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:

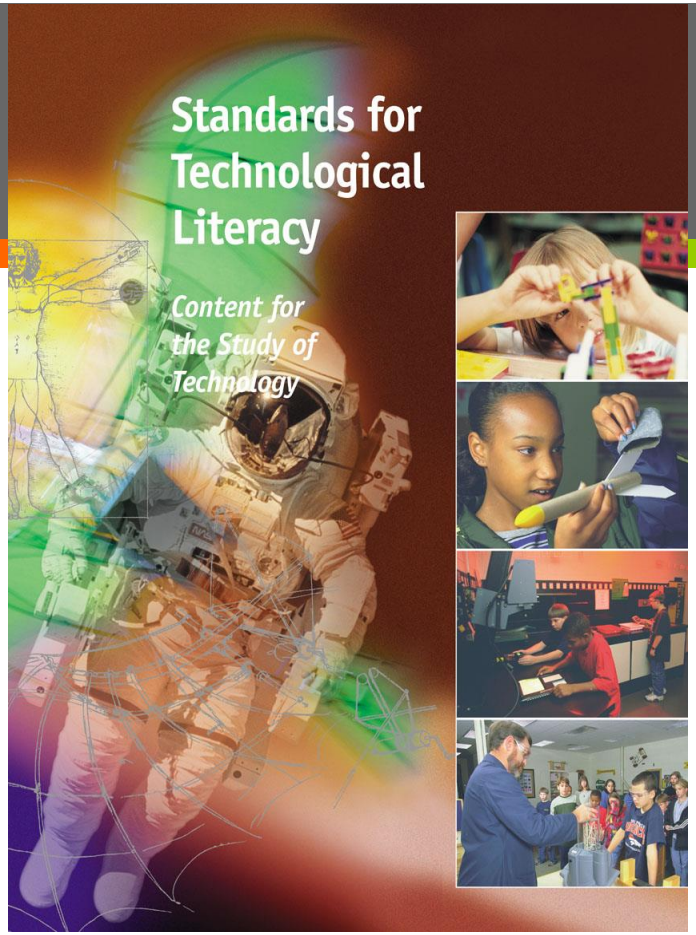
- Three phases of Project
  - 1994-1996 *Rationale and Structure of the Study of Technology* (ITEA, 1996 and revised in 2006)
  - 1996-2000 *Standards for Technological Literacy, Content for the Study of Technology (STL)* (ITEA, 2000, 2002, 2007)
  - 2000-2005 *Advancing Excellence in Technological Literacy, Student Assessment, Professional Development, and Program Standards (AETL)* (ITEA, 2003)

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

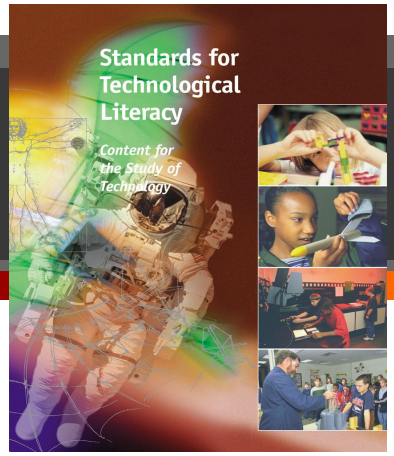
  * Approximately 4,000 people reviewed *STL*
  * Leaders from 21 International Countries Reviewed *STL*

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***.

www.iteea.org



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)

Nature of Technology (3 Stds.)

- 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.

Design (3 Stds.)

- 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.

Abilities for a Technological World: 3 Stds.)

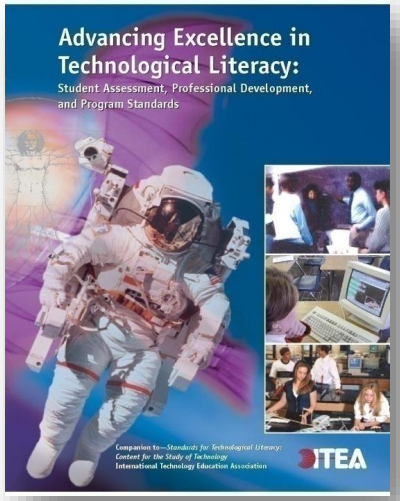
- Students will develop the abilities to:
  - apply the design process.
  - use and maintain technological products and systems.
  - assess the impact of products and systems.

The Designed World (7 Stds.)

- 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.

Advancing Excellence in Technological Literacy: Student Assessment, Professional Development, and Program Standards (AETL)(ITEA, 2003)

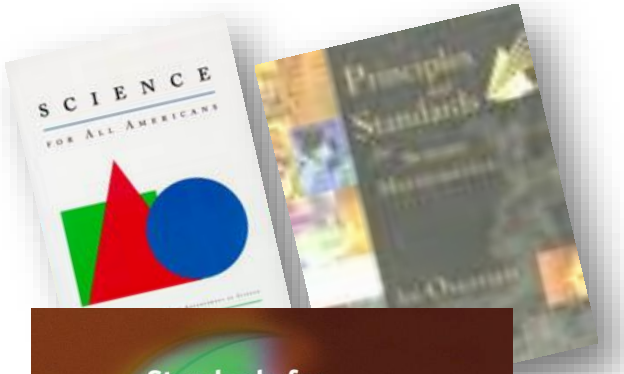
- *AETL* is based on STL & provides the means for implementing *STL* in K-12.
- *AETL*contains three separate but interrelated sets of standards.
  - Student Assessment
  - Professional Development
  - Program

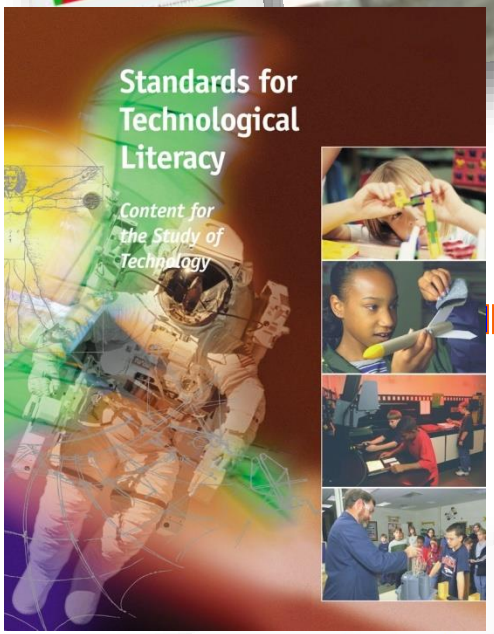


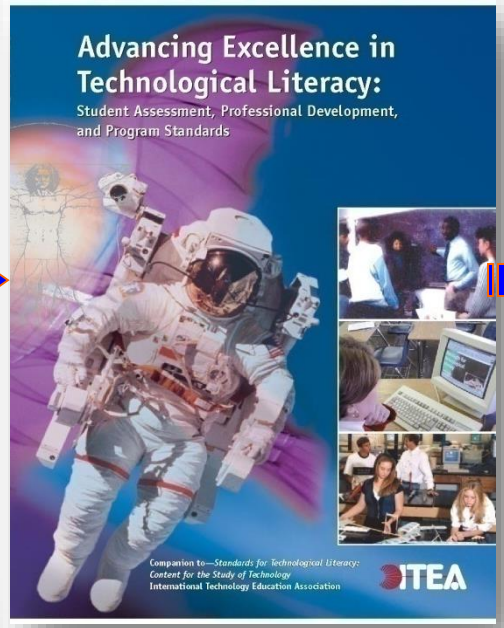
Other accomplishments in Phase 3

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

ITEEA's Engineering byDesign™?







ENGINEERING byDesign™

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*

Impacts/Results of *STL* (Cont.)

- 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)

Impacts/Results of *STL* (Cont.)

- 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)

Impacts/Results of *STL* (Cont.)

- *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 Resultsof *STL*

Thank you!