From the Editor

Are We There Yet?

The "are we there yet" phenomenon is familiar to most everyone. It occurs when traveling with children, especially for long distances. The question usually comes up shortly after departure and continues up until the destination is reached. The secret to reducing the phenomenon to a mild distraction is to keep the children occupied with games and other diversions, taking their minds off the length of the journey and focusing on the fun to be had "once they are there."

In our journey to reach our goals in technology education, it is easy to become so engaged in our day-to-day work that we do not realize how far we have traveled or what has happened along the way. It is comparable to how new technological developments can become a part of our everyday lives in a very short time, without us hardly realizing it. The cell phone is a prime example.

Much has happened in our field in the past fifteen years or so, but most of us must pause and reflect in order to put it all in perspective. In the US, the era started with the name change from industrial arts to technology education. The name change was followed by a flurry of efforts at all levels to articulate just what technology education is and how it might be put into teachable terms. Philosophical and practical arguments ensued in all sectors of the field. Companies began to develop "modular" approaches to technology education, defining for some just what technology education should be, *de facto*.

The US sought expertise internationally, especially from Great Britain, resulting in a miniature version of the "British Invasion" that started with the music of the Beatles a quarter century earlier. The National Science Foundation, the National Aeronautics and Space Administration, and other agencies began to offer significant funding for technology education through competitive grants. With this funding, the era culminated with the *Standards for technological literacy: Content for the study of technology* (ITEA, 2000), providing a clear idea of the parameters of the field and a substantial backbone for curriculum development. Though one could argue that the standards should have preceded the name change, that point is now moot.

While all these developments were going on in the field, a lot was transpiring externally during the same time period. New standards for mathematics and science were developed. The science standards clearly stated the importance of technological design and problem solving as a part of the study of science and technology, and there were obvious implications for technology education in the mathematics standards as well.

Corporations began to sponsor competitive events to encourage students to invent and develop new products. Though it was recently discontinued, the

Duracell Corporation and the National Science Teachers Association sponsored a technological invention contest, awarding a significant scholarship to the winner. Engineering professional associations started to become interested in what was going on with technology in the schools. Some of these organizations began to develop curriculum materials. *A World in Motion* from the Society of Automotive Engineers (SAE) is an example (www.sae.org/students/awim.htm). It is a physical science curriculum that uses (among other things) the design and building of a toy car to teach science principles. A number of professional organizations like the SAE now have professionals who are assigned exclusively to K-12 grade initiatives.

Dean Kamen, President of DEKA Research and Development Corporation, founded the FIRST Robotics Competition for high school students (www.usfirst.org). In just a few years this competition has grown to over 20,000 participants and is international in scope. Opportunities for younger students were developed through the FIRST LEGO League (www.firstlegoleague.org) as part of Kamen's FIRST Jr. Robotics program. This newer competition is growing at a rate comparable to its older sibling. Kamen, incidentally, is behind the development of the innovative Segway™ Human Transporter (HT) that has received a lot of attention in the media in recent months.

One could defensibly argue that the field of technology education, having evolved from industrial arts, has been focused upon "technological literacy" throughout its 140-plus year history. As a general education program in the schools, its philosophy has been grounded from its inception in what is good and useful for everyone. Only in the past two decades, though, have there been two parallel efforts going on at the same time to develop technological literacy: one in the field of technology education and the other outside of the field.

Initially the efforts were, for the most part, parallel but separate. This was not based on exclusivity but rather on a lack of awareness of just who the interested parties were in developing technological literacy. Through the efforts of the International Technology Education Association, the National Science Foundation, the American Association for the Advancement of Science, and others, linkages have been established to merge the parallel efforts. Most noteworthy is the significant role that the prestigious and influential National Academy of Engineering and the National Research Council had in the development of the *Standards* (ITEA, 2000). They influenced the standards so that they were useful to all those who had technological literacy on their agenda, not just those in the formalized field of technology education.

As our journey led us near to where we are right now, some intensely bright, carbon arc lamps swept the sky ahead of us. In January of this year a document titled *Technically speaking* (2002) was released amidst deserved fanfare. I cannot recall ever reading a document that presents a more logical and compelling case for technological literacy. I do not think I am being too bold in stating that everyone in the field needs to read it, including our international colleagues. It is thought provoking and sheds new light on some of the issues technology educators have philosophized about for decades.

The way in which technological literacy is to be delivered will no doubt set technology educators in the US back in their chairs. First, it defines and creates the context for technological literacy that is apart from the thinking of many in our field. Second, it recommends that technological literacy be developed by integrating it with the other subjects in the school:

> Short of the widespread adoption of dedicated courses in technology – an unlikely scenario in the committee's view – the inclusion of technology subject matter in other academic areas is one of the surest ways of increasing the visibility of technology in U.S. schools (p. 104).

This assertion was supported by citing the recent Gallup poll on technology that was commissioned by the ITEA:

> Ninety-seven percent [of the poll respondents] said they believed the study of technology, broadly defined, should be part of the school curriculum; two-thirds said it should be integrated in other subjects rather than taught as a separate course (p. 66).

At the same time, *Technically speaking* recognizes the work of technology educators throughout the document and it amply cites the *Standards for technological literacy*. It also indicates that technology educators will have an important role in infusing technological content throughout the school curriculum: "Teachers who specialize in technology, still relatively few in number, will be essential to a serious effort to boost technological literacy" (p. 7).

Clearly, a new paradigm for technological literacy is unfolding – a paradigm that is quite different from the one prompted by the name change that occurred nearly two decades ago. Just what role our teachers and the "dedicated courses in technology" they are now delivering will have in this new paradigm is neither explicit nor implied in *Technically speaking*. Perhaps this was by design, rightfully allowing the technology education profession itself to define its role in the new paradigm. Whatever the case, such an effort must begin at once. One thing is for certain: We are not there yet!

JEL

References

International Technology Education Association (2000). *Standards for technological literacy: Content for the study of technology*. Reston, VA: Author.

National Academy of Engineering and National Research Council. (2002). *Technically speaking: Why all Americans need to know more about technology.* Greg Pearson and A. Thomas Young, (Eds.), Committee on Technological Literacy. Washington, DC: National Academy Press (http://www.nae.edu/techlit).