Editorial

Current technology plays an important role in our daily life. It is also an integral part of teaching and learning at almost all levels and across most disciplines; this includes engineering at both the undergraduate and the graduate levels. The use of the technology of the day in education has a long history with distinct eras that had their prevailing approaches. If we consider the use of the Internet and e-learning as the mark of the newest era then we certainly came a long way in just a few short years. A few years ago, posting class notes on the web, communicating with students via e-mail and adopting PowerPoint in the classroom, was considered the zenith of using technology in education, highlighted by promises from politicians to get all classrooms "wired".

The use of new technology in engineering education faced mixed reactions. Some educators did not welcome it, were suspicious of it, or even resisted its use in the classroom and in distance learning (although correspondence courses have been known for a long time). Some feared that the ultimate goal of using technology was to marginalize the role of humans as teachers. Some feared that the ability of a student to follow sets of procedures without a real understanding would be equated with learning. Further, some feared that the communication skills of students would be adversely affected. In some cases a particular technology was imposed on educators and students alike even where student-centered learning was advocated.

One should remember, however, that as technology is developed by humans, the role of humans in education will perhaps increase rather than decrease because of technology. Applications of technology in education need to keep developing to meet the increased demands and expectations. Not only would the tools need continual development, but also the methods of their incorporation in curricula. When it comes to students' learning, it is not technology that leads to a culture which emphasizes marks and grades over understanding and competence. Even if technology was misused by some this is not an argument against its proper use: *abusus non tollit usum*.

On the other extreme, some people thought of technology as the solution to all of education's problems. Students would be able to gain better understanding with little or no effort, institutes of learning would save money and have reduced budgets, and educators would have more time to peruse other technical and scientific activities. Also, investors spotted an opportunity to make money and politicians spotted an opportunity to impress the public. However, for meaningful education, students will always need to invest time and effort to learn; institutes will be required to budget for adequate acquisition, maintenance, and development of technology otherwise the system would vanish into obsolescence. For dedicated engineering educators, technology may cause them to spend additional time on teaching and learning, not less.

Engineering educators should not rush into adopting or rejecting technology. They should be well-informed of current trends in technology for education and be actively involved in its development. Further, engineering educators have the duty of informing the public and the decision makers of the benefits and limitations of technology. They have to be actively involved not only in its development and use, but also in all strategic decisions related to its development and use. If what Marshall McLuhan said is true; that *we shape our tools and afterwards our tools shape us*, we have to be very careful who decides the shape of our tools and how we design them.

An excellent way to acquire and share information about the current instructional technologies is the interaction among engineering educators through publishing and reading about its advances and the experiences of engineering educators. This special issue is intended to contribute to this goal.

I would like to thank Prof. Kinshuk, Prof. Tzu-Chien Liu and Prof. Mohamed Jemni for guest editing this special issue of the IJEE on Instructional Technologies in Engineering Education. The time, effort and thought put into selecting, reviewing and organizing the manuscripts led to an excellent set of papers that address varied aspects of the subject. I am particularly grateful to Prof. Kinshuk for his help in numerous editorial aspects and in communication with the authors.

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