



A project of
The International
Technology Education
Association

Building Consensus for Technology Education Standards

Consensus is defined as general agreement or majority of opinion (Soukhanov, 1992, p. 401) and is critical to the development of the *Standards for Technology Education*. For the past three months, consensus building has been the focus of the Technology for All Americans Project (TFAAP). The project is administered through the International Technology Education Association (ITEA) and funded by the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA).

Beginning in early October 1997, the project staff presented the first draft of the *Standards for Technology Education* across the country at various regional and state conferences. Consensus hearings were conducted at these conferences to allow participants to review and comment on the technology content standards for grades K-12. Also during this time, the draft document was reviewed by individuals via the project's home page as well as being reviewed by mail.

The technology content standards are broken down by four benchmark grade levels—K-2, 3-5, 6-8, and 9-12—with each benchmark level encompassing content standards under the three universals and seven dimensions of technology. The three universals of technology have been defined as knowledge, processes, and contexts. These three universals include the seven dimensions of technology, which have been defined as technological concepts and principles, linkages, nature and history of technology, technological



*** Technology for All Americans Project Staff**



Participants at the consensus hearing conducted at the Learning Institute of Technology Education Conference in Ypsilanti, Michigan review the first draft of the technology content standards.

design, developing and producing technological systems, utilizing and managing technological systems, and assessing the impacts and consequences of technological systems. A sample of the technology content standards is shown in Figure 1.

Participants at the consensus hearings were allowed time to read the technology content standards for one benchmark level (or more, if time permitted) and respond to a series of consensus-based questions. Open-ended comments were also available for each question. Participants then engaged in an overall group discussion period on the draft standards.

William Dugger, Jr., director of TFAAP, conducted hearings at the following conferences: the American Society for Engineering Education North Midwest Section Conference in Iowa City, Iowa; the National Council of Teachers of Mathematics Regional Conference in Anchorage, Alaska; the National Science

Teachers Association Eastern Area Convention in Pittsburgh, Pennsylvania; the Mississippi Valley Technology Teacher Education Conference in Nashville, Tennessee; and the American Vocational Association Convention in Las Vegas, Nevada. Dugger said he was pleased with the number of individuals who participated at these hearings and their eagerness to provide in-depth critiquing of the draft standards. "Each individual's input is invaluable to the development of a viable set of technology content standards for our children in the future," he added.

Tom Hughes, director of development for the Foundation for Technology Education, conducted a consensus hearing at the New England Technology Education Conference in Newport, Rhode Island. The project's senior research associate, Pam Newberry, conducted hearings at the Learning Institute of Technology Education Conference in Ypsilanti, Michigan; the Work Now

and in the Future Conference in Portland, Oregon; and the Rocky Mountain States Technology Education Conference in Colorado Springs, Colorado. Dugger, Hughes, and Newberry conducted the first consensus hearing, which was held at the Southeastern Technology Education Conference in Roanoke, Virginia. Newberry praised the participants' dedication and hard work in providing substantial feedback during the first stage of the consensus building process.

The typical three-hour format of the consensus hearings was as follows:

- Overview presentation on TFAAP (45 minutes)
- Specific instructions for consensus hearing (15 minutes)
- Participants review the draft standards and respond to questionnaire (1 hour and 15 minutes)



Christopher Carroll, an engineer and professor of electrical and computer engineering at the University of Minnesota-Duluth, reviews the technology content standards at the consensus hearing conducted at the American Society for Engineering Education North Midwest Section Conference in Iowa City, Iowa.



Participants engage in group consensus activity at the hearing conducted at the Southeastern Technology Education Conference in Roanoke, Virginia.

- Group discussion (30 minutes)
- Wrap up (15 minutes)

This format was followed for the majority of the hearings, although several hearings allowed for more in-depth group consensus building. "The amount of substantial input we received during the consensus hearings, given the time constraints, has been fantastic," said Newberry.

Equally important as the hearings during the first stage of consensus building was the input received via the project's World Wide Web home page and mail review. The entire draft developed to date of the *Standards for Technology Education* was available for review and comment electronically during the month of November. Also, approximately 200 copies of the entire draft was mailed to six selected focus groups, the project's Advisory Group and Standards Team, and other individuals for their input. This input is just as critical as the consensus hearings. "Due to the time factor of the consensus hearings, participants reviewed only the 'meat'

[the technology content standards] of the draft document," Newberry said. "The mail review and home page review provided the necessary input on other sections of the total draft of the document. This provided the best possible opportunities for feedback to the project staff." (See Table 1).

The project staff, with the help of the Standards Team leaders and recorders, will spend January and February 1998 further developing and refining the standards based on all the input received on the first draft. The result of this work will be the second draft of the *Standards for Technology Education* that will go through the next stage of the consensus building process from March to May 1998. "We hope all of the reviewers of the first draft of the standards will see the fruits of their efforts in the second draft this spring," said Dugger.

Again, consensus hearings will be conducted at several conferences on the second draft (see Table 2), including the upcoming ITEA Conference in Fort Worth, Texas on March 8-10, 1998. Individuals attending this conference will have

the opportunity to participate in a consensus hearing scheduled as a pre-conference workshop on Saturday, March 7, 1998, from 9:00 a.m. to 12:00 p.m. "We anticipate following the same type format this spring as the fall 1997 consensus hearings," said Newberry. Participants at the ITEA Conference can expect to review and comment on the technology content standards for one benchmark grade level and engage in group consensus building

TABLE 1

**Table of Contents
First Draft
Standards for
Technology Education**

Preface
Chapter 1: <i>Standards for Technology Education—A Guide for Readers</i>
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4.1 Introduction
4.2 Content Standards for Grades K-2
4.3 Content Standards for Grades 3-5
4.4 Content Standards for Grades 6-8
4.5 Content Standards for Grades 9-12
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TABLE 2

**SPRING 1998
CONSENSUS HEARINGS*
Second Draft
Standards for
Technology Education**

- March 5-7, 1998
National Council of Teachers
of Mathematics Regional
Conference
Tampa, Florida
- March 8-10, 1998
International Technology
Education Association 60th
Annual Conference
Fort Worth, Texas
- April 2-5, 1998
National Council of Teachers
of Mathematics National
Conference
Washington, DC
- April 16-19, 1998
National Science Teachers
Association National Convention
Las Vegas, Nevada
- April 23, 1998
Wisconsin Technology Education
Conference
Wisconsin Dells, Wisconsin

*Confirmed hearings. Other hearings will be conducted, but were not confirmed at publication. Please see the project's home page for updates.

activity. The entire draft of the document will, again, be available on the home page and mailed to the six focus groups, the project's Advisory Group and Standards Team, and other selected individuals.

After the second stage of consensus building, the document will go through another period of

further development and refinement. In the fall of 1998, the third draft will be field tested in selected schools across the country. The input received during field testing will be used to refine the final document for publishing. The *Standards for Technology Education* will then be released at the ITEA Conference in Indianapolis, Indiana in March 1999.

For further information on the *Standards for Technology Education*, please contact: International Technology Education Association, Technology for All Americans Project, 1997 S. Main Street, Suite

701, Blacksburg, VA 24061-0353, Phone: (540) 953-0203, Fax: (540) 953-0014, Email: tfaa@bellatlantic.net, URL: <http://scholar.lib.vt.edu/TAA/TAA.html>. ❖

Reference

Soukhanov, A. H. et al. (Ed.). (1992). *The American heritage dictionary of the English language (3rd ed.)*. New York: Houghton Mifflin Company.

***Jodie L. Altice**, Administrative Assistant; Editor: **William E. Dugger, Jr.**, Director, Technology for All Americans Project.

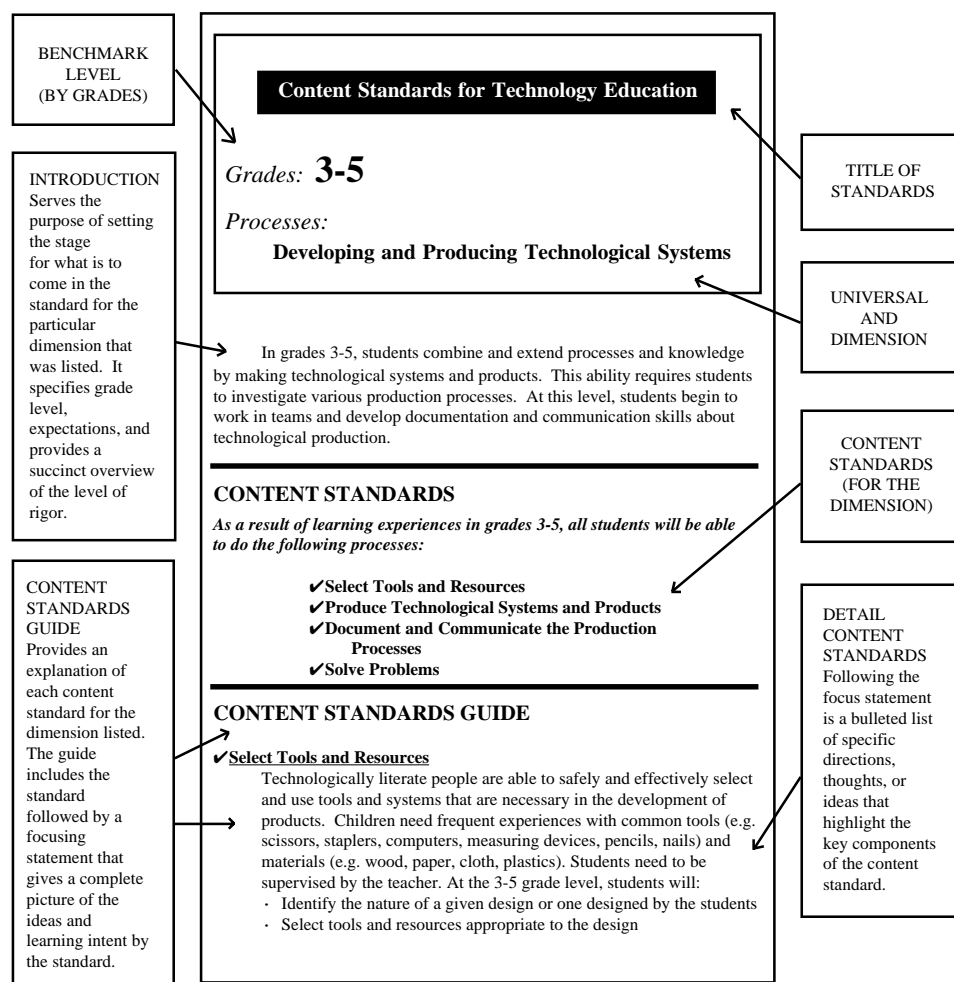


Figure 1. Sample Technology Content Standards.