



The Making of a Standard

Ever wonder how educational standards become standards in the first place? How is it decided what goes into a standard? The Technology for All Americans Project is going through the process of writing Standards for Technology Education. By looking at the methods being used to write the standards, we can get an inside glance into how the process works.

Background

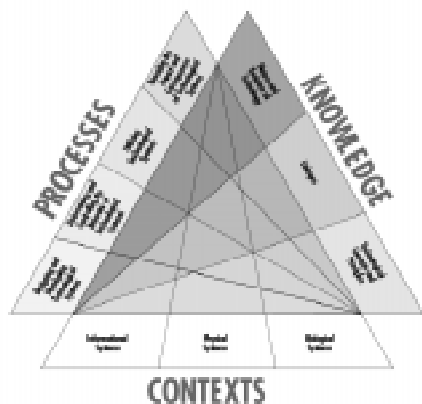
Since the completion of Phase I in October 1996, the staff of the Technology for All Americans Project have been concentrating all their

efforts on one task—the creation of content standards for technology education for grades K-12. Phase I developed the framework that the standards will be based on, outlined in the document *Technology for All Americans: A Rationale and Structure for the Study of Technology*. The document presented three universals for the study of technology that are timeless: processes, knowledge, and contexts. Under these universals are seven dimensions. These dimensions of technology define the universals, but are adaptive to technological changes that may occur through time. The universals and dimensions are the starting point for the creation of the standards and will serve as a structure to the writing process.

Two key groups were formed by the Technology for All Americans Project staff to provide input into the technology education standards: the Advisory Group and the Standards Team.

The Advisory Group

The Advisory Group is made of people who have been through the process of creating standards for their



TECHNOLOGY FOR ALL AMERICANS PROJECT STAFF*



Project Director, William E. Dugger, Jr., presents to the group at the Standards Team meeting held at the Xerox Document University in Leesburg, Virginia on October 25-28, 1996.

own fields of study. The members include: **Rodger Bybee**, Executive Director of the Center for Science, Mathematics, and Engineering Education, National Research Council; **Daniel Goroff**, Postsecondary Division Director of the Center for Science, Mathematics, and Engineering Education, National Research Council; **Linda Rosen**, Executive Director of the National Council of Teachers of Mathematics; **James Rutherford**, Director of Project 2061 of the American Association for the Advancement of Science; and **Gerald Wheeler**, Executive Director of the National Science Teachers Association.

The role of the group is to advise the Project Staff of the best practices in standards development and determine ways for the study of technology to be integrated into the total school curriculum. By using their input, the Project Staff can gain important insight into the methods that have worked in the past and those that did not. For example, we have

examined and adapted some of the same procedures that other standards used in developing, gaining consensus on, and validating their own standards. The Advisory Group provides a

wealth of knowledge and experience that the project can tap into, increasing the speed of our own learning curve.

The Standards Team

The second group that is helping provide guidance to the project is the Standards Team. The team is currently made up of 27 people from various backgrounds, including classroom teachers, supervisors, technology education teachers, elementary administrators, and representatives from math, science, and engineering. It is broken down into three sub-teams, representing Elementary, Middle, and High School grades by benchmark grade level (K-2 and 3-5, 6-8, and 9-12). Each sub-team has a leader who is the team's key contact to the Project Staff throughout the three-year period of Phase II. (See side-bar)

The Standards Team's main purpose is to recommend and evaluate the content of the standards. They provide the outlines, details, and



Connie Larson and George Willcox work in breakout groups at the October 25-28 Standards Team meeting.

revisions that the Project Staff will use to write the final standards. In addition to mailings and electronic communication such as email and the internet, the team will meet with the Project Staff twice throughout Phase II in intensive two- to four-day meetings. The first of those meetings was held last October at the Xerox Document University.

During the October 1996 Meeting

Twenty-one members of the Standards Team gathered in small and large group meetings during the four-day workshop from October 25-28, hoping to create the first outline of the technology education standards. Discussions were intense and in depth regarding what every child should know and be able to do in technology. Using the format of a standards outline as a guide (See figure 1), the Standards Team members generated the organizational level of the standards by benchmark grade level. As the team became more involved in the process, they found it was beneficial to mix the sub-teams up into new groups that represented a cross section of grade levels. This allowed the sub-teams to develop continuity. They could then look at each dimension with the perspective of all the developmental levels represented and find the knowledge and skills that could build on one another through each grade.

"Bright and dedicated people have engaged in genuine give and take and exchange of views. The project's leadership structured the teams to represent diverse perspectives and levels across the profession. As a result, we have not always been of one mind, but that is good," said Dr. Rodney Custer, Standards Team leader for grades 9-12, describing the meetings.

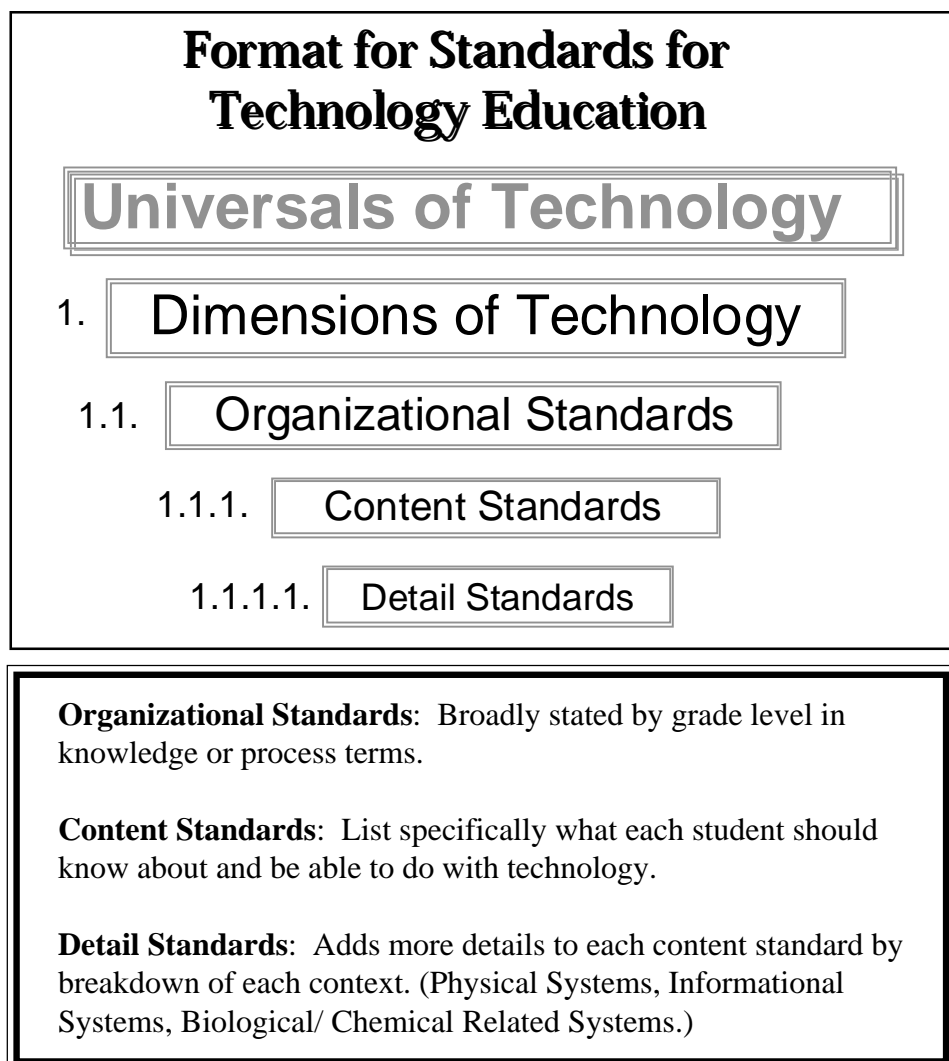
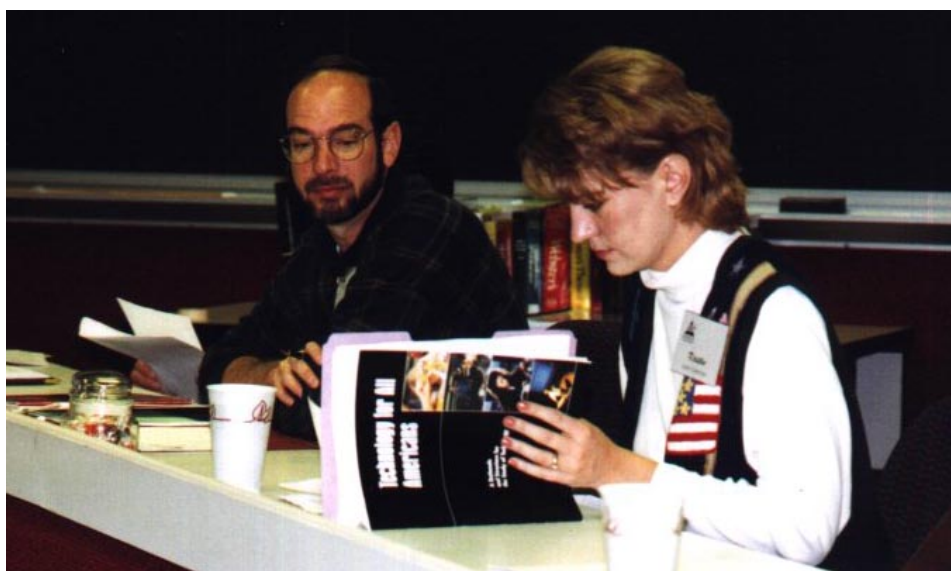


Figure 1.



Team members Barry Burke and Kristin Callender listen to group discussion at the October 25-28 meeting.

The Standards Team Leaders

Grades K-2 and 3-5:



Jane Wheeler is the Principal of Monte Vista Elementary School in Rohnert Park, California. In 1995, her school received the *California Distinguished School Award* for providing an integrated thematic program that enables students to apply skills and concepts through projects using a variety of technologies. She is a member of ITEA, Phi Delta Kappa, and the Association for supervision and

Grades 6-8:



Franzie Loepp is a Distinguished Professor at Illinois State University and a co-director for the Center for Mathematics, Science, and Technology. His current areas of specialization are Technology Education, Curriculum Design and Development, and Manufacturing Technology. In the past six years, ITEA has honored him with two awards, including the Academy of Fellows in 1996 and the Distinguished Technology Educator in 1990. From 1994-95, Loepp was a program officer for Technology Education with the National Science Foundation. He also serves on the Governor's Science Advisory Committee for Illinois.

Grades 9-12:



Rodney Custer is the program leader of technology and industry education program and Associate Professor at the University of Missouri-Columbia. He is the current editor of the *Journal of Industrial Teacher Education* and the co-editor of the 1996 CTTE yearbook "Technology and the Quality of Life." From 1995-1996, Custer was a program officer with the National Science Foundation representing technology education. In addition, he was recognized in 1996 by ITEA as the Outstanding Young Technology Educator.

March 1997 Meeting

Last December, and again in March, the Standards Team Leaders met with the Project Staff to continue the discussion from the October meeting. Several items needed to be resolved before the standards could be further developed. The first item discussed at the March meeting centered around

the format of the benchmark grade levels. During the first morning of the three day meeting, a discussion centered on whether to write the standards using the K-2, 3-5, 6-8, 9-12 breakdown or by using the K-4, 5-8, 9-12 format. After a lengthy discussion, consensus was gained by the members to use the K-2, 3-5, 6-8,

9-12 format. The members came to the conclusion that this format would be more user friendly and, because they would coordinate with the upcoming revised National Council of Teachers of Mathematics (NCTM) standards, it would create a stronger document.

"Each step in the evolution (of the standards) is adding more power and credence to what they are meant to be," said Pamela Newberry, the Senior Research Associate for the project.

Creating something new is never easy. But the hard work going into the creation of the Standards for Technology Education now is the first step to supporting the future growth of Technology Education. As Dr. Rodney Custer points out, "The potential for Technology Education is tremendous. But we must first engage in the hard, disciplined work that it takes to think through and develop a coherent structure and context for the field of study."

The Technology for All Americans Project is organizing many teachers, supervisors, and teacher educators to do just this.

For more information about the Technology for All Americans Project, write to 1997 South Main Street, Suite 701, Blacksburg, Virginia 24061-0353 or email the project staff at tfaa@bellatlantic.net. You can also visit our homepage at <http://scholar.lib.vt.edu/TAA/TAA.html>. ♦

***Amy Kinser**, *Lead Author and Public Relations/Dissemination Assistant*; **William Dugger, Jr.**, *Director*; **Pamela Newberry**, *Senior Research Associate*; **Ken Singletary**, *Research Assistant, Technology for All Americans Project*.