

Editorial

Dear Colleagues,

Welcome to the Journal of STEM Education: Innovations and Research, Issues 3 & 4! This issue is a Special Edition on Engineering Leadership Education. The idea to focus a Special Issue of the Journal on this topic sprang from an Engineering Leadership Workshop hosted by the National Science Foundation on September 10, 2007.

First, I would like to thank Dr. Pamela McCauley-Bush for acting as Guest Editor of this Special Edition. It was her hard work that made this issue possible. She also provides a Guest Editorial for this issue describing further how the issue came about and urging each of you to take part in the dialogue on Engineering Leadership.

Additionally, I would like to thank Dr. Charles Vest, President of the National Academy of Engineering (NAE), for providing the Foreword to our Special Edition. He introduces this issue of the Journal by providing insight from NAE on the importance of Leadership in Engineering Education.

Each of the articles in this issue has something unique to say about Engineering Leadership. We begin with Dr. Norman L. Fortenberry of the Center for the Advancement of Scholarship on Engineering Education and the National Academy of Engineering. He provides several examples of engineers who were/are also prominent leaders, and asks educators several key questions to consider in preparing students for leadership in engineering.

Next, Lesia Crumpton-Young, Pamela McCauley-Bush, Luis Rabelo, Katherine Meza, Ana Ferreras, Betzaida Rodriguez, Angel Millan, David Miranda, and Misha Kelarestani, in “Engineering Leadership Development Programs: A Look at What is Needed and What is Being Done” discuss the results of several surveys administered to engineering students and professionals regarding their perceptions of leadership in engineering. The article also discusses programs in which current engineering professionals and students can develop their leadership skills.

Then, Monica F. Cox, Osman Cekic, and Stephanie G. Adams, in “Developing Leadership Skills of Undergraduate Engineering Students: Perspectives from Engineering Faculty,” discuss faculty perceptions of engineering leadership. The authors conducted a study of twelve engineering faculty, who provided definitions of leadership and ways that institutions of higher education can help engineering students develop leadership skills.

Next, Chetan S. Sankar, Barbara Kawulich, Howard Clayton, and myself discuss developing engineering leadership using multimedia case studies. In “Developing Leadership Skills in Introduction to Engineering Courses through Multimedia Case Studies, we provide the results and analysis of research conducted in two different Introduction to Engineering classes examining different instructional methodologies: lectures, PowerPoint slides and visuals, case studies, quizzes, small group discussions, and projects. Students found the case studies used in this research to be valuable to their learning experiences, and especially useful in developing problem-solving skills, which are essential to high-quality leadership.

Then, in “Engineering Leadership Education—The Search for Definition and a Curricular Approach,” Richard J. Schumann details the changes made to The Pennsylvania State University’s engineering leadership development program, providing an example for other engineering curricula to follow.

Similarly, K. S. Athreya and Michael T. Kalkhoff round out our issue with “The Engineering Leadership Program: A Co-curricular Learning Environment by and for Students.” Their article describes the current progress of the engineering leadership program at Iowa State University, a four-year pilot program begun in 2006, and looks ahead to future goals.

Finally, it is my unfortunate duty to announce that all article submitted after August 1, 2010 and are accepted will be charged a publication fee of \$395 for the first eight pages (including the author bio) and \$75 for each additional page. Due to the increased costs of production, we reluctantly had to increase the fees in order to keep bringing you high-quality research. These fees will be applied once the article is in the proof stage of publication; the fees are not applied to manuscript pages. All articles currently in our system and submitted before August 1 will be charged the current fee of \$295 per article.

As always, I hope you enjoy reading the articles in this issue as much as I have. Leadership training for engineering students is more important than ever, and these articles provide much-needed insight into where the field currently stands and where we are heading.

Happy summer!

P.K. Raju
Editor-in-Chief