Making Technology a Major School Curriculum

Now is the time for all the professions in technology to mobilize. A unified effort will achieve a status for the technology curriculum equal, in every way, to that of other traditional curriculum areas in K–12 schools. Although such a campaign may be in the vanguard to change other aspects of the nation's K–12 curriculum, the focus here is technology.

Some may argue that seeking to change curricula at this time is a vain exercise. Persons of influence are not likely to listen or respond because of the nation's economic circumstances and attendant pressures on states and localities. The foreboding international situation and the War on Terrorism could also be invoked as possible deterrents to change.

Leaders in the technology professions ought not be put off. Rather, they need to find strength and determination in the fact that such circumstances define a National Necessity that demands wider recognition of technology subjects that may augur a comprehensive revision of the entire school curriculum.

Technically Speaking: Why All Americans Need to Know More About Technology (Pearson & Young, 2002) is the prime motivator of this commentary. This auspicious document concerns the delivery of technology curricula in K–12 and the higher schooling levels. Perhaps unintentionally, it sets the stage for the undertaking advocated here.

The National Academy of Engineering (NAE), the National Research Council (NRC), and the National Science Foundation (NSF) stand behind the publication. This makes it a declaration to be taken seriously, a product to be used wisely and effectively, and it gives substance to this appeal. The document has high praise for the work of two organization: the International Technology Education Association (ITEA) and the National Association for Science, Technology and Society (NASTS).[1] The curriculum effort of the American Association for the Advancement of Science (AAAS) that addresses technological literacy is also recognized.

It is fair to say that the document's positive views of ITEA members' work that resulted in conceptualizations, standard, and assessment processes and other references to ITEA is deserved recognition that it is the legitimate leadership group for the technology curriculum area at the K–12 level.

While the document does not use the term *National Necessity*, it does make a compelling case that technology studies deserve a high national priority. It covers the ubiquitous role of technology in our society. It refers to the need to prepare for a technological future, which, even today, requires that the nation's citizenry will (must) be technologically literate in order to participate in normal life functions and for the U.S. to continue its world-leading scientific and technological role.

More can be inferred from *Technically Speaking*. For example, the U.S. is faced with increasingly critical shortages of high school graduates with interest in pursuing advanced studies to prepare for careers in science, technology, and engineering. Reliance on foreign students to fill the voids thus created may not be a sound national policy over the long run. Therefore, there are significant expectations that properly developed and taught science and technology curricula at the K–12 and community college levels will produce a technologically literate citizenry and a larger pool of students who will pursue the advanced studies and careers so critical to the American future.

The Case to Adopt Technology and Then Revolutionize the Curriculum

To develop technologically literate persons, appropriate learning experiences need to be more widely and very quickly incorporated in the schools. But, according to *Technically Speaking,* no single curriculum area can achieve this goal. Therefore, it recommends that existing curricula in science, social science, and other subjects also deliver technology subject matter.

Such a recommendation smacks more of expedience and politics of the possible rather than one that aims to properly restructure and redirect the curriculum. It is a patchwork solution to a major problem, and because it fails to lodge the responsibility with technology educators who have the most experience and capabilities, it diminishes their authority and the contributions they can make.

The plaudits and appreciations expressed toward technology educators, particularly those that suggest they could and should lead the curriculum effort, are subverted by the aforementioned proposal for other subjects to assume a role in teaching technology. It places limits on technology educators to deliver their effectively conceived content and experiences to produce technologically literate students.

Another reason behind such a slight may be that most students meet high school graduation and college entrance requirements without studying technology. So, the expedient way to get around that and quickly reach the largest number of students is to attach technology content to subjects that are required for graduation.

This sort of thinking highlights symptomatic weaknesses and discrepancies that exist throughout the curriculum. For example, does it really make sense to add technology content to subject areas that claim to already be challenged to teach their rapidly increasing knowledge base? Might not the resource

[1]Epsilon Pi Tau is the official honorary for ITEA and NASTS.

requirements to get that done be as great as what it would take to get technology subjects recognized as a graduation requirement?

All this about technology marks a need for curriculum revitalization beyond the subject of technology. Comprehensive reform requires keen attention and response to cognitive science findings, applications of computer and information technology, workplace and workforce changes and needs, leaps in the knowledge generation base of most disciplines, associated emergence of new fields of inquiry and knowledge or disciplines, and the dramatic changes in our society. Because technology educators have consistently given appropriate attention to such matters and will do so when they undertake to achieve greater visibility for technology in the curriculum, a model for wider reform may evolve.

In an open atmosphere of change that responds to National Necessity, the subject area of technology would receive respectful attention. Technology professionals should work to produce that open environment by building on the accomplishments of ITEA leaders noted above. In fact, it is ITEA leaders who have the breadth of experience to lead such an undertaking.

A Consortium to Support the Change

Over the years these pages have offered arguments, enticements, rationales, and appeals concerning the need for and advantages of unified and cooperative efforts among the professions in technology in the U. S. This is a nationally important issue around which a consortium of professional organizations can be formed.

ITEA has a record of success with government and private sector agencies and has developed links with the science and engineering and technology and workforce education professional communities. The organizations in these fields will quickly recognize the human resource issues as enumerated in *Technically Speaking* that apply to their interests. ITEA leaders know how to obtain commitments from them.

The stakes are large. The goal is worthy. And the challenge to turn centuries of schooling tradition around is great. But the nation may be ready to listen and accept, particularly if prominent professional organizations, government agencies, business entities, and educators of all disciplines stand in support.

Making the Case

As with the matter of forming a consortium, ITEA leaders have been adept at making a case. It makes sense that they will take advantage of the status conferred on them by the powerful sponsors of *Technically Speaking* and the engineering and science professions they represent.

ITEA leaders are aware of the need to overcome the prejudices of those who have had traditional academic school experiences. They can effectively explain the role, contributions, and significance of technology as a school subject to certain members of the consortium itself and then to those citizens, politicians, and educational leaders they are trying to persuade.

The arguments and rationalization of *Technically Speaking* will certainly be helpful. And to those could be added the history of a field that has evolved out of a tradition of innovation in content and methods that have responded rapidly to societal change and student needs. It is no shame to point to instructional methods that have been responsive to the activity inclinations of youth and that the ideas of content applications involving active problem solving and teamwork have been adapted and employed by other disciplines, even in professional education venues such as medical education.

ITEA also has links with educators in other lands enabling them to use first-hand information to communicate about other industrial nations where technology curricula in one form or another are receiving serious consideration to be, or are already, required courses in the nation's schools.

Add these to the important issues of National Necessity as related to the future of the science, engineering and technology workforce and maintaining U.S. leadership in those areas leads to a summarizing and effect concept to clinch the argument: *The central purpose of schooling is still to produce literate citizens. For the 21st century the purpose will be achieved when an effective technology component is included in the curriculum.*

What a powerful message to carry and argue! And as it becomes obvious that the campaign will succeed, there will be a change in the statement in *Technically Speaking* that elicited criticism in this piece. Currently, it says:

Short of widespread adoption of dedicated courses in technology—an unlikely scenario in the committee's view—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 is what it will be changed to:

The surest way of increasing the visibility of technology in U.S. schools is to encourage the acceptance of offerings from the technology curriculum as major courses that satisfy graduation requirements and for widespread adoption of such a curriculum in schools which currently do not have it.

Full success of the campaign will be realized when that begins to happen. **JS**

Reference

Pearson, G., & Young, A.T. (Eds.). (2002). *Technically speaking: Why all Americans need to know more about technology.* Washington, DC: National Academy Press. Retrieved from http://www.nae.edu/techlit