Atelier Pédagogique International à Polytech Tours

Active learning as a means of increasing student engagement and learning

14 et 15/5/2019
Département Aménagement – Environnement de Polytech Tours – Salle 11
35 Allée F. de Lesseps, 37200 Tours

Résumé

Dans le cadre de leur réflexion sur les nouvelles techniques pédagogiques Polytech Tours et Bucknell University (USA) organisent un atelier autour de l’apprentissage actif (active learning) comme levier pédagogique auprès des étudiant-e-s. Cet atelier comprend trois modules dissociés :

- "Active Learning for Busy Skeptics" & "Active Learning with Just a Touch of Technology" (14/5 ; 9h-12h) ;
- "Teaching Backwards: Using Inductive Teaching to Promote Conceptual Understanding" & "Engineering Students Making Videos: Why and How" (14/5 ; 14h – 17h) ;
- "A Practical Introduction to Problem-Based Learning (15/5 ; 9h-12h) & "Designing Engaging Student Experiences with Campus MakerSpaces”

L’atelier est ouvert à l’ensemble des composantes de l’Université de Tours et sera animé par les Pr. M. Prince et M. Vigeant reconnus internationalement dans le domaine de la pédagogie.
Organisation

Nombre de participants : 25-30 max.
Langage : anglais
Matériel : prévoir ordinateur portable ou tablette connectée au réseau. Un polycopié sera transmis à chaque participant-e.

Inscriptions

Gratuite et obligatoire pour l’ensemble des collègues de l’Université de Tours sur
https://docs.google.com/forms/d/e/1FAIpQLScSckaIICCQ55_hl0oggocmdlCE4ritE2KajPH0FYNgWnyQLCw/viewform

Programme

Session 1 : 14/5/19 – 9h-12h
Active Learning for Busy Skeptics
Active learning has consistently been shown to be more effective than traditional instruction for promoting learning, motivation and student retention. Despite this overwhelming research support, instructors have a number of significant concerns about adopting active learning techniques in their own classes. Common concerns include worries about preparation time, content coverage and student resistance to new teaching methods. This hands-on session is designed to introduce quick and simple active learning techniques that are effective, require little preparation or class time, and which generate little or no student resistance.

Active Learning with Just a Touch of Technology
Active learning has been demonstrated to help student learning, engagement, and retention across STEM fields. While technologies such as smartphones and tablets aren’t required for active learning, there are ways to use these technologies to enhance what you can do with active learning. In this workshop, we’ll engage in several short, easy to use active learning techniques and how they can be integrated or enhanced by the devices students bring with them to class.

Session 2 : 14/5/19 – 14h-17h
Teaching Backwards: Using Inductive Teaching to Promote Conceptual Understanding
Instructors want their students to learn and remember the big ideas or concepts taught in their courses. However, research shows traditional instruction is not particularly effective for developing deep conceptual understanding. This workshop session introduces the idea of “teaching backwards” using inductive or inquiry-based teaching methods. Research shows this to be a much more effective approach to repair common and persistent student misconceptions – as well as for promoting a range of other important learning outcomes.

Engineering Students Making Videos: Why and How
Smartphones have put relatively sophisticated videography tools into the hands of more students than ever before. YouTube has hundreds of millions of users and is a source of instruction on topics from dishwasher repair to triple integration. For example, in 2015, 97% of US high school students used online resources, including video, for learning. Students can meaningfully contribute to this body of video knowledge by sharing what they learn in engineering while building their skills in this important communication medium. In this workshop, we’ll examine several types of technical assignments leveraging student-created media (conceptual learning, project pitching, and outreach), go through the minimal tool set for decent video, and finally shoot our own video as a demonstration.
A Practical Introduction to Problem-Based Learning

Most instructors want to develop their students’ ability to solve practical, realistic problems of the sort found in the real world. Despite that, instruction typically emphasizes textbook examples and homework that has little to do with the types of problems encountered outside of the classroom. This session offers a practical introduction to Problem-based learning or PBL. PBL is a form of inductive teaching that introduces students to realistic, open-ended problems and uses those problems to drive the desired course content and theory. Research shows that PBL is more effective than traditional teaching for a broad range of educational outcomes. It can also be a fun, dynamic and engaging way to teach.

Designing Engaging Student Experiences with Campus MakerSpaces

“PBL” can stand for a number of things: Project-, Problem-, or Product-based learning. What all of these approaches have in common is a student-centered, inductive approach that mirrors problem-solving as experienced in industry and research. PBL can be paired with student access to campus maker-spaces to become a powerful approach for student problem-solving. In this workshop, we’ll consider the research basis for these approaches and take a step-by-step approach to designing a new activity for one of your classes that leverages “making” as an approach to empower PBL.

Biographie des intervenants

Mike Prince is a professor of chemical engineering at Bucknell University. He is the author of over 100 education-related papers for engineering faculty, with a particular focus on active and inductive teaching strategies. His current research examines the use of inquiry-based activities to repair persistent student misconceptions in thermodynamics and heat transfer as well as how to increase the diffusion of research-based instructional practices in both academic and corporate settings. Dr. Prince is a director of the National Effective Teaching Institute, a national workshop for engineering faculty held several times each year. Since 2000, he has also directed a teaching workshop at Bucknell University entitled “How to Engineer Engineering Education” for a national audience of engineering faculty. In 2005 he received the ASEE Mid-Atlantic Section Outstanding Teaching Award, was honored in 2008 with Bucknell University’s Lindback Award for Distinguished Teaching and in 2010 he received the Hutchison medal from the Institute of Chemical Engineers. In 2012 he was appointed to be the Rooke Professor in Engineering and achieved the rank of Fellow of the American Society for Engineering Education in 2016. He travels extensively to deliver teaching workshops on active learning and instructional design to national and international audiences.

Margot Vigeant is Rooke Professor of Chemical Engineering at Bucknell University. Margot’s broad research area is effective pedagogy in engineering, including approaches to conceptual learning, inquiry-based activities for thermodynamics and heat transfer, and entrepreneurially-minded learning in engineering. She is also interested in “making” in engineering, using educational and online technology to broaden engagement and access, and games as learning tools. She has given numerous workshops and talks in these areas, including a 2019 webinar for the AIChE Education Division on engaging students with food-based examples. She teaches chemical engineering thermodynamics, applied food science and engineering, first-year engineering, and capstone design. Margot completed her doctorate at the University of Virginia (1999), and was recognized as their Outstanding Young Engineering Graduate in 2012. She is an Apple Distinguished Educator and chair of the 2021 ASEE Chemical Engineering Summer School.

Contact

E-mail : srodrigues@univ-tours.fr
Tel : 02 47 36 14 74