STEM Conference 2019
Conference programme

30 - 31 January 2019
Millennium Point, Birmingham

#STEMConf19

Delivering next generation higher education in STEM
Advance HE STEM Conference 2019
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30-31 January 2019
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Session abstracts

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Proposition 1
Oral presentation, Auditorium
Sometimes we're guilty of "silo teaching" – focusing on our specific subject alone. Doing so can be detrimental to student experience and also fails to reflect the realities of industry. Modern engineering is complex and interdisciplinary in nature. This presentation explores ways we can use project work to encourage students to work together in different disciplines and cross-pollinate knowledge, gaining real-world experience at the same time. Using a student-led space rocket programme we facilitated in summer 2018 as an example we explore the lessons learnt, the benefits seen, and encourage one and all to think about interdisciplinary ways of working in the future.

Session 4.1b: Peering up: A collaborative approach for teaching mechanical design to Chemical Engineering students
Ms Marsha Maraj, Imperial College London
Proposition 1
Oral presentation, Auditorium
This work examines the experiences of third year Chemical Engineering students studying the mechanical design of pressure vessels. A project-based learning approach allowed students to work collaboratively in teams. Preliminary findings show that a large percentage of students (>80%) felt that this collaboration strongly improved their understanding of mechanical design and contributed to a high academic self-efficacy across associated learning outcomes. Peer interactions throughout the module also led to enhanced transferable skills (notably team working). These results show that collaborative learning in Engineering education can produce more well-rounded graduate profiles; this is important given that engineers will routinely work in interdisciplinary teams to solve complex problems.

Session 4.1c: A structured approach to immersive, team-based, interdisciplinary learning
Mr Justin Siefker and Professor Eva Sorensen, University College London
Proposition 1
Oral presentation, Auditorium
The need for interdisciplinary learning is self-evident as engineers are increasingly tasked to envision, invent, and construct insightful solutions to Grand Challenges, which require evermore creativity and integration. A favoured approach for preparing engineers is immersing the learning experience with fundamentals applied to interdisciplinary practice, enabling learning through discovery of how theoretical concepts practically apply in complex, interdisciplinary scenarios. Unfortunately, preparing such experiences often necessitates educators completing similar journeys of discovery. We present a structured approach for developing and delivering immersive, team-based, interdisciplinary learning experiences to large cohorts, including preparing educators and teaching assistants.

Session 4.2a: How safe is your playground? Analysing soil in Scottish schools
Dr Debbie Willison, University of Strathclyde
Proposition 2
Oral presentation, Connect Event Space
The University of Strathclyde, in partnership with Scottish secondary schools, completed a year-long project, from August 2017 to September 2018, analysing soil samples taken from playgrounds across the nation. Students, primarily 11-13 years old, gained an understanding of Scotland’s environmental heritage and current environmental issues through carrying out their own research and considering this data in a national context. This session will explain how to successfully host a project of this nature and explore suggestions and ideas for delegates to consider in their own context. Benefits and challenges will also be discussed and sources of possible funding will be outlined.

Session 4.2b: Toxicology training to decontaminate environments affected by chemicals
Dr Antonio Peña-Fernández, De Montfort University, Dr Raquel Duarte-Davidson and Dr Stacey Wyke, Public Health England
Proposition 2
Oral presentation, Connect Event Space
Health professionals will be required to have some foundation knowledge in environmental toxicology to combat increasing morbidity/mortality indices due to environmental contamination. However, very little training in these specialised topics is delivered in Human Health Science degrees due to time and curriculum constraints. We have created a short training course that has shown to be effective in providing Pharmacy students with basic skills to tailor a complete protection, decontamination and restoration strategy for environments contaminated by chemicals. The web-based recovery tool to respond to chemical incidents developed by Public Health England would be an effective resource to provide this specific training.