History and Impact of Standards for Technological Literacy

Revising Standards for Technological Literacy – Content for the Study of Technology: Issues and Recommendations

NAE, Washington, DC - November 19, 2010
Overview of Presentation

- Background to *Standards for Technological Literacy: Content for the Study of Technology* (ITEA, 2000, 2002, 2007) (*STL*)
- Overview of *STL*
- Impacts/Results of *STL*
Background:

- Technology for All Americans and ITEA
- Funded by NSF and NASA
Background:

- Three phases of Project
Background (Continued):

- Advisory Committee
- NAE Provided Substantial Input to STL
  - NAE Focus Group
  - Formal Review of STL by NRC
    - NAE STL Review Committee
    - NAE Special Review Committee
    - NRC Technical Review Panel
* Approximately 4,000 people reviewed STL
* Leaders from 21 International Countries Reviewed STL
Standards for Technological Literacy (STL) (ITEA, 2000, 2002/2007) presents the content for what every student should know and be able to do in order to be technologically literate.
Standards:

- **STL Standards** are 20 written statements about what is valued that can be used for making a judgment of quality.
- Standards represent fundamental concepts.
- The goal for students is to meet all of the standards from Grades K-12.
- **STL Standards** were written around five major organizers or categories.
The Five Major Organizers (Categories) in STL

- The Nature of Technology (3 Standards)
- Technology and Society (4 Standards)
- Design (3 Standards)
- Abilities for a Technological World (3 Standards)
- The Designed World (7 Standards)
Students will develop an understanding of the:

- characteristics and scope of technology.
- core concepts of technology.
- relationships among technologies and the connection between technology and other fields of study.
Technology and Society: (4 Stds.)

Students will develop an understanding of the:
- cultural, social, economic, and political effects of technology.
- effects of technology on the environment.
- role of society in the development and use of technology.
- influence of technology on history.
Students will develop an understanding of the:

- attributes of design.
- engineering design.
- role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.
Students will develop the abilities to:
- apply the design process.
- use and maintain technological products and systems.
- assess the impact of products and systems.
Students will develop an understanding of and be able to select and use:

- medical technologies.
- agricultural and related biotechnologies.
- energy and power technologies.
- information and communication technologies.
- transportation technologies.
- manufacturing technologies.
- construction technologies.
AETL is based on STL & provides the means for implementing STL in K-12.

AETL contains three separate but interrelated sets of standards.

- Student Assessment
- Professional Development
- Program
Other accomplishments in Phase 3

- Four Addenda developed
  - (Student Assessment, Programs, Professional Development, & Curriculum Development)
- ITEA/Gallup Polls
  (http://www.iteea.org/TAA/Publications/TAA_Publications.html)
Impacts/Results of STL

- Used in 41 States
- Primary document used in NCATE Accreditation Guidelines for teacher education programs in U. S.
- Council of Technology Teacher Education (CTTE) 2002 Yearbook based on STL
First document in the profession that provided content for what every student in grades K-12 should know and be able to do to be technologically literate.

Used as a significant reference document in the 2014 NAEP Framework for Assessment in Technology and Engineering Literacy. (Section 1 & 2)

Translated into five international languages (Japanese, German, Finnish, Chinese, and Estonian)
Misunderstanding about the true meaning of Technology

ITEA/Gallup Polls (2001 & 2004) found that the American public think that science and technology are the same.

Also, two-thirds of the public in the ITEA/Gallup Polls defined technology narrowly as being computers and the internet.

Confusion today about technology as being just information and communication technology (ICT)
STL uses the following terms:
- Mathematics – over 50 times
- Science – over 60 times
- Engineering – over 150 times

STL has strong ties philosophically with Benchmarks for Science Literacy (AAAS, 1993) and The National Science Education Standards (NRC, 1996)

In the time period when STL was being developed, this was before engineering began formal thinking about what they should be doing in grades K-12
Summary

- Background
- Overview of STL
- Impacts and Results of STL
Thank you!