominent among individuals with low graph literacy. Eye tracking data revealed that participants with low graph literacy attended to a lesser extent to information in conventional features. Differences in viewing times mediated the effect of graph literacy on accuracy of graph comprehension.
DISCUSSION:
Our findings suggest that people may often misinterpret information even in relatively simple displays, and that caution should be taken to ensure that viewers of varying skill levels infer the correct meaning from graphs. Our findings also point to interventions that could be applied to enhance comprehension, including training methods to instruct individuals in the relevance of information contained in conventional features, as well as the use of methods to direct attention to essential information (e.g., interactive displays).

46 Communicating sunscreen effectiveness as “percentage of sunrays blocked” leads laypeople to underestimate the increase in protection when comparing sunscreens

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INTRODUCTION.
The Sun Protection Factor (SPF) is commonly used to convey a sunscreen’s efficacy in protecting primarily against UVB energy (1). Some media outlets and health professionals promote the misconception that high SPFs offer only marginal improvements in sun protection, arguing that the percentage of UVB rays blocked (%-blocked) increases much slower than SPF increases (2). For example, doubling SPF from 30 to 60 increases %-blocked only from 96.7% to 98.3%. In fact, SPF-60 is twice as effective as SPF-30: it allows only half the UVB rays to reach the skin (%-through: 1.7% vs. 3.3%, assuming laboratory conditions). We tested the prediction that the %-blocked format leads laypeople to underestimate increases in sun protection when comparing sunscreens.

METHODS.
343 US laypeople completed a randomized web-experiment. Sunscreen effectiveness was communicated as %-blocked, SPF, or %-through. Participants judged the increase in sun protection for 10 pairs of sunscreens (all combinations of SPFs 10, 15, 20, 30, and 50). Main participant outcome measures: (a) mean bias (under-/overestimation of protection increase; i.e., ratio of minimal erythema doses); (b) mean subjective rating (range: 1–7). HDI: 95% Bayesian posterior density interval (3).

RESULTS.
On average, the %-blocked format led participants to underestimate the increase in sun protection by a factor of 2.04 (HDI [2.00–2.09]), whereas the SPF format led to only slight (1.20, HDI [1.12–1.26]), and the %-through format to moderate underestimation (1.45, HDI [1.35–1.55]). Furthermore, %-blocked led to lower subjective impressions of increases (4.0, HDI [3.8–4.2]) than did SPF (4.9, HDI [4.7–5.1]) or %-through (4.5, HDI [4.3–4.7]).
DISCUSSION.
Communicating sunscreen effectiveness as %-blocked leads laypeople to underestimate the increase in sun protection when comparing sunscreens, whereas using SPF leads to appropriate perceptions. The media and health professionals should thus use SPFs rather than %-blocked to communicate sunscreen effectiveness to laypeople.

REFERENCES:

27 Can all patients understand? Extent and implications of low numeracy and graph literacy.

Galesic M¹

¹ Max Planck Institute for Human Development

PURPOSE
Doctors have been increasingly encouraged to involve patients in decision making rather than pursuing a paternalistic model in which they make the decisions for their patients. To participate in decisions about their health, patients need to be able to understand the complex risks and benefits of different medical treatments and screenings. However, patients often have severe difficulties in understanding of health-related risk information.

METHOD
I will describe main results of a series of studies conducted on large national samples in Germany and the United States, which investigate the origin and extent of these difficulties in understanding, as well as test a variety of methods for overcoming them.

RESULTS
Our results show that many patients have low numeracy, that is they have little understanding of basic statistical concepts, such as probabilities and the notion of a random toss, that are prerequisites for understanding information about risks and benefits of treatments. These patients have less accurate perceptions of the risks and are more affected by irrelevant factors when making decisions. They are also less willing to get involved in shared decision making process with their doctors.
Our research further shows that visual aids are helpful for patients with low numeracy who understand basic graphs. However, a significant portion of the population - up to one third in both the United States and Germany - lacks the basic skills required to understand both numerical and visual formats. Therefore we explore alternative ways to communicate medical information to this particularly vulnerable group of people, such as analogies.

CONCLUSION
Unless communications are sensitive to the level of basic numeracy and graph literacy of patients, some groups of patients will be at a systematic disadvantage. Well designed numeric, visual, and verbal formats can reduce or eliminate these patients' difficulties in the understanding of risk information.

11 What makes a doctor a scholar? A cross-national comparison of outcome frameworks

Hautz S 1, Blaum W 1, Feufel MA 1, Spies CD 1

• 1 Charité Berlin, Berlin

BACKGROUND:
Given the trend toward outcome-oriented approaches in medical education, many countries develop outcome frameworks that define relevant competencies physicians should possess. The aim of our study is to compare the competency-based definition of the “doctor as a scholar” among published national outcome frameworks and to contrast our findings with the results of the MEDINE-project.

METHODS:
We searched MedLine, EmBase and the Internet for outcome frameworks in medical education. All frameworks that resulted from a national consensus process and were endorsed or published by a national society or governmental body were retrieved for full analysis. Frameworks of medical sub-disciplines were excluded. We recorded structure, extent and mode of creation and extracted all text referring to the definition of “doctor as a scholar”, science education, research methodology or evidence based practice. Results were identified to refer to one or more of four predefined categories relevant to evidence based medicine: (A) finding and appraising evidence, (B) applying evidence, (C) communicating evidence and (D) generating evidence.
RESULTS:
We identified seven outcome frameworks that meet our inclusion criteria. Modes of creation, structure, level of detail and content vary considerably between frameworks. Five of seven frameworks dedicate a least one outcome domain to science. All frameworks require competent doctors to locate, interpret and apply scientific evidence (categories A&B). The communication of evidence is mentioned but mostly not elaborated (category C). The largest differences among the frameworks are found with respect to the competencies necessary to participate in scientific research (category D). Our results correspond well to the MEDINE-project.

DISCUSSION:
The definition of “the doctor as a scholar” varies considerably across countries. All frameworks agree that finding, appraising and applying scientific evidence in clinical practice is a basic competency all doctors should possess. Whether and to what extent practicing physicians should be competent researchers remains disputed.
1 The joint project ‘Practical clinical competence’

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² Phillips University, Marburg
³ Liebig University, Giessen

INTRODUCTION
Practical clinical competence is fundamentally important for undergraduate medical education. However, undergraduate training competes with patient care and experimental research, mostly to the disadvantage of the training of skills and competencies.

As surgery includes various practical skills important even for beginners, undergraduate training in surgery is predestined to exemplarily develop, analyse and implement training concepts for practical competence.

The present work presents a joint project aiming to improve and strengthen undergraduate training in practical clinical skills and competence in surgery.

METHODS
The medical faculties of the universities Frankfurt, Gießen and Marburg conceptualized the joint research project in collaboration with the German Society of Surgery (DGCH), the German Society of Medical Education and the German Medical Students Association. The project received a funding by the German Federal Ministry of Education and Research with almost two million Euro for a period of 5 years and began its work in April 2012.

RESULTS
The project combines nine packages in three pillars in order to improve undergraduate training on a methodical, didactic and curricular level in a nationwide network. Based on the catalogue of learning objectives defined by the working group “Education” of the DGCH, the present surgical curricula and the utilised teaching and assessment methods from the three faculties are analysed. Successively, further methods will be developed, analysed and integrated in the curricula based on the results. Furthermore, present online teaching contents (e.g. videos) are analysed, assigned to the catalogue of learning objectives and made available for both teachers and students as mobile learning tool.

Furthermore, qualification programmes for physicians will be implemented in order to improve both undergraduate education and the attractiveness of educational research.
DISCUSSION
The present work presents a joint curriculum and faculty development project of three medical faculties with nationwide partners exemplary for the surgical training.

Perception and demand of medical students concerning a learning management platform and its tools

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³ Charité Universitätsmedizin Berlin Dieter Scheffner Fachzentrum für medizinische Hochschullehre und evidenzbasierte Ausbildungsforschung Kompetenzbereich eLearning, Berlin

Almost every medical faculty offers various e-learning tools via a particular learning management system (LMS) to its students. Not all available tools and functions may be appreciated in the same way. This study analyzed the acceptance of the LMS Blackboard among medical students and how its tools were perceived by the users. Additionally, the platforms and tools which should be provided by the faculty were surveyed.

METHODS:
An online survey was launched for all of the students at the Charité Universitätsmedizin Berlin in the summer semester of 2012. The questions were defined by the authors and validated by independent peer-reviewers in advance. Using Survey Monkey® (SurveyMonkey Inc., Oregon, USA) a questionnaire was made available and students were asked to participate via Email. At the end of the semester, data gained was analyzed with Survey Monkey’s® internal tools and IBM SPSS Statistics.

RESULTS:
A total of 584 students participated in the survey, which represents approximately 10% of all students enrolled in the Charité. 38,62% used the LMS daily, 48,32% weekly and only 13,06% less than once a week. Leading motivations for its use were to obtain information about the curriculum (86,33%) and learning materials (78,31%). Lowest rankings received options for communication with students or teachers (30,25%), group work (24,67%) and task/calendar management (13,24%). A uniformed study platform was desired by a large majority of all survey participants (90,05%) together with online storage space, with less emphasis on wikis or blogs (43,37%).
DISCUSSION:
This study shows that not all features of the web 2.0 are also represented in the perceived needs of medical students nowadays. Faculties should take this into consideration when establishing new or foster existing LMS and their tools. However, especially for organizational purposes and the provision of learning materials, the existence of a LMS seems a basic necessity.

REFERENCES:
Schulmeister (2009): Studierende, Internet, E-Learning und Web 2.0
Grosch/Gidion (2011): Mediennutzungsgewohnheiten im Wandel: Ergebnisse einer Befragung zur studiumsbezogenen Mediennutzung

On the way towards a National Competency-based Catalogue of Learning Goals for Medicine (NKLM) in Germany: The role of the “Gesellschaft für Medizinische Ausbildung” (GMA)

MR Fischer, K Mohn

BACKGROUND
Outcomes of undergraduate medical education in Germany are measured after six years by a national written single best answer multiple choice exam and a two day clinical case-write-up and oral examination in the faculties’ responsibility. However, no outcome- or competency-based national catalogue of learning goals exists. The GMA together with the German Association of Medical Faculties have initiated a structured process of creating such a catalogue together with all relevant institutional stakeholders in medical education, taking into account international references as well as catalogues from faculties and national medical associations.

Summary of work
We describe the development of the NKLM from 2009 until now with respect to its structure, process and preliminary results from the perspective of the GMA, the association for medical education in the German speaking community. 21 interdisciplinary workgroups are involved in the process. Intermediate results are currently reviewed by more than 150 German medical associations. The goal is a broadly accepted competency-based core curriculum to be used by the 37 German medical faculties as a joint basis that should be enriched by faculty specific profiles. The NKLM should provide recommendations for assessment and serve as a foundation for postgraduate training. Competencies should seamlessly be further developed after graduation. The development process is critically reviewed and strengths and shortcomings are described.
CONCLUSION
The multi-institutional development of the National Competency-based Catalogue of Learning Goals for Medicine (NKLM) is a complex process with potential for the improvement of medical education in Germany.

51 Study diaries as qualitative evaluation instrument in the process of implementation of scientific work modules

Schmidt S 1, Hitzblech T, Maaz A 1, Peters H 1

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INTRODUCTION
In 2010, the Charité - Universitätsmedizin Berlin started to implement a new integrated, outcome-based medical curriculum. This process is accompanied by large organizational, conceptual and institutional challenges. The integration of two modules “Scientific work” in the medical curriculum is evaluated by study diaries which identify sensitively and immediately problems.

METHODS
The aim was an in-process qualitative evaluation of the implementation process of the medical curriculum by means of an online-supported, semi-structured study diary which is completed daily, weekly and modularly by a students’ subset of the first study cohort. Data were analyzed using qualitative content analysis according to Mayring. We conducted triangulation with the results of the general evaluation and the debriefing of the modules.

RESULTS
Students’ feedback revealed relevant redundancies in lectures and modules, which could be removed immediately for the second module run. Additional feedback related to module structure, organizational and institutional contexts, social climate and feasibility of the work load. In order to solve the problems identified, specific steps were worked out involving short- and medium-term interventions carried out with the target groups involved.

DISCUSSIONS
Study diaries can serve as an effective instrument to improve the implementation process of a new curriculum and to provide immediate curricular feedback loops. They deliver differentiated information about the students’ perspective of their learning environment created by the new curriculum.

References:
**Workshop 1 (14:30 - 17:00, incl. 30min break)**

**Critical thinking as a method in ME**

**Chair: Pelz J**

**Location: Virchowweg 3**

**Room: 01 043**

<table>
<thead>
<tr>
<th>aims &amp; intended learning outcomes</th>
<th>Participants (max 20)</th>
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<tbody>
<tr>
<td></td>
<td>• reflect/discuss (critically’) what “Critical Thinking” is.</td>
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<td></td>
<td>• develop instructive examples of content of “Critical Thinking” courses.</td>
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<td></td>
<td>• make up their mind about the usefulness of “Critical Thinking” within the realm of medical education.</td>
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<table>
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<tr>
<th>workshop content</th>
<th>Students (eg. bvmd) asked for, authorities (eg. General Medical Council) recommended courses in Critical Thinking.</th>
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<tbody>
<tr>
<td></td>
<td>Critical thinking is what we all already do every day - isn’t it?</td>
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<td></td>
<td>Norman (2002) summarized his critical review of the effectiveness of Critical Thinking courses: “…that teaching such skills is much more difficult than might be imagined. .... such “skills”, once learned, are very content specific and not at all general.”</td>
</tr>
<tr>
<td></td>
<td>Teachers of Critical Thinking feel confident that it is a general method of all intellectual activities and of all sciences.</td>
</tr>
<tr>
<td></td>
<td>Attendees will develop possible content of critical thinking courses for medical students and discuss the impact on the development of scientific reasoning.</td>
</tr>
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| delivery method | Introductory presentations, small group exercises, large group discussions. |
Workshop 2 (14:30 - 17:00, incl. 30min break)

Competency-based medical education: frameworks and implementation

Chair: Peters H

Location: Virchowweg 3  Room: 01 046

**aims & intended learning outcomes**

The workshops aims at

- understanding and reflection on actual frameworks for competency-based medical curricula
- discussing actual research and implementation strategies in competency-based medical curricula
- challenging our current competency framework
- learning about professional activities as an approach to translate competency based education into practice
- comparing and contrasting the scope of professional activities in under- and postgraduate medical education

**workshop content**

The workshop will discuss and compare key current frameworks for competency-based medical curricula. It will review the recent transition from knowledge-based to outcome-based curricula and speculate on future developments.

Strengths, weaknesses and difficulties of implementing outcome-based medical education programs will be discussed. Prime competencies will be identified and contrasted to those not included in the role model of today’s doctors.

Constructing learning and development along professional activities are actually a key strategy to translate competency based education into clinical practice. The scope of professional activities in under- and postgraduate education will be compared.

**delivery method**

Interactive workshop, subgroup discussions
Workshop 3 (14:30 - 17:00, incl. 30min break)

Decision Aids

Chair: Neth H, Keller N

Location: Virchowweg 3           Room: 01 050

| aims & intended learning outcomes | Participants will understand when and why simple, fast- and-frugal strategies provide powerful alternatives to more complex categorization algorithms. By understanding the theoretical criteria for making efficient and robust classification decisions and learning to construct and evaluate FFTs in an interactive fashion, participants will be enabled to apply FFTs to new data sets in their own domain of expertise. |

| workshop content | To predict whether a patient is in peril or a particular treatment effective, medical experts require rapid and robust decision strategies that work swiftly, accurately, and reliably. Fast and Frugal Trees (FFTs) allow efficient and effective binary classification decisions by sequentially attending to a list of diagnostic cues (Martignon et al., 2003). FFTs often perform remarkably well in comparison to more complex methods and have been formally analyzed (Martignon et al., 2008) and linked with the signal detection framework for diagnostic decisions (Luan et al., 2011). FFTs are robust because they focus on the most relevant cues and ignore noisy data. Due their simple structure - few cues are considered sequentially - they are easy to communicate, learn, and teach. The workshop will provide participants with intellectual and software tools to tackle real-world classification problems. It addresses clinical researchers, instructors, and practitioners, and combines lecture-style presentations with practical exercises. |

| delivery method | In a theoretical part, we will review the formal criteria for evaluating the success of diagnostic decisions and highlight the properties and potential of simple heuristics. In a practical part, participants will conduct guided interactive exercises. Using a pre-designed MS Excel TM sheet, we will re-construct a FFT designed for patient placement in a coronary care unit (Green & Mehr, 1997). We then explore the consequences of alternative cue and criterion choices on a variety of outcome measures. Finally, we discuss the implications of using FFTs in practical contexts with specific emphasis on the validity and robustness of diagnostic decisions. |
Workshop 4 (14:30 - 17:00, incl. 30min break)
Social Media: Professionalism and Medical Education in Digital Age. A Practice-oriented, interactive course on necessity, options and tools of Web 2.0

Chair: Badakhshi H, Kaul D, Barelkowski T, Lux H, Planitzer M

Location: Virchowweg 3 Room: 02 036

| aims & intended learning outcomes | Rationale: We aim to make it intelligible that preparing students and young professionals for practicing medicine in the digital age is an imperative. Therefor, the necessity of social media usage in graduate medical education is obvious, because of advantages multimedia applications and technological tools are providing; enabling us to complement „traditional“ methods in a substantial way. To share an innovative and forward-thinking idea with the attendees and to hope to stimulate and to help Charité to develop a program. To make visible the self-evident nature of web2.0 applications and multimedia technologies to the attendees by exploring a range of practical options and, thus, to create curiosity and motivation to use it, to proliferate it and to stimulate further research. The main outcome would be to induce ambitious interest in usage of web 2.0 for education, self-education, and to develop more advanced competencies. |

| workshop content | Content: To understand the fundamental necessity, technological tools and, more interesting to us, to explore educational options and to learn to think critically about web-based media with all their advantages and pitfalls. To asses fields of using social media in a very practical way, including the notion of interactivity, time-based factors, circulation of information in real-time, as well providing, storage and communication of information and knowledge. To think on following possible fields of future usage: clinical practice of clinical medicine in terms of evidence-based practice, managing relationships and boundaries with patients in terms of a patient-oriented practice. |
**delivery method**

Delivery method:

1: Necessity
Exploring the state of technology in practical examples with attendees and try to induce curiosity and interest.

2: Options
Showing „established“ methods of social media-based learning, teaching and self-teaching in various contexts.

3: Tools and Tricks
Testing tools in an interactive
Drawing practice-oriented, education-stimulating conclusions, re-evaluating topics. Planing a virtual, web-based working group with all attendees.
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9 Knowledge, clinical-practical skills and communicative competences - can we assess them separately?

Schüttpelz-Brauns K\textsuperscript{1}, Deis N\textsuperscript{1}, Kaden J\textsuperscript{1}, Narciss E\textsuperscript{1}, Fritz H\textsuperscript{1}, Obertacke U\textsuperscript{1}

\textsuperscript{1} Medical Faculty Mannheim, Heidelberg University, Mannheim

**BACKGROUND:**

In medical education we try to assess factual (knows) and applied knowledge (knows how), competence (shows how) and competency (does) as it is visualized in the Millers’ pyramid (Miller, 1990). There are several recommendations to assess the different levels. You can assess knowledge with multiple-choice-questions, applied knowledge with short essay questions, the shows how level via OSCE and the does-level with work-placed based assessment. But do we really measure different levels of knowledge resp. competence or do we measure different things because of the different assessment methods we use?

**METHODS:**

In 2012 106 students of the 5th year at the medical faculty of Mannheim sat an interdisciplinary multiple choice test (114 items) to test knowledge in five different subjects and attended an interdisciplinary 12-station OSCE with checklists to test practical skills (history taking/examination, further procedure, tentative diagnosis) and with the Berlin global rating scale (Scheffer, 2009) to test for communicative competence (only 10 stations due to a dummy-station and missing data). To answer our research question we conducted a multi-trait-multi-method approach.

**RESULTS:**

We found relations within knowledge, within practical-skills and within communicative competence (mono-trait). There is no relation between knowledge and clinical-practical skills resp. communicative competence (multi-trait). But we found strong relations between clinical-practical skills and communicative competence (multi-trait, mono-method).

**Discussion:** We can in fact measure the different levels of Millers’ pyramid, but there is strong evidence that this is due to method artifacts. This has to be systematically investigated in future studies.
REFERENCES:

45 How to evaluate the role-play of simulated patients: development and validation of a new questionnaire.

Kujumdshiev S ¹, Conrad C ², Zupanic M ³, Fischer MR ⁴

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INTRODUCTION
The reliability and also the validity of an OSCE depend on the examiner rating and on the highly standardized role-play of the simulated patient1.
What are the criteria for an authentic role-play of simulated patients in an OSCE?
How is it possible to operationalize these criteria in a short questionnaire to be able to assess the role-play? We developed a questionnaire and tested its reliability and validity.

METHODS
In collaboration with experts, teachers, simulated patients and students we collected and prioritized criteria of good role-play and operationalized them into a 3-subscale questionnaire.
In pre-test A 18 raters and in pre-test B 18 other raters used the questionnaire for 5 different video role-plays. After the first pre-test the items were refined and the subscales enhanced by improved item alignment.
The revised questionnaire was validated through a summative OSCE with parallel use of the validated MaSP questionnaire2. All examiners were trained to use the MaSP questionnaire, our questionnaire and the OSCE rating.

RESULTS
In pre-test A the Cronbach’s alpha of the subscales was 0.79 for communication, 0.58 for information and 0.90 for realism. Pre-test B showed an increased intern consistency of 0.82 for information.
Cronbach’s alpha of the OSCE was 0.86. MaSP2 reliability was 0.63.
Analysis of subscales revealed a Cronbach’s alpha of 0.77 for communication, 0.85 for information and 0.69 for realism.
DISCUSSION
We defined appropriate criteria of an authentic role-play of simulated patients, operationalized them and created a valid tool with reproducible ratings. After extensive refinements in subscale information ratings improved further. The questionnaire is a highly reliable tool to assess the quality of simulated patients’ role-play and offers new possibilities in quality management.

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53 Judging the trustworthiness of medical trainees
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INTRODUCTION
The question about supervisor’s reasons to judge a medical trainee as trustworthy is not fully answered. Kennedy et al. (2008) listed medical skill/knowledge, truthfulness, conscientiousness and discernment of medical trainees as factors that influence trainees’ trustworthiness. However, other, less obvious factors may be involved as well. So far no systematic study has investigated potential implicit effects on trustworthiness in the medical context.

METHOD
A literature review was conducted to identify which implicit factors could affect the trustworthiness judgments about medical trainees.

RESULTS
Several variables were detected and are discussed. Studies from disciplines other than medicine have found for example that trustworthiness judgments can be influenced by factors such as the person’s facial feature (van ‘t Wout & Sanfey, 2008) and gait (Thoresen et al.,2012). These variables potentially affect implicitly the perceived trustworthiness of medical trainees as well.

DISCUSSION
Our aim was to call attention to the possible influence of implicit judgments about trustworthiness in the medical setting. Supervisors have to decide who to entrust professional activities. It appears important to investigate and explicitly research all those factors that may have an impact on implicit trustworthiness judgments and hence an influence on the decision to entrust professional activities in the clinical context.
REFERENCES:

17 How differentiated are assessments in rating performance differences. A pragmatic method

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The quality of assessments concerning their ability to differentiate between performance levels of students can be judged by comparing the distribution of grades with a binomial distribution (pass/fail) or a normal distribution (grades). A special case are normative regulations concerning the frequency of the categories. ECTS-grades are such an example.

For analysing a concrete exam one can use the Kolmogoroff-Smirnoff-Test (KS-Test) for one sample. The KS-test is capable to analyse deviations from a binomial, a normal and any other given distribution. There are a couple of reasons why this test is suitable, but he has also some drawbacks. Very often the grades distribution of a given exam will be judged to deviate from a normal distribution although the histogram of the grades looks very similar to a normal distribution for laymen.

Therefore we tried to develop an algorithm for judging the quality of an assessment which can be accepted by the stakeholders. Three criteria had been enacted by the academic senate of Hannover Medical School. The first criterion examines the range of the empirically observable grades. The second looks for a distinctive mode of the distribution (kurtosis). While the third criterion reflects that there should be more “good” grades than “bad” ones (skewness). After a trial period the revised model had been used to evaluate the assessments of two years. Each year 165 exams were conducted within the medical curriculum, two thirds of them electronically. For each exam a algorithm was used to judge the defined quality of the assessment and for the electronically conducted exams were additionally analysed with regard to some additional criteria. The presentation explains the algorithm, compares its results for some concrete exams with statistical parameters and discusses the reactions of students and staff to its quality assurance.
Students from different undergraduate medical curricula reveal different ordering patterns for laboratory and radiology tests

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BACKGROUND:
The overuse of laboratory tests and radiology imaging and their possible hazards to patients is observed with growing concern in the medical community. With this study the authors wished to determine whether ordering patterns for laboratory and radiology tests by medical students are related to certain forms undergraduate training.

METHODS:
We developed an assessment for near graduates in the setting of a resident’s daily routine including a consultation hour with five simulated patients, three hours for patient work up, and thirty minutes for reporting of patient management to a supervisor. In 2011, 30 students from a vertically integrated (VI) curriculum (Utrecht, The Netherlands) and 30 students from a traditional, non-VI curriculum (Hamburg, Germany) participated in this assessment (see reference for validation study of this assessment). We compared the number of laboratory and radiology requests and correlated the results with the scores participants received for the competence “scientifically and empirically grounded method of working” and the correctness of final diagnoses made by the participants.

RESULTS:
Students from a VI curriculum used significantly (p<.01) less total laboratory requests (N=283 versus N=466) which correlated with their scores for a “scientifically and empirically grounded method of working” (Pearson’s r=.572). A significantly (p<.01) higher number of radiology imaging was ordered with a large effect size (V=.618) by near graduates from a non-VI curriculum (N=156 versus N=97) even when this was not supporting the diagnostic process. Correct diagnoses were reached in both groups with no significant differences.

CONCLUSIONS:
The focused ordering patterns from VI students might be a result of their early exposure to the clinical environment and a different approach to clinical decision making during their undergraduate education.

REFERENCES:
Improving resident training with workplace assessments Step 1: Development and validity testing

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BACKGROUND:
Residents in Germany tend to be dissatisfied with their training because the feedback they receive is irregular und unstructured. On the other hand, many attending physicians are unsure about how to provide useful feedback in a structured way. To circumvent these problems, we developed workplace assessments (WPA) for (a) placement of central venous catheters (CVC) and (b) handovers for resident training in anesthesiology departments.

METHODS:
Based on previous research and a consensus process among attending physicians of two anesthesiology departments, we developed “negative” checklists (so that only lacking competencies are to be indicated) and rating scales for 10 competency dimensions related to CVC placement, 5 to handovers as well as a general impression scale indicating resident overall performance. To test whether these WPAs help differentiate resident performance and to what extent they are dependent on rater idiosyncrasies, we video recorded four actual handovers and CVC placements of first and second-year residents and asked attending physicians to rate performance on all of these videos using the WPA.

RESULTS:
We ran univariate ANOVAs with the overall competency score as outcome variable and showed that ratings of CVC placement performance differed more by residents ($F(3,7) = 7.84$, $p = .012$) than by raters ($F(3,7) = 2.72$, $p = .125$). Similarly, overall handover performance differed by residents ($F(3,15) = 5.18$, $p = .012$) but not by raters ($F(5,15) = 1.93$, $p = .149$).

CONCLUSIONS:
Preliminary analyses show that the developed WPAs have desirable measurement properties in a controlled setting. We are currently running a generalizability study to verify these findings in the field as well as a field experiment (Step 2) to test whether and to what extent feedback with WPAs accelerates residents’ learning curves in practical skills related to CVC placement and the less structured.
Anesthesiology residents’ perspective about good teaching

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BACKGROUND:
Germany, like many other countries, will soon have a shortage of qualified doctors and other health care professionals. One reason for the dissatisfaction amongst German medical residents is the relatively unstructured residency training programs. The aim of our study was to identify characteristics and requirements for good teaching during anaesthesiology residency training from the resident’s point of view.

METHODS:
A consensus workshop with anaesthesiology residents from all medical universities in Germany was held. Participants were allocated to one of the three topics, which were chosen based on the 2009 nationwide evaluation of residency as the three main areas in resident’s training. The three topics were (A) characteristics of helpful / good teachers, (B) characteristics of helpful / good conditions and (C) characteristics of helpful / good curricular structure and rotation culture. Each group was supplied with preparation material prior to the workshop and followed the Nominal Group Technique consensus process to define and rank characteristics for a good residency.

RESULTS:
31 (79.5%) resident representatives (or their substitute) out of 39 invited participants were present during the consensus process. The groups A-C developed ranked lists of categories, eleven categories, 15 categories and eight categories respectively. Patient safety was stressed as the overarching goal in residency training and excluded from the rankings. The most highly ranked characteristics of good residency are inexpensive measures which are easy to implement.

CONCLUSIONS:
Good residency training requires careful consideration of all stakeholders’ needs. Characteristics of good residency as defined by residents are at least to some degree easily implemented and reflect previous findings from the literature. These preliminary findings are an important stepping stone in establishing a broader consensus within the discipline.

REFERENCES:


From innovation to institutionalization: Ensuring sustainability in a training program for student tutors by establishing a quality assurance system

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INTRODUCTION:
The increasing relevance of peer teaching in medical education requests an efficient quality assurance system (QAS) to control quality standards and save resources. In 2001, the Faculty of Medicine in Tuebingen implemented a structured, dual qualification program for peer tutors: a centralized and standardized didactic training, followed by a specific professional training by the responsible departments. Evidence was given that the original program was highly effective and well accepted. Program expansion, with currently 17 departments demanding for tutorial support, meant heterogeneous requirements and increasing financial strain. The aims are to develop a QAS concept to ensure the quality and transferability of the training program, providing an acceptable cost-benefit ratio.

METHODS:
Based on an intensive literature research, a comprehensive QAS concept addressing all parties and different quality aspects was designed. Structured interviews with 10 teachers guiding tutors in representative departments were conducted to illuminate tasks, conditions and challenges of tutors. All peer tutors trained in 2012 (n=103) were surveyed twice (pre and post tutorials; response: 98%, 45%) using 5-point Likert scale questionnaires.

RESULTS:
Communication problems in the departments and between departments and administration were identified and adequate measures consensed. Tutors highly estimated most didactic modules pre and post tutorial (e.g. “leading groups” 1.66±0.08 vs. 1.65±0.70; “presentation” 1.79±0.10 vs. 1.82±0.73). Ratings of the module “practical skills” differed significantly (F(8/82)=2.953, p=0.006), as it was not relevant for all tutorials. Tutorial profiles were derived and a didactic training program with definite interchangeable modules was developed. Tutors required occasional meetings with professional and didactic experts (70%). Regular exchange meetings were initiated between all parties involved to enhance transparency of standards, responsibilities, procedures and contextual challenges.
CONCLUSION:
The QAS contributed to an increase in transparency and to more efficient structuring. It initiated high cooperation of all parties and revealed prospects of development.

57 On the role of biomedical knowledge in the acquisition of clinical knowledge

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BACKGROUND
Basic science education in undergraduate medical education faces several challenges. One prominent discussion is focused on the relevance of biomedical knowledge for the development and integration of clinical knowledge. Although the value of basic science knowledge is generally emphasized, several theoretical positions differ on the relative role of this knowledge and the optimal approach for its instruction. We address the question whether and to which extent biomedical knowledge is related to the development of clinical knowledge.

METHODS
We analyse repeated measure data of performances on basic science and clinical knowledge assessments. A sample of N=598 medical students from a traditional curriculum participated in the study. Overall a developmental phase of 2 years of medical education was covered. Structural equation modelling was used to analyse the temporal relation between biomedical knowledge and the acquisition of clinical knowledge.

RESULTS
Our data indicates a decline in basic science knowledge which is complemented by a growth of clinical knowledge. Statistical comparison of several structural equation models revealed that a model specifying unidirectional relations from earlier states of biomedical knowledge to subsequent changes in clinical knowledge explained the data best. However, the parameter estimates indicate that this association is negative.

CONCLUSIONS
Our analysis suggests a negative relation between earlier levels of basic science knowledge and subsequent gains in clinical knowledge. We discuss limitations of our study such as the given educational context and the non-experimental nature. The results presented here hint at possibly critical issues in basic science education that have been rarely addressed thus far.
Are five minutes enough to find your ideal mentor? Exploring the benefits of a speed-mentoring event that integrates with formal student-faculty mentoring

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INTRODUCTION:
Mismatches in mentee-mentor relationships are quite common and lead to dysfunctionality in terms of less psychosocial and career support. Thus we adapted “speed-mentoring” described by Cook et al. (2010) for the kick-off event of a mentoring program to match medical students with their faculty mentors at University Medical Center Hamburg-Eppendorf. A mixed methods approach was used to explore the perception of mentees and mentors about the benefits of a “speed-mentoring” event and examine effects on formal mentoring between faculty and medical students.

METHODS:
In December 2011, speed-mentoring was employed to match 37 medical students with their faculty mentors. In 2012, two focus groups with medical students (n=8) and faculty mentors (n=6) were conducted. Each discussion was audiotaped, transcribed, and analyzed using conventional content analyses. In addition, quantitative data (duration of mentoring relationship, satisfaction with the personal mentor) were compared to medical students who chose their mentor only via mentor profiles accessible on the intranet.

RESULTS:
Findings are presented under five main themes: benefit of speed-mentoring, where both students and mentors agreed on the great benefit such as efficiently try out interpersonal relationships; time-frame and atmosphere of the speed-mentoring event; participation in decision-making with regard to matching results and in how far speed-mentoring might facilitate long-term mentoring relationships. Regarding the last four aspects students and mentors experienced a mixture of positive and negative impacts. Quantitative data revealed that students who participated in speed-mentoring were significantly more satisfied with their personal mentor (p=0.029) and duration of the mentoring relationship was longer compared to students who chose their mentor via online profiles.

Discussion: Results indicate that speed-mentoring seems to be a valuable and efficient matching tool to facilitate long-term mentoring.

REFERENCES:


Differences in procedural knowledge after a “spaced” and a “compressed” version of an emergency medicine course of 26 teaching hours each

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BACKGROUND:
Spacing of teaching sessions may provide the learner with more opportunities to elaborate and process learning contents. Hence, distributing a certain amount of teaching hours over a longer time period (spaced version) may result in better learning than delivering the same amount of teaching within a shorter time period (compressed version). On the other hand, a compressed version offers the opportunity to plan teachers’ time and material utilisation in a more economical fashion. Therefore, we wanted to evaluate the effect of these two different versions on students’ procedural knowledge after an intensive emergency medicine course (EM-C).

METHODS:
In fifth year of an undergraduate medical curriculum an EM-C of 26 teaching hours was delivered either within 3 days, or 4.5 days. At the end of the course students’ procedural knowledge was assessed by a specifically developed video-based electronic key-feature test.

RESULTS:
From 191 eligible students 156 data sets could be completely evaluated, 54 students from the spaced version, and 102 students from the compressed version. Socio-demographic characteristics and drop out rates were similar between groups.

In the key-feature-test students from the spaced version reached 14.8 of 22 points (13-16; 25.-75. percentile), and students from the compressed version reached 13.6 of 22 points (12-15). This difference was 8.5% of the average test score, being highly significant (p = 0.002) at a moderate effect size (Cohens d = 0.53).

CONCLUSION:
The data provide an empirical decision base to prioritize between flexibility of resource planning and promotion of learning.
Are communication, collaboration and management competencies imparted in the final year? – A qualitative study

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INTRODUCTION:
In traditional curricula the medical expert is the most emphasized CanMEDs-role in medical education. But nevertheless the other CanMED-roles such as communicator, collaborator and manager gain more and more importance. We wanted to know how these three competencies are represented in the explicit or hidden curriculum of the final year.

METHODS:
To evaluate especially the hidden curriculum we conducted a qualitative design. Between November 2012 and March 2013 we interviewed 15 clinicians who are educators in the final year at the university hospital Mannheim and in five connected teaching hospitals. We used half-standardized interviews that lasted between 25 and 55 minutes. All interviews were transcribed and the content was categorized with qualitative content analysis via MAXQDA-software (Kuckartz, 2012).

RESULTS:
Explicit teaching of competencies is rarely reported, except when there are standards as in case presentation which is part of the role of collaborator and the role of communicator. The collaborator is also implicitly imparted in daily station routine via modeling. Concerning the manager role there are discrepancies in standards of quality and error management across the clinics and hospitals and therefore big differences in the teaching of standards occur.

DISCUSSION:
To increase the teaching of competencies we need explicit standards and teaching strategies. Keeping in mind the impact of the implicit curriculum teachers have to be aware of their responsibility as a role model for future physicians.

REFERENCES:
Adressing the role of the scholar: Introducing an obligatory masters thesis into an undergraduate curriculum

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BACKGROUND:
In Switzerland, a nationwide bachelor / master structure was introduced into undergraduate medical education. As a consequence, the university of Zurich implemented an obligatory master thesis for all students who entered the first year of their master phase in 2010 (4th year of medical education). We now are able to report descriptive data on the first cohort who completed the programme in March 2013.

METHODS:
Supported by an online instructional guide and several seminar activities for conceptualisation and writing skills, the programme was introduced to the students at the end of their third year. At the beginning of the 1st year of the master phase, formal approval of the proposal including a responsible supervising faculty member had to be given. Progress was monitored by the supervisor and a second faculty member at PhD level. Final approval of the thesis was accomplished by a committee of senior research faculty, partly at deans' level. It is important to note that approval of the master thesis is a precondition to register for the final federal examination in medicine.

RESULTS:
From 208 students of the cohort only six exceeded the deadline (by a maximum of 7 days). Approximately 36% were not accepted by the final committee at first submission. Reasons for rejections were diverse, including formal flaws, statistics, unclarified ethics, and missing or insufficient declarations of individual contributions to the project. After revision, all theses could be accepted. 47 manuscripts (23%) were submitted to peer reviewed journals, predominantly with students’ co-authorships.

CONCLUSION:
The implantation of a master thesis as an obligatory and time-sensitive element of an undergraduate medical curriculum is feasible. Its implications for the development of scientific competencies in the role of the scholar remain to be investigated.
Analysis of Learning Objectives and Operators in the Berlin Model Curriculum of Medicine

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INTRODUCTION
Problem Based Learning (PBL) is an essential element of the new Berlin model curriculum of Medicine. Its implementation is challenging for faculty development. There are 40 PBL groups per semester and a need for 240 PBL tutors up to now. This enforces continuous recruiting of new tutors who have to care for their groups without having observed PBL before. We analysed the facilitators’ ability to motivate students to create proper PBL learning objectives.

METHODS
Learning objectives of the first and third semester were compared regarding
1. correct formulation using operator verbs.
2. reference to general basic knowledge versus the PBL patient paper case.
3. level of operationalisation according to Miller’s pyramid.

RESULTS
171 learning objectives (1st semester) and 207 (3rd semester) were evaluated. The average number was 2.5 (1st) and 2.8 (3rd). Correct verbalization of learning objectives was performed in 82% (1st) versus only 67% during the 3rd semester. Analyzing the contents, 42% referred to the PBL case and 51% to basic knowledge (1st semester) whereas 64% referred to the PBL case and 33% to basic knowledge in the 3rd semester. Operators of every level of competence were found. Most commonly used verbs were explain, explicate, demonstrate, name and describe in both groups.

CONCLUSION
The number of correctly verbalized learning objectives decreased between the 1st and 3rd semester. This might be due to the proportion of new PBL tutors (25% in the 1st semester, 42.5% in the 3rd semester, respectively). The number of learning objectives referring to basic knowledge was higher in the 1st semester, as expected. The use of operators did not represent a broad spectrum: 5 operators covered over 80% of the cases and reached just two cognitive levels. These findings have urged us to introduce a training lesson on operationalisation of learning objectives for PBL tutors.

References:
Teaching scientific competencies to first year medical students: A report

Biller S\textsuperscript{1,2}, Boeker M\textsuperscript{1,3}, Giesler M\textsuperscript{1,2}, Zeuner A\textsuperscript{1,4}, Fabry G\textsuperscript{1,4}

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INTRODUCTION
As the first step in a longitudinal thread on scientific competencies we developed a PBL-seminar for first year medical students. PBL-cases focused on basic issues of scientific methods and approaches. To evaluate the seminar we used different instruments related to students’ learning success as well as to their satisfaction with the seminar.

METHODS
Learning objectives for first year medical students were developed by experts from different medical and theoretical disciplines. Authentic cases based on exemplary scientific studies were constructed accordingly and aligned in a problem-based seminar. Performance on cognitive learning was measured with a written test. Self-assessment of competencies and attitudes of students were collected.

RESULTS
The curriculum was implemented 2012 in Freiburg. Students (N = 340) competencies increased with regard to learning objectives (M=1.94 vs. M=3.38, p <.001, Cohens d = 1.98). A pre-post-assessment of their scientific competencies by means of the respective scale of the Freiburg Questionnaire to Assess Competencies in Medicine (FKM, Giesler et al. 2011) indicated an increase in competency (M=2.82 vs. M=3.11, p<.0001, Cohen’s d=0.47). These results correlated positively with the results of the written test. Students were also positive with regard to the quality of the discussion process (Group Interaction Questionnaire, GIQ, Visschers-Pleijers et al. 2005) and the guidance of their tutors. However, when students were asked in the end-of-year evaluation to rate their learning success in the seminar and their satisfaction with the seminar overall, results were rather poor (M=3.64 and M=3.54, 6-point scale, 1=very good, 6=very poor).

DISCUSSION
We established a problem-based curriculum on basic scientific methods for first year medical students in which students can actively acquire basic knowledge on evidence-based medicine, literature retrieval and biometry. The inconsistency of the results with the final evaluation highlights the importance of understanding learners’ expectations on how to learn.

REFERENCES:
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Evaluation of an innovative teaching-concept for “applied science” in an early study phase

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INTRODUCTION
Critical appraisal of published research is a crucial aspect in all health professions. Active learning has also been identified to be of major relevance for the development of corresponding skills, whereas classical docent-centred approaches remain to be the predominant pedagogical style (1). The B.Sc. in “Interprofessional Health Care (IHC)” integrates 9 different vocational training programmes (2). An innovative 9-session-seminar “applied science” was developed, aiming to develop self-confidence for basic understanding of research in the initial period of the degree. The teaching-concept incorporated student’s individual vocational interest, balanced with self-directed, experiential learning on an e-learning platform. At RIME we aim to present the teaching-concept for the seminar “applied science” and present preliminary evaluation results from a student’s perspective.

METHODS
Qualitative data was collected to evaluate the entire first module and to identify areas for improvement. Three semi-structured focus groups were conducted by an independent researcher with 17 of 24 enrolled students (age range: 19 to 29 y; 16 female, 1 male). All focus groups were audio-taped, transcribed and analysed using content analysis (3). Quotes referring to the seminar “applied science” were used to gain an insight in student’s perception.

RESULTS
Participants rated the seminar “applied science” as interesting but challenging. Understanding published research was regarded as relevant not only for the bachelor programme but also for integrated vocational training and clinical practice. The students described self-confidence in reading and understanding scientific articles.

DISCUSSION
Feedback on the seminar “applied science” supports the use of active self-directed learning strategies. A longitudinal approach will be implemented in the programme. In subsequent modules critical appraisal skills will be included and consolidated in depth utilising a research based learning approach.
INTRODUCTION:
Teachers and students commonly believe that teaching in small groups is superior compared to teaching in larger groups. We investigated the impact of different group sizes on the training outcome of resuscitation skills.

METHODS:
Medical students (n = 74) were randomized to Basic Life Support (BLS) courses with three, five or eight participants per tutor. Students received a standardized BLS training while we video-recorded teaching observations. Before and after the training, all participants performed an Objective Structured Clinical Exam (OSCE). We analyzed the BLS quality using a checklist (pass level 75%) and measured the chest-compression parameters with a high-fidelity manikin.

RESULTS:
Checklist pass-levels were comparable between groups of three, five and eight students per tutor in the post-test (93%, 95% and 91%, respectively). Chest compressions showed comparable compression depths. Mean compression rates were mostly between 100 – 120/min. Students in groups of eight classmates asked fewer questions (0.5 (0.0 – 1.0) vs. 3.0 (2.0 – 4.0), median (interquartile range), p < 0.001), had less training time (2:16 min (1:15 – 4:55 min) vs. 4:07 min (2:54 – 5:52 min), median (interquartile range), p = 0.02), conducted more irrelevant conversations (17.0 ± 5.1 and 2.9 ± 1.7, mean ± standard deviation, p < 0.001) and had a lower self-assessment than groups of three students per tutor (7.0 (6.1 - 9.0) and 8.2 (7.2 - 9.0), median (interquartile range), p = 0.03).
DISCUSSION:
Although resuscitation checklist scores were comparable high for all group sizes, smaller groups had certain advantages in teaching interventions and effective learning time. However, these advantages could just provide “in-details” knowledge and might not be necessary to learn and perform relatively simple tasks as BLS skills. Our results suggest that BLS skills can be effectively taught in groups of three, five and eight students per tutor.

6 Learning the science of diagnostics with Sherlock Holmes & Dr. House: Evaluation of a seminar teaching philosophical concepts and psychological pitfalls that underlie medical decision-making with the help of popular role-models.

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INTRODUCTION
Learning Diagnostics is central skill in medical education. (1) It can either be acquired by emulating a role-model, or by following guidelines or strategies in textbooks. (2) Ethnographic studies of medicine have shown that few students are lucky to find a role-model they can criticize and which strategies are actually used by doctors differ from textbooks and guidelines. (3) Arthur Conan-Doyle's “Sherlock Holmes” is one of the most popular figures of literature. It has been adapted to over 200 films. Holmes method of „analysis and deduction“ was explicitly modeled after one of Conan-Doyle's medical teacher's diagnostic approaches. Recently, the character of Holmes has been used in the television series House M.D. This has been used to teach diagnostic reasoning. (4) Holmes method of „analysis and deduction“ has been shown to be useful for explaining philosophical concepts and psychological pitfalls in medical decision-making. (5) We combined the two approaches, using the pop-cultural models of Holmes & House for teaching diagnostic strategies and the basic philosophical concepts and psychological pitfalls in medical decision-making. (6)

DISCUSSION
We designed, conducted and evaluated two seminars (32 hours each) in two consecutive years during 2012/13 at Charité, Berlin. Students had to deal with problems of decision-making from real life (Firefighters, Mount Everest Expedition,...), literature (Holmes) and medicine (House). Finally they analyzed a case story from Sherlock Holmes. 40 papers were separately analyzed by two independent reviewers.
RESULTS
Most students were able to explicate the problem solving strategy used in the case and discuss one or several sources of bias in the case. Students were able to translate problem-solving strategies between the contexts of literature, medicine and everyday life.

DISCUSSION
Using the popular models of Holmes & House proved a stimulating and fruitful strategy to teach basic philosophical & psychological concepts.

REFERENCES
(1)

(2)


(3)


Teaching the basic principles of science in medical education – Development and evaluation of a two week introductory course

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INTRODUCTION:
In the course of developing a new study programme of medicine at the University Medical Center Hamburg-Eppendorf, a two week mandatory program on the basic principles of science was implemented for all 400 students of the first semester. Goals of the programme were to introduce the principles and the relevance of science in medicine, to set a standard for all forthcoming courses, to draw interest in scientific work among medical students and to improve the quality of medical dissertations in the long run.

METHODS:
In the process scientists with different scientific backgrounds from different Departments of the Medical Faculty were involved. The curricula included about 12 hours of classes, 13 hours of lectures as well as time for the preparation of a presentation and was completed by a written exam. Lectures included information on the principles of science and the research process, different forms of clinical trials and epidemiologic studies as well as questions of scientific and medical ethics. Classes were designed to enhance reading, understanding and critical appraisal of scientific publications, to help in the preparation of an oral presentation and to give a quick guide into the do’s and don’ts of a presentation. Basic techniques in literature research and correct citation were taught as well. Also central aspects of ethics in clinical work and medical research were discussed. Evaluation included quantitative assessment of student satisfaction and qualitative assessment of student and teacher opinion.
RESULTS AND DISCUSSION:
The results of the evaluation showed high overall satisfaction. Qualitative opinions of teachers and students are used for implementing changes in the curriculum. The introductory course on the basic principles of science seems to fit well into the beginning of medical studies and will therefore be mandatory for future medical students in Hamburg in their first semester.

18 Teaching communication skills - Development and evaluation of e-learning and role play lessons for students in the domains medicine and teaching

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BACKGROUND:
Role play as training method for communication skills requires many resources and is therefore often underrepresented in curricula. One main objective of the project ProfKom [1] was to develop alternative training methods and compare them to each other and a control with regard to learning success: E-learning, role play and their combination. The second main objective was to investigate, whether parallel instructional designs can be developed for different professions (medicine, teaching) [2].

OBJECTIVES:
A comparison of the learning success with the different instructional approaches can only be valid if they are of high quality. Hence the study question was: Is it possible to develop high quality instructional approaches in parallel for both professions?

METHODS:
For quality assurance, development of the instructional approaches was based on: (i) coherence with approved learning and communication theories, (ii) consideration of implications for the multidisciplinary composition, (iii) empiric assessment of quality criteria (questionnaires, likert scales 1-4; e.g., subjective learning success, structure/ visual appearance of modules). Following pilot studies [3], the main study was performed with 72 medicine and 96 teaching students and equal time on tasks.
RESULTS:
Acceptance marks for the e-learning modules usually lay in the range 3-4. For some scales, they varied significantly between treatment groups. Acceptance by medicine students was usually slightly (but seldom significantly) higher than by teaching students. Role plays were evaluated as quite authentic and as on a medium level of difficulty. Self efficacy increased with one exception significantly in all treatment groups (p<0.01).

DISCUSSION AND PERSPECTIVES:
The results and our experiences indicate that for teaching communication competencies, both e-learning modules and role play can be composed in parallel for different domains on a high quality level. Analysis of videotaped conversations with standardized patients/ parents will soon give more information on learning success with the different instructional approaches.

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