



HEA STEM Conference 2018: Creativity in Teaching, Learning and Student Engagement

Posters: 1 February 2018

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Group A

Can new digital technologies support student retention and engagement?

Dr Antonio Peña-Fernández, Senior Lecturer in Biomedical & Medical Science, Dr Michael J. Randles, Lecturer, Dr Chris Young, Lecturer, Dr Natruedee Potiwat, Lecturer and Dr Avninder S. Bhambra, Lecturer (De Montfort University)

Poster

Session A1: 10:30-11:15 on 1 February 2018

Student retention requires proactive intervention and is pivotal in enhancing student satisfaction and progression. The literature suggests that effective interventions should provide students with the necessary skills to become independent learners. We implemented a range of interventions that were successful in enhancing retention in our BSc Biomedical Science (BMS) programme at De Montfort University (DMU). We are also creating a e-learning environment, named DMU e-Biology, that underpins the fundamental concepts of human biology and biochemistry delivered in AS and A levels (AQA, 2017) and BMS level 4 modules. This resource also provides interactive case studies to encourage self-learning and autonomous work and will be publicly available on the DMU website. The availability of this resource prior to students starting their course may enable earlier engagement and improve student retention. Our interventions and resources, which will be explained in the poster, could be easily adopted in any human health science programme.

Testing the field: Trans-disciplinary learning in an unfamiliar environment

Miss Rachel Kelly, Senior Lecturer, Annie Carpenter, Artist and Dr Sam Illingworth (Manchester Metropolitan University)

Poster

Session A2: 10:30-11:15 on 1 February 2018

Testing the Field was a transdisciplinary field trip, designed to bring together students from both the School of Art and Faculty of Science and Engineering.

"[The project] is the second of hopefully many art/science pedagogic research experiments" says Annie Carpenter, associate lecturer at Manchester School of Art and founder of the project. "We hope to form an established and ongoing collaboration between the faculties and explore the mechanics of a cross-faculty unit being incorporated into the regular curriculum. Testing the Field hopes to build on the successes and failures encountered."

Testing the Field consisted of a trip to Middlewood Ecological Trust with 20 students from across the two faculties. The students took part in workshops in poetry, experimental sound recording, and ikebana, amongst others.

Rachel Kelly and Sam Illingworth were invited along by Annie Carpenter to run workshops using the Japanese practices of Ikebana and Haiku to explore interdisciplinary collaboration and to promote new learning discussion and reflection amongst staff and students.

The efficacy of a new style of laboratory-based learning

Miss Catriona McAllister, PhD student, Dr Eric Yao, Lecturer and Dr Pedro Parreira, Lecturer
(University of Glasgow)

Poster

Session A3: 10:30-11:15 on 1 February 2018

Undergraduate laboratory teaching is an integral part of any science degree. Huge amounts of effort and resources are devoted to this, often with uncertain effectiveness. We have introduced a new style of laboratory experiments focusing on improving students' understanding of concepts and topics in an immersive first year Physics course, the details of which will be presented in a separate paper. Here we are presenting a comparative study of the efficacy of this new laboratory teaching format. We compared student performance in formal examinations on specific topics and conducted student surveys. Students performed better in the subset of questions testing concepts relating to the experiments. The introduction of the new laboratory design further enhanced this bias. Data from the surveys also show that students perceive the labs as helpful in furthering their understanding. Our result shows that this new approach is effective and can transform laboratory teaching and students' learning experiences.

Quizzes as a pedagogical tool to facilitate teaching and enhance learning: An example from Psychology

Dr Elisa Carrus, Lecturer at London South Bank University

Poster

Session A4: 10:30-11:15 on 1 February 2018

The aim of this project is to describe an example of using VLE quizzes when teaching statistics to UG psychology students. Besides describing how the quizzes are used, it evaluates the data in terms of: impact on learning; increasing student engagement and enhancing student experience; facilitating student engagement with feedback. Furthermore, the project considers issues around flexible learning, diversity, and future implementations in light of limitations with formative assessments.

Standardise not sterilise: The use of introductions to dissection classes as a means of standardising teaching and clarifying expectation

Mr Luke Welsh, Deputy Director of Anatomy at Keele University

Poster

Session A5: 10:30-11:15 on 1 February 2018

This poster will outline the action research that I carried out over the 2016-17 academic year which focussed on an area in which I am closely connected – anatomy dissection classes. Utilising an action research (AR) approach I have scrutinised teaching of year one medical students using the setting of anatomy teaching at Keele University. The subject being scrutinised is a novel introductory resource that is used to preface year one practical anatomy dissection classes. The motivation for this research came from a desire to tackle potential issues concerning tutor variability with a student resource. Two cycles of data were generated for this research as well as a pre-reflection utilising existing school-generated quality assurance (QA) data. The data featured both staff and students involved in the teaching of anatomy and was analysed through a mixed methodological approach. Likert-style data was generated along with free-text

data that underwent theme analysis. Staff underwent semi-structured interviews, which were analysed using auto-ethnographic and thematic methods. Results revealed interesting stories as to how the introductions are utilised by staff and students as well as indicating how they may have affected the equity of teaching in these classes.

Student experience of patchwork assessment in a postgraduate public health policy module

Mrs Gayle Davis, Programme Director & Lecturer in Environmental & Public Health and Mr Alastair Tomlinson, Senior Lecturer in Environmental & Public Health (Cardiff Metropolitan University)

Poster

Session A6: 10:30-11:15 on 1 February 2018

Patchwork assessments can integrate formative, self and peer assessment within the learning process, improve authenticity and inclusivity, and promote assessment for learning rather than assessment of learning.

This poster details an evaluation of the student experience of using patchwork text in a postgraduate public policy module. The main evaluation themes include student views on the process, context and perceived impact on the outcome of the assessment.

The process was positively received and largely successful in achieving the objectives of the module and patchwork assessment. Students observed that the role of peer feedback needed greater promotion & emphasis and patch submission timings needed to be reviewed in context of assessment deadlines across the programme.

Improving essay writing skills: Comparing the effects of written and verbal feedback in Animal Biology undergraduates

Dr Ashley Le Vin, Lecturer at University of Glasgow

Poster

Session A7: 10:30-11:15 on 1 February 2018

Feedback is essential for student learning as it allows students to reflect on previous work and consider how to make future improvements. Written feedback allows students to take their time digesting the feedback, and can be used reflectively. However, students sometime struggle to understand written feedback from staff if it is not clearly written. Verbal feedback, although less well studied, can increase student confidence in their coursework and may foster greater staff student relationships.

This talk aims to investigate the perceptions of Level 3 Animal Biology undergraduates to two types of feedback, written and verbal, given for an essay writing exercise to them. Feedback collected from students was used to ascertain if one type of feedback is deemed more helpful than the other. Additionally, I investigated if staff feedback was easy to understand and if students felt more confident approaching staff for feedback in the future.

The dissertation writing retreat

Dr Emily Harrison, Lecturer in Psychology and Dr Panagiotis Rentzelas, Senior Lecturer in Social Psychology (Birmingham City University)

Poster

Session A8: 10:30-11:15 on 1 February 2018

As a final year module, the dissertation is key to the student experience as well as NSS results. Key themes that emerged from student feedback indicated that experience of the dissertation module could be improved through careful engagement with supervision and feedback, and further guidance and support with the final project. The dissertation writing retreat is an example of innovative practice for improving the student learning experience, addressing areas of student concern by providing a structured day away from campus with workshops, dedicated free writing time, supervision, and the provision of learning resources. Student feedback demonstrates that the event was well received by students, helping them to feel part of a community of student researchers. Feedback indicates that students found the event enjoyable, informative and inspiring, and that they left the event feeling confident and enthusiastic about their projects.

Supporting successful transitions into and out of taught postgraduate study

Dr Nicolas Labrosse, Senior Lecturer, Ms Jessica Bownes, Effective Learning Advisor, Dr Gayle Pringle Barnes, International Student Learning Officer and Dr Maria Jackson, Senior Lecturer (University of Glasgow)

Poster

Session A9: 10:30-11:15 on 1 February 2018

The successful growth in postgraduate taught (PGT) students in many UK universities has illustrated the need to focus on a distinct student journey: the challenging transition into and out of PGT study. We present findings from research that investigates University of Glasgow students' experiences of a range of transitions. We find that actions to support successful transitions to PGT study will have more impact if they are focused on improving online support at all stages of the student journey; facilitating the development of a PGT community; and encouraging independence. We'll start with a general presentation of the project aims and the context. We'll then discuss the main results of the project. In the Q&A part the audience will be able to comment on the challenges and difficulties faced by PGT students during their transitions to postgraduate study, and share good practice on specific approaches to address these issues.

Using Problem-based Learning for a medicinal chemistry practical course – “the power of the virtual client”

Dr Katja Strohfeltdt, Teaching and Learning Dean; Associate Professor in Pharmaceutical Chemistry at University of Reading

Poster

Session A10: 10:30-11:15 on 1 February 2018

Problem-based learning (PBL) initially was developed in medical schools as a format for self-directed learning and to acquire problem-solving skills. It significantly differs from other learning approaches, where students are equipped with knowledge prior to the exercise. There are limited examples of a PBL approach being used to teach a large-size chemistry or science practical class at the university level.

In this paper, we report on the design of a novel medicinal chemistry-based practical class that uses PBL creatively based on the “the power of the virtual client”.

The objectives are:

- to introduce a new and creative approach to problem-based learning (PBL) used in a medicinal chemistry practical class for pharmacy students;

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- to develop a design that addresses typical issues found in PBL approaches, such as high staffing needs and the time-consuming aspect of feedback;
- to learn tips and tricks how to implement this pedagogic approach into large classes.

Group B

Openly licensed, peer reviewed textbooks

Dr Rebecca Pitt, Research Associate, Dr Rob Farrow, Research Fellow and Dr Beatriz de los Arcos, Research Associate (Open University)

Poster

Session B1: 10:30-11:15 on 1 February 2018

Open educational resources (OER) offer creative possibilities for STEM teaching, from widening access to materials to supporting student transition to university. One form of OER in particular, open textbooks, can offer better value for students and wider flexibility for academics. In North America, use of openly licensed textbooks, such as OpenStax, that are free to download or available in low-cost print versions, has grown tremendously and reduced education costs for students. This poster will illustrate how openly licensed STEM textbooks, available in many core science subjects, can meet the myriad needs of teachers and students. It will provide information about the Hewlett Foundation-funded UK Open Textbook project (UKOpenTextbooks.org) involving The Open University (UK), University of the West of England (UWE), WonkHE, OpenStax and Open Textbook Library. Our collaboration aims to reduce study costs for students and encourage lecturers to explore open pedagogies that can facilitate inclusive and more equitable study opportunities.

Does video feedback and peer observation offer a valid method of reinforcing oral presentation training for undergraduate biochemists?

Dr Timothy Simpson, Teaching Associate at University of Nottingham

Poster

Session B2: 10:30-11:15 on 1 February 2018

This poster aims to summarise the findings of a recent study into how training in oral presentations and communication skills can be enhanced for first year undergraduate biochemistry students at the University of Nottingham. During the 2016/2017 academic year, the new intake were offered the chance to have their oral presentations (a summative assessment in the 1st year Core Skills course) visually recorded for self-analysis and as an aide memoir for future assessments. In addition, students were tasked with peer assessing one another to provide feedback from sources of similar ability. Both were in addition to the traditional written assessor feedback. The veracity of this modified approach was assessed via staggered surveys during the course. The results from this study will help influence the School of Life Sciences' approach to teaching this critically important skill set to our students.

The benefits of a press release coursework for undergraduates

Dr Gwen Hughes, Associate Professor, Dr Ben White, Assistant Professor and Dr Daniel Wilkinson, Assistant Professor (University of Nottingham)

Poster

Session B3: 10:30-11:15 on 1 February 2018

Students today are faced with increasing academic challenges including the development of appropriate transferrable skills, science communication and their awareness of evolving employability opportunities. To introduce the need to tailor and adapt scientific communication styles and to simultaneously enhance career awareness, Media Relations colleagues presented a seminar on 'The Role of Media in Science' to year 2 BSc (Hons) Medical Physiology & Therapeutics students. The students were then tasked with comprehending the findings of a scientific paper published by a Divisional research group and communicating these as a press release suitable for the general public. The subject area was unknown to the students and had not been previously studied. Furthermore, the coursework had to fulfil the University Media Relations instructions for press releases. Feedback showed this exercise was challenging but beneficial in numerous ways which will be outlined in this poster.

Core self-evaluations are positively associated with student satisfaction but not academic performance

Dr Martin Jones, Senior Lecturer at University of Exeter

Poster

Session B4: 10:30-11:15 on 1 February 2018

Researchers have shown that core self-evaluations (CSE), a broad psychological trait that encompasses an individual's subconscious, fundamental evaluations about themselves, their abilities and their own control, can predict job satisfaction and job performance. Specifically, people with higher CSE report higher satisfaction and performance than people with lower CSE. The purpose of this study was to consider whether CSE predicted satisfaction and performance in higher education. 165 (female = 39) first year undergraduates completed measures of CSE at the start of a sport psychology module. At week six (mid-module), we asked them to rate their satisfaction with the course. Finally, we took their final module grade (based on a two multiple choice exams) as a measure of performance. We examined the direction and magnitude of the relationship between CSE and satisfaction and CSE and performance in the module. We also explored whether satisfaction mediated the relationship between CSE and performance.

Enhancing the accessibility of active learning in Engineering using virtual laboratory technology

Dr Mike Knowles, Senior Lecturer at University of Sunderland

Poster

Session B5: 10:30-11:15 on 1 February 2018

Laboratory experiments play a fundamental role in engineering education. For a range of social, economic and environmental reasons, accessing this part of engineering training can be difficult or impossible for some students. Virtual laboratories have been designed to fill this gap by providing an alternative method of instruction in laboratory experimentation. Virtual experiments are simulations that model physical experiments in terms of the potential for students to explore the behaviour of both the components under test and the simulated test equipment – a critical part of the learning experience for engineering students. This poster describes a system which is designed to support this type of active learning experience in a low cost, offline fashion that does not require extensive software installation or live internet connectivity. The structure and operation of the software and a technological and user evaluation are also presented.

Ensuring an effective Engineering HE provision for contemporary STEM engaged applicants

Mr Dave Knapton, Principal Lecturer at University of Sunderland

Poster

Session B6: 10:30-11:15 on 1 February 2018

It is not only the fact that today's applicants to higher education are of the millennial generation that sets them apart. For many higher education students embarking on STEM programmes, they do so with a far greater experience and exposure across the STEM sector. The poster presents work which forms part of a wider study which focuses on Engineering Pedagogy and how HE provision for Engineering must adapt to remain effective for the contemporary student.

The poster explores not only the current situation of the skills gap, but also the positive trends over the past four years which indicate a soon to be increasing number of graduates emerging from higher education with engineering degrees. Reasons for this encouraging trend are also explored together with possible answers as to how Engineering Pedagogy in the HE sector must adapt to remain effective.

Integration of blended learning into face-to-face teaching

Dr Katarzyna Sypek, Teaching Associate and Mr Howard Ramsay, Learning Enhancement Manager (University of Strathclyde)

Poster

Session B7: 10:30-11:15 on 1 February 2018

The aim of the project was to consider the potential for improvement of student engagement and satisfaction through incorporation of online delivery methods of delivery into a face-to-face course. The idea was to incorporate one week's learning material into a Virtual Learning Environment (Moodle "Lesson") and test if this type of activity could be successful in the teaching of full-time students.

The main outcome of the project was that while the majority of respondents liked the Lesson, when asked if they preferred this kind of delivery in comparison to traditional lecture only around half responded 'Yes' to the question. One of the main reasons expressed for liking the Lesson was the aspect of flexible learning (own time, pace, place) while the main reason for not preferring the Lesson was lack of direct contact with, and guidance of, the lecturer as well as the requirement to read considerable amounts of material.

STEM For All: Promoting post-primary inclusivity using Robotics

Mr Thomas Lavery, Connecting STEM Teachers Programme Coordinator (Royal Academy of Engineering), Mrs Catherine O'Donnell, Research and Impact Manager, Widening Access and Participation and Mrs Anne Mooney, Access Officer for Community Engagement (Ulster U

Poster

Session B8: 10:30-11:15 on 1 February 2018

The VEX Robotics' Challenge is an all-inclusive STEM programme and competition which has been delivered by the Connecting STEM Teachers Programme of the Royal Academy of Engineering and Ulster University to young people from a diverse range of post-primary schools since 2015. It is currently running for the fourth time.

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Upon joining the programme schools are given a VEX Clawbot kit to build and practice controlling within STEM clubs at school. Additional research, activities and reports related to the application of robotics and career pathways are encouraged. Participating schools are then invited to come together in an annual competition event.

Use of a hand-held gaming platform to teach object-oriented programming to embedded systems students

Dr Craig Evans, Teaching Fellow and Dr Alexander Valavanis, University Academic Fellow (University of Leeds)

Poster

Session B9: 10:30-11:15 on 1 February 2018

Embedded systems development is a core skill required of electronic engineering graduates. Historically, these systems have been programmed using low-level procedural languages such as C. However, modern platforms are better able to exploit the power and flexibility of object-oriented languages such as C++. Object-oriented programming (OOP) is known to be a difficult concept for students to grasp and as such, an effective pedagogy for engaging students is required. Using games design to teach OOP is not a new idea. This approach is typically done on a desktop computer, but here we adapt it and apply it to embedded systems development. In our approach, students design and assemble a hand-held gaming platform. They then learn the core concepts of object-oriented software development by creating an arcade-style game. We have found that the tangible nature of the platform engages students and makes it easier to understand and apply OOP concepts.

How to make the most of individual and teamwork Peer-Assessment

Dr Cristina Mio, Teaching Associate and Dr Vitor Magueijo, Teaching Associate at the University of Strathclyde

Poster

Session B10: 10:30-11:15 on 1 February 2018

Peer assessment (PA) has been successfully used as a formative and summative tool in the Chemical and Process Engineering department of the University of Strathclyde. PA has been used in a variety of classes and contexts:

- in peer-marking of individual weekly homework tasks using the Moodle workshop tool;
- in assessing individuals' contributions in laboratory group reports.

The session will focus on the advantages and disadvantages of using peer assessment as a formative and summative tool. The first part of the session will address the peer marking of individual homework tasks while the second part will discuss the use of PA tools to split laboratory group report grades into individual weighted grades. The session is targeted to lecturers and tutors involved in the teaching of STEM subjects, and the aim is to provide guidelines on how to implement peer assessment in large classes, i.e. classes with more than 100 students.

Group C

Using coaching to enhance Nursing students' work based learning

Mrs Diane Daune, Senior Lecturer - Work Based Learning at University of Central Lancashire

Poster

Session C1: 10:30-11:15 on 1 February 2018

This poster provides an overview of the use of coaching to enhance UCLan student nurses work based learning within the implementation of Collaborative Learning in Practice model (CLiP). The presentation includes examples from a range of Health Service Clinical Learning Environments, including acute care, high dependency and mental health services.

This poster will give examples of:

- How to use coaching as an educational tool to enhance students' work based learning experiences;
- How to use the Concern, Anticipations, Resources, Enact (CARE) model (Daune and Dunbar 2017) in day-to-day work based learning;
- How to embed coaching in the real life clinical learning environments.

Investigation into the use of a decision tree in histology practical sessions

Dr Rachael Quinn, Teaching Fellow at Keele University

Poster

Session C2: 10:30-11:15 on 1 February 2018

This project aimed to investigate how students can be helped to apply their knowledge in a content-heavy subject. Students were provided with a decision tree to encourage them to ask informed questions when identifying an unknown tissue in histology practical classes. In addition, students were provided with worked examples using the decision tree, and quizzes to test their understanding and provide immediate feedback. These resources resulted in improved test scores, both formative and summative, in addition to improved confidence. Developing the skills necessary to allow students to apply their knowledge is a responsibility of educators in higher education, and this combined with opportunities for testing and timely feedback create a suitable environment to foster deep learning.

Context and problem-based learning in analytical Chemistry: Refining precious metals

Dr Daniel Belton, University Teaching Fellow at University of Huddersfield

Poster

Session C3: 10:30-11:15 on 1 February 2018

The development of active learning resources for teaching calibration methods in analytical chemistry, resulting from an industrial-academic collaboration, is presented. The resources support two distinct phases of student activity/learning. For the first phase, a scaffolded data analysis activity has been developed, which requires students analyse a data derived from a range of calibration approaches. Resources for this phase include a data analysis exercise and video tutorials. Students are walked through the analysis of data to determine the level of analyte concentrations using standard series, standard additions, internal standards and ion-selective

electrodes calibration. For the second phase, a context/problem-based scenario has been devised based on platinum group metal (PMG) refining. Students are required to use the calibration methods covered in the first phase to solve problems and guide decisions during the refining process. The aim of this contribution is to outline how the approach works and to highlight transferable elements of the teaching methodology.

Development of differentiated teaching resources and active learning environments to create a rich and immersive learning journey

Dr Daniel Belton, University Teaching Fellow at University of Huddersfield

Poster

Session C4: 10:30-11:15 on 1 February 2018

Differentiated resources and active learning environments have been designed and deployed to create a rich and immersive learning journey for students on a second year analytical chemistry module. Developments include video tutorials to explain key concepts; structured reading assignments to encourage autonomous learning; e-notes that complement and support learning in lectures; 'Peer Instruction' to encourage active participation during class time; and gamification using medals to indicate progress within a specific topic. Low stakes online tutorials have also been developed and deployed. These can be taken over and over again, with different combinations of questions presented for each attempt. Grades and detailed solutions are provided immediately on completion of the tutorial. This instant feedback and the ability to retake the tutorial enables students to correct misunderstanding and reinforce their learning through retrieval practice. Details of these developments and the effect on student learning are presented.

Fostering student engagement: A case study involving guest speakers, a student-led poster conference and E-portfolios

Dr Marie-Luce Bourguet, Lecturer at Queen Mary University of London

Poster

Session C5: 10:30-11:15 on 1 February 2018

This contribution draws on a case study, involving guest speakers, a student-led poster conference and the use of E-portfolios to foster engineering students' engagement and creativity. Three guest speakers, both academics and practitioners were invited to talk to students about design and creativity. Following this, the students organised a poster conference to showcase their work, at which two of the guest speakers actively participated. The aims were to provide a concrete context to the module's learning objectives, and to motivate engagement through direct interaction with practitioners. We also used students' E-portfolios, with four main objectives: support student collaboration, be formative, encourage engagement, and enable timely feedback. The aim of this contribution is to report on both the advantages and the limits of these three activities (guest speakers, student-led conference and E-portfolios) in relation to STEM students' engagement and creativity.

Careers in the Curriculum: Extending a successful model of primary and secondary school engagement to Undergraduate teaching.

Dr Carol Davenport, Director, NUSTEM and Mr Joe Shimwell, NUSTEM Primary Outreach Specialist (Northumbria University)

Poster

Session C6: 10:30-11:15 on 1 February 2018

Career destinations and employability statistics are becoming an important metric for universities. In this session we will explore the lessons that can be learned from the school sector about the value of embedding careers information into curriculum lessons.

Drawing on the experience of NUSTEM at Northumbria University in embedding careers-messages in the primary and secondary school curriculum, participants will consider how this approach is being extended into undergraduate teaching to raise students' awareness of future career options.

Enhanced student engagement through cross-disciplinary engineering undergraduate projects and peer-reviewed journal publications

Dr Nadimul Faisal, Lecturer in Mechanical Engineering, Dr Ghazi Droubi, Lecturer in Mechanical Engineering, Dr Sheikh Islam, Lecturer in Mechanical Engineering and Dr Ketan Pancholi, Lecturer in Mechanical Engineering (Robert Gordon University)

Poster

Session C7: 10:30-11:15 on 1 February 2018

This study presents the outcomes of key practices leading to an enhanced student engagement in modules related to project supervision (4th year individual, 5th year group, fast-track MEng industrial projects). The purpose of this work is to introduce the context, review, discuss contributions and provide a critical reflection upon practices. Overall the context is to study the impact of Robert Gordon University's (RGU's) undergraduate engineering project modules in enhancing student experience. The research include: (i) how to enhance staff's supervisory skills for students during their project supervision, (ii) how to assess the students' performance during their project execution stage, (iii) how to enhance the students' experience and expectation after project completion (i.e. post-project activities), and (iv) how to enrich the students experience through publications (conference/journal), and the impact of student's involvement in research publication on student's employability. It is concluded that the engagement with students enrich the overall pedagogical environment.

How to enhance student engagement through transforming assessment? A creative pedagogic approach.

Dr Bana Abdulmohsen, Teaching Fellow at Newcastle University

Poster

Session C8: 10:30-11:15 on 1 February 2018

Learning dental anatomy is fundamental for dental students. Traditional approaches strongly focus on lecture -based teaching. In attempt to foster the student interest in the subject content and to increase engagement through assessment and feedback, an active learning approach was developed in line with the principles of transforming assessment in HE (HEA frameworks 01- <https://www.heacademy.ac.uk/knowledge-hub/framework-transforming-assessment>). This involves

engaging students in a workshop to learn tooth morphology in three dimensions by carving teeth from soap, then following up with a formative assessment & feedback process. The assessment, using a grading matrix, includes (i)self-evaluation, (ii)peer review and (iii)staff assessment of the carved teeth. The matrix has all essential features required to learn and assess tooth morphology while assessing the carved teeth. This is an assessment for learning (Hattie & Timperley, 2007) that enhances the learning of tooth morphology and develops reflection skills in dental students to meet General Dental Council learning outcomes (GDC-2015:<https://www.gdc-uk.org/professionals/education>).

Can I see that again? The use of video-led workshops for effective teaching of technical topics in data analysis.

Dr David Martin, Lecturer at University of Dundee

Poster

Session C9: 10:30-11:15 on 1 February 2018

Technical topics can be hard to teach. Students assimilate information and develop understanding at different rates. In an instructor-led workshop the class proceeds at the pace of the slowest with a requirement that students keep up, and with increasing pressures on staff numbers and few TA's, the whole class has to wait whilst problems are solved. Students become bored, disenchanted and rapidly disengaged. Class sizes cannot scale or they become unmanageable.

I have pioneered the use of pre-recorded videos in such sessions. Each student becomes an independent learner. I will discuss the impact this has had on the student experience, the staff workload, and the quality of the relationship between the instructor and the students.

Group D

The use of video capture to support active learning

Dr Michael Elsdon, Senior Lecturer at Northumbria University

Poster

Session D1: 10:30-11:15 on 1 February 2018

The focus of this poster is the use of video recording to supplement the teaching of a level 5 Engineering module. It has been argued that the traditional lecture is an outdated mode of delivery which involves the lecturer imparting information to students on a particular topic. Whilst I am not sure I agree entirely with this, there is some truth in it. To overcome this, and make lectures more interactive, we will explore the use of video recording and ask if it can be used to encourage deep learning. The poster will provide some key thoughts on the benefits, challenges and opportunities for the use of video recording of lectures, together with student feedback.

STEMing the growth of Primary Science: Implications for Initial Teacher Education

Mrs Kelley Dockerty, Lecturer in Education (Science) at University of Hull

Poster

Session D2: 10:30-11:15 on 1 February 2018

The aims of this ITE case study presented as a poster is to exemplify how it is possible to enthuse pre-service teachers in planning creative cross-curricular opportunities for children to engage with the STEM subjects. It acknowledges the importance of developing the knowledge, skills and attitudes of both teachers and children as the main objective, so that they can utilise STEM skills in a range of contexts to support their success for life. Consideration of my own pedagogical approach in ITE training with a passion to provide students with hands-on practical experiences in planning and teaching, aims to reduce the gap between the confidence and competence of pre-service teachers.

The poster summarises the research and data that underpins the on-going need to develop knowledge and skills to grow the workforce and support the UK economy, addressing the skills gap particular the focus on attracting women through outreach activities to STEM careers.

Engaging students using digital tools in the Science practical laboratory

Dr Emma Jones, University Teacher at University of Sheffield

Poster

Session D3: 10:30-11:15 on 1 February 2018

Maintaining engagement in the practical Science laboratory can be challenging, especially with classes of 90-100 students. Additionally, if we are to prepare our students for careers in scientific research, we need to encourage independence and expose them to appropriate activities in our class practicals.

This poster will present our 'Digital Schedule', a tablet-based tool that we used as a guide for our practical classes. Students used it to access scientific articles, video tutorials, formative quizzes and manufacturers' protocols. We also designed a number of tablet-based activities that required students to engage with simple bioinformatics tools.

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We will also share our results from a questionnaire that sought to evaluate the effectiveness of our new digital learning resources. Students enjoyed the addition of the Digital Schedule and felt that it had helped their enjoyment, engagement and understanding of the practical classes.

Just Imagine....? Imaginary Numbers in the real world

Mrs Angela Lupton, HE STEM Co-ordinator and Dr Helen Southall, Senior Lecturer in Computer Science (University of Chester)

Poster

Session D4: 10:30-11:15 on 1 February 2018

Imaginary numbers are a critical part of the mathematical toolkit in many industries, from recording studios to computer design, and from medical imaging to engineering. They therefore form a key part of A-level and equivalent mathematics courses, as well as university courses in a wide variety of fields. However, they are based on abstract concepts that can be hard for students to get to grips with. This poster reports on an innovative approach to making imaginary numbers more accessible and understandable, making use of drama, history, music, and practical activities. This approach was trialled as a summer school activity at the University of Chester in summer 2016.

Industry-ready graduates through curriculum design

Mr Dave Allan, Course Tutor & Learning Innovation Leader and Mr Greg Rowsell, Course Manager (Harper Adams University)

Poster

Session D5: 10:30-11:15 on 1 February 2018

This poster explains the decisions and actions taken to produce a degree course which develops the technical ability required of an engineer, but also develops the confidence, self-belief and professional behaviours which are required for the graduate engineer to function within an industrial organisation. This can be described as the difference between 'knowing engineering' and 'being an engineer'. In order to deliver this dual requirement, a new approach to curriculum design was deemed necessary and the curriculum was developed from first principles using industry based process logic. This curriculum was developed using a pull-centric process-based model, which ensures that the programme is designed from the perspective of being a 'delivery process' having a combination of learning streams that are designed to achieve a series of capability outcomes.

What constitutes teaching excellence? An investigation into the perceptions of students and staff within the faculty of Science and Technology at the University of Westminster

Dr Maria Ashioti, Senior Lecturer at University of Westminster

Poster

Session D6: 10:30-11:15 on 1 February 2018

Teaching excellence has been a central topic of discussion in recent years with the introduction of the Teaching Excellence Framework (TEF), a measure of teaching quality in higher education institutions. However, the perceptions of staff and students as to what constitutes good quality teaching in the Faculty of Science and Technology at the University of Westminster has never been

investigated. This study aims to investigate these perceptions and determine whether the perceptions of staff and students align. This study also aims to investigate the factors that are believed to influence perceptions of teaching excellence as well as the perceived responsibilities of both staff and students to ensure quality teaching is delivered.

Overall, it was evident that teaching excellence is a very personal concept and that transparency and communication between staff and students is required to improve staff and student alignment and therefore the teaching provision and student satisfaction at the University.

Creativity: The challenge for Business Education and other disciplines

Mr Michael Schmidt, Academic Skills Development Tutor, Dr Andrew Hollyhead, Associate Professor and Mr Jon Curwin, Associate Professor (Birmingham City University)

Poster

Session D7: 10:30-11:15 on 1 February 2018

This poster will explore creativity and the ways in which it might be encouraged formally by a taught module or informally by recognition. Examples will be given from a Creative Problem Solving module being taught at Birmingham City Business School. The importance of assessment will be considered, particularly the use of digital stories. The poster will also consider how creativity can be fostered in at course level, formally and informally. An example will be given of how students using their own initiative have used 'WhatsApp' to support their studies.

Reflective Practices amongst Excellence Teachers through Dewey's Reflection Criteria

Ms Anoud Abusalim, Senior Instructor at American University of Sharjah

Poster

Session D8: 10:30-11:15 on 1 February 2018

This paper explores the findings of an empirical study about the reflective practices of four excellent teachers (two of them are in STEM fields) emphasizing the affective aspect of their reflective practices as articulated by John Dewey's in his books *How We Think* and *Experience and Education*. The paper starts by outlining the affective aspects of reflective practices according to Dewey. Then, the paper proceeds to identify the reflective practices of excellent teachers. Finally, the paper explores different ways in which reflective practices cultivate excellence in teaching.

The Understanding Knowledge, Curriculum and Student Agency (UK-SA) Project: insights from a participating department

Dr Daniel Belton, University Teaching Fellow at University of Huddersfield

Poster

Session D9: 10:30-11:15 on 1 February 2018

This contribution is framed from the perspective of one of four institutions from the UK and South Africa whose departments are participating in a project examining the relations between knowledge, pedagogy and student identity in Chemical Engineering and Chemistry undergraduate degree courses. The project is following the same cohorts of students as they progress through their programmes of study at two institutions in the UK and two in South Africa. Insights are emerging from a range of data sources, including face-to-face interviews. The long-term aim of the project is to understand how students' perceptions of their discipline change over the course of

their degrees; to examine students' views of engagement in terms of 'value and usefulness of what they are learning', 'level of integration into university life', and 'intellectual engagement with studies'; and to elucidate the relationship between the development of discipline knowledge and professional identity.

Engage or not to engage That is the question: Can the use of a peer feedback strategy improve engagement?

Tina Harvey, Lecturer at the University of Cumbria

Poster

Session D10: 10:30-11:15 on 1 February 2018

I designed a comprehensive strategy to introduce peer feedback to a small group of first year undergraduates. This consisted of four formative assessment sessions where students gave and received feedback on previously prepared written work linked to module summative assessment. Students were required to complete a feedback template of each other's work, which included referencing, sentence construction, grammatical structure and development of ideas.

Ostensibly these four sessions provided students with the opportunity of working alongside peers to develop written skills. However in reality the learning was much more; students were able to not only learn from each other, but also develop confidence in their own abilities, enhance their abilities to criticise in a constructive manner, and last but definitely not least develop researching skills.

This presentation will share the 'highs' and 'lows' of this project along with exploring the key areas identified for development in preparation of a follow-up study.