Editorial

Rep. Ehlers, Vice Chair for Science Education on the Science Committee and on the Education and Workforce Committee, during Congressional Briefings in April 2000, discussed his principal reasons for raising awareness of importance of budget enhancements for science, mathematics, engineering, and technology (SMET) education. He argued that, "We need more scientists and engineers to propel us throughout the 21st century; we need a better trained technical workforce to remain globally competitive; and, we need a technologically literate society of consumers, voters and thinkers who can make intelligent everyday decisions about the world around them."

In order for this to happen, it is critical that SMET educators have access to latest instructional materials and research results from a peer-reviewed and refereed publication. We intend this journal to fulfill this critical mission by publishing articles and case studies that could be used by the educators to institutionalize improvements in undergraduate SMET education. We expect the articles to encourage members of the higher education SMET community to stimulate discussion on a number of important issues related to undergraduate education. As an example, Fortenberry's article in this issue discusses the strategies that are being adapted by National Science Foundation (NSF) to enhance the effectiveness of undergraduate SMET programs by integrating research and education, laying the foundation for education reform, and increasing collaboration across departmental boundaries.

The success of the case method in business, law, and medical schools has inspired educators to recommend its adoption in SMET education in order to bring real-world issues into the classrooms. Very few faculty members involved in SMET education have experience on how to develop or administer the case studies in their classrooms. In order to meet this need, we are including two articles that discuss the process of developing case studies. Naumes and Naumes discuss the process of creating, testing, and refining the case studies. Walls describes how given the empirical foundations of science and technology, SMET educators have to emphasize the multidisciplinary, interpersonal, cross-cultural, and transnational networks of issues attending engineering problems. He stresses the need for SMET education to involve technology in its multiplex relations with other domains.

The co-developers of this journal, LITEE and SEATEC, have developed and field-tested many award-winning case studies during the past five years and we include two case studies that were developed from their projects. Sbenaty uses his research experience with Heatcraft industries to create a case study that shows the challenges facing Bob, an engineer, in the development of a portable pizza warmer. Situated in 1986, Sankar, Sankar, Raju, and Dasaka present a case study where Joe Kilminster faces the decision of launching or not launching the space shuttle: STS 51-L. Both these case studies have been tested in classrooms and have received very high ratings in their ability to integrate engineering and science with business and ethical issues. These case studies foster cross-disciplinary approaches and link curricula effort to real-world problems and improve student access to quality resources and their ultimate mastery of concepts and skills.

We request you to participate with us in reading these articles and case studies and adapting them for use in the classrooms. Use of the case studies and research methodologies reported in this journal in your classrooms has a good possibility of producing high-quality problem solvers and decision-makers who could better their problem-solving experiences by connecting to science, mathematics, engineering, and technology fundamentals. Please share your thoughts, ideas, and experiences by publishing in this journal or writing comments on articles that appear in this journal. We hope you will find this issue useful and will recommend it to others. We look forward to hearing and learning from you!! ■

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