

Dear Readers,

Welcome to Volume 13, Issue 5 of the Journal of STEM Education: Innovations and Research. Readers will find that our authors' excellent research continues and we have seven interesting articles in this issue that describe several new approaches to improving students' learning through hands-on experiences and exposure to real-world case studies.

To accompany the outstanding articles in this issue, we also have the pleasure of presenting a guest editorial by Dr. Richard Felder, a Hoechst Celanese Professor Emeritus of Chemical Engineering at North Carolina State University. Felder is also the coauthor of *Elementary Principles of Chemical Processes*, the textbook used by roughly 90 percent of American engineering departments for more than 30 years. In his editorial, he discusses the importance of supporting new faculty in the fields of Science, Technology, Engineering and Mathematics. Drawing from a wealth of experience, Felder gives numerous examples and suggestions of programs and tips to help integrate new faculty members. He even gives one example of a program in place at North Carolina State University that uses workshops to prepare new and future STEM faculty members for academic careers.

To begin the issue, in "The Current Status of STEM Education Research," Brown explores the current STEM education research base through an analysis of journals focused on STEM disciplines. Through his study, Brown shows that there is a research base, but that further research is needed to determine the effectiveness of education initiatives in the fields of science, technology, engineering and mathematics.

Continuing on with exploring the current status of STEM Education, "An Investigation of Science, Technology, Engineering and Mathematics (STEM) Focused High Schools in the U.S." by Catherine Scott of the University of North Carolina at Chapel Hill examines the characteristics of and compares 10 different STEM-focused high schools in different regions of the United States. The author outlines that even though the programs varied, the students who attended these schools were engaged in real-world problem solving, and, when they graduated, were completely prepared for college STEM programs.

Jeremy Ernst and Aaron Clark also discuss high school students in "Fundamental Computer Science Conceptual Understandings for High School Students Using Original Computer Game Design." They discuss the production and evaluation of using games as a means for learning STEM discipline content in high schools. They also explore how computer science literacy has become an important aspect to learning and living in our contemporary society.

John Mativo bring us "Innovative and Creative K-12 Engineering Strategies: Implications of Pre-service Teacher Survey." He surveyed 12 students at the University of Georgia to explore perceptions of how the engineering design process is learned and applied by pre-service teachers. He found that teachers who participate leave with an essential set of real world problem solving skills and be prepared to teach K-12 engineering.

New ways to enhance student creativity are covered in "From Brainstorming to C-Sketch to Principles of Historical Innovators: Ideation Techniques to Enhance Student Creativity," by Christina White, Kristin Wood and Dan Jensen of The University of Texas at Austin, Singapore University of Technology and Design and the United States Air Force Academy. The authors discuss their investigation of concept generation techniques that have been developed for engineering education across disciplines and at all levels of curriculum.

Kumar Yelemarthy of the Central Michigan University School of Engineering and Technology also investigated the improvement of engineering curriculums across multiple disciplines in "RFID-Based Multidisciplinary Educational Platform to Improve the Engineering and Technology Curriculums." He discusses one of his ideas for an undergraduate student project and how it prepares students for future professional environments.

Finally, Paul Golter, Gary Brown, Dave Thiessen and Bernard Van Wie of Washington State Univeristy, explores a step-by-step process of how to adopt an alternative pedagogy in engineering, and more specifically, chemical engineering, education. They provide plenty of insight to help inform instructors about implementing new pedagogies.

As the year draws to a close, I hope all of our readers can look upon the last few months and see true accomplishments and learning among their students and use suggestions from our authors in the upcoming fall semester. As always, we welcome comments, questions, and suggestions related to the journal, sent by email to jstemed@gmail.com.

Regards,
P.K. Raju
Editor-in-Chief