TALE 2024 Conference Workshop – 4

Synergizing Problem & Project Based Learning and Design Thinking for Transforming Engineering Education

Date & Time: Dec 11th 2024, 2 pm to 5pm

Workshop Facilitator:

Dr. Deepak L. Waikar Senior Lecturer at SP in Singapore and Hon. Vice President of International Energy Foundation

Workshop Overview

As independent pedagogical methods evolve, they often reach a point of diminishing returns, where their effectiveness is reduced by limitations such as rigid interpretations and overzealous implementation. To overcome these challenges and maximize the impact on learning outcomes, this 3-hour workshop at TALE 2024 introduces an innovative approach: **synergising Problem-Based Learning (PBL), Project-Based Learning (PBL), and Design Thinking (DT)**.

The workshop will guide participants on how to combine the strengths of these three powerful, independent pedagogical practices to transform engineering education. By merging these methodologies, educators can optimize both teaching and learning resources, leading to more effective outcomes in the classroom.

Part 1: Why Synergizing PBL, PBL, and DT? – Exploring the Benefits

In the first part of the workshop, we'll discuss the individual strengths of Problem-Based Learning, Project-Based Learning, and Design Thinking. Each method brings unique advantages to the table, but when implemented in isolation, they may fail to reach their full potential. By synergizing these methods, educators can address the inherent limitations of each, enhancing creativity, problem-solving skills, and student engagement. Pilot studies from institutions that have implemented this approach will be shared, along with their key findings and lessons learned.

Part 2: Practice Session – Implementing the Synergized Model

In this interactive session, participants will delve into real-world case studies showcasing the successful integration of these methodologies in engineering education. Through practical exercises and discussions, we will explore key challenges, successful implementation strategies, and how to apply this synergized model to enhance both curriculum development and teaching practices. A sample template of **Synergizing Problem & Project Based Learning (P2BL) and Design Thinking (DT)** will be co-

created, which can be adapted by faculty members, researchers, and educational institutions.

Part 2: Interactive Learning Modules – Implementing AI-Driven Engagement

During this segment, participants will take part in simulated classroom settings, using ChatGPT to create interactive learning modules. Focused on real-time student interactions, this session will highlight how AI can adapt to individual learning needs, enhance engagement, and provide dynamic, on-the-fly support. You'll walk away with hands-on experience in using AI to drive adaptive learning techniques in your classroom.

Who Should Attend?

This workshop is designed for educators, curriculum developers, researchers, and academic leaders, particularly those in the field of engineering education. If you're looking to enhance your teaching methods, boost student engagement, and innovate your curriculum, this workshop will equip you with actionable strategies and tools.

What Will Participants Take Home?

Participants will leave with a deeper understanding of how to synergise Problem-Based Learning, Project-Based Learning, and Design Thinking in their teaching. You will gain access to a co-created template, practical implementation strategies, and insights from real case studies, empowering you to adapt and apply this model to your own educational practices.

What Do Participants Need?

A passion for enhancing engineering education and an interest in exploring new approaches to teaching and learning. No prior experience with Design Thinking or specific pedagogical methods is required.

Don't Miss This Opportunity!

Join us at TALE 2024 to discover how synergising Problem-Based Learning, Project-Based Learning, and Design Thinking can transform your teaching practices and curriculum. Gain hands-on experience with an adaptable model that can bring fresh energy to your classroom. Be part of the movement to revolutionize engineering education and inspire your students in new and meaningful ways!

Biography of Facilitators

Dr. Deepak L. Waikar (LinkedIn Profile) Chair, IEEE Education Society, Singapore Chapter, Member of the Advisory Committee of Indo-Universal Centre for Engineering Education (IUCEE) Foundation, & Ex-Managing Partner of EduEnergy Singapore), has been involved in education, training, research, and management fields for more than three decades. He has been associated with the premier institutions, polytechnics, colleges, and academies in India and Singapore as well as with British and Australian Universities offering courses in Singapore. He has authored/co-

authored books, book chapters, research articles, and policy papers and delivered hundreds of invited keynotes, plenary, panel session presentations on power, energy, management, sustainability, leadership, and education-related topics. He has served on various committees in **professional** bodies. He is a recipient of the IEEE-PES **Outstanding** Power **Engineers' Award** and SP **Green Buddy Award**. Dr. Waikar has been associated with **Singapore Certified Energy Manager's** programme for more than a decade. He He obtained **Ph.D.** from the National University of **Singapore**, **M.S.** from the University of Saskatchewan, **Canada, M.Tech.** from the **Banaras Hindu** University, **India,** and **PD Certificate** in **University Teaching** from the University of **Newcastle**, **Australia**. He obtained PG-DBM from **Nagpur** University & B.E. from the **Government** Engineering **College** in **India**, respectively.