Shaping the Future of Technology-Enhanced Learning

SECC GLASGOW, UK 5-6 September 2015

Abstract Book
As of 31 July 2015
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SATURDAY 5 SEPTEMBER

Time: 0845-0950 hrs
Session: #P1 - Opening Plenary
Location: Hall 2, SECC
Chair: Peter de Jong, Netherlands (Chair, eLearning Symposium)

Professional Learning: what autonomous learners do differently

Allison Littlejohn, Chair of Learning Technology and Academic Director of Learning and Teaching, Open University, UK

Professional learning is a critical dimension of work. This is particularly true in Medicine, where contemporary work practices require forms of professional learning that align with increased specialisation, new forms of organisation and agile transformation. Professional learning has to be continual: as people deal with constant changes in health work practices they need to learn to solve the new problems they face at work. Learning has to be personalised: as work becomes more specialised, each individual’s learning needs are bespoke. These learning needs are influenced by factors associated with work (environment, role, tasks, culture) and personal dispositions (previous knowledge, skills, attitudes). Conventional forms of workplace learning, such as training are unlikely to meet the learning needs of contemporary healthcare contexts. The co-evolution of work, learning and technology is having a profound effect on society and on work, but is slow in having impact healthcare. This keynote will explore how professional learning is already being supported and enhanced by technology, with an emphasis on open courses, open resources, and social media. The importance of learner autonomy and the impact of emerging technologies on educating the future practitioners will be considered.

Professor Allison Littlejohn is Chair of Learning Technology and Academic Director of Learning and Teaching within the Open University, UK. Her area of specialism is technology-enhanced professional learning. Within this field, her research interests are focused on three inter-related areas: Learning processes, identifying factors that influence learning and examining the complex interplay between formal and informal learning. For example recent research in the Finance Sector gave insights into the ways professionals self-regulate their learning, integrating formal development with on-the-job learning. Work practices, exploring forms of learning and expertise development that expand professional practice and organisational effectiveness. For example work with Shell and BP is improving the ways individuals, teams and organisations learn from incidents to advance health and safety in hazardous work environments. Technology use, analysing factors around effective pedagogy, costs and continuous, innovative practice. Work in this area has included the observation of professional learning in Open Networks and Massive Open Online Courses.
Her research has spanned sectors, including the Health, Energy, Education and Finance sectors. Allison leads industry-academic research partnerships with companies and professional organisations, most notably Royal Dutch Shell, for whom she was Senior Researcher 2008-2010. Including been funded by the European Commission (EC), UK Joint Information Systems Committees (JISC), the UK Higher Education Academy (HEA), the Higher Education Funding Council for England (HEFCE), the Scottish Funding Council (SFC), the Quality Assurance Agency (QAA) and has been a senior scientist on projects funded by the UK Economic and Social Research Council (ESRC), the British Council, the Australian Research Council (ARC) and the US National Science Foundation (NSF).

Allison has been author or editor of four books including Technology-enhanced Professional Learning: processes, practices and tools (2013) and Reusing Open Resources: learning in open networks for work, life and education (2014), both published by Routledge.

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0950-1000 hrs: Break/Transfer to Sessions

Time: 1000-1100 hrs
Session: #A1 - Short Communications: Online Assessment
Location: Hall 2, SECC
Chair:

1000-1015
#A1.1 (26180)
Digital assessments – challenges, choices and pitfalls

Eivind Ortind Simonsen*, Aarhus University, Centre for Medical Education, Aarhus, Denmark

In a rapidly changing world, where technology is making inroads everywhere, digital assessments are becoming more and more common. To many it might seem as an obvious choice to be made, and there are many benefits that could be mentioned. However, we cannot hide the fact, that digitalizing assessments is a potential upheaval of an existing order of doing things, and as in any change, there are choices to be made, and pitfalls to be avoided. In this session we would like to share our experience with digitalizing assessments. In 2011 we started our first project with an aim at digitalizing assessments at the faculty of Health, Aarhus University. Today (2015) we have digitalized approximately 70 % of our assessments, including MCQ (multiple choice) and OSCE (objective structured clinical examination), with 7-800 students assessed each semester.

We have developed our own systems for the digitalized assessment, where we provide all the hardware (iPads + network). While providing us with a great deal of flexibility, these choices have also presented some challenges. Apart from the pure technical issues, there are organizational and increasing logistical challenges, due to the success of the digitalization and the increasing number of students. At our faculty there is only one person allocated to this task. This talk shares his story.

1015-1030
#A1.2 (28128)
Understanding How Learning Analytics Might Assess the Whole Practitioner

Janet Corral*, University of Colorado, Aurora, USA

Background: Learning analytics is an emergent field of research that aspires to use data analysis to describe health professions learner achievement. Early implementations often focus on education data mining; that is, the analysis of quantitative evaluation data. This practice is often in tension with contemporary conversations and evaluations in the health professions that aim to assess the whole learner, including humanism, communication, and patient-centered care.

Methods: A gap analysis triangulated a review of the literature on methods in learning analytics with validated assessment tools in medical education.

Results: Specific learning analytics methods for written discourse analysis, sentiment analysis, and social network analysis provide the power to analyze non-cognitive characteristics such as humanism, communication skills and patient-centered care. Sample sizes, ethical concerns, and disclosure of evaluation data usage in analytics methods will be discussed in the general context of health professions education, that attendees may translate these conversations to their local education programmes.

Conclusions: When learning analytics is conceptualized as “analyzing the relationship between learner, content, institution, and educator” (Long & Siemens, 2011), learning analytics holds promise to assess the humanistic, social, and non-cognitive development of learners. Medical schools can be empowered today to design learning analytics projects to assess the whole learner.

1030-1045
#A1.3 (27553)
Continuous virtual feedback enhances point of care ultrasound learning: the Brazilian-Portuguese POCUS Collaboration Group

Thiago Santos*, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Paula Nocera, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Carolina Gontijo-Coutinho, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Tatiana Ozahata, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
José Mariz, University of Minho, Emergency Medicine, Braga, Portugal
Marco Carvalho-Filho, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil

Background: Point of care ultrasound (POCUS) has become an essential tool for the assessment of critical patients in the emergency department. Therefore, a collaboration group for POCUS development was created between emergency physicians from Brazil and Portugal.

Summary: A team of dedicated Brazilian physicians were invited to minister a presential POCUS training course for their colleagues at the Hospital of Braga, in Portugal. After the course, continuous problem-based e-learning consisting of POCUS videos feedback from real portuguese medical cases was performed. The videos were evaluated by the Brazilian team in terms of technique, orientation of the ultrasound probe, video gain, video depth and video time. Results were dicotomized between adequate versus inadequate.

Results: In three months, eleven clinical cases were assessed and discussed. A total of 123 videos were analyzed. The number of videos varied widely among cases (average 11.2 videos per patient). Overall exam adequacy for technique, probe orientation, gain, depth and time were, respectively, 48.7, 67.7, 94.3, 54.9 and 36.1%. Greater improvements were achieved on technique, time and probe orientation.

Discussion: Continuous problem-based feedback enhances POCUS e-learning. Furthermore, continuous feedback helps guiding which parameters should be improved in future exams.
Is peer review an appropriate assessment and feedback tool in an online teaching environment?

Sarah Meek*, University of Glasgow, School of Medicine, Glasgow, UK
Louise Blakemore, University of Sussex, Genome Damage and Stability Centre, School of Life Sciences, Brighton, UK
Camille Huser, University of Glasgow, School of Medicine, Glasgow, UK
Leah Marks, University of Glasgow, School of Medicine, Glasgow, UK

‘Cancer and the Genomic Revolution’ was the University of Glasgow’s first massive open online course (MOOC) on the FutureLearn platform, and will form the basis of a blended learning Student Selected Component (SSC) course for second year medical students. During the first run of this MOOC, students completed a short writing task which was then reviewed by their peers. With increasing focus on online platforms in teaching, it is vital to examine peer review in an online context. The aim of this research was to evaluate the students’ experience of this process and the quality of the feedback written by students.

Over 200 students took part in this task and almost all assignments received at least one peer review. Peer reviews were compared with staff marking, and peers’ qualitative comments categorised. The students’ experience was analysed qualitatively from in-course and post-course comments. Overall, many high quality reviews were generated. Students identified specific benefits to both receiving and giving reviews, including promoting deeper learning. However, a substantial proportion of students disliked or did not complete the task, most commonly due to time constraints. Only a small number of students disagreed with peer review per se. Online peer review can promote higher order learning in students who engage with this process. We discuss the implications of these findings for online and offline environments.

Take-home message: Peer review in a large online class can promote student learning. However, specific aspects of task design can alter student engagement with the process.

Time: 1000-1100 hrs
Session: #A2 - PechaKucha 1
Location: Alsh 1, SECC
Chair:

The Academic Progress Portal: Catching Students Before They Fail

Scott Helf*, WesternU/COMP, Academic Informatics, Pomona, USA
Marcel Ngo, WesternU/COMP, Academic Informatics, Pomona, USA
Patricia Camberos, WesternU/COMP, Academic Informatics, Pomona, USA
Gerald Thrush, WesternU/COMP, Office of Academic Affairs, Pomona, USA

We will introduce, demo, and encourage interaction regarding Western University’s experience successfully developing a powerful, yet easy to use technology solution, now a mission critical system for seven of its professional colleges. The Academic Progress Portal (APP) is a web and permissions-based, FERPA compliant software which automatically integrates dozens of data systems on and off campus to provide a real time, holistic, and complete view of student progress.
through the curriculum, including pre-admissions, pre-clinical, clinical, national board testing, and residency selection data. Its core design provides the means for the appropriate student advisors, deans, and faculty to prevent students from failing a course, and by extension, failing the degree program. The APP gives advisors easy, simplified, secure, and timely access to student scores, and other advisor notes, via a 24/7 web connection and login. Deans, advisors, and faculty may leave comments on a per student basis, not unlike a medical chart record, to facilitate communication, documentation, and appropriate action regarding student progress. Students, advisors, deans, and student performance committees use the APP as the primary data source for all demographic data, scores, academic history, disciplinary actions, notes, etc. The application’s use has grown dramatically with the release to students, and seven professional colleges at the university, which include Osteopathic Medicine, Podiatry, Dentistry, Pharmacy, Graduate Biomedical Sciences, Optometry, and Veterinary Medicine.

1011-1018 hrs
#A2.2 (27487)
Building a Healthcare Learning Toolbox

*Raymond Elferink*, RayCom BV, Leeds Institute of Medical Education, Utrecht, Netherlands
*Tamsin Treasure-Jones*, University of Leeds, Leeds, UK
*Graham Attwell*, Pontydysgu, Pontipridd, UK

Mobile technology offers the potential for learning to be truly contextualised and personalised, tailored to the very specific situation, working process, location, learner and business sector in which it is used. However, this rewarding, but tricky area, has not been widely explored. The Learning Layers project uses a co-design approach, bringing together users, researchers and developers to identify areas where there is a real potential for technology to support learning at the workplace. It is working to iteratively develop and refine tools to support learning in two very different sectors, construction and healthcare. We are finding interesting synergies and possibilities for ideas from one sector to be adapted and implemented in the other. Our work with the construction sector has highlighted the key importance of context and led to the development of the Learning Toolbox. This mobile app allows the learner to choose, create and share customised and adaptive learning toolsets (providing access to tools, resources and peers) designed to provide learning support in different contexts. We are now working with healthcare professionals to explore how this approach could also be used to provide easy access to contextually relevant learning tools and resources for healthcare professionals at work. We will present the first prototype of the Healthcare Learning Toolbox, based on our co-design work with healthcare professionals, and welcome your feedback. Learning Toolbox aims to provide flexible and adaptable support for learning in the workplace. How would Learning Toolbox help you bring context to learning?

1020-1027 hrs
#A2.3 (27980)
Teaching Histology to Millennial Generation

*Mihnea I. Nicolescu*,* Carol Davila University of Medicine and Pharmacy, Dept of Histology and Cytology, Bucharest, Romania and, King’s College London, Craniofacial Development, London, UK

Making histology appealing in an era where fringe techniques, like conditional gene manipulating, are the new lead players, may prove itself to be challenging at least. Histology is, by excellence, a unique subject where both approaches – classical and digital – may be used to present images and notions. This is where teaching art must take the stage. To transform a plain transmission of facts in a successful convey of a message. A message that should be linked to students’ limited scientific
background, but also to their expectations of clinical correlations and importance for their future daily medical routine. Firstly, the combined use of direct teaching and MOOC should be balanced by an increase of direct student engagement. Secondly, continuous assessment assures a good bi-directional feedback, essential in modulating the pedagogical pace. As for the practical side, one has to offer the students the best of both worlds. On one hand, the actual use of classical light microscopes will instil them an increasing confidence, priming them for understanding the latest advances in microscopy techniques. On the other hand, developing the ability to know what to look for and interpret a histological digital image of a given tissue is mandatory for any healthcare professional. In the words of Robert Anton Wilson, “In conclusion, there is no conclusion”. In order to yield good teaching results, one needs to find the right degree to overlap the use of canonical methods, emerging technologies and, most important, the involvement of the final recipient – medical students.

1029-1036 hrs
#A2.4 (26386)
PBL and MOOC: A succesful marriage?

Daniëlle Verstegen*, Maastricht University, FHML, Dept. of Educational Research and Development, Maastricht, Netherlands
Jeroen van Merrienboer, Maastricht University, FHML, Dept. of Educational Research and Development, Maastricht, Netherlands

PBL and MOOC sound like a contradiction. Highly structured learning in small-group versus massive and ultra-flexible…. But opposites attract. Can this marriage work? Can we follow PBL learning principles with large groups of participants, without human tutors and with large drop-out levels? The first PBL principle is that the educational activities provided by the MOOC will be problem-based and thus contextualized. These can take the form of traditional PBL-problems, small projects, case studies or other types of learning tasks. The second principle is that students collaborate in small groups on problems and tasks. Especially for international students who work together in a MOOC, the contacts they establish with peer participants may be just as attractive as the content of the MOOC itself. It helps them to expand their professional or personal network. The third principle is that students actively construct new knowledge, and the fourth principle is that learning is self-directed. In the MOOC participants can choose which problems they study, following one of three possible tracks. They can choose to form their own groups, join an existing group or be grouped automatically, and they can decide themselves how to interact and collaborate. Group sizes are monitored automatically and when too many group members drop out groups are merged. PBL in a MOOC: Can we do it? Yes we can!

1038-1045 hrs
#A2.5 (27360)
The state of virtual patients 2015: A complete and unabridged report in 6.7 minutes

Gerald R Stapleton*, University of Illinois at Chicago, Medical Education, Chicago, USA

Screen-based virtual patients are currently being used in medical and health professions training around the world to provide students, practicing physicians, and other health professionals with the opportunity to develop their procedural, communication, and diagnostic reasoning skills in a safe environment while receiving objective feedback and guidance. In this brief report on the state of virtual patients, the author will share the results of his efforts to survey the field and identify the latest and most promising developments in virtual patient technology and the extent to which screen-based virtual patient systems are currently being used in the training of physicians and other
healthcare professionals. The report will be of interest to those who are exploring the use of virtual patients in their teaching, will establish a benchmark to begin tracking utilization of this exciting educational innovation for those working in the field, and serve as a springboard for further discussion and collaboration among developers and educators.

1047-1054 hrs
#A2.6 (27818)
Virtual Patients: Making best use in an important resource

Kieran McGlade*, Queen’s University, Belfast, Centre for Medical Education, Belfast, UK
Clare Thomson Thomson, Queen’s University, Belfast, Centre for Medical Education, Belfast, UK

Background: The term “virtual patient” is used sometimes when a more accurate description might be “virtual case”. Whatever the term, representing a patient’s history, examination, investigation and management in an interactive and sometimes evolving way, online, has the potential for promoting deeper learning and understanding of clinical diagnosis and management. In previous work we described a “virtual general practice surgery” and demonstrated that students rank virtual patients highly, above both text books and small group work. How should virtual patients be used to optimal effect within the curriculum and in what ways do students use them?

Method: We examined the approach taken to the use of virtual patients within our curriculum in a number of disciplines: Ophthalmology, Microbiology, General Practice and Paediatrics. Students were asked to comment on how they integrated the virtual patients into their overall learning of each discipline.

Results: We report on a range of contexts where we have used virtual cases to enrich the learning experience of students providing a bridge between clinical face to face learning and didactic online or book learning. Virtual patients may have greater importance in some specialties than others. We demonstrate how virtual patients can fulfil their potential for increasing the interactivity of the online learning experience through worked examples.

Discussion: Electronic Virtual Patients can be used to add authenticity to a clinical case, but have a wider role in engaging students in critical thought. Ways of building this into design of online content will be discussed.

1054-1100 hrs – Discussion

Time: 1000-1100 hrs
Session: #A3 – Short Communications: Online Learning 1
Location: Alsh 2, SECC
Chair:

1000-1015 hrs
#A3.1 (27039)
Optimising online learning modules for Foundation Year (FY) doctors working in a London university hospital: junior doctors’ views towards e-learning

Ann Chu*, Imperial College London, Faculty of Medicine, London, UK

Background: Innovation in e-learning has captured the attention of medical educators. However, sustained user engagement can be challenging.

Summary of work: This is confirmed in this questionnaire survey of 48 Foundation doctors working in one NHS Trust. The results confirmed a low user rate of online learning modules (69% used them
infrequently [less than once a month], rarely or never), despite exposure as undergraduates (46%) and awareness of resources.

**Summary of results**: Foundation doctors identified benefits to online learning, including flexibility. Design features and content were praised in comparison with textbooks, although this was a barrier to engaging if executed poorly. F2 doctors used online learning to demonstrate curriculum competencies, therefore subject relevance and obtaining a certificate for evidence were motivating factors. Junior doctors need to be strategic with their time, and so highlighted educational alignment with their training curriculum/ePortfolio as key to engagement. Social aspects, including peer discussion and lack of feedback, were identified as a limitation to online learning.

**Discussion and conclusions**: Previous studies have focused on CPD amongst qualified GPs and consultants, with less focus on doctors in training programmes. These results are consistent with the literature, but also highlight the importance of educational alignment with the training curriculum. This may be of interest to postgraduate deaneries and specialty colleges when developing e-learning for trainees.

**Take-home messages**: Online learning is recognised by Foundation doctors to have benefits. However, this is most valued when there is a clear educational strategy and straightforward interface with the training curriculum.

1015-1030 hrs
#A3.2 (26184)

*Pam Nicoll*, NHS Education for Scotland, RRHEAL, Inverness, UK
Fiona Fraser, NHS Education for Scotland, RRHEAL, Inverness, UK
Bill McKerrow, RRHEAL / SSRH&W, RRHEAL, Inverness, UK

**Background**: Digital technology offers the opportunity to transform the way public services are delivered across Scotland, both in the cost of their delivery and to improve the user experience of those services. It is recognised that the strategic priority to achieve at scale change is workforce education and capability in exploiting technology and information to improve and transform services.

**Summary of work**: NHS Education for Scotland (NES) completed a baseline survey of 13,000 health and social care in 2014 to determine current access to and use of digital technology in workplace and at home. The results provide a baseline against which progress can be measured and inform development of a targeted workforce core capabilities framework and training programme.

**Summary of results**: The results confirm a clear set of learning domains to guide development of a technology enabled learning (TEL) programme. Staff currently make greater use of both technology and range of series available outside work than within. Almost 80% of the survey group agree technology could help with training and learning to help capability at work. Only half of the group use some form of technology to support care delivery, with TEL options limited and basic. Over 50% of the group indicated a need for more education to use technology, to assist access to and application of available resources and effectively improve end point care delivery.

1030-1045 hrs
#A3.3 (26739)
The effectiveness of well-designed and user friendly web-based eLearning in Taipei City hospital

*Jason JiunShiou Lee*, Taipei City Hospital, Department of Teaching and Research; Department of Family Medicine, Taipei City, Taiwan
Jade ChienYu Yeh, LoSheng Hospital, Department of Family Medicine, New Taipei City, Taiwan
Background: Web-based eLearning has been established since late 2010 in Taipei City Hospital. All employees are recommended to take 20-30 credits of different areas of continuing and professional education courses each year. However, the Center for Faculty Development (CFD) found that the course completion rates were low in 2011 and 2012.

Summary of work: The CFD tried to motivate employees to take more continuing courses and improve the course completion rate. In 2013, the CFD redesigned the main page. Once a user logs in, eLearning system would announce a table of the completion percentage of each continuing and professional learning area he/she has achieved so that he/she could easily notice how many courses he/she needs to finish the whole year. Furthermore, the system also helps users to find the online or regular courses they can choose by easily clicking the learning area names. The users do not have to type the keywords to find and select the available courses.

Summary of results: After one year changed of the main page, the completion rate has raised from 45.41%±34.73% in 2011, 41.37%±33.66% in 2012 to 68.60%±35.65% in 2013. There was a statistical significant improving of the completion rate after the completion rate message has been shown in the main page and the easily finding courses system has been established.

Discussion and Conclusions: Not only regulating the recommended courses, the CFD should also design a good web-based eLearning to help staffs to keep learning.

Take-home message: A well-designed and user friendly web-based eLearning could assist users to achieve their learning goals.

1045-1100 hrs
#A3.4 (28026)
Remote Agile Development facilitating Distributed Simulation (RADDS) for rapid Infection Prevention & Control: EBOLA case study

Arunangsu Chatterjee*, Plymouth University Peninsula Schools of Medicine and Dentistry, Collaboration for the Advancement of Medical Education Research & Assessment, Plymouth, UK
Thomas Gale, Plymouth University Peninsula Schools of Medicine and Dentistry, Collaboration for the Advancement of Medical Education Research & Assessment, Plymouth, UK
Austin Hunt, Plymouth Hospitals NHS Trust, Department of Acute Medicine, Plymouth, UK
Simon Mardel, University of Manchester, Global Health, Manchester, UK
Nicholas Mellor, Masanga MENTOR Ebola Initiative, Collaboration for the Advancement of Medical Education Research & Assessment, Bristol, UK

Background: Distributed simulation (DS) can involve high-fidelity immersive simulation on-demand, made widely available whenever it is required through a self-contained ‘set’ of simulated environments. DS can be used to effectively train a geographically separated workforce. However, rapidly developing DS for an aggressively spreading epidemic can be challenging, especially with a tight timeframe required to produce effective training.

Summary of work: A health worker focused DS was implemented along with a community focused interactive DS, providing ‘just in time training’ for health workers in local treatment centers in Liberia and wider community in Sierra Leone. Game like elements were embedded in the DS environment to enhance engagement & transform behaviours. Agile development using SCRUM methodology was adopted with the aim of building the DS by empowering and trusting people, acknowledging rapid change as a norm, and promoting constant feedback.
**Summary of results:** DS with embedded game-like elements offers a unique way to engage learners across cultures. More importantly, utilising a remote agile development process to develop DS offers a way to rapidly respond to the complexity and urgency inherent to epidemics.

**Conclusions:** Given the observed and potential benefits, it is worth testing and evaluating how remote agile based DS can be put into practice to improve response times in tackling other epidemics.

**Take home message:** Remote agile development using DS with embedded game elements is an innovative solution for rapid response training in an epidemic outbreak.

**1100-1130 hrs – Networking Coffee Break**

**Time:** 1130-1300 hrs  
**Session:** #B1 – Show and Tell  
**Location:** Hall 2, SECC  

An opportunity to demonstrate your project to colleagues in an informal setting and to get their feedback. Contact us before 28 August to reserve your table for the session and have your project listed in the online programme, or just turn up on the day with your laptop/device. If you don’t have anything to demonstrate, why not take the opportunity to go around the tables to see lots of good ideas from others?

**1300-1400 hrs – Lunch**

**Time:** 1400-1500 hrs  
**Session:** #C1 – Short Communications: Blended Learning  
**Location:** Hall 2, SECC  
**Chair:**

**1400-1415 hrs**  
**#C1.1 (26349)**  
**Building a blended course with e-lectures: from service to strategy**

_E.H.M. Christenhuis*, University Medical Center Utrecht, Center for Research and Development of Education, Utrecht, Netherlands  
_W.I. de Haan, University Medical Center Utrecht, Center for Research and Development of Education, Utrecht, Netherlands_

**Background:** E-lectures is one of the projects within four-year Education IT Programme at the University Medical Center Utrecht. E-lectures in all forms (lecture captures, webinars and knowledge clips) provide means to students to learn independent of time and place.

**Summary of work:** E-lectures focusses on providing lecture captures as a service to students (863 hours in 2014). We invested in lecture capture hardware; from 1 to 6 recorders. We also piloted with strategic forms of e-lectures: webinars and knowledge clips. In knowledge clips a short, concise format of one concept is explained. Students watch these as a preparation for classical teaching, so face-to-face time can be used for in-depth discussions and student interaction. Also webinars were organized: lecturers presented from a studio and students could ask questions online. The
production of knowledge clips and webinars requires different kinds of expertise: technological, pedagogical and content knowledge.

**Summary of results:** Twenty clips were made, differing in content, structure and duration. In a course five Meet-the-Expert classes were given as a webinar. A survey revealed the appreciation for lecture captures as well as the knowledge clips and webinars.

**Discussion:** The strategic role e-lectures can have is often not taken into account. Lecture captures only do not qualify as a blended learning instrument.

**Conclusion:** E-lectures can play a significant role in the education process when related to face-to-face meetings. The overall course rate went up due to the strategic use of knowledge clips and webinars in the course we evaluated.

**Take-home message:** Most institutions focus on lecture captures. Try embedding knowledge clips and webinars into your course. They can be important ‘bricks’ in building a blended course.

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**1415-1430 hrs**
**#C1.2 (27501)**
**Enhance students’ learning by integration of facilitated online discussion forums with problem based learning: a mixed methods study from Qassim Medical School**

*Ahmad Alamro*, Qassim Medical School, Qassim University, Medical Education, Saudi Arabia

*John Sandars*, The University of Sheffield, Medical School, Academic Unit of Medical Education, UK

**Background:** Problem-based learning (PBL) is widely used but previous research has shown that often there is little sharing of knowledge between the sessions. Student evaluation has highlighted inadequate feedback and lack of student-student and student-tutor interactions. Integration of facilitated online discussion forum between PBL sessions is proposed to alleviate the current issues and it is expected to enhance knowledge construction and advance different skills.

**Methods:** A facilitated online discussion forum was integrated between PBL sessions on a four-week traditional PBL course at Qassim Medical School, Saudi Arabia. Fifteen tutors (5 females and 10 males) and 145 students were included in the study. A mixed methods approach was conducted using questionnaires and interviews to evaluate perceived usefulness (knowledge sharing/learning) and an objective (quantitative content analysis) measure of knowledge sharing and elaboration using a validated tool that evaluated the online discussions.

**Results:** The objective measure of knowledge construction in the online discussions showed that knowledge was shared and elaborated, consistent with an active learning process. Students and tutors considered that the intervention improved student’s understanding of PBL in a collaborative environment and it was enjoyable experience. Students found the intervention as a tool to enhance their team work in addition to English writing and confidence.

**Conclusion:** An integrated and facilitated online discussion forum between PBL sessions has the exciting potential to improve knowledge construction and advance different skills.

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**1430-1445 hrs**
**#C1.3 (24067)**
**A technology enhanced intern readiness program to support the transition from medical student to junior doctor**

*Kate Jurd*†, School of Medicine University of Queensland, Toowoomba Rural Clinical School, Toowoomba, Australia

Sheila Cook, University of Queensland, Rural Clinical School, Toowoomba, Australia

**Background:** The medical curriculum ensures that medical students amass vast clinical knowledge with a solid grounding in medical science. However this does not formally translate to providing
them with the practical skills and basic ward-work ‘know how’ required to become an effective junior doctor. Medical students are ill-prepared for the role of an intern, and experience high levels of stress and anxiety in the first few weeks of work.

**Aim:** The aim of Intern Readiness Program is to develop the daily ward work skills required by medical students to confidently transition to interns.

**Methods:** The program is underpinned by contemporary learning theories and integrates technology enhanced teaching and learning strategies. Using a blended delivery model, based on principles of the flipped-classroom the program incorporates interactive e-learning activities with role-play and reflective small group learning sessions to engage the students in “real-life” ward round scenarios. Following the tutorial, students completed a satisfaction survey and modified Clinical Capability Questionnaire.

**Results:** Student feedback for the Intern Readiness Package was overwhelmingly positive. One hundred percent of students rated the e-module as being ideal preparation for the tutorial and that the small group learning was an ideal learning style. Over 90% of students reported that the tutorial identified gaps in their knowledge (91% for SBAR and 96% for ward round tasks) and more than 70% of students reported an improvement in their skills in six of the ten domains due to the package.

**1445-1500 hrs**

#C1.4 (26218)

**Using the TPACK (Technological Pedagogical Content Knowledge) model in an extensive blended learning programme**

**Anne-Petra Rozendal**, University Medical Center Utrecht, Center for Research and Development of Education, Utrecht, Netherlands

**Esther Christenhuis**, University Medical Center Utrecht, Center for Research and Development of Education, Utrecht, Netherlands

**Margreet Manrique van Woudenbergh**, University Medical Center Utrecht, Center for Research and Development of Education, Utrecht, Netherlands

**Background:** At UMC Utrecht, we are implementing a four year programme to boost the integration of ICT in all educational departments. The programme comprises among others the development of e-modules, e-lectures and e-assessment.

**Summary of work:** We approached directors and faculty to identify which ICT applications would create the optimum form of blended learning. Multidisciplinary teams were formed. Educationalists focused on highlighting the pedagogical aspects of e-learning, like the way content is presented in e-modules. Faculty provided content for e-learning products. The necessary technological tools were provided by the programme or custom made by developers. The TPACK model showed us how to interconnect these three areas.

**Summary of results:** Faculty had a unique opportunity to develop and integrate e-learning applications in existing courses. After three years more than 100 e-modules have been developed, more than 2000 hours of e-lectures have been recorded, 55% of all assessment is now online. Evaluation of blended learning among students and faculty generated positive feedback and results. In 2015 faculty development is our main focus to secure implementation of e-learning products in education.

**Conclusions:** Developing ICT products is not in itself a goal. Faculty need to be aware why and how ICT applications improve the quality of education in order to facilitate student learning. The TPACK model has proven to be indispensable.

**Take-home message:** While developing ICT products for education, faculty, educationalists and developers need to be constantly aware of the appropriate integration of technology, pedagogy and content in a specific educational context.
Medical students' choice of apps for learning - is reliability important?

Fiona Curtis*, Lancaster University, Lancaster Medical School, Lancaster, UK
Ashleigh Garstang, Lancaster University, Lancaster Medical School, Lancaster, UK

Smartphones are considered valuable for supporting medical student learning and significant numbers use medical applications (apps). However, little is known about how students select educational apps. This study aimed to investigate factors medical students consider when choosing to use medical apps for learning. Medical students at Lancaster Medical School were invited to complete an online questionnaire investigating their use of medical apps for learning. Likert scales and open questions were used. Qualitative data was analysed using thematic analysis. Ethical approval was granted by the Lancaster University Research Ethics Committee. Forty-four students who owned a smartphone or a tablet and used medical apps to support learning completed the questionnaire. The majority utilised apps weekly or two to three times per week and used between one and three medical apps for core and additional learning, in addition to revision. Cost, reviews and peer/staff recommendations were considered important when deciding to purchase or download apps. In contrast, medical app charts within the app store, advertisement in medical journals/medical websites and on social media were not considered as important. Ninety-three per cent of students wanted the medical school to recommend apps. When deciding whether an app is reliable, the majority valued reviews and recommendations. A minority were influenced by the author/producer of the app, the presence of references and when the app was last updated. Students based their decisions to download or use apps on a range of factors and on varying degrees of evidence of reliability.

CURIOS: video mashups for teaching clinical procedures

David Topps*, University of Calgary, Family Medicine, Calgary, Canada
Wes Jackson, University of Calgary, Family Medicine, Calgary, Canada
Doug Myhre, University of Calgary, Distributed Learning & Rural Initiatives, Calgary, Canada

Background: Learners attempting clinical procedures have few opportunities to practice, many of which are squandered on watching teachers perform. Data from our PocketSnips project showed that learners do more and better if they first study short videos of the procedure. But the cost and effort required in creating such videos is substantial. However, many examples now exist on YouTube but these are highly variable in quality.

Summary of work: Initial attempts with collaborative video capture using low cost cellphone cameras will be demonstrated that show promising new perspectives but are beyond the scope of most authoring teams. We then developed more practical and cost effective approach with mashups of existing videos. A custom tool to support technical-inexpert curators has been developed and has enhanced the effectiveness of this approach.
**Results**: Data analytics, using Google Insight, OpenLabyrinth, and the xAPI protocol, have enabled better evaluation and iterative improvements to our content. Results will be provided at the session. Effective analysis of Learning Record Store data has proven more challenging. The linked, annotated, framework of video mashups provides a neat workaround to copyright and permissions challenges. Example mashups, with how-to information, will be provided for open access and broad dissemination.

**Discussion**: Mashups of existing material are more cost effective than original video creation. Clinical teachers find it easier to curate existing content than to start from scratch. Data analytics are more effective than satisfaction surveys in iterative process improvement.

**Take-home**: Video mashups provide point-of-learning access to curated, high quality video snippets. We should measure use and impact, not satisfaction.

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**1430-1445 hrs**  
**#C2.3 (23476)**  
**A Scoping Review of Podcasts in eLearning: Determinants of success**  

*Clyde Matava*, Hospital for Sick Children, University of Toronto, Anesthesia and Pain Medicine, Toronto, Canada  
*Devin Singh*, Queens University, Faculty of Medicine, Kingston, Canada  
*Fahad Alam*, University of Toronto, Anesthesia and Pain Medicine, Toronto, Canada

**Background**: Podcasting has become popular in medication largely for the advantages such as easy to create, cheap costs for distribution and ease of portability. However, there is no data describing factors associated with success or quality of podcasts. The goal of our study was to identify successful podcasts in anesthesia and identify factors associated with success.

**Methodology**: Independent reviewers performed a systematic search of anaesthesia related podcasts on iTunes Canada. Data and metrics recorded for each podcast included: podcast’s authorship, number posted, podcast duration target audience, format, and social media presence. Descriptive statistics and ANOVA were used to analyze data.

**Results**: 21 podcasts related to anesthesia were included in the final analysis. Only a third were still active. The median longevity of the podcasts series was only 3 months (IQR: 3-28 months). Less than 10% of podcasts had user ratings. Factors associated with success were: podcasts created by universities/companies; use of social media; frequency of posting; variety of podcast types (P<0.05).

**Discussion/Conclusion**: Our novel tool for assessing the success for a podcasts. The majority of anesthesia podcasts have a short half-life of only 3 months. Successful podcasts are associated with journals/universities. Reasons for this may be the need for fresh and quality content and good editing by users. The lack of these maybe associated with the early demise of a podcast series. Podcast creator may need to consider factors we have identified for success.

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**1445-1500 hrs**  
**Discussion**
**Jenna Woods**, University of Glasgow, Laboratory of Human Anatomy, Glasgow, UK
Daniel McCluskey, University of Glasgow, Glasgow, UK
Iskandar Afiq Mohamad Hashim, University of Glasgow, Glasgow, UK
Paul Rea, University of Glasgow, Glasgow, UK
Aileen Linn, University of Glasgow, Glasgow, UK

**Background**: Advances in technology have caused a surge in e-learning resources worldwide. Glasgow University has run an SSC to develop e-Tutorials for anatomy in conjunction with the MBChB curriculum.

**Summary of work**: An interactive tutorial on the anatomy of the heart was created using Articulate Storyline. Nine sub-topics are covered to give a comprehensive tutorial. Interactive 3D models are incorporated as an extra learning tool for users. These were created by taking 70+ photographs of prosections of the heart, then using 123D Catch, Blender and Unity Web Player to merge the images into one cohesive model. Imaging of the heart is covered in detail and real-time GIFs of cardiac imaging were used to aid that part of the tutorial. Each of the nine sub-topics includes a short quiz to test the information given, using a variety of question types. In some cases, clinically relevant information has been included to add another dimension to the user’s learning.

**Summary of results**: These interactive features have been engaged in an easy to use tutorial that allows a user to learn and test their existing knowledge of heart anatomy. The use of interactivity allows for constructivist education and sets e-learning apart from traditional textbook or lecture based learning.

**Conclusions**: This e-tutorial provides a detailed package of information on the anatomy of the heart with some clinical relevance included, creating a resource that is easy to use and not cluttered with irrelevant information.

**Take home message**: This project has created a valuable interactive e-resource that incorporates advanced 3D technology for students to learn and revise the anatomy of the heart.

1415-1430 hrs
#C3.2 (24692)
Integrating an anatomy MOOC into a medical anatomy curriculum

**James Pickering**, University of Leeds, Division of Anatomy, Leeds Institute of Medical Education, Leeds, UK
Neil Morris, University of Leeds, School of Education, Leeds, UK

An anatomy Massive Open Online Course (MOOC) – Exploring anatomy: the human abdomen – was created at the University of Leeds, UK, and hosted on the FutureLearn platform. The course was scheduled for three weeks and contained a series of multiple entry-level resources that were created to attract, and enable, a wide range of learners. Each week covered two areas of abdominal anatomy and finished with a clinical scenario to link the basic anatomy to modern medical practice. The course aimed to attract three groups of learners, including: (1) prospectus medical, biomedical and allied healthcare students; (2) current medical undergraduate students; and (3) postgraduate trainees. Learning objectives, discussion topics, self-assessment questions and live question and answer sessions were delivered within each week and supported the learners in monitoring their own progress and engaging directly with the lead educator. This short communication will provide a detailed review of the development and delivery of the MOOC and focus on the learner feedback from the first and second runs of the course. This will include the sex, age distribution, employment status, level of education and location of learners. First-hand experience from the course’s lead educator will highlight the workload and time commitments in developing the resources and delivering the course live over the three weeks. Moreover, ideas on how MOOCs can be integrated
into medical anatomy curricula to compliment the existing on-campus lecture, small group and practical teaching will be discussed.

1430-1445 hrs  
#C3.3 (27491)  
**The Anatomy of E-Learning Tools: Does software usability influence learning outcomes?**

*Sonya E. Van Nuland*, Western University, Anatomy and Cell Biology, London, Canada  
*Kem A. Rogers*, Western University, Anatomy and Cell Biology, London, Canada

Increasing class sizes and a reduction in laboratory hours have increased the popularity of commercial anatomy e-learning tools. It is critical to understand how the functionality of such tools can influence the mental effort required during the learning process, also known as cognitive load. Using dual-task methodology, we examined two anatomical e-learning tools to determine the effect of their design on cognitive load during two joint learning exercises (elbow and knee). ADAM Interactive is a simplistic, 2-dimensional tool that presents like a textbook and utilizes a sliding tab to dissect image layers, while Netters has a more complex 3-dimensional usability that allows structures to be rotated. We hypothesized that longer reaction times on a Stroop visual observation task would indicate a higher cognitive load imposed by the anatomy software, which would interfere with learning. Undergraduate anatomy students from Western University, Canada (n=70) were assessed using a baseline anatomy knowledge test, Stroop task response times, and an anatomy post-test. Results showed that different software packages had no influence on reaction time or post-test outcomes (reaction times: 1518ms±356 and 1530ms±414; post-test scores: 7.71±2.01 and 7.77±2.01, for Netters and ADAM respectively, p>0.05). Post-test scores differed significantly based on which joint was studied (8.22±1.93 and 7.42±1.62 for elbow and knee respectively), however this was not impacted by the software itself. This suggests that a simple e-learning tool, such as ADAM, is as effective as more complicated tools, such as Netters. The results of this study could constructively inform software developers about future design considerations.

1445-1500 hrs  
**Discussion**

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1445-1500 hrs  
#C4.1 (26140)  
**Use and Perception of Second Life by Distance Learners: Comparison with other communication media**

*Jo-Anne Murray*, University of Glasgow, Glasgow, UK  
*Fiona Littleton*, University of Edinburgh, Edinburgh, UK  
*Dozier Marshall*, University of Edinburgh, Edinburgh, UK

**Introduction:** The use of virtual worlds (VW) in education has increased in recent years, with Second Life (SL) being the most commonly used VW in Higher Education. However, there is a paucity of information available on students use and perception of SL in relation to other online
communication media available to the distance learner. Consequently, this study explored this area with a group of distance education students.

**Methods:** A self-completion survey was designed to assess students’ use and perception of using SL and whether this changed according to timing of orientating to SL in relation to subsequent use. A series of Likert scale questions were organised to gather the following information: student demographics; students’ experience of using SL; students’ thoughts on using Second Life. Free text comments and a small number of open questions were also included.

**Results:** The majority of students rated SL lower than other forms of communications media, such as email, WebCT discussion boards, Skype and Wimba, in terms of facilitating communication, promoting the formation of social networks, fostering a sense of community and benefiting their learning. The use of an orientation session close to subsequent use of SL for learning activities did positively affect students’ use and perception of SL.

**Conclusion:** It is possible that the results of this study were influenced by the lower frequency of use of SL on this programme compared to other work reported on this subject. Nevertheless, little has been done to compare SL to other communication media in this way.

1415-1430 hrs

#C4.2 (25025)

**Demonstration (and discussion of a study) of a blended learning setting for teaching the clinical assessment of substance use disorders**

*Paul Lanken, University of Pennsylvania, Perelman School of Medicine, Philadelphia, USA*  
*Barbara Schindler, Drexel University, College of Medicine, Philadelphia, USA*  
*Christof Daetwyler*, Drexel University, College of Medicine, Philadelphia, USA  
*Dennis Novack, Drexel University, College of Medicine, Philadelphia, USA*

DocCom is a series of 42 media-rich online modules for teaching and learning of healthcare communication skills, created jointly by the American Academy on Communication in Healthcare (AACH) and Drexel University College of Medicine (DrexelMed). DrexelMed, in collaboration with the University of Pennsylvania Perelman School of Medicine, became a National Institute on Drug Abuse (NIDA) Center of Excellence for Physician Information, and received funding to create 2 DocCom-like modules on substance abuse screening and counseling. These peer reviewed modules are available copyright free and open to the public from http://webcampus.drexelmed.edu/nida/ and through MedEdPortalhttps://www.mededportal.org/publication/9110. We were then fortunate to receive a grant to study the educational effectiveness of the first module. We conducted a cluster randomized controlled trial investigating whether the NIDA module “The Clinical Assessment of Substance Use Disorders” and small-group debriefing can improve students and residents attitudes and communication skills toward patients with substance use disorders (SUDs). Our study was published on October 7, 2014, in Academic Medicine under the title “Efficacy of an Internet-Based Learning Module and Small-Group Debriefing on Trainees' Attitudes and Communication Skills Toward Patients With Substance Use Disorders: Results of a Cluster Randomized Controlled Trial.” In our presentation, we'll present the blended learning and eLearning resources used, and discuss the outcomes and consequences of this study.

1430-1445 hrs

#C4.3 (27551)

**Strategies to increase satisfaction of health professionals in long e-learning courses**

*Alessandra Dohner*, UFCSPA, Education and Information in Health, Porto Alegre, Brazil  
*Maria Eugenia Bresolin Pinto*, UFCSPA, Public Health, Porto Alegre, Brazil  
*Marta Quintanilha Gomes*, UFCSPA, Education and Information in Health, Porto Alegre, Brazil
Satisfied users evade less, especially in long Distance Learning courses. The Postgraduation Course in Family Health focused on two strategies to increase student satisfaction with the course: use of active methodologies and peer tutoring. This is an exploratory study on the Axis 1 (180h) course covering the content of Public Health and consists of three units (U1, U2, U3). Were analyzed structured questionnaires of 4 classes for a total of 811 questionnaires answered a total of 996 students. Was considered satisfactory the two highest categories in Likert scale. The units were evaluated individually and we used two indicators: "methodology" features eight items and the "tutoring" has four items. The indicator on "methodology" on the U1 77.3% was considered satisfactory; U2 at 72%; at U3 79.8%. The best rated item was "significant learning strategies" (85.7%) and of lowest satisfaction was the "time set for tasks" (50%). The indicator on "tutoring" on the U1 88.7% considered satisfactory; U2 at 83.7% and 89.6% U3. In this indicator, the item with the highest satisfaction was "tutor monitoring the performance of activities" (88.5%) and the one with less satisfaction were the "tutor as motivator" (86.2%). Students recognize the interaction processes (tutor-student) and interactivity (student-learning object) as important principles in the active methodology and strategy in health education.

The use of active methodologies strategies and peer tutoring are essential to increase the satisfaction and motivation of students in distance learning course of long-term (12-18 months).

1445-1500 hrs
#C4.4 (24599)
Evaluation of the MindEd e-portal for children and young people’s mental health and emotional wellbeing

Cathy Street*, National Children's Bureau, Research Centre, London, UK
Amanda Mainey, National Children's Bureau, Research Centre, London, UK

The MindEd e-portal is a new resource commissioned by the Department of Health and developed by a consortium of mental health experts. Intended for all those working with children and young people in both health and universal sectors, it aims to provide accessible online learning about children and young people’s emotional and behavioural development. This paper presents findings from the national evaluation of MindEd in its first year of operation, carried out by the National Children’s Bureau (NCB). Findings explore how MindEd can be used as a practice tool within staff teams or toward continuing professional development, as well as by individuals looking to increase their knowledge. A range of practitioners from across the children’s workforce received MindEd enthusiastically, citing its potential to increase knowledge around children and young people’s mental health, with resulting positive effects for children and young people and their families. Practitioners saw MindEd as particularly useful for new or trainee staff within the health sector, or for those new to a role within universal services i.e. as part of induction training for those less experienced in working with children and young people or with mental health issues. The evaluation highlighted that MindEd may be valuably integrated into existing health education training programmes e.g. for student nurses, health visitors and counsellors. Technical difficulties throughout its first year of implementation have hindered some practitioners’ access to and learning through MindEd however. Ongoing refinements and further additional e-sessions are planned which it is hoped will address these early deficits.

Time: 1400-1500 hrs
Session: #C5 – Short Communications: Online Learning 2
Family medicine goes digital – our journey from text to digital media

Heather Grusauskas*, Monash University, General Practice, Melbourne, Australia
Josephine Antoniades, Monash University, General Practice, Melbourne, Australia

Technology is now part of everyday life, in fact the internet has in many parts of the world become a necessity to conduct your daily activities such as banking, paying bills, booking that long anticipated holiday. This also holds true in education: technology is changing the way we learn and teach. Traditional ways of delivering course materials are slowly morphing into either blended learning or pure on-line learning: Students no longer blame the dog for eating their assignments, they blame the internet for being down! University students, whether local or overseas, are not only experiencing new teaching and learning styles, but are ever increasingly being involved in the evolving digital world. The progression from traditional to digital educational styles has for many been relatively painless whereas for others there have been many obstacles to overcome on their journey. It is no surprise that within the higher education institutions countless academics have faced many challenges in this new era of digitization of education. This presentation looks at our journey moving from traditional course delivery to our Master students to the development and delivery of course materials for an E-learning platform within the realm of family medicine. We discuss the highs and the low: The good, the bad and the ugly. And also welcome commentary from others during the presentation on their own experiences.

Expectations of those registered in a E-learning Postgraduation Course in Family Health in Brazil

Maria Eugenia B Pinto*, UFCSPA, Public Health, Porto Alegre, Brazil
Alessandra Dahmer, UFCSPA, Public Health, Porto Alegre, Brazil
Marta Quintanilha Gomes, UFCSPA, Porto Alegre, Brazil

Studying the expectations about e-learning Postgraduation courses, enables knowledge of the demands of students in the qualification of health professionals, providing opportunities for the creation and maintenance of specific strategies. This study is based on the expectations of 163 students of the Postgraduation Course in Family Health (UNASUS-UFCSPA) at the time of registration. Open questions were collected in digital media, were examined from the perspective of content analysis. Of the 163 students, 127 were women; 100 were nurses, 28 doctors and 35 dentists. Of these, 132 were already working in Primary Health Care. The "expansion of knowledge" was mentioned by 84 students as expected. The "better assistance to SUS users" was cited by 57 and the "feasibility of study by distance education" for 17; 11 cited the "experience exchange possibility" and 9 said that "possibility of reconciling working hours and study" was theirs expectations. In Brazil, the need for interiorization of training can be fulfilled by distance learning, providing the reconciliation of work and study and offering the exchange among peers. A Course that aims to support professionals resignify their practices and problematize the daily life of their work can improve the user assistance. Most were women and the fact that they can keep their home and work routines, studying at alternative times, contributes to the choice of e-learning. E-learning is a methodology that permits meet the various demands of health professionals regarding their continuing education, especially in a country the size of Brazil.
A dynamic co-design approach to developing technology based help-seeking services that enhance informal workplace learning in healthcare

Micky Kerr*, The University of Leeds, Leeds Institute of Medical Education (LIME), Leeds, UK
John Cook, University of the West of England, ACE, Arts and Cultural Industries, Bristol, UK
Tamsin Treasure-Jones, University of Leeds, Leeds Institute of Medical Education (LIME), Leeds, UK

This paper describes a participatory co-design approach, undertaken within a large European project investigating the scaling up of informal learning technologies in SMEs. Our focus is on developing technology to enhance multi-professional, informal workplace learning in the context of primary care. A collaborative, design-based research methodology, informed by socio-technical systems thinking, was adopted. The co-design is characterised by regular workshops and meetings, with multi-disciplinary professionals from primary care, as well as research, design and development project partners. Multiple techniques capturing user interface and experience requirements were employed, including; meaningful task-based and problem-solving exercises; think-aloud and cognitive walkthroughs; plus paper and software prototypes. There have also been one-off events with diverse stakeholders, to garner feedback about technological developments, along with reflective discussions among the co-design teams. Efforts to advance design ideas and technologies are exemplified by the Help Seeking Service team, focussing on healthcare professionals engaged in inter-organisational networks and communities. Our aims are to identify trusted capable peers, and reliable resources through these networks, in order to enrich the informal learning experience. We also tackle criticisms that user groups may possess limited models of learning processes, and that co-design may generate requirements that over-emphasise existing needs and expectations. Specifically, a business-oriented social networking service (LinkedIn) was used in one workshop to probe current attitudes to social media, while a second workshop employed a prototype to elicit views of potential future application scenarios. This dynamic co-design approach not only informs educational theory, but also contributes to developing fit-for-purpose learning technologies.

eLearning for multiprofessional CPD: lessons learned from a large scale implementation

Nicolas Brichet*, Collège des hautes études en médecine (CHEM), Brest, France
Laetitia Knockaert, Collège des hautes études en médecine (CHEM), Brest, France
Christophe Chaumeil, Collège des hautes études en médecine (CHEM), Brest, France
Estelle Michelet, Collège des hautes études en médecine (CHEM), Brest, France
Jean-Luc Derrien, Collège des hautes études en médecine (CHEM), Brest, France
Nabil Zary, Karolinska Institutet, Stockholm, Sweden

Background: Since 2013, healthcare professionals in France are required to attend at least one CPD activity. Because of the varied conditions of work, availability and competency needs, the demand for flexible CPD have increased which created an appropriate context for technology-enhanced learning.

Summary of work: This project was conducted at CHEM, a non-profit continuous professional development organization in France. Training needs from the healthcare professional were elicited. eLearning modules were developed in house using a user centric design-based approach. Content was developed and validated by leading subject matter experts from the Bretagne region in France.
Summary of results: Twenty eLearning courses were developed (http://www.e-dpc.fr). A course is composed of four main components: (i) pre-test were the participant can assess its practice in relation to the course participants, (ii) interactive learning activities and expert feedback, (iii) post-test and follow-up after a few weeks to assess the knowledge gained, (iv) CPD certificate after successful completion. In 2014, 4600 healthcare professionals completed at least one eLearning course.

Discussion: The participants actively engaged in the eLearning COD courses and evaluation reported that the pre-and post- tests fostered an active learning. The high number of completion indicates an interest for this form of education.

Conclusions: Interactive eLearning CPD courses can provide a complement and/or alternative to the traditional on site CPD courses.

Take-home messages: eLearning CPD is a flexible and popular form of continuous education provided that it is designed based on the needs of healthcare professionals and with a focus on practice change.

Time: 1400-1600 hrs
Session: #C6 – Workshop: Students as co-producers of learning
Location: Carron 1, SECC
Facilitators: Natalie Lafferty (University of Dundee, UK), Moira Maley (University of Western Australia), Kati Hakkarainen (University of Tampere, Finland)

‘Partnership’, ‘engagement’, ‘student-centred’ are words that describe optimal teaching practices .. but what do they mean? Do you know if your students feel like partners in your classroom? Are they engaged learners in your sessions? How do you make your teaching student centred? The concept of "students as co-producers of learning" in medical education is linked with engagement and students taking responsibility for their learning. Used effectively this approach steps teachers away from a role of funneling core examinable information into students, to a role where they challenge students to discuss how that knowledge underpins clinical practice and research. This workshop illustrates the ways you can walk alongside students as they build their version of understanding of topics in which you are a master. You will use education technologies as a student to create content and share your thoughts relating to that process.

Participants should bring with them a teaching scenario for which they wish to devise a resource which will be built during the session.

Time: 1400-1600 hrs
Session: #C7 – Workshop: Serious gaming in medical education. Let’s play!
Location: Carron 2, SECC
Facilitators: Carolien Kamphuis (Department for Evaluation, Quality and Development of Medical Education, Radboud University Nijmegen Medical Center, the Netherlands), Mary Dankbaar (Institute of Medical Education Research Rotterdam, Erasmus University Medical Center, Rotterdam, the Netherlands), Joep Lagro (Department of Internal Medicine Haga Teaching Hospital, the Hague, the Netherlands)

On behalf of the special interest group e-learning from the Dutch Organization on Medical Education (NVMO)

Serious gaming has gained increasing popularity in medical education. It has the advantage of learning in a safe environment and students can experiment in an engaging way. Students get direct
feedback and learn what the consequences are of their actions. Moreover serious games often are fun and connect to an active and experiential learning style. However developing and implementing serious games in medical education is not straightforward and may encounter different obstacles. In this interactive workshop participants are offered methods and ideas for development, and implementation of serious games. In small groups participants go through the conceptual design process for a serious game. We will summarize the main results from research on game effectiveness and provide guidelines for implementation. By the end of the session, participants will be able to:

1. Understand the rationale to use serious gaming in medical education
2. Name crucial elements for the development of a serious game for medical education
3. Identify potential pitfalls in implementation of a serious game in medical curricula
4. Know main results from research on learning and motivational outcomes of serious games in medical education
5. Create a “game concept” on a medical subject

Our workshop is relevant for all those who participate in or develop medical education for bachelor or master medical students and medical residency training.

**Schedule:**

10 min: Introduction
10 min: Play a little game
15 min: Background
60 min: Design a serious game!
30 min: Present
20 min: Implementation / research
5 min: Rounding off/conclusions

1500-1530 hrs – Networking Coffee Break

**Time:** 1530-1630 hrs
**Session:** #D1 – Short Communications: Online Learning 3
**Location:** Hall 2, SECC
**Chair:**

1530-1545 hrs
#D1.1 (28152)
EuFMD e-Learning: Opportunities in online learning and networking for veterinarians confronting a transboundary animal disease

**Jenny Maud**, Royal Veterinary College AND European Commission for the Control of Foot and Mouth Disease (FAO), London, UK
Nick Short, Royal Veterinary College, London, UK
Christine Thuranira-McKeever, Royal Veterinary College, London, UK
Keith Sumption, European Commission for the Control of Foot and Mouth Disease (Food and Agriculture Organisation of the United Nations), Rome, Italy
EuFMD e-Learning is a virtual learning environment, established through a partnership between the European Commission for the Control of Foot and Mouth Disease (EuFMD-Food and Agriculture Organisation of the United Nations, Rome, Italy) and the Royal Veterinary College (RVC-London, UK). The project has seen the development of a number of blended learning and online courses for veterinarians involved in the diagnosis, prevention and control of foot-and-mouth disease, a highly infectious transboundary viral disease affecting cloven hooved animals, outbreaks of which have severe economic and social consequences. The establishment of the online training environment has enabled EuFMD’s training programme to reach far wider audiences than through traditional face to face training, and has additionally allowed networking between learners in different geographical locations, who might never otherwise meet. This short communication will examine some of the benefits of using online training to connect and network adult professional learners internationally, particularly in the face of a disease that does not respect national borders. It will additionally address some of the challenges encountered to date, including translation of content, access to appropriate technology and differing styles and approaches to learning.

1545-1600 hrs
#D1.2 (25421)
The secret of success: how can an Emergency Moodle-based course be so cool?

Tiago de Araujo Guerra Grangeia*, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Bruno de Jorge, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Daniel Franci, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Thiago Martins Santos, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Marcelo Schweller, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil
Marco Antonio Carvalho-Filho, School of Medical Sciences of Unicamp, Emergency Medicine, Campinas, Brazil

Background: Teaching Emergency Medicine is challenging and requires the development of a great diversity of competences, and it is nearly impossible to standardize students’ exposures to every emergency situation. To address this matter, we offered an online course based in real clinical cases.

Summary of work: Sixth-year medical students (n=229) participated in a Moodle-based course throughout 2013 and 2014. “Virtual Rounds” was the main activity, providing weekly virtual patients in a narrative format, aiming to simulate emergency care rounds and students’ clinical reasoning. Other activities were provided: 1– Extreme Decisions; 2– Emergency Quiz and 3– Radiological and Electrocardiographic challenges. Students’ participation was voluntary, and their opinions about the course were evaluated in a survey.

Summary of results: Students produced 406,419 pageviews. The most accessed activities were Virtual Rounds (37%) and Extreme Decisions (30%). 97% of the students felt that Virtual Rounds improved their clinical reasoning, 82% reported that it encouraged them to participate in real medical rounds, and 93% felt better prepared for rendering emergency care. The main reasons were the systematization of clinical reasoning, the structuring of learning materials (common complaints, syndrome diagnosis and patient evolution), and the acquisition of knowledge and confidence.

Discussion and Conclusion: The virtual learning environment is well accepted by students, and a course based on real clinical cases may simulate their participation in emergency care rounds and improve their clinical reasoning. This kind of course may address and standardize the knowledge of Emergency Medicine, being an efficient way to complement and optimize in-hospital experience.

1600-1615 hrs
#D1.3 (26795)
Blended e-learning with short face-to-face in an RN-BSN course, the Kenyan experience

**Kefa O Bosire**, University of Nairobi, Pharmacology and Pharmacognosy, Nairobi, Kenya
Micah Matiang’i, African Medical Research Foundation (AMREF), Virtual Training School, Nairobi, Kenya
Grace Omoni, University of Nairobi, School of Nursing, Nairobi, Kenya
James Kiarie, University of Nairobi, Obstetrics and Gynaecology, Nairobi, Kenya
James Ngatia, African Medical Research Foundation (AMREF), Directorate, Nairobi, Kenya
Isaac O Kibwage, University of Nairobi, Obstetrics and Gynaecology, Nairobi, Kenya

**Background:** Having highly skilled health work force is critical for improved health outcomes. Nurses form the backbone of health services in Kenya. To increase the numbers and qualification of nurses, University of Nairobi in partnership (UoN) with AMREF embarked on a program of upgrading registered nurses to a degree using blended RN-BSN to overcome health worker shortage accentuated by offsite training. E-platforms have been shown to enhance learning. This abstract describes the process of developing and implementing an innovative blended RN-BSN course.

**Methodology:** The UoN/AMREF and Nursing Council developed a blended e-learning and face to face course. Course development involved: (1) establishing learning needs and determination of course objectives (2) designing of module/assignment instructions (3) development of the e-learning platform. Trainees are assessed together with the full time pre-service BSN students.

**Outcomes:** The resulting RN-BSN course uses blended e-learning with short face to face sessions. The program is offered over 2.5 years. The RN-BSN upgrading program is implemented at University of Nairobi. There is a high demand with applications exceeding current capacity. The first cohort has completed its second year with over 225 students enrolled since the first intake in 2012. The performance by the e-based students is comparable to their full-time counterparts.

**Conclusion:** The blended RN-BSN potentially increases numbers and qualification of nurses while providing rural health services. This model may be adapted for direct entry nurse training. Deeper evaluation of the program is underway to determine satisfaction, appropriateness of learning methods and content.

1615-1630 hrs
**Discussion**

Time: 1530-1630 hrs
Session: #D2 – PechaKucha 2
Location: Alsh 1, SECC
Chair:

1532-1539 hrs
#D2.1 (27346)
**Video**
Learning optimally: engagement, interaction and oiling the hinges

**Moira A.L. Maley**, The University of Western Australia, Rural Clinical School of Western Australia (Albany), Albany, Australia
Kirsten A. Auret, The University of Western Australia, Rural Clinical School of Western Australia (Albany), Albany, Australia
Helen M. Wright, The University of Western Australia, School of Paediatrics and Child Health, Perth, Australia
The overwhelming demand on opportunities for clinical experience in traditional hospital-based settings has kindled alternative clinical learning paradigms for undergraduate medical students, such as studying in dispersed or remote small groups. VideoLearning, where remote students link with their remote peers is used to augment face to face (f2f) learning. This modality presents challenges for both students and their doctor teachers; but these challenges also exist for effective f2f interaction. New technologies applied strategically with videoLearning can mimic optimal f2f teaching technique. In the Rural Clinical School of Western Australia where clinical students learn for a year in small groups dispersed over 2.5 million square kms, we use videoLearning as an adjuvant with teaching onsite. Our suite of tools includes eClickers applied in multiple roles such as classroom aggregation, hinge questions, sharing clinical thinking, opinion polling and student feedback. We provide formal upskilling in the optimal use of video equipment and encourage digital professionalism in both students and teachers via discussion in an open blog. These activities are new for both students and teachers and so provide shared opportunities in professional development, enriching their relationship. The role modelled emphasis on networking across remote sites aids students' engagement with rural learning by hearing others' experience "live". In fact the design strategy by which videoLearning is implemented, is a tool in itself, such as student-led sessions where unique experiences are disseminated peer-to-peer. Assuming that a reliable and appropriately configured technical network supports videoLearning, it can highlight the context of rural learning to advantage.

1541-1548 hrs
#D2.2 (24271)
Learning models, theories and emerging technologies – developing interactive elearning by linking design and pedagogy

Kate Jurd*, School of Medicine University of Queensland, Rural Clinical School, Toowoomba, Australia

This presentation provides a visual representation of the key design elements and instructional strategies used to create effective eLearning. Instructional strategies need to be informed not only by theories of learning, but also the pedagogies that apply to those theories and how they impact upon instructional design and practice. (Adams et al., 1996)

- Cognitive load theory – Utilising Intrinsic, extraneous and Germane to reduce cognitive load in elearning (Sweller, Mayer and Clark)
- Zen philosophy of design (Garr Reynolds) – visual voice, image storytelling, emotional impact
- Experiential Learning
- Multimedia learning

1550-1557 hrs
#D2.3 (27534)
Learning Analytics: New Methodology for Understanding Professional Learning?

Janet Corral*, University of Colorado, Aurora, USA

Learning analytics is an emergent field of research that aspires to use data analysis to inform decisions made at multiple tiers of the educational system (e.g. student, faculty evaluation, academic program, institutional quality). Focusing on “analyzing the relationship between learner, content, institution, and educator” (Long & Siemens, 2011), learning analytics methods hold promise
to describe social networks and actions among learners (and teachers), learning paths through the curriculum, and deeper analysis of written discourse.

**Methods**: A qualitative review of the literature on methods in learning analytics was used to identify frequently used research methodologies, and outcome measures, across multiple educational contexts (e.g. K-12, higher education, medical education). A gap analysis followed, triangulating the results of the qualitative review with known curricula and learning measures in medical education.

**Results**: Visualization of learning is the entry-level approach to learning analytics most immediately accessible to the medical education community. Existing learning measures, such as summative evaluation scores, post-quiz scores, completion/non-completion of courses, provide low fidelity measures of learner progress but may be sufficient in early iterations of learning analytics to reveal basic relationships in professional learning. The power of learning analytics is increased when multiple formative assessment data can be used, or larger databases of student achievement (such as board exams).

**Conclusions**: Learning analytics may provide a new methodology for visualizing and characterizing learning in medical education, though refinement of educational measures, and even curricular resources, is needed in order to achieve sophisticated implementations of learning analytics in medical education.

**1559-1606 hrs**

#D2.4 (25384)

e-Learning for Healthcare (e-LfH) – “that’s the way to do it”

*Julia Moore, HEE e-Learning for Healthcare, London, UK*

*Alan Ryan*, Nottingham University Hospitals NHS Trust, Nottingham, UK

e-Learning for Healthcare devises and delivers free nationally quality-assured training and education for the healthcare workforce across the UK, underpinned by a comprehensive transferable record of life-long learning. e-LfH contains >24,000 learning objects, over 8000 individual e-learning sessions, 1000 searchable keynote e-library articles and hundreds of MCQs, clustered into >90 programmes. e-LfH supports an enormous primary audience across a diverse range of roles, for a workforce that requires just-in-time learning and has limited flexibility to train without impacting on 24/7 care delivery. Technical solutions make e-LfH content accessible 24/7 from hospitals, primary care and home, from the oldest NHS computers to modern devices. e-LfH works in partnership with the NHS and relevant professional bodies to create content. The 12,000 Content Authors and Module Editors are all practising clinicians and trainers, ensuring content is grounded in reality and is fit for purpose in the real-world environment. All content is validated and endorsed by the relevant professional body, which maintains responsibility for clinical content oversight and updating. 2.5 million hours of learning delivered: NHS staff access e-LfH content either via the e-LfH portal or the National LMS. 350,000 users access via the e-LfH portal. To date, they have undertaken 2.5 million hours of learning. 500,000 users access via NLMS, with e-LfH content comprising 80% of all NLMS content.

**Awards**: e-LfH has won 22 national/ international awards for innovation, e-learning content, technology, uptake, education, training and service development. e-LfH’s e-learning and technical expertise and advice is widely sought both in the UK and overseas.

**1608-1615 hrs**

#D2.5 (26514)

Engaging Students: Hosting a National Medical Student TEL Conference

*Clare Thomson*, Queen’s University Belfast, School of Medicine, Dentistry and Biomedical Sciences, Belfast, UK
Background: The concept of an innovative student centred conference on Technology Enhanced Learning (TEL) arose from our ongoing experience of high calibre student generated online learning content. HEA funding facilitated the hosting of a free UK and Ireland wide conference. The aim was to showcase student work across the islands demonstrating the wealth of student expertise in TEL. We explore how such conferences could lead to better student engagement in the creation of learning content.

Drivers for success: Keynotes on Simulation and Networked learning set the scene, but all other presentations were dedicated to the student voice. Linkage to a follow up Hackathon planned with Computer Science as an additional event the following day ensured student ideas could be taken to another level. A vibrant conference website, student representation on the planning committee and a focus on student participation were also vital components.

Results: Ten UK and Ireland medical schools sent student and staff representatives. Success was demonstrated by the high standard and variety of the twelve oral and twelve facilitated poster presentations ranging from Smartphone applications on drug formularies and student resilience to development of an eLearning resource for sepsis.

Discussion: Is this a good way to harness student energy and enthusiasm and how can it be sustained? Does it represent an efficient way of engaging students? Building a forum where students could share ideas and experience of TEL might be one way of developing this concept.

References: Conference website: http://www.med.qub.ac.uk/TEL

1615-1630 hrs
Discussion

Time: 1530-1630 hrs
Session: #D3 – Short Communications: Online Anatomy 2
Location: Alsh 2, SECC
Chair:

1530-1545 hrs
#D3.1 (26817)
A novel workflow methodology for the creation of an education and training package incorporating a digital reconstruction of the cerebral ventricular system and cerebrospinal fluid circulation

Amy Manson*, University of Glasgow (Laboratory of Human Anatomy) and Glasgow School of Art (Digital Design Studio), Glasgow, UK
Matthieu Poyade, Glasgow School of Art (Digital Design Studio), Glasgow, UK
Paul Rea, University of Glasgow (Laboratory of Human Anatomy), Glasgow, UK

Background: The use of computer-aided learning in education can be advantageous, especially when interactive 3D models are used to aid learning of complex 3-dimensional structures. The ventricular system of the brain is difficult to fully understand as it is seldom seen in 3D. Knowledge of the shape and relative sizes of the ventricles can be important in diagnosing and assessing some medical conditions.

Summary of work: Using MR images of the cerebral ventricular system and several widely available commercial and free software packages, the techniques of 3D modelling, texturing, sculpting, image editing and animations were combined to create a workflow in the creation of an interactive...
educational and training tool. This was focussed on cerebral ventricular system anatomy, and the flow of cerebrospinal fluid.

**Summary of results:** We have successfully created a robust methodology by using key software packages in the creation of an interactive education and training tool. This has resulted in a package being developed which details the anatomy of the ventricular system, and flow of cerebrospinal fluid, using an anatomically accurate 3D model. In addition to this, our established workflow pattern presented here shows how tutorials, animations and self-assessment tools can also be embedded into the training package.

**Conclusions:** This study showed that an educational and training package could be created for both specialist and non-specialist users, aiding understanding of an otherwise complex area of anatomy.

**Take-home message:** This study details a workflow methodology which could be applied to other complex areas of anatomy to aid understanding.

1545-1600 hrs
#D3.2 (26946)

The application of user feedback in a student-developed anatomy E-Tutorial

*Emma Andrew*, University of Glasgow, School of Medicine, College of Medical, Veterinary and Life Sciences, Glasgow, UK

Robyn Wilson, University of Glasgow, School of Medicine, College of Medical, Veterinary and Life Sciences, Glasgow, UK

Andrew Hayburn, University of Glasgow, School of Medicine, College of Medical, Veterinary and Life Sciences, Glasgow, UK

Paul M Rea, University of Glasgow, Laboratory of Human Anatomy, School of Life Sciences, College of Medical, Veterinary and Life Sciences, Glasgow, UK

Aileen Linn, University of Glasgow, School of Medicine, College of Medical, Veterinary and Life Sciences, Glasgow, UK

**Background:** Recent studies indicate a shift in learning styles towards more self-driven methods. These methods have become increasingly important in medical education, resulting in the necessity for creation of more interactive means of learning. As a result, we have created an E-tutorial, aiming to reinforce the learning outcomes of the curriculum via a multi-platform program incorporating various methods of learning.

**Summary of work:** Articulate Storyline 2 was used to create an E-learning program, covering anatomy, histology and imaging of the abdominal organs. We designed the program based on feedback regarding preferred learning styles. We then altered the program during its creation based on user responses. We incorporated a balance of information, diagrams and quizzes into an interactive resource to suit various learning styles of students.

**Summary of results:** This is a pilot study prioritising user feedback in the creation of an educational resource. Peer feedback was collected from 29 students at a crucial early-stage in development and modified based on further feedback. The end product will be subject to an end-user evaluation then qualitative and quantitative analysis will be used for future developments.

**Conclusions:** Feedback from 6 students in the initial user evaluations provided valuable feedback in the design and development process. Further feedback allowed for improvement of the program, enabling us to achieve the overall aim of creating a tutorial focusing on the needs of students.

**Take-home message:** Our main focus was to ensure the feedback we received was incorporated fully into the development of our tutorial. This allowed our end-product to be tailored to the needs of users.

1600-1615 hrs
#D3.3 (26804)
Development of Integrated Anatomy E-Tutorial by Medical Students, using Anatomy-TV

Nimra Zaidi*, School of Medicine, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, UK
Nikitha Rajaraman, School of Medicine, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, UK
Jenny Thomas, School of Medicine, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, UK
Paul M. Rea, Laboratory of Human Anatomy, School of Life Sciences, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, UK
Aileen Linn, School of Medicine, College of Medical, Veterinary and Life Sciences, University of Glasgow, Glasgow, UK

Background: With increasing availability of a huge variety of resources online for anatomy learning, variability in the quantity and reliability of information makes learning complicated for students. Hence, we created a student-made E-tutorial as a one-stop resource, which integrates gross anatomy, surface anatomy, and clinical relevance, with content verified by teaching staff.

Summary of work: Review of the University of Glasgow’s medical curriculum highlighted areas that needed reinforcement. Articulate Storyline software was used to create an Anatomy E-tutorial on ‘Hand-and-Wrist’. High-quality gross anatomical images from Anatomy-TV, and surface anatomy images and videos captured by digital-photography, were our main focus. Interactive features of Articulate Storyline were employed to allow an engaging user-experience.

Summary of results: This is a pilot study and end-user evaluation will be conducted to assess the effectiveness of the E-Tutorial. Target end-users are Years 1 and 2 medical students at the University of Glasgow. Results will be presented at the conference.

Discussion: Information online is not tailored to the curriculum and are not always verified by experts. Also, due to the lack of required resources online, production of our own videos and images was necessary to address requirements of the curriculum. After end-user evaluation, quantitative and qualitative data will be analysed and presented.

Conclusion: This E-Tutorial encompasses various aspects of anatomy teaching, serving as a guide and revision tool. It is a unique attempt at creating an educational resource using Articulate Storyline, which has not been attempted before.

Take-home messages: This product will help our colleagues as it is made by students and tailored to the integrated anatomy teaching.

1615-1630 hrs
Discussion

Time: 1530-1630 hrs
Session: #D4 – Short Communications: Learning Communities
Location: Boisdale 1, SECC
Chair:

1530-1545 hrs
#D4.1 (26486)
What do we mean by collaborative learning in networked simulation based healthcare education?

Aislinn Joy*. University College Cork (UCC), Cork, Ireland
Collaborative learning has been defined as “different people with different backgrounds and different perspectives working together in a team to solve a problem or produce a product”. The inclusion of the word team in this definition implies a responsibility to team dynamics on the part of those who engage in collaborative learning activities. In the world of healthcare, interprofessional education, where two or more professions learn about, from and with each other, has been advocated for enhanced collaboration and patient outcomes. However, while the notion of multiple perspectives can allow for richer analyses and solutions, it can also put an additional burden on collaborative problem-solving processes. In the context of distributed or networked simulation-based healthcare education (SBHE), a space for sharing understandings or misunderstandings can exist in the remotely facilitated debrief, involving sociocultural differences between participants. These differences have been described as socially constructed boundaries which can lead to discontinuities in actions or interactions, or conversely, can potentiate learning opportunities. Boundary crossing can be enabled by a type of networked expertise facilitated by certain types of agency through dialogue. This presentation will focus on what is meant by collaborative learning in networked SBHE from a sociocultural perspective, revealing an enhanced conceptual understanding of how we define expertise and investigate learning in this domain, within the continuum of professional education in healthcare.

1545-1600 hrs  
#D4.2 (26915)  
LivingDocuments, Turning conversations into reliable knowledge  

Andreas P. Schmidt, Karlsruhe University of Applied Sciences, Institute for Learning & Innovation in Networks, Karlsruhe, Germany  
Martin Bachl, Karlsruhe University of Applied Sciences, Institute for Learning & Innovation in Networks, Karlsruhe, Germany  
Christine Kunzmann, Pontydysgu Ltd., Faculty of Medicine & Health, Remchingen, Germany  
Tamsin Treasure-Jones, University of Leeds, Institute for Learning & Innovation in Networks, Leeds, UK  
David Zaki*, Karlsruhe University of Applied Sciences, Institute for Learning & Innovation in Networks, Karlsruhe, Germany  
Ed Bellamy, Pinbell Ltd., Leeds, UK  

E-Learning has concentrated much on disseminating mature knowledge to learners. Only recently, the focus has also shifted towards workplace learning situations in which learning from others is relevant, including sharing individual experiences and opinions, discussing them among peers, and developing them further into collaboratively agreed conclusions and decisions. This involves a larger group of individuals into the sensemaking and knowledge development process and promises earlier adoption of new insights. A collaborative web-based editor (“LivingDocuments”) has been developed and trialled in primary care in the UK. In this system, documents can be created and developed by multiple users. They can also annotate the documents with comments and discuss controversial parts with their peers. In contrast to online office suites, such as Google Docs, the system does not require cloud-based storage and supports users in developing trust into the contributions of others (e.g., within a network of professionals or a local network). For that, indicators based on various sources, such as user activities (how many comments, how frequently agreed with), but also level of experience of contributors and personalized trust relationships that have been previously established are used to make traceable how reliable, mature, or trustworthy documents and comments are, and they can be used for filtering, but also for visual cues alongside the content that has not been officially approved, but might still be valuable. The system’s functionality has been found to be applicable in a variety of scenarios, including cascading training, developing local implementation plans, and significant event analysis.
1600-1615 hrs
#D4.3 (24813)
Creating Virtual, Synchronous Learning Communities from a Distance

Ryan Palmer*, Oregon Health & Science University, Family Medicine, Portland, USA
Joy Checa, American University of the Caribbean School of Medicine, Family Medicine, Coral Gables, USA
Steve Ash, American University of the Caribbean School of Medicine, Coral Gables, USA
Kim Kirkland, American University of the Caribbean School of Medicine, Coral Gables, USA
Gene Grochowski, American University of the Caribbean School of Medicine, Coral Gables, USA
Julie Taylor, American University of the Caribbean School of Medicine, Coral Gables, USA

Medical education is increasingly moving off-campus, with more learners completing their clinical education at distant sites for longer spans of time. Institutions with significant decentralized student learning often struggle with how to create a sense of community with a spatially dispersed student body, many of whom do not return to campus for months, or even years, at a time. In short, how does an institution create an effective sense of community with a student’s home institution’s faculty and peers when that student is at a distance for a prolonged period of time? This presentation will describe the innovative approach taken by American University of the Caribbean (AUC), an international medical school with clinical sites located across two continents. AUC created interactive, longitudinal virtual peer groups for a student body that does all of its third- and fourth-year clinical rotations off-campus. To reconcile feelings of isolation often reported by distance students, the institution implemented virtual student cohorts that persist throughout a student’s third- and fourth-year of medical school. The presenters will describe how they utilized inexpensive, cloud-based videoconferencing technology that is easily accessible on laptops, tablets and smartphones to enable these groups to meet on a regular basis with minimal technology challenges. Additionally, the audience will learn how the curricular activities of these group meetings are deliberately designed to foster a sense of virtual community. The research behind these activities will be presented, as will evaluative data for the first year of virtual groups which included more than 300 students.

1615-1630 hrs
Discussion

1530-1630 hrs
Session: #D5 – Short Communications: Online Resources 2
Location: Boisdale 2, SECC
Chair:

1530-1545 hrs
#D5.1 (23284)
Interpersonal skills education, cultural sensitivity, and translations

Christof Daetwyler*, Drexel University, College of Medicine, Philadelphia, USA
Wolf Langewitz, University of Basel, Medical School, Basel, Switzerland
Sissel Guttormsen, University of Berne, Institute for Medical Education, Berne, Switzerland
Kai Schnabel, University of Berne, Institute for Medical Education, Berne, Switzerland
DocCom is a series of 42 media-rich online modules for teaching and learning of healthcare communication skills, created jointly by the American Academy on Communication in Healthcare (AACH) and Drexel University College of Medicine (DrexelMed). So far, two different types of translations were done: verbatim translations with subtitled videos in Japanese and Portuguese language, and a re-creation of 12 basic modules by authoring physicians in their (German) culture and language in the case of DocCom.Deutsch. The Japanese translation is used at one Institution only – this after several years of marketing efforts. So when we seeked funding to create a German Translation, we proposed no translation but a re-creation of 12 core modules that are based on the original DocCom, but done by German, Swiss, and Austrian physicians who became the new module authors. All videos were re-done at the University of Berne Institute for Medical Education with Swiss, German, or Austrian physicians and standardized patients, and the texts were re-written and anchored in the Swiss, German, and Austrian culture. DocCom.Deutsch is right now being implemented into the medical school curricula in Vienna, Berne, Basel, Munich, Freiburg, and many more. The fact that the faculty who is involved in communication skills teaching authored this new resource was key to getting this done. Cultural sensitivity and translation is sometimes an oxymoron, especially when videos are involved. A re-creation on the basis of an original resource, which expands the original brand, but is culturally adapted, seems to be a more promising procedure.

1545-1600 hrs
#D5.2 (25669)
One hub to rule them all? Describing the need for a national online 'hub' to access and share technology enhanced learning resources in healthcare

Susan Kennedy*, Health Education England, London, UK
Bryn Baxendale, Nottingham University Hospitals NHS Foundation Trust, Nottingham, UK
Elizabeth Hughes, Health Education West Midlands, Birmingham, UK
Richard Price, Yorkshire Ambulance Service NHS Trust, Wakefield, UK

Experience suggests that UK healthcare professionals, educators and students have difficulty locating relevant high quality technology enhanced learning (TEL) resources related to e-learning, mobile technologies, and simulation-based education. This hinders dissemination of resources more and encourages duplication. We aimed to test whether a single web-based community ‘portal’ would be valued by learners and educators, aid learning in practice, and potentially make financial savings. We undertook at desk study to evaluate the learning landscape for existing TEL resources in the UK. A series of national focus groups, stakeholder events and workshops were held and a national user survey was conducted. Results were triangulated to describe a case of need and clarify potential benefits in detail. Over 75% of survey respondents (412) strongly supported the concept of a national on-line hub where TEL resources, guidance and educational innovations could be shared, evaluated, and developed further through collaboration, and 58% expressed the need for an ‘overarching site for all’ in healthcare. Healthcare professionals and students wish to benefit from access to high quality TEL resources, which need to be easily discoverable through a single web location, and to encourage feedback on their use and wider sharing across professional and geographic boundaries. Avoiding duplication and improving quality of educational resources were described as important issues. A collaborative, crowd-sourced national ‘hub’ for TEL resources in healthcare is needed, would add value to the current and future workforce, and would improve efficiency of use of educational funding in the NHS and Higher Education sectors.

1600-1615 hrs
#D5.3 (27864)
Digital literacies among veterinary students: an international benchmarking exercise to scope readiness for online open educational resources

Laura Gledhill*, RVC, London, UK
Sonya Powney, RVC, London, UK
Vicki Dale, University of Glasgow, Glasgow, UK
Nick Short, RVC, London, UK

One of the great opportunities of the rapid growth in e-learning provision is the potential to share resources with colleagues and students. It is widely suggested that this will help to support education in less developed countries by providing access to the highest quality resources from more privileged universities. However, there is a limited evidence base to confirm that not only is the relevant technology available in all countries but also that students and academics actually reuse content produced elsewhere. The WikiVet project was launched in 2007 with the stated objective of addressing the entire veterinary and related curriculum in order to provide a reliable and trusted resource for students anywhere in the world. To do this it has fostered a global network of veterinary student ambassadors in vetschools around the world. These individuals not only act as champions for the project but also feedback how students are using WikiVet and other resources to learn. This presentation describes an innovative research project to measure access to technology and connectivity, familiarity with the use of different e-learning tools and requirements for future development. In the process it highlights the significant differences between countries and the opportunity to build on collaborative projects such as WikiVet to enhance veterinary education in the future. Collaborate to compete: Seizing the opportunity of online learning for UK higher education.

Report to HEFCE by the Online Learning Task Force: http://www.hefce.ac.uk/pubs/year/2011/201101/#d.en.63891

1615-1630 hrs
#D5.4 (27979)
Affordable, Practical, Innovative, and Scholarly eBooks: Supporting faculty in the teaching and assessment of the intrinsic CanMEDS roles

Derek Puddester*, uOttawa, Postgraduate Medical Education, Faculty of Medicine, Ottawa, Canada
Colla MacDonald, uOttawa, Faculty of Education, Ottawa, Canada
Emma Stoddel, Postgraduate Medical Education, Faculty of Medicine, Ottawa, Canada

The Office of Postgraduate Medical Education at the University of Ottawa is in the process of implementing a comprehensive program to assess residents on the full spectrum of CanMEDS roles. A Multi-Focal Assessment System framework was developed to guide this process. A literature review was conducted to identify existing procedures, mechanisms, and instruments for assessing resident competency. Interviews were conducted with 60 Program Directors to identify the current state, barriers, and needs related to assessing residents. Based on these findings, faculty development workshops were designed, delivered, and then evaluated using post-workshop surveys. Companion eBooks (http://ipad-fm.ca/pgmeebooks/) were also developed to provide easy access to practical tools for teaching and evaluation. Program Directors emphasized they do not have time to teach the intrinsic roles at the expense of the Medical Expert role. New strategies and resources needed to be developed and shared. 270 post-workshop surveys were completed and analyzed. Participants ranked the workshops extremely high on all factors. Preceptors learned how to incorporate the teaching of the intrinsic roles into their clinical teaching; how to give effective feedback; how to evaluate the roles; and the key competencies of the roles. Results further revealed that preceptors appreciated having convenient, practical, just-in-time resources available to them. Preceptors reported that developing strategies to integrate the intrinsic CanMEDS roles into their
day-to-day teaching and having access to convenient, practical, innovative, and scholarly eBooks will improve the quality of teaching and evaluating the CanMEDS roles.

Time: 1630-1730 hrs
Session: #S1 - Day 1 Closing Panel/Symposium
Location: Hall 2, SECC
Chair:

1745-1845 hrs – Drinks Reception

SUNDAY 6 SEPTEMBER

Time: 0845-0950 hrs
Session: #P2 - Plenary
Location: Hall 2, SECC
Chair:

The MOOC Ecosystem
Dr Stephen Downes
National Research Council of Canada

The initial rush to create and join massive open online courses (MOOCs) has faded a bit and now many providers offer courses, videos, and other learning resources. So what now? The next iteration of MOOC technology will be to develop an ecosystem of learning technology and services to enhance the student experience and help them gain the most of these courses. For example, people want to be able to earn credit for their MOOC experience and amass course credits to obtain degrees or certification. Additionally, third party applications such as social networks and discussion boards want to be able to support interactivity outside the MOOC environment, for example, in a social network or in local community Meetups. What will this new MOOC ecosystem look like, how will it operate and how will it be designed? In this presentation Stephen Downes will draw on his experience building MOOC-based networks to offer suggestions for current applications and predictions about the sort of network we will see in the future.

Stephen Downes is the program leader for the National Research Council of Canada’s Learning and Performance Support Systems research program. With 13 years’ experience at the NRC, and fifteen years’ experience developing and using online learning technologies before that, Downes is now recognized as one of the leading researchers in the field. He is known as a proponent of open and personal learning, active learning and engagement, personal learning and network theories of learning. His work includes the development of a learning management system in 1998, the application of syndication to learning and podcasting in 2003, the development of a pedagogy of learning networks, or ‘connectivism’, in 2004, and the development of the world’s first MOOC in 2008. His newsletter, OLDaily, is one of the most widely read in the field, and he has given hundreds of talks in dozens of countries on six continents. See http://www.downes.ca for more.
0950-1000 hrs: Break/Transfer to Sessions

Time: 1000-1100 hrs
Session: #E1 – Short Communications: Social Media
Location: Hall 2, SECC
Chair:

1000-1015 hrs
#E1.1 (26128)
Engaging students in online discourse and international dialogue using Twitter: a Public Health experience

Annalisa Manca, University of Dundee, Medical Education Institution, Dundee, UK
Eleanor J Hothersall*, University of Dundee, Medical Education Institution, Dundee, UK
Sestini Piersante, University of Siena, Department of Medicine, Surgery, and Neurosciences, Siena, Italy

An online, interactive educational intervention was developed in 2012 (Manca A et al, AMEE2014) to teach Dundee medical students about Public Health issues during a flu outbreak. This intervention, re-developed and repeated in 2013 and 2014, was based on four scenarios to be discussed on Twitter. The latter experience involved Siena Medical School, with the purpose to facilitate international exchange between students. Over 5 days in November 2014, 355 first-year medical students (191 from Siena, 144 from Dundee) broadcasted 1634 tweets in total (714 from Siena, 920 from Dundee). Tweets were collected using a Google spreadsheet (https://tags.hawksey.info). Social-network and content analysis were performed to evaluate students’ engagement. The average number of tweets was 3.7 (95% CI 31.4-4.3) per Siena student and 6.4 (5.1-7.7) per Dundee student (p <0.0001). Dundee students mentioned other Twitter users more frequently (68%) than Siena students (39%, p <0.0001). A feedback questionnaire was sent to evaluate students’ perceptions of learning. 50% of the whole cohort reported that they had never used Twitter before. Nevertheless, 65-70% of the whole cohort agreed or strongly agreed that it had been useful for learning and that they would like to participate in similar activities in the future. Only 10% agreed or strongly agreed on the contrary. Although the interaction between the two communities of students was limited, results are encouraging. We conclude that Twitter is an engaging tool, suitable to promote collaborative learning among medical students from different countries.

1015-1030 hrs
#E1.2 (25012)
Does Twitter Enable Participants at Medical Education Conferences to Engage in Higher Order Thinking Skills?

Nathan Bugden, St. Joseph’s Health Centre, Medical Education & Scholarship, Toronto, Canada
Ali Jalali, University of Ottawa, Faculty of Medicine, Ottawa, Canada
Jerry Maniate*, St. Joseph’s Health Centre, Medical Education & Scholarship, Toronto, Canada

Background/Purpose: Organizations develop a social media presence for a variety of reasons, one of which is engaging their audience (Neiger, et al., 2013). As medical educators, we have slowly begun adopting this process. This gap is the basis for trying to understand how twitter can enable medical education conference participants to use higher order thinking skills.
**Method:** Tweets were identified from the Canadian Conference on Medical Education (CCME) 2014 to construct a representative sample. The tweets were restricted to include only English tweets and no retweets that took place during the first two days of the conference. Using Bloom’s Digital Taxonomy as the basis for analysis the tweets were categorized using the following taxonomies: Remember, Understand, Apply, Analyze, Evaluate, and Create. Any images and/or links were included in the categorization.

**Results:** Of the 894 tweets that were categorized, nearly three quarters (73.65%) of the valid tweets (n=702) were either remembering or understanding; the lowest levels on the structure of cognitive processes. However, the higher order taxonomies (Analyze, Evaluate, and Create) accounted for approximately one fifth of the tweets (19.37%) and were exhibited more during keynote presentations. This might suggest that medical educators are using twitter for higher order thinking skills when contested questions are posed in their field.

**Conclusions:** Although this study is limited to the scope of one medical education conference, it offers a unique insight into how social media is being used. Higher order thinking skills can be exhibited in 140 characters or less, the question is how we can ensure our connections curate our own higher order thinking. However, we must not discount how social media enhances our ability to remember and understand as this offers building blocks for higher order thinking skills.

**1030-1045 hrs**

## #E1.3 (25890)

**Digital distraction in the classroom: Does multi-tasking hurt?**

Walaa Fedda, Qassim University, Pharmacology, Unaiza, Saudi Arabia  
Azzam Al-Kady, Qassim University, Unaiza, Saudi Arabia  
Manal Al-batanony, Qassim University, Buraydah, Saudi Arabia  
Abdulla AlGhasham, Qassim University, Saudi Arabia  
Mohammed Saqr*, Qassim University, Saudi Arabia

**Introduction:** In today’s connected world, almost all students own a smart device connected to the internet, and a significant number of them use it during the classroom (multi-task). The aim of this study was to study the extent of the phenomena, the reasons for usage, student’s awareness of possible distraction and correlation with their performance and final grades, and how do they see teachers’ reaction to it.

**Methodology:** All students (396) of the College of Medicine were anonymously surveyed using paper based survey. The survey included questions about frequency of using smart devices, applications used, the reasons, frequency of using e-learning during class and at home, and student’s score in last course, as well as his GPA and suggestions to deal with the phenomena.

**Results:** Most of the students 95% use their smart devices during classroom, 58% check the e-learning portal, 49% take notes, 26% chatting and back channeling. 28% Check social networks (e.g. Facebook, twitter, Instagram) and 33% check social networks occasionally. A boring lecture would significantly lead to more usage as to 62% of students. 45% of students think that multitasking affects their attention during the lecture, and 44% think it negatively affects their performance and final score; these students had slightly lower grades. Interestingly 25% of the students said it has a positive effect on their final score, However their mean GPA was average compared to the rest (P=0.02). They were equally divided as how the teacher should do to students using their device during the lecture.

**Conclusions:** Multi-tasking is almost a universal phenomena, with no direct correlation to students’ overall performance as measured by their GPA, however; it is still a rapidly evolving challenge that necessities further study and relevant action.

**1045-1100 hrs**
Facilitating international dialogue in medicine: combining Medical English and Social Media in Mallorca

Jonathan McFarland*, Freelance Medical English Coach, Medical Education Institution, Palma de Mallorca, Spain
Annalisa Manca, University of Dundee School of Medicine, Dundee, UK

Social Media tools are becoming ubiquitous in Healthcare and Continuing Medical Education. But what happens when doctors are not familiar with these tools, nor are native English speakers? How can they successfully be part of an international dialogue in medicine? The project is aimed at helping Spanish-speaking doctors develop fluent English skills through the combination of clinical English sessions and workshops on the use of Social Media. It includes a series of workshops, which are planned to help doctors based in Mallorca (Spain) become confident in applying their English skills to effectively network with international colleagues through the use of social media, while becoming active members of an international community of interest in medicine and medical education. This is an action research project. The educational aims described above lead the development of the research design. Methods include questionnaire survey, interviews and focus groups. Results from the focus groups, interviews and survey will be presented and discussed together with the implications for the educational framework and socio-cultural dynamics. Social media have the potential to become both a catalyst for clinical English skills and a tool that can facilitate and improve their development. We will discuss whether, and how, this educational strategy impacts on learning, how it changes the “information landscape” (Lloyd 2010), and whether and how it influences the inclusion of clinicians in the international community of healthcare professionals. Our aim is to improve doctors’ knowledge of clinical English and social media to benefit their professional lives.

Time: 1000-1100 hrs
Session: #E2 – Short Communications: Virtual Patients
Location: Alsh 1, SECC
Chair:

Virtual patients: A qualitative content analysis of descriptions

Inga Hege*, Ludwig-Maximilians-Universität, Institute for Medical Education, Munich, Germany
Andrzej Kononowicz, Jagiellonian University, Institute for Medical Education, Krakow, Poland

Background: Virtual patient (VP) is an umbrella term for different types of E-learning activities ranging from case descriptions with limited interactivity to complex scenarios in virtual realities. Therefore the aim of researchers has been to develop a typology or classification of VPs to Examples are among others studies by Cook et al., Huwendiek et al. or Kononowicz et al. applying different methods to develop a classification schema. The aim of our project was to determine which aspects are used by healthcare researchers and educators to describe VPs.

Summary of work: We conducted a literature review to determine educational articles using the term "virtual patient" in the title or abstract. We extracted all definitions and descriptions of virtual patients and performed a qualitative content analysis applying a data- and experience-driven coding frame.
**Summary of results**: We extracted and included 184 descriptions of VPs from 375 educational articles from 1991 until 2014 into the analysis. The coding frame is based on the following categories: Technology, VP form, navigation, characteristics, resources, competency, purpose, challenges, user, integration, and adoption. In addition the publication year was included. We will highlight interesting findings of our analysis.

**Discussion & Conclusion**: Our analysis shows how healthcare educators describe virtual patients. We believe that these results give an additional input for the further elaboration of classification schemata and thereby help to develop a clearer understanding and communication about the different types of VPs.

**Take-home message**: Due to the existence of very different VP types, it is indispensable for educators and researchers to carefully describe their VP to avoid misunderstandings.

1015-1030 hrs  
**#E2.2 (26900)**  
**Virtual patient systems: a literature-based inventory**

**Julia Küfner**, Klinikum der Ludwig-Maximilians-Universität München, Institut für Didaktik und Ausbildungsforschung in der Medizin, Munich, Germany  
**Andrzej A. Kononowicz**, Jagiellonian University Medical College, Department of Bioinformatics and Telemedicine, Krakow, Poland  
**Inga Hege**, Klinikum der Ludwig-Maximilians-Universität München, Institut für Didaktik und Ausbildungsforschung in der Medizin, Munich, Germany

**Background** Virtual Patients (VPs) are commonly used in medical education. Many different kinds of VPs exist ranging from simple text-based patient cases to complex 3D-world scenarios. Former reviews focused on VP instances but not on the software systems explicitly.

**Summary of work** We systematically searched databases for papers on VPs mentioning the use of software systems streamlining the production, display and maintenance of VPs. The focus of the review was on systems to design interactive patient scenarios for case-based learning using interactive multimedia.

**Summary of results** The literature review revealed 51 VP systems. The majority was developed in the USA, followed by UK and Germany. The most common mentioned platforms were: Web-SP, Open Labyrinth, Casus and Campus. We accessed available demos and identified different concepts and interface elements like navigational structures; tools for question, reasoning and feedback support; digital roles and variations in content representation.

**Discussion** We discovered a large list of available VP systems in literature. For most of them only limited information was available. It remained unclear how many are still in use. The inventory is now base for establishing common features and design pattern of VP systems by a series of online-interviews with system developers.

**Conclusion** The review showed a great variation in VP system design. This study contributes to a better overview of the possibilities of this class of systems to inform choices made by medical universities.

**Take-home messages** VP systems are a distinct and increasingly populated class of e-learning tools which requires systematization.

1030-1045 hrs  
**#E2.3 (25989)**  
**Visual analytics in branched virtual patients**

**Andrzej A. Kononowicz**, Jagiellonian University Medical College, Department of Bioinformatics and Telemedicine, Krakow, Poland  
**Natalia Stathakarou**, Karolinska Institutet, Dept. of Learning, Informatics, Management and Ethics, Stockholm, Sweden  
**Anne H. Berman**, Karolinska Institutet, Center for Psychiatric Research, Stockholm, Sweden
Background: Visual analytics is an emerging discipline employing human cognitive abilities to recognise visual patterns in analytical tasks. Branched virtual patients (VPs) enable acquisition of clinical reasoning skills by simulating clinical scenarios with outcomes depending on the learners’ choices. The application of visual analytics to improve VP design is innovative and tools for this task have been lacking.

Summary of work: A software tool was designed to export log data from the VP system OpenLabyrinth and visualise learners’ pathways in navigational graphs within the VUE editor. The tool was used at Karolinska Institutet in analysis of two branched VPs in a massive open-online course (MOOC) on Behavioural Medicine.

Summary of results: The prototypically implemented tool visualises in greyscale, varying size of nodes and labels in the graphs for the most frequently visited paths through the case. Regions of fading interest and the most challenging choices are also easily recognisable.

Discussion: With the advent of MOOCs using embedded VPs for clinical reasoning practice, the need arises for visual analytics tools that display large datasets at their best advantage. We hope this will contribute to better e-learning resources adapted to the needs of the learners.

Conclusions: The developed tool extends open-source e-learning authoring software to graphically present learners’ activities in VPs. It helps to pinpoint stronger and weaker elements of the evaluated case structure.

Take-home messages: Visual analytics provide feedback on learners’ choices within VPs to facilitate a better case design. VP authoring tools can be extended to support visual analytics tasks.

1045-1100 hrs
Discussion

Time: 1000-1100 hrs
Session: #E3 – ePosters 1
Location: Alsh 2, SECC
Chair:

1000-1005 hrs
#E3.1 (28201)
Design of a virtual environment to support group activities in a postgraduate Medical Sciences Programme: When a little more is much better

Renata B. R. Giaxa, University of Fortaleza, Coordinator for Curriculum Development and Evaluation, School of Medicine, Fortaleza, Brazil
Henrique L. C. SA*, University of Fortaleza, Vice-President of Undergraduate and Academic Affairs, Fortaleza, Brazil
Jeova K. B. Colares Colares, University of Fortaleza, Dean of the Graduate Programme of Medical Sciences, Fortaleza, Brazil
Olivia A. A. C. Bessa, University of Fortaleza, Head, Centre for Medical Education, Fortaleza, Brazil

Online activities are important for delivering content, collaboration and facilitating students’ assessment. In a Masters degree Programme in Medical Sciences, where students are overloaded with course activities besides their own professional work, could a virtual classroom add too much load to their academic job? We conducted an elective 32 hours discipline in Principles and Practice of Health Professions Education and introduced a Moodle-based environment in a week format
aiming to reinforce live activities with video summaries of presentations, supplemental reading and to drive collaborative assignments through a shared online space. Facilitators intervened for feedback and support. Nineteen students were enrolled. An average daily time per student online was 46.3 minutes [3.2-137.4]. Highest average periods were reported in weeks involving assignments’ due dates (63.1 minutes, [18.2-165.5]). Participation in forums was consistent, with an average of 3 posts per week. Qualitative assessment evidenced that the environment provided real support for students and stimulated discussions. Students reported satisfaction with online work, especially because it would become impossible to enable face meetings. The online environment was effective to enhance learning and engagement in the discipline. The different features available within the system (forum, video capabilities and sharing tools) can be utilized to achieve students’ contribution to the subject. Time devoted by faculty to prepare and conduct the activities increased at least four times. If your discipline requires a high degree of reflection and collaborative work involving an already overburdened group of students, do not hesitate: go online.

1005-1010 hrs
#E3.2 (28027)
Development of an online 'On-Call' environment

Carwyn Watkins*, Royal Devon and Exeter Hospital, Exeter, UK

Newly qualified doctors take on many responsibilities they did not have to face as medical students. The ‘on-call’ shift exacerbates these challenges, requiring a doctor to make frequent and often difficult decisions under significant time pressure. Simulation may allow both the clinical and non-technical skills required as a doctor to be developed in a safe environment. Most simulations in current use are focused on an individual case. This project aimed to take a more integrated approach in developing a hospital wide ‘on-call’ simulator within a 2D web browser. The ‘on-call’ is simulated through the receipt of ‘bleeps’ at regular intervals containing a brief handover outlining a common clinical task. Students can navigate to each of these scenarios in any order they wish. Within each case the focus is on management; the student is asked to record in the patient notes, prescribe appropriately, and to choose what (if any) escalation they will make. At the end of the ‘on-call’ their management of each case can be compared side by side with an exemplar, together with further discussion of the key topics raised and links to further information. Responses to the scenarios are databased allowing analysis of how the quality of answers changes over time. As the platform is introduced in the teaching of senior medical students, this database together with other qualitative methodologies may be used to improve the simulator and build a more complete picture of its role in helping with the transition from student to doctor.

1010-1015 hrs
#E3.3 (28055)
Show and TEL: What would a national on-line Technology Enhanced Learning community look like?

Alan Ryan*, Health Education England, London, UK
Bryn Baxendale, ASpiH, London, UK
Emma Scales, Health Education England, London, UK
Susan Kennedy, Health Education England, London, UK
Richard Price, Yorkshire Ambulance Service, Leeds, UK
Julia Moore, Health Education England, London, UK

Background: Technology Enhanced Learning (TEL) encompasses e-learning, mobile technologies, and simulation-based education resources. There is no overall cohesive or co-ordinated system for
accessing existing resources, applying them in different educational contexts, or developing and sharing new resources.

**Summary of work:** We analysed users’ needs for such a resource by purposefully sampling a cross section of healthcare academics, professionals (from hospital and community based clinical specialties), managers, educationalists, and representatives of other stakeholder NHS organisations. This involved hosting healthcare education working groups, stakeholder focus group sessions and conducting a national survey to identify key requirements/expectations of potential users of such a ‘TEL Hub’.

**Summary of results:** Any hub needs to be more than a simple repository. There was an enthusiasm for ‘crowd-sourced’ resources from higher education, NHS and commercial sectors that could be uploaded by developers/creators whether individual or an organizational. Peer rating/review was seen to be key regarding quality. Linking/signposting to other existing repositories, portals, and online communities of practice was seen as crucial.

**Discussion and conclusions:** Users currently are frustrated by the slowness, inefficiency and cost of producing and accessing high quality educational resources and support for TEL across a range of modalities. There is an appetite for innovation, collaboration and co-design of resources; for an easily searchable ‘hub’ that helps in accessing existing materials and highlighting those of the highest quality as judged by users in a transparent manner.

**Take-home messages:** A national TEL hub needs to enable people to deposit, find, sample, co-design, experience and feedback on a wide range of technologies and techniques in healthcare education.

1015-1020 hrs
#E3.4 (26701)

The Development of an Educational Training Package incorporating the Anterolateral Ligament into Standard Knee Anatomy using Cadaveric Dissection and Digital Reconstruction

*Craig Humphreys*, University of Glasgow, Life Sciences, Glasgow, UK
*Daniel Livingstome, Glasgow School of Art, Digital Design Studio, Glasgow, UK
*Paul Rea, University of Glasgow, Life Sciences, Glasgow, UK

**Background:** Medical education and surgical approaches are constantly evolving to remain in touch with recent advances. Recently, the anterolateral ligament (A.L.L.) was “discovered” as a distinct ligamentous structure from the knee capsule. This project aimed to incorporate the A.L.L. into an educational training package utilising both cadaveric dissection and digital reconstruction.

**Summary of work:** Detailed cadaveric dissection was carried out to identify the A.L.L. This was captured using digital photography. Using this imagery, an accurate model of the A.L.L. was developed using widely available software. Following the creation of the A.L.L. model, it was incorporated into a series of animations showing movement of the lower limb. The model was then incorporated into a 3D interactive application bringing the A.L.L., and related knee anatomy into the digital age.

**Summary of results:** The 3D interactive model of the lower limb allows the A.L.L. to be visualised. Four separate animations were created illustrating the ALL’s function naturally and post injury. The 3D interactive application has a high degree of interactivity with an inbuilt multiple-choice quiz allowing users to test their anatomical knowledge. There is also the option for users to view dissection images of the A.L.L. and enhance their knowledge on this new area of anatomy.

**Conclusions:** This project has created a novel educational training package that allows the users to build on their existing knowledge of the knee by incorporating recent research.

**Take-home message:** This project incorporates recent research into a novel educational training package for healthcare professionals of knee anatomy.
Development of e-learning material with GBS (goal-based scenario) as a preliminary learning of multitasking training for new nurses

Yoshikazu Asada*, Jichi Medical University, Medical Simulation Center, Tochigi, Japan
Shigeki Tsuzuku, Kumamoto University, Graduate School of Instructional Systems, Kumamoto, Japan
Katsuaki Suzuki, Kumamoto University, Graduate School of Instructional Systems, Kumamoto, Japan
Hiroshi Nakano, Kumamoto University, Graduate School of Instructional Systems, Kumamoto, Japan

Health workers often have to decide priority on the fly and provide medical services. The training for such situation with on-the-job is so risky that training with simulation become popular in these days. However, simulation training needs not only time and place but also the human resources such as instructor or operator of the simulator. It is not realistic to do all training with only by simulation. In addition, simulations are not best way to teach some kinds of learning outcomes such as intellectual skills, and the training should be designed as blended learning. In this research, the objective is to make improve the multitasking simulation for new nurses with e-learning material. The e-learning was designed with goal-based scenario (GBS) approach and developed for teaching intellectual skills as a scaffolding for simulation based training. GBS is developed by Roger Schank. Learners study the skills through playing the “role” and accomplishing the “mission” in the e-learning scenarios. This learning style is so similar to the simulation that GBS is suitable for the blended learning with simulation. The learning material is developed with moodle. Some nurses who educate freshpeople in the hospital advised as subject matter experts to make scenarios. As a result of formative evaluation of the e-learning, although there are points to be improved such as the number of stories or the behavior of the e-learning system, it is expected to improve the framework of the multitasking training by developing effective and efficient e-learning materials with GBS for learning scaffolding.

What are good web courses made of? Quality evaluation in the Virtual University for Occupational Health Care

Lena Selänne*, University of Helsinki, Faculty of Medicine, Clinicum, Department of Public Health, Helsinki, Finland
Marianne Rytkönen, University of Eastern Finland, Faculty of Health Sciences, School of Medicine, Public Health and Clinical Nutrition, Kuopio, Finland

The Virtual University for Occupational Health Care (VUOH) is a collaborative effort of five medical faculties in Finland and the Finnish Institute of Occupational Health. It offers training for about 800 physicians specializing in occupational health and their 350 tutor physicians. VUOH offers over 50 courses in Moodle learning environment, varying from guided eLearning and blended learning to self-study and case-based courses. Quality control is an ongoing process in VUOH. A quantitative study was made to explore the quality of the courses. About 40 quality criteria were defined based on pedagogical literature and the structure of Moodle. The criteria were divided into administrative, technical and content questions. Altogether 15 tutored and 10 self-study courses were evaluated by the criteria using three-point scale. The tool for evaluation was made as a quiz in Moodle. The results showed that in about 85% of the courses the information about the authors, the course summary and keywords were well defined. In more than 75% of the courses attention should be paid to the information about response time of the tutors, assessment criteria and response to feedback. More instructions to the tutor physicians are also needed. The results will guide the
strategic choices of VUOHC. In the future the evaluation tool can be used by teachers to guarantee the quality. It will further be developed in workshops where teachers, tutors and other users will work together on quality matters. A quantitative analysis and an easy tool helps to enhance the quality of web courses.

1030-1035 hrs
#E3.7 (26351)
Developing generic online courses in research methods for health

Debbi Marais*, University of Aberdeen, Applied Health Sciences, Aberdeen, UK
Amanda Lee, University of Aberdeen, Applied Health Sciences, Aberdeen, UK

We have developed an online PgCert in Research methods for health, which includes four 15-credit courses which each run for 12 weeks. An induction course has also been developed to introduce students to the learning environment. The courses and PgCert aim to introduce quantitative and qualitative methods in a health research context to enable students to critically appraise the literature and design effective and relevant healthcare research projects. The courses allow for flexible learning which is essential for clinicians working full time and wanting to study for specialisation or CPD purposes. The e-learning provides flexible learning utilising innovative teaching and assessment methods as well as engagement with a diverse range health care professionals and international networking opportunities. Students will develop and apply essential methodological research skills, improve academic writing and IT skills, enhance their employability and become more competitive in securing external funding.

1035-1040 hrs
#E3.8 (27527)
Exploration of the instructional design and usability of the student e-module on challenges in prescribing completed at the University of Dundee: an exploratory case study

Aoife McCloskey*, University of Dundee, Dundee, UK
Gillian Cruickshank, University of Dundee, Dundee, UK
Barclay Goudie, University of Dundee, Dundee, UK
Susan Law, University of Dundee, Dundee, UK
Fiona Muir, University of Dundee, Dundee, UK

Background: Prescribing is an essential skill. The General Medical Council states medical students should prescribe effectively and safely (GMC 2009). During their GP placement, 5th year medical students at the University of Dundee complete an e-module on prescribing challenges in primary health care. Launched in October 2014, it aims to develop a student’s skill at prescribing using a virtual GP surgery and genuine clinical scenarios. Instructional design and usability are shown to have an important impact on learning from an e-module with the perceived quality influencing learner engagement (Clark & Mayer 2008; Hahne 2005). One study determined only 29% of UK medical students thought they were competent at prescribing with many considering teaching insufficient (Heaton 2008). Ensuring existing resources are well-designed is vital in encouraging learner engagement.

Summary of work: Fifteen semi-structured qualitative interviews were conducted with students, university staff interested in e-learning and university/NHS staff experienced in teaching prescribing. Navigation, colour and accessibility were some areas under investigation. A thematic analysis was performed.

Results: Results pending and will be available at conference.
Discussion: This pilot study will inform further qualitative work; thereby aid the development and evaluation of learning resources and their impact on prescribing.

Conclusions: Results may deepen understanding of how aspects of design and usability influence learner engagement thus helping determine if this prescribing e-module is adequately designed. Future developments of the e-module may be highlighted.

Take-home messages: Evaluation of user perceptions about e-module design and usability is an integral part of the process of learner resource development.

1040-1100 hrs
Discussion

1100-1130 hrs – Networking Coffee Break

Time: 1130-1230 hrs
Session: #F1 – Short Communications: Online Learning 3
Location: Hall 2, SECC
Chair:

1130-1145 hrs
#F1.1 (25464)
“A stroke of genius”: Student-led redesign of an online educational activity

Eleanor Hothersall*, University of Dundee, Dundee, UK
Lewis Huges, University of Dundee, Dundee, UK
Annalisa Manca, University of Dundee, UK

Background and Purpose: A series of online, discourse-based educational sessions, named and tagged #fluscenario, were developed in 2013 as part of teaching for the first year Respiratory block at the University of Dundee undergraduate medical school. Although pedagogically successful[1], student feedback was ambivalent and there was pressure to alter the sessions or cede the timetable space to more successful interventions. Consequently, a student-centred approach[2] was taken to redesigning the sessions.

Methodology: A third year student who had previously completed #fluscenario undertook a complete review of the sessions, which included feedback received and learning objectives. Following this and supplementary research into social media use in outbreaks[3], the sessions were completely redesigned. Where the previous format had been four one-hour sessions run through Twitter, the structure was now:

1. Seminar: Introduction to flu, pandemics and their clinical impact
2. Small group session: Introduction to social media (twitter) for medical education
3. Live Twitter chat on Flu Epidemics
4. Face-to-face debrief

Results: 117 students from Dundee participated in the twitter chat, plus 45 students from an Italian University (Siena). Social network analysis (SNA) and content analysis showed no significant difference between the 2014 and 2013 experiences. Responses from student feedback were significantly improved, with the majority of students reporting both enjoying and learning from the experience.

Discussion and Conclusions: A student-centred revision of this intervention created a truly blended approach, which helped students to see the real world context and wider applications. This is reflected in the positive feedback received.

References:
Engagement is considered to be an important aspect of successful eLearning resources, along with other aspects such as flexibility and relevance. In medical education, the extent to which eLearning assists students to integrate foundational knowledge within clinical contexts is also considered to be an important aspect. Of these aspects, engagement can be the most difficult to measure. Research from the field of human-computer interaction suggests that engagement can be broken down into a number of separate dimensions (e.g., O’Brien and Toms, 2008). Building on this, a thirteen-item instrument was developed and piloted in three contexts: 1. online case-based learning for second-year students, 2. online case-based learning for fifth-year students, and 3. online-mediated reviews of simulated patient interviews for fourth-year students. In the first two contexts, the instrument was administered as an online form, and in the third as a paper-based form. The instrument asked students to rate their agreement with statements relating to engagement, relevance and integration of foundational knowledge within clinical contexts on a 5-point Likert scale. Students were highly tolerant of the instrument, with response rates ranging from 82% for the online form to 100% for the paper-based form. Group sizes ranged from 20 to 285 students. Variation in response patterns suggests the instrument is sensitive to different dimensions of engagement and relevance. Though early in development, this instrument appears to be a simply administered and discriminative measure of engagement in medical eLearning. Future research will more thoroughly investigate the psychometrics of the instrument.
conviction as academics was that the traditional lecture, face-to-face delivery of content would be perceived to be more useful by the students. However, these findings do fit in with the current literature around student engagement with lectures and the increasing uptake of newer technologies in the education environment. Students find both face-to-face and online content useful but the quality of the resource is important in their evaluations.

1215-1230 hrs
#F1.4 (28314)
E-learning blended with didactic modes of instruction: gaps in knowledge patched at one’s own pace

Sarmishtha Ghosh*, MAHSA University, Physiology, Kuala Lumpur, Malaysia

E-learning provides control over learning sequence and pace, allowing the learners to meet their personal learning objectives. The aim of the study was to find out the perception and improvement of performance in medical students in their preclinical phase after an e learning module. Specific topics under system blocks for semester 1 and semester 4 students were provided as e-learning package Packages, posted on the University student server. The multimedia used included texts and diagrams, interactive sessions, video clips, self-assessment questions and the evaluation was done in the subsequent tutorial classes. A self-structured questionnaire was used to assess the perception and attitude of the students and a 10 question MCQ was used to check performance. Response rates were 75% for sem 1 and 80% for sem 4. Students varied in their way of making use of resources which ranged from casual browsing regularly to systematic study in depth until concepts are clear. Almost all rated e-learning resources to be definitely of value. Interactive exercises, videos and animations were appreciated by both groups with sem 4 students liking them better in comparison of sem 1 students. The scores of MCQ showed significantly higher value with 80-85% students scoring more than 65%. Freshers may not be as competent as their senior counterparts in handling e resources since the school education do not support self-learning. However, with proper directions medical students in their preclinical years may become capable of utilizing the benefits of e-learning. E-learning needs to be blended with didactic teaching and PBL for improvement of understanding of core concepts of physiology under an integrated curriculum.

Time: 1130-1230 hrs
Session: #F2 – Short Communications: Management of eLearning
Location: Alsh 1, SECC
Chair:

1130-1145 hrs
#F2.1 (28024)
A sustainable public-private business model for international veterinary e-learning that works

Mark Johnston, Vetstream, Cambridge, UK
Nick Short*, Royal Veterinary College, London, UK

The WikiVet (www.wikivet.net) project has received significant support from funding agencies to create a veterinary educational resource that now has a large international student following. However, like many government-funded e-learning projects, it has faced the challenge of developing an independent and sustainable business model. To ensure its long-term viability, WikiVet has opted to establish a public-private partnership. This involves a collaboration with Vetstream, one of the
largest commercial providers of online veterinary content. This arrangement is based on WikiVet continuing to provide free educational content for students which is now complemented by clinically focused resources provided by Vetstream. The attraction of this collaborative model is that all users continue to have free access to the WikiVet site. Through the partnership, student users can now also access the Vetstream content at no cost. Graduates and institutions are still required to pay for a Vetstream subscription but WikiVet now receives a commission for these referrals. Initial research demonstrates student use of these combined resources continue to grow in the UK. Importantly, the tiered World Bank pricing model which adjusts the costs of Vetstream subscriptions according to the economic prosperity of each country, has also helped to support veterinary education in the developing world too. As a consequence of this collaboration both parties have been able to build their user audiences, grown their income streams and expanded their content collections. WikiVet has also been able to maintain its commitment to provide free access to resources and maintain its editorial independence.

1145-1200 hrs
#F2.2 (25300)
Technology Enabled Learning at LKCMedicine: A Double Helix Inspired Conceptual Model

Paul Gagnon*, Lee Kong Chian School of Medicine, Singapore
Preman Rajalingam, Lee Kong Chian School of Medicine, Singapore

The Lee Kong Chian School of Medicine (LKCMedicine), a partnership between Nanyang Technological University (Singapore) and Imperial College London (UK), welcomed its inaugural cohort of 54 students in August 2013. Central to our mission was the focus on innovation to create a seamless integration of technology, curriculum and pedagogy. Our teaching and learning ecosystem evolved through the purposeful interaction of technologists, educators and clinicians who focussed on the design and delivery of a student-centered pedagogy. This has spawned the expression of a unique educational ‘DNA’ which expresses in three sets of teaching and learning ‘genes’: 1. Self-Directed Learning, 2. Collaborative Learning, and 3. Feedback. The resulting model translates across disciplines and learning technologies. In our presentation, we will unfold our ‘double helix’ and reveal how technology, resources, activities, support and assessment bond to create the requisite conditions for a ‘learning renaissance.

1200-1215 hrs
#F2.3 (27073)
Perceptions of eLearning for undergraduate health professional education: A systematic review

Emma Keeling*, Imperial College London, Department of Public Health and Primary Care, London, UK
Josip Car, Imperial College London, Department of Public Health and Primary Care, London, UK
Jose Marcano Belisario, Imperial College London, Department of Public Health and Primary Care, London, UK
Živa Cotič, Imperial College London, Department of Public Health and Primary Care, London, UK
Kristine Rasmussen, Imperial College London, Department of Public Health and Primary Care, London, UK
Nikos Papaxristou, Imperial College London, Department of Public Health and Primary Care, London, UK

There is a global shortage of both trained healthcare workers and educators due to migration and lack of adequate training. The result is a growing interest in eLearning as a means to increase access to healthcare education. This work is part of a large systematic review evaluating the effects of
eLearning versus traditional learning, commissioned by the World Health Organisation. This presentation will discuss one aspect of the study: The advantages and disadvantages of eLearning.

**Aim:** To provide insight into the perceived advantages and disadvantages of eLearning, from both learner and education provider perspective.

**Methods:** A systematic review following Cochrane collaboration methodology. Studies comparing eLearning or blended learning versus traditional methods in undergraduate students studying health-related university degrees were included. Qualitative assessment was made of all reported advantages and disadvantages.

**Results:** 109 studies met the criteria. Advantages discussed in 88, disadvantages in 42. Flexibility and ease of access were the most commonly reported advantages and lack of student-teacher interaction and isolation the most common disadvantages. Active participation and feedback may contribute to better learning outcomes and eLearning may provide particular advantage to lesser able students requiring more time. For educational providers, potential advantages included reduced ongoing costs, scalability and improving curricular consistency. The main disadvantage is the cost of the initial setup.

**Discussion:** Analyses of advantages and disadvantages may allow identification of areas in which eLearning is most beneficial; enabling institutions to focus their development of eLearning and avoid investment in areas where traditional teaching would be more effective.

1215-1230 hrs
Discussion

**Time:** 1130-1230 hrs
**Session:** #F3 – ePosters 2
**Location:** Alsh 2, SECC
**Chair:**

1130-1135 hrs
#F3.1 (26214)
E Learning: Virtual support for ‘hands on’ clinical skills

**Thomas Heathcote**, Lancashire Teaching Hospitals NHS Foundation Trust, Clinical Education Team, Preston, UK
**Paul Brophy**, Lancashire Teaching Hospitals NHS Foundation Trust, Blended Learning Team, Preston, UK
**David Leech**, Lancashire Teaching Hospitals NHS Foundation Trust, Blended Learning Team, Preston, UK
**Adrian Hawtin**, Lancashire Teaching Hospitals NHS Foundation Trust, Blended Learning Team, Preston, UK

As clinicians we have all been there, the trembling hand of the medical student or student nurse trying to steady the needle during their first attempt of venepunture or cannulation. To truly master essential clinical skills such as these, there comes a point where the learner must bite the bullet (or grasp the sharp). What therefore, is an appropriate use of information technology in the support of learners to develop these highly practical, real world skills? And how can we integrate such resources as educators? In an attempt to answer such questions; in order to revamp our core clinical skill pathways. A collaborative partnership between our Clinical Education and Blended Learning teams was developed, with the goal to create robust and supportive clinical skill pathways with the integration of appropriate and innovative E Learning solutions. In doing so we aimed to provide a more engaging, highly accessible educational experience for learners and as a result, promote and
support the highest standards of patient care. At this stage of development the approach is currently being used to transform teaching and assessment of clinical competencies, and has been developed with professional experts in subject areas such as: 12 Lead ECG, Cannulation, IV Medication Administration, Sepsis/Blood Cultures and Venepuncture. The initial pilot groups have provided very encouraging feedback, the first wave of deployment showing positive signs that a blended approach will have a massive impact in supporting teaching and development of essential clinical skills at Lancashire Teaching Hospitals NHS Foundation Trust.

1135-1140 hrs
#F3.2 (26412)
Microlectures: effective and simple didactic tools to explain complex concepts

Mathijs Doets*, Erasmus MC, Desiderius School, Rotterdam, Netherlands
Mary Dankbaar, Erasmus MC, Desiderius School, Rotterdam, Netherlands
Bob Zietse, Erasmus MC, Department of internal medicine, Rotterdam, Netherlands

Background: In the first year of the Erasmus University medical curriculum the anatomy and physiology of the kidneys are covered. In the past, some of the more complex topics were explained several times by the professor, during lectures, in small group sessions or on online discussion boards. By creating and distributing microlectures, the explanations can be viewed by students as often as they want. We evaluated the use and perceived value of the microlectures among first year medical students.

Summary of work: Over a 2 year period, 25 videos were recorded. In each lecture, a concept was explained by the professor in 3 to 5 minutes, only supported by a whiteboard. The videos were distributed through YouTube and Blackboard. 161 students (total = 450) completed an online questionnaire with statements on a 5 point scale (5=positive end) and viewers’ statistics were analyzed.

Summary of results: 69% of the students watched all microlectures, most views were directly before the written exam. Students felt the videos were very useful (mean=4.7, SD=0.5) and understood the concepts better after viewing. The format (length, quality of video and audio) was rated positively. Some videos were watched more than others, the number of weekly views ranged from 20 to 600 times.

Conclusions: Students strongly appreciate simple microlectures, explaining complex concepts and mostly use them to prepare for exams.

Take-home messages: Short, ‘talking head’ microlectures with simple drawings are a useful and cost-effective didactic tool to explain complex concepts to students.

1140-1145 hrs
#F3.3 (26477)
Diginatives or not? Medical students stumble with mobile learning skills

Teemu Masalin*, University of Helsinki, Faculty of Medicine, Helsinki, Finland
Eeva Pyörälä, University of Helsinki, Hjelt Institute, Helsinki, Finland
Kalle Romanov, University of Helsinki, Department of Public Health, Hjelt Institute, Helsinki, Finland
Heikki Hervonen, University of Helsinki, Department of Biomedicine, Anatomy, Helsinki, Finland

Background: All incoming students in 2014 were provided with iPads as a part of our ongoing mobile learning strategy. Information and Communication Technology (ICT) Driving License is a mandatory course to ensure that all students have necessary ICT skills for their studies. The iPad project brought up new demands in ICT teaching.
Summary of work: To help the students acquire versatile iPad skills, we offered in-class meetings, a Moodle online course, iPad guides, instructional videos and low-threshold Pop Up sessions. Students (N=172) were asked to evaluate their iPad skills in the beginning of their studies and three weeks later (N = 172) at the end of the ICT course. In the questionnaire 20 skills were surveyed with a Guttman scale.

Summary of results: The proportion of students mastering basic iPad skills, e.g. installing and using applications (92% before/95% after), using internet (93%/94%) and e-mail (91%/90%) was quite high. Several iPad skills that are needed to study effectively rated initially much lower. Downloading course materials (56% before/91% after), copying documents from computers (49%/72%), sharing study materials (40%/68%) and annotating course materials (82%/86%).

Discussion and conclusion: Most of the students were already fluent in basic PC-computer skills. However, not all were diginatives. Using tablet device effectively in studies requires more than basic computing skills. iPad skills were inadequate for many, but improved considerably during the course.

Take-home message: Even though many students are already using mobile devices, it is important to consider and promote the skills needed in studies.

1145-1150 hrs
#F3.4 (27942)
Students and teachers collaborating on content: using a social network aggregation tool for self regulated learning

Jasper Hollenbeek Brouwer*, University Medical Centre Groningen, Educational Institute, Groningen, Netherlands

Background: In order to help students become motivated, critical academic thinkers, able to find their way in this age of rapid developing information, the Medical University of Groningen introduced a social network aggregation tool.

Summary of work: A social network aggregation tool, Flipboard, was presented to all 400 first year students. Both students and teachers are active in uploading feeds from (medical) websites, to ‘online magazines’, ranked by medical topic.

Summary of results: The majority of students is looking for structured information, telling them exactly what to do (‘the consuming student’) to pass their exam. Students find it challenging not to have a tight frame and actually need to search for relevant information themselves. A small group of both teachers and students (8-10) work on a specific online magazine on intramural care for over 5 months now, successfully recommending each other relevant new articles every week. This way of working saves time and helps everyone involved to update their knowledge.

Discussion and conclusions: A questionnaire on 166 first year students learned that the majority feel they first need to be trained as an academic thinker, before they take the step to actually do their own (online) research on relevant sources. Students are positive about the fact that a social network aggregation tool is used in their curriculum.

Take-home messages: All Students use social media in everyday life. Using a social tool as a formal information tool in the curriculum seems logical to do. Training in academic thinking is key.

1150-1155 hrs
#F3.5 (27972)
An experiment on collaborative web-based learning – An elective course on medical education for medical students

Kati Hakkarainen*, University of Tampere, Medical School, Tampere, Finland
Juhani Jääskeläinen, University of Tampere, Medical School, Tampere, Finland
**Background**: To answer the students’ demand for a medical education course and opportunities for peer-teaching, an elective web-based course “Learning, Teaching, Facilitating” was offered for 26 students in the 4th and 5th study year (clinical stage).

**Summary of work**: The web-based course was organized on an Eliademy® platform that allows forming of multiple discussion groups and insertion of various multimedia formats. The platform is easily accessible also with mobile devices. The goals, approaches and schedules of the course were discussed and agreed on with the students at the beginning of the course in a face-to-face meeting. The course consisted of six rounds of tasks and group discussions. The students used their newly gained knowledge and skills in planning a practical peer-teaching event for the first year students and will execute it in the fall term 2015 as their course assessment event.

**Summary of results**: The students discussed on line reaching conclusions and reforming groups under teacher mentoring. A graphical presentation of their discussion groups will be shown. The students constructed their ideas on teaching and facilitating learning from their own experiences as learners. The facilitating teachers reacted to the ideas rising from the group discussions and distributed pertinent publications on the platform.

**Discussion and conclusions**: Web-based collaborative learning was a rewarding experience for both the students and teachers. Tampere medical school utilizes integrated PBL curriculum. The self-directed tradition of learning may in part explain the success of this collaborative web-based learning experiment.

**Take-home message**: Successful collaborative online learning occurs when learners are self-directed and facilitating respects that.

- **1155-1200 hrs**
  - #F3.6 (25660)
  - Use of E-learning quizzes by medical students

  **Joachim Neumann, Martin Luther University Halle-Witten, Pharmacology, Halle, Germany**  
  **Benedikt Kunstler, University Halle-Witten, Pharmacology, Halle, Germany**  
  **Ulrich Gergs, University Halle-Witten, Pharmacology, Halle, Germany**  
  **Joachim Neumann, University Halle-Witten, Pharmacology, Halle, Germany**

  We used used e-learning tools to improve the curriculum in pharmacology for medical students. We designed multiple choice questions as a study aid. These were given as 15 test groups, each test comprised of 8 to 12 questions. The questions were made available to students via the content management system Stud.IP and the learning management system ILIAS. We made 15 separate tests available to students at the start of each semester and monitored via ILIAS the first access to the tests. We cumulatively summed up student usage of each of the 15 tests. In the winter term 2011/12 only prior to the mid-term exam and prior to a final exam the usage of ILIAS increases. In the week when test 1 was made available, it was only used by six students. The usage increased gradually and made a step from 102 to 219 users (of 236 potential eligible users) just prior to the final test. In contrast, in winter semester 2012/13 usage peaked for test 1 to 145 users just prior to the mid-term exam and reaches its maximum with 185 (of 256) right before the final exam. Furthermore, in winter semester 2013/14 only 60 (of 186) eligible users took test 1. In summary, usage of multiple choice tests might be a sensible teaching tool. It is, however, probably only used if the questions are not widely exchanged between students. Moreover, we hypothesize that it is only used by students if they see an immediate benefit for their test performance.

- **1200-1205 hrs**
  - #F3.7 (27629)
  - The acceptability and effect on knowledge of a paediatric virtual patient tutorial
Introduction: Considerable resources are invested into creating virtual patients (VPs). To justify their usage VPs must attract interest from students and promote learning.

Method: A Linear-branching VP was constructed using Articulate Storyline for an undergraduate paediatric curriculum. 34 students completed the VP before their fourth year clinical attachment in paediatrics in a tutorial with an E-learning fellow. Prior to and after completing the VP-case 21 students were assessed on their ability to identify appropriate history components, examinations and clinical guidelines. All students completed a satisfaction questionnaire of the tutorial.

Results: Satisfaction in the paediatric VP tutorial was high, with students enjoying (82%) and feeling actively engaged in the tutorial (85%). Most students found the case challenging (82%) and clinically realistic, with clinical reasoning skills also being utilised (88%). Most students thought the VP alone would be useful for their future learning (76%). There were significant increases in knowledge of the paediatric history (56% to 98% correctly identified from 5 items; p<0.001, t=9.1) and interpretation of a clinical scenario to select the correct examination (54% to 100%; p= 0.015) and paediatric guideline (8% to 85%; p=<0.001).

Discussion and conclusion: This tutorial encouraged students to engage in the use of VPs. It had high levels of satisfaction amongst the students, and the VP in this context also increased knowledge and challenged reasoning skills.

Take-home message: VP tutorials represent a suitable method of utilising VPs. Further studies will aim to address the retention of knowledge gained.

1205-1230 hrs
Discussion

1230-1240 hrs – Break/Transfer to Plenary Session

Time: 1240-1330 hrs
Session: #P3 - Closing Debate
Location: Hall 2, SECC
Chair:

What is the true value of eLearning?
David Cook (Mayo Clinic, USA) and Natalie Lafferty (University of Dundee, UK)

Time: 1330-1345 hrs
Session: #P4 - Report of AMEE-MedX Hackathon Outcomes
Location: Hall 2, SECC
Chair:
1334-1400 hrs  Closing remarks

1400 hrs – Close of eLearning Symposium