EPI•STEM Seminar Series

Friday 26th March 13h00 to 14h00,

Title of Talk: Designing Professional Development for Post-Primary Mathematics and Science Teachers: Two Different Approaches Stemming from an Out-of-Field Experience

Delivered by: Ciara Lane, Stephen Comiskey and Tracey O'Connell

Introduction: EPI*STEM has an established reputation for providing evidence, delivering solutions, and implementing programmes that build a talent pipeline for STEM graduates and teacher supply. In 2020, EPI*STEM was awarded performance funding from the Higher Education Authority (HEA) in recognition of our delivery of the Professional Diploma in Mathematics for Teaching (PDMT) and based on a review of Research Impact Assessment Case Studies submitted by all higher education institutions in Ireland. This HEA funding is being utilized for two projects; upskilling post-primary physics/science teachers and developing CPD resources for post-primary mathematics teachers.

Professional Development for Mathematics Teachers: The HEA Maths project will build upon the Centre's wealth of expertise and experience in upskilling mathematics teachers via the Professional Diploma in Mathematics for Teaching (PDMT). In particular, the project will involve adapting existing PDMT materials to produce high quality online CPD resources focusing on mathematical knowledge for teaching, and to conduct a research evaluation of this programme. The design of the professional development for post-primary Mathematics teachers draws on multiple theoretical models for mathematics teacher knowledge, teacher beliefs and motivation, and learning theories to form an overlapping conceptual framework. Using a design-based research (DBR) approach, teacher input and collaboration will play a key role in designing and developing online professional development resources for mathematics teachers. A database of existing online resources has also been generated.

Professional Development for Science Teachers: To be a qualified science teacher in Ireland a teacher must hold 60 credits in one science subject and a minimum of 10 credits in biology, physics and chemistry. However, research is beginning to show that general science teachers exhibit out-of-field like symptoms such as anxiety, lower levels of confidence and a lack of pedagogical diversity. This phenomenon is known as near-out-of-field or out-of-specialisation. This project sets out to determine whether second level science teachers demonstrate near-out-of-field like phenomena and develop a targeted programme aimed at alleviating these symptoms. A national survey will be designed to generate a nationwide picture of second level science teachers' classroom pedagogy, attitudes and beliefs and engagement with professional development as these are key indicators of out-of-field teachers. From this data, appropriate CPD workshops can be designed for the identified needs.

Dr. Stephen Comiskey

Biography:

Stephen completed his undergraduate degree in Science Education at Dublin City University. After this he took up a full-time teaching position in Co. Offaly before pursuing his PhD in DCU under Dr. Eilish McLoughlin. His PhD examined second level teachers' attitudes and beliefs towards technology integration. Stephen was also a Research Fellow in Trinity College Dublin working in the Innovative centre "Learnovate" where he worked with high performance start-ups, SMEs and other industry partners researching novel ways to leverage research into commercially viable businesses. Stephen has lectured on the Science Education programme in UL and is currently the Projects Officers for a Junior Cycle Physics Upskilling programme in EPISTEM.

Dr. Ciara Lane

Biography:

Ciara's educational background comprises a BA (Joint Honours) Degree in Mathematical Studies and English from University College Cork (UCC) and a PhD in Mathematical Studies from UCC. Her PhD thesis was entitled: 'An Investigation of Post-Primary Students' Images of Mathematics'. Since 2013, Ciara has worked in a variety of roles at the University of Limerick and EPI*STEM including teaching various mathematics modules, tutor at the Mathematics Learning Centre, school placement tutor, teaching co-ordinator for the Professional Diploma in Mathematics for Teaching (PDMT) and mathematics projects officer at EPI*STEM. Ciara is currently employed at EPI*STEM as a Postdoctoral Researcher in Mathematics Education leading a HEA funded project to design and develop professional development resources for mathematics teachers.

Ms. Tracey O'Connell

Biography:

Tracey completed her undergraduate degree in Technology education in the University of Limerick. Tracey is in the final stages of completing her studies with the EHS Structured Masters Programme in the University of Limerick. The title of her thesis is as follows: An investigation of the impact of an industry-focused gender intervention on the self-perceptions and career aspirations of female undergraduate students in the STEM disciplines. Since 2018 Tracey has been working at EPI*STEM, the National Centre for STEM Education at the University of Limerick. Tracey began with the position of the WiSTEM2D Programme Co-Ordinator. Currently, Tracey is a research assistant in EPI*STEM, where she works on projects with colleagues regarding STEM Education initiatives and research to aid in improving education of teachers and students.