

Research Student Project

Supervisor name & contact details:	Professor Shannon Chance, PhD, SFHEA +353-85-7884677 shannon.chance@tudublin.ie https://shannonchance.net/2021/08/27/phd-in-stem-education/						
Research Centre Name and Website	CREATE research group						
Funding Arrangements	✓ Fully Funded (ie Scholarship, Fees & Materials funding available)						
Funding Agency	Technological University Dublin, Research Scholarship Programme						
Funding Details	<table> <tr> <td>Student Stipend</td> <td>€ 18,500 p.a.</td> </tr> <tr> <td>Materials/Travel etc</td> <td>€ 2,600 p.a.</td> </tr> <tr> <td>Registration Fees/Tuition</td> <td>€ 4,500 p.a. (EU full-time) or € 9,000 (Non-EU full-time)</td> </tr> </table>	Student Stipend	€ 18,500 p.a.	Materials/Travel etc	€ 2,600 p.a.	Registration Fees/Tuition	€ 4,500 p.a. (EU full-time) or € 9,000 (Non-EU full-time)
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Subject Area	STEM/engineering education						
Title of the Project	Supporting Diversity in STEM by Enhancing Problem-Based Learning (PBL) Practices						
Project Description (max 300 words)							
<p>This scholarship will support one researcher to earn a PhD while addressing the research question: <i>What challenges do women face with collaborative, peer-to-peer and Problem Based Learning while studying engineering and other STEM courses at university, and how do they deal with these challenges?</i></p> <p>Across engineering in Ireland, skills shortages represent “a major concern” and “barrier” to growth, and “the continuing gender gap requires greater attention and action” (Engineers Ireland, 2020). Addressing shortfalls and increasing diversity requires shifting the culture of Science, Technology,</p>							

Engineering, and Maths (STEM) and STEM learning – it must start with understanding the experiences of the students who enrol in STEM. The mixed methods PhD study will entail phenomenological analysis of 71 existing interview transcripts, complemented by a new quantitative survey of STEM students to identify patterns across TU Dublin. These longitudinal data provide a unique window into students' experience of engineering and the active, inquiry-driven, Problem-Based Learning (PBL) used at TU Dublin. Objectives of the study are to:

- Distil lessons from interviews and surveys to improve attraction, delivery, and retention in engineering and STEM education and employment
- Assess the degree to which PBL pedagogies support women in engineering
- Describe how women experience PBL in engineering at TU Dublin
- Identify positive and negative aspects of the PBL experience
- Make full use of the existing longitudinal interview data via in-depth analysis
- Extend the value and generalizability of the findings via a quantitative survey
- Assess data for gender, ethnic, and intersectional dimensions

The researcher will receive excellent support and mentorship from the supervising Professors, Shannon Chance and Brian Bowe, who are widely published in engineering education research and have used phenomenology and advanced statistical analyses. The researcher will benefit from structured programmes provided by TU Dublin's Graduate Research School.

Student requirements for this project

Applicants must have obtained a minimum of a 2.1 honours degree (level 8), or equivalent, in a relevant (e.g, STEM or social science) subject. A Master's degree and/or some prior experience in qualitative or quantitative research is desirable but not essential. The ideal candidate will be highly self-motivated, with keen interest in STEM education and theories on learning and teaching and the ability to work both independently and collaboratively. We welcome applications from candidates from diverse backgrounds and from anywhere in the world. Applicants must meet the minimum English language requirements.

Deadline to submit applications (only for funded projects)

14 October 2021

Applicants for this project are required to complete an [Expression of Interest](#) and email it to both shannon.chance@tudublin.ie AND phd@tudublin.ie