

Further Refinement of *Standards for Technology Education* in Progress

With input from hundreds of individuals from the first review of the *Standards for Technology Education (Standards)*, the project staff was actively involved in the process of refining the K-12 content standards during the winter of 1998. With help from the Standards Team leaders and recorders and Advisory Group, the second draft was completed by the end of February in time for the spring consensus building process.

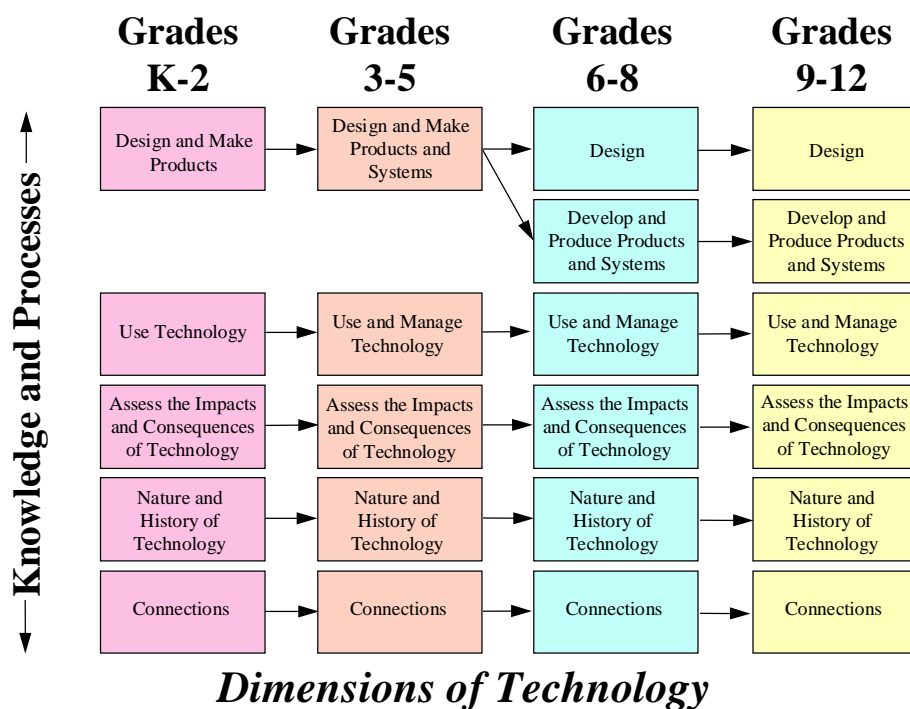
Based on the input received, some major refinements were made to the *Standards*. The dimensions were refined to more clearly identify the content to be covered in technology education. As a result, the Technological Concepts and Principles dimension was incorporated throughout the remaining dimensions.

Another refinement was to change the titles of each dimension to reflect what the students should be learning at each benchmark level and to address the developmental appropriateness of the content standards at each benchmark level. This change resulted in the Design dimension being combined with Make for grades K-2 and 3-5, and the Manage dimension not being introduced until the third grade.

The second draft also takes into account the concern that some topics and examples were too advanced for the various benchmark levels. As a result,

certain concepts, such as the interaction of technology with the environment, were not introduced in-depth until later grades. In addition, the examples and wordings were simplified in the lower grades and became more detailed in the later grades.

These refinements, in addition to many others, were all a result of the input received on the first draft. The second draft, which is going through the same consensus building process this spring, will be refined during the summer of 1998 in time for field testing and limited reviews next fall. The *Standards* will go through a final period of refinement during the winter of 1998-1999 before being released at the ITEA Conference in Indianapolis, Indiana in March 1999.



From the Reviewer's View

Reviewers of the second draft of the *Standards for Technology Education* speak out:

“Well done—should be used as long as standards are not down graded and are used as a guide for upward movement.”

“Decision makers in educational systems across the U.S. are currently concerned about the use of educational technology (or information technology) to resolve the problems of literacy and numeracy. For these standards to gain widespread appreciation, they ought to address the dynamic role that technology education can play in this resolution.”

“Design narrative is very good. Implementation should increase self-esteem and promote/encourage students to do better in mathematics and pursue higher level mathematics courses.”

“Creativity of 6-8 students is unbelievable. The standards allow for this creativity.”

“It is important to include the human element, because people are the chief resource in any area of technology. People are the implementers, designers, creators, manufacturers, and users of any given technology.”

“Like the NCTM Standards, the *Standards for Technology Education* are broad. Support and design will be needed to implement the standards in schools. To this end, the vignettes were very helpful.”

“Good!! Develops research and writing skills and motivates creativity and sense of curiosity.”



Seventh graders at Summerfield Middle School pose with the 1st and 2nd place winning posters.

Classroom Activities

In response to “Becoming an Ambassador for Technology Education” in the January 1998 issue of *Standpoint*, James Partridge, an instructor at Summerfield Elementary/Middle School in Petersburg, Michigan, submitted a classroom activity he assigned to his seventh grade Introduction to Technology class. The assignment involved applying problem-solving skills to solve a communication problem. The objective of the assignment was to work as a team to develop a definition of “technology” and make a 12-inch by 10-foot poster to communicate the definition. Once each team developed a definition, they shared their definition with the other teams in their class and developed a class definition:

TECHNOLOGY is the sum of all human knowledge and the application of science used to transform resources to make things work better by using Manufacturing, Transportation, Construction, Bio-Tech, and Communication technologies to satisfy human needs and wants to make our lives easier.

Each team then designed a poster of the definition according to a set of design criteria. Representatives from advertising and graphic businesses evaluated the posters to chose the poster that best met all the design criteria. The winning poster was displayed in the middle school foyer.

Congratulations to Mr. Partridge and his students on a job well done!

The *Technology for All Americans Project* is a project of the International Technology Education Association (ITEA) and funded by the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA). All inquiries should be addressed to:



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Standards Team Profiles

In the next several issues of *Standpoint*, members of the Standards Team will be profiled to give readers a close-up of the individuals responsible for generating the *Standards for Technology Education (Standards)*. In addition, members will give their views on how the *Standards* will be implemented and how the *Standards* will develop technological literacy of K-12 students.



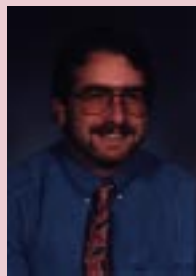
Connie Larson is a member of the Grades K-2/3-5 Standards Team. She has a Master's Degree in teaching and has taught first and second graders at John Wetten Elementary School in Gladstone, Oregon for the past 20 years. She co-authored a book entitled *Construction for Children, Projects in Design Technology*.

"The technology content standards will be easy to incorporate into my 1-2 blend classroom. I've been teaching Design Technology (DT) based on the British approach for the last ten years.

I was introduced to Britain's Design Technology through a DT specialist who visited our school. He assisted me with a community theme and changed my life forever. When six and seven year olds, because of DT, do not want to go to recess or PE—what excitement and what a wonderful discovery.

In Oregon, *The Educational Act for the 21st Century* has set new, higher standards for students so they are better prepared to face the challenges after high school. Our setting of higher standards means teachers will be even more focused on what they expect of students and how their classroom curriculum, instruction, and assessment will work. Teachers are weaving curriculum, instruction, and assessment together to help students achieve these higher standards.

Technology for All Americans and Oregon's Content Standards for Technology align. My challenge will be to continue improving my knowledge and application base and sharing my enthusiasm for technology with my students and peers."



Michael Jensen serves on the Grades 9-12 Standards Team. He has a Master's Degree from the University of Wisconsin-Stout and teaches technology and engineering education at Paonia High School in western Colorado where he began an integrated technology program in

1989. The Paonia High School technology program has been recognized nationally for its innovation at integrating instruction and continues to blur the lines of distinct subject areas.

"The content standards for technology education will allow us at Paonia High School to begin organizing the many pieces of technology content and integrated studies into a structured curriculum program that will impact the total school building. Specifically, the processes of technology will be utilized to provide a better emphasis in planning and design. Teaching planning and design as organized by the *Standards* will provide students globally with the tools to solve problems in invention and innovation. The processes of technology will become a segment of the curriculum that will be required of all freshman entering our high school and provide a basic foundation for all students. Further course work for the student will allow for more in-depth study and application of the processes as students proceed into advanced or diverse course work.

Perhaps the greatest attributes of the *Standards* toward implementation in our school will be the Connections dimension. The connections that technology education provides with all subjects is a great asset. Yet, the structure of technology connections has been a guessing game on the part of other standards and subject areas that call for technology, but are unsure of the connections that do exist. Connections have been the key to integrating technology education with other subjects and will be strengthened through the organization of content.

Overall, I find that the standards will aid in the organizing of content in my technology education program to insure that all students have the knowledge, skills, and attitudes to enter the lifelong learning process."



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Becoming an Ambassador for Technology Education

In response to the “Frequently Asked Questions” column that appeared in the September 1997 issue of *Standpoint*, Michael Shannon of Anglewood, New Jersey suggested that our answers to these important questions needed more detail. We should all be able to explain, without hesitation, what technology education is and the importance of technological literacy.

Mitchell Kittenplan, editor of *The Technology Educator*, a journal of the New York State Technology Education Association, said it best: “Technology Education teachers are the only ones who know what Technology Education is, and the results are devastating. Mention any other subject area, whether it’s Math, Science, History, Art, Foreign Language, or Music, and the course content is instantly understood. Not so with Technology Education.”

Shannon suggested that we “get back to basics” every so often to keep fresh in our minds these critical definitions from *Technology for All Americans: A Rationale and Structure for the Study of Technology*:

Technology is human innovation in action. It involves the generation of knowledge and processes to develop systems that solve problems and extend human capabilities.

Technological literacy is the ability to use, manage, and understand technology. It is much more than just knowledge about computers and their application.

► The ability to **use** technology involves the successful operation of the key systems of the

time. This includes knowing the components of existing macro-systems, or human adaptive systems, and how the systems behave.

► The ability to **manage** technology involves insuring that all technological activities are efficient and appropriate.

► **Understanding** technology involves more than facts and information, but also the ability to synthesize the information into new insights.

Technology Education is the school subject designed to develop technological literacy.

Technology Education (Technological Studies)

- ★ Teaches *about* technology
- ★ A school subject
- ★ Ultimate goal:
Technological literacy for everyone

Educational Technology

- ★ Teaches *with* technology
- ★ A means of teaching
- ★ Ultimate goal:
Improving the process of teaching and learning

References

Technology for All Americans Project. (1996). Technology for all Americans: A rationale and structure for the study of technology. Reston, VA: International Technology Education Association.

Kittenplan, M. (1997, Winter). ...if symptoms persist... The Technology Educator, 16, 2.