Bridging the Gap between University Learning and Real-Life Practice in Industry

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Abstract:

While it is important to create a real connection for students between scientific knowledge and the implementation of that science, bridging the gap between university learning and real-life practice in industry, it remains a formidable challenge for educators to implement the appropriate strategy to ensure achieving their aims. This paper describes a Teaching-Research-Industry-Learning (TRIL) pedagogy which I developed in designing elective courses on sustainability/recycling and circular economy courses.

The proposed TRIL pedagogy, is envisaged as a two-layer model. The underpinning layer engages a student-centred deep approach to learning by creating inspiring and rich learning environments which can be achieved by maximising student participation, engagement, and interactivity. The second layer is based on inquiry learning where research-integrated learning ensures students learn about the latest research, while through industry integrated-learning. In this layer, real case studies are used to showcase the implementation and commercialisation of lab research outcomes into industrial processes where students can learn scientific and theoretical concepts through detailed explanations of industry case studies. As they become familiar with the latest research outcomes and discover how scientific concepts are being leveraged to tackle industrial problems, they link their study with research and real-life practice.

This methodology was evaluated by students over 4 years at the end of each trimester via online anonymous surveys. The result of survey of 156 participants indicates that, students perceived this teaching and learning approach as beneficial for promoting their learning, interest, and motivation enabling them to connect to the real time practice. 100% students agreed that this teaching pedagogy helped them strongly to connect the theoretical concept in the context of sustainability to the real-life practice.

Keywords:

Research-informed teaching; industry-learning; science-to-practice; STEM, pedagogy.