

## Contents

### Section I

#### Special Issue

#### Open Source & Collaborative Project Based Learning in Engineering Education

#### Guest Editors

**Andrés Díaz Lantada—Universidad Politécnica de Madrid, Spain**

**Carmelo De Maria—Università di Pisa, Italy**

<b>Ahmad Ibrahim</b>	1277	Editorial
<b>Andrés Díaz Lantada and Carmelo De Maria</b>	1278	Guest Editorial
<b>Andrés Díaz Lantada and Carmelo de Maria</b>	1279–1289	Towards Open-Source and Collaborative Project-Based Learning in Engineering Education: Situation, Resources and Challenges
<b>Juan M. Munoz-Guijosa, Andrés Díaz Lantada, Javier Echávarri and Enrique Chacón</b>	1290–1305	Using Smartphones Physical Interfaces in Engineering Education: Experiences in Promoting Student Motivation and Learning
<b>Pilar Pazos, Stacie I. Ringleb, Jennifer Kidd and Rachel Jones</b>	1306–1315	Scaffolding Project-Based Learning in an Engineering and Education Partnership using Open-Access Technology
<b>William Villegas-Ch, Xavier Palacios-Pacheco, Diego Buenaño-Fernández and Sergio Luján-Mora</b>	1316–1325	Comprehensive Learning System Based on the Analysis of Data and the Recommendation of Activities in a Distance Education Environment
<b>Ayhan Istanbulu and Mustafa Tasci</b>	1326–1335	Open Source Hardware—Arduino: Case Study on Mechanical Engineering Students Design Project
<b>Manuel Vargas, Miguel Alfaro, Guillermo Fuertes, Gustavo Gatica, Sebastian Gutierrez, Soledad Vargas, Leonardo Banguera and Claudia Duran</b>	1336–1342	CDIO Project Approach to Design Polynesian Canoes by First-Year Engineering Students
<b>Kauser Jahan, Cheryl Bodnar, Stephanie Farrell, Ying Tang, Iman Noshadi, C. S. Slater and Demond S. Miller</b>	1343–1352	Improving Students' Learning Behaviors Through Hands-On Algae Based Project
<b>Emad Habib, Matthew Deshotel, Guolin Lai and Robert Miller</b>	1353–1365	Student Perceptions of an Active Learning Module to Enhance Data and Modeling Skills in Undergraduate Water Resources Engineering Education
<b>Divna Krpan, Saša Mladenović and Goran Zaharija</b>	1366–1377	The Framework for Project Based Learning of Object-Oriented Programming
<b>Gordon Hoople, Austin Choi-Fitzpatrick and Elizabeth Reddy</b>	1378–1391	Drones for Good: Interdisciplinary Project-Based Learning Between Engineering and Peace Studies
<b>O. Picton, R. Losada, I. Fernández De Bustos and E. Rojí</b>	1392–1401	Glued-Wood Structure Development Contests for Project Based Learning in Engineering and Architecture Degrees
<b>Orna Muller, Vered Dangur and Orit Braun Benyamin</b>	1402–1414	Developing Devices for People with Disabilities: Challenges and Gains of Project-Based Service Learning
<b>Mandy Mclean, Jasmine Mcbeath, Tyler Susko, Danielle Harlow and Julie Bianchini</b>	1415–1424	University-Elementary School Partnerships: Analyzing the Impact of a Service-Learning Freshman Engineering Course on Students' Engineering Values and Competence Beliefs
<b>Brenda Vilas Boas, Marcus Dias, Pedro Batista, Aurenice Oliveira and Aldebaro Klautau</b>	1425–1435	CELCOM Project: Engineering Practice via Community Networks in Amazon
<b>Daniel López-Fernández, Laura Raya, Fernando Ortega and José Jesús García</b>	1436–1445	Project Based Learning Meets Service Learning on Software Development Education
<b>M. Royo, M. Carlos, R. Izquierdo and L. Cabedo</b>	1446–1455	Industrial Design and Social Prospect: A Service-Learning Experience for Second Course Undergraduates
<b>Gilberto Duarte Cuzzuol, Lílian Barros Pereira Campos, Diana Mesquita and Rui M. Lima</b>	1456–1465	Collaborative PBL to Teach Calculus to Engineering Students: The Important Role of Collaborative Professors
<b>Eri Ota, Rie Murakami and Proadpran Punyabukkana</b>	1466–1479	Comparative Analysis on Effect of Multicultural Project-Based Learning Between Universities in Japan and Thailand
<b>Danielle Miquilim and Marcia Terra da Silva</b>	1480–1492	The Teaching of Innovative Entrepreneur Engineers: Key Factors that Contribute to Teaching-Learning Processes and University Management
<b>Siva Chandrasekaran and Llewellyn Mann</b>	1493–1502	Case Study of Facilitating Practice-Based Education in a Studio-Based Learning Environment

## Section II

### Contributions in: Global Competence, Internship, Flipped Classroom, Low Self-esteem, Industry 4.0, CDIO, Motivation, MOOC, Assessment, and Critical Thinking, Distributed Practice, Engineering Mathematics

<b>Scott C. Streiner and Mary Besterfield-Sacre</b>	1503–1517	Measuring the Relative Impact of International Experiences on Engineering Students: A Benchmarking Analysis
<b>Po-Wen Cheng, Po-Wen Liu, Chin-Chung Huang and Wen-Jye Shyr</b>	1518–1525	The Effects of the Flipped Classroom on Technical High School Students with Low Self-Esteem
<b>Cheng-Tang Tseng, Ching-Yi Lee and Kuo-Cheng Tai</b>	1526–1539	Development and Assessment of a Mold Design Curriculum Corresponding to Industry 4.0 Based on the CDIO Principles
<b>Mitchell Zielinski, Victoria West, Hillary E. Merzdorf, Kerrie A. Douglas and Peter Bermel</b>	1540–1550	Motivation and Perceived Costs to Achievement in Advanced Engineering MOOCs: A Mixed Method Study of Advanced Engineering MOOC Learners' Motivation and Perceived Barriers
<b>Adam R. Phillips and Colin Lambie</b>	1551–1560	Assessing Civil Engineering Students Perceptions of Their Problem Solving Ability
<b>Ahmet Refah Torun</b>	1561–1565	The Effect of Weekly Distributed Mathematics Homework and Quizzes on the Learning Performance of Engineering Students
	1566	Guide for Authors