

Editorial

This issue of the IJEE is divided into two sections. The first section is a special issue on Current Trends in Nanotechnology Education. I would like to thank Professors Wei-Fan Chen and Tony Jun Huang for suggesting this topic for a special of the IJEE. I am also very grateful to them for the effort put toward guest-editing the special issue.

The second section includes contributions in topics related to a variety of engineering education topics. The first paper by Atman et al. presents a set of key findings from various research threads related to engineering education and highlights the various tools and processes developed by the Center for the Advancement of Engineering Education (CAEE). These resources include survey, interview, and design task instruments, as well as a year-by-year guide to the development and implementation of the Academic Pathways Study and more.

The following two papers relate to outreach activities. Meyers et al. discuss the project: Imagination, Innovation, Discovery, and Design intended to benefit both college and intermediate school students. They also report on the assessment of the impact of the project on the two groups. Ryokai et al. present ongoing research activities on mobile access to context-relevant digital library resources using mobile interfaces aimed for K-12 and higher education. They evaluated the benefits and limitations through two case studies.

Numerous aspects of curriculum and course design are addressed by the next set of papers. Mihajlovic and Cupic discuss a software environment for learning and assessment. They address two problems: creating an individualized task for students and evaluating answers particularly when multiple solutions are possible and when solutions are partially correct.

Patil et al. present a multi-disciplinary mechatronics course that was intended to create a collaborative environment and provide hands-on experience, develop teamwork, leadership, and project management skills. The impact of the course was assessed using various techniques.

Williams et al. present a bioprocess engineering curriculum designed to engage the students and improve their mastery of concepts. They present nine instructional modules for three bioprocess engineering courses. They also present the results of the assessment of the impact of the developed curriculum on students learning.

Masek and Yamin discuss the impact that Problem Based Learning (PBL) has on knowledge acquisition in the area of electrical engineering. In their investigations, they employed an experiment, a pre-and post-test and control.

Fang reports on a student-centered active learning approach to teaching grant proposal writing. The approach was implemented and assessed in a specialized course in a PhD program in engineering education.

Duman and Ergun present an experimental set-up for use in an undergraduate fluid mechanics laboratory that was designed and implemented by a graduate student. The study aims to enhance the graduate education experience and to create a novel laboratory experiment that would be useful to undergraduates. Important aspects of experimental studies are introduced to the undergraduate students. An assessment of the impact of the work on learning is presented as well.

Garcia et al. report on the development, implementation and evaluation of a tool that allows a detailed diesel engine simulation performance. The simulation makes use of MATLAB and a graphical user interface. The tool was assessed using a students' survey.

Wang et al. report on incorporating RFID (Radio-Frequency Identification) in engineering education. The technology is used to convert various resources into smart teaching objects, which are connected by wireless networks in to collect real-time information. The approach enables teaching by examples and by doing. The limitations and the impact of the approach are discussed.

The final four papers present an international perspective on some aspects of engineering education. Tabsh et al. investigates civil engineering courses at 31 universities in 19 countries. The study addressed various aspects of degree requirements including science, mathematics, general education, electives, engineering fundamentals, computer proficiency, and civil engineering courses. Baytiyeh identifies learning deficiencies that hinder the effectiveness of practicing engineers who graduated from Lebanese universities. Three skill categories were investigated: technical, interpersonal, and personal indicators. The objective is to determine whether engineers acquire these skills before graduation, the importance of these skills to practicing engineers, and whether the perception of their importance depends on gender, work experience or work location. Kanesan et al. studied the relationship between education and employment from the point of view of the mismatch of acquired and required competencies of electronic engineers in the electronic industry in Malaysia.

Motahhari-Nejad et al. report on the investigation of the objectives and standards of engineering education in Iran. They identified twenty-four objectives in five categories.

I would like to thank all the authors for their important contributions and I hope the readers find this issue of the IJEE interesting and informative.

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