

## TECHNOLOGY STANDARDS FOR AIR QUALITY CURRICULUM

The International Society for Technology in Education (ISTE) has published *National Educational Technology Standards for Students: Connecting Curriculum and Technology* (2000). The ISTE work provides ten performance indicators for each grade band, K-2, 3-5, 6-8, and 9-12. The indicators are assigned to one or more of the following six broad categories: basic operations and concepts; social, ethical, and human issues; technology productivity tools; technology communication tools; technology research tools; and technology problem-solving and decision-making tools. These are available on-line at: <http://cnets.iste.org/>

The International Technology Education Association (ITEA) published *Standards for Technological Literacy: Content for the Study of Technology* (2000). As the title suggests, and the preface makes clear, these standards address "what students should know and be able to do in order to be technologically literate" (p. vii). The twenty standards comprise five broad categories on the nature of technology, technology and society, understanding of design, abilities needed in a technological world, and understanding the designed world. These are listed on-line at: <http://www.itea.org/TAA/Listing.htm>

All of the ISTE Technology Foundation Standards for Students listed below can be integral with a PBL investigation:

### ***1. Basic Operations and Concepts***

Students demonstrate a sound understanding of the nature and operation of technology systems.

Students are proficient in the use of technology.

### ***2. Social, Ethical, and Human Issues***

Students understand the ethical, cultural, and societal issues related to technology.

Students practice responsible use of technology systems, information, and software.

Students develop positive attitudes toward technology uses that support lifelong learning, collaboration, personal pursuits, and productivity.

### ***3. Technology productivity tools***

Students use technology tools to enhance learning, increase productivity, and promote creativity.

Students use productivity tools to collaborate in constructing technology-enhanced models, prepare publications, and produce other creative works.

#### ***4. Technology communications tools***

Students use telecommunications to collaborate, publish, and interact with peers, experts, and other audiences.

Students use a variety of media and formats to communicate information and ideas effectively to multiple audiences.

#### ***5. Technology research tools***

Students use technology to locate, evaluate, and collect information from a variety of sources.

Students use technology tools to process data and report results.

Students evaluate and select new information resources and technological innovations based on the appropriateness for specific tasks.

#### ***6. Technology problem-solving and decision-making tools***

Students use technology resources for solving problems and making informed decisions.

Students employ technology in the development of strategies for solving problems in the real world.

The ITEA Standards listed below are also applicable to PBL units; these parallel and/or expand upon many of the above technology standards.

#### ***The Nature of Technology***

***Standard 1:*** Students will develop an understanding of the characteristics and scope of technology.

***Standard 2:*** Students will develop an understanding of the core concepts of technology.

***Standard 3:*** Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.

#### ***Technology and Society***

***Standard 4:*** Students will develop an understanding of the cultural, social, economic, and political effects of technology.

***Standard 5:*** Students will develop an understanding of the effects of technology on the environment.

***Standard 6:*** Students will develop an understanding of the role of society in the development and use of technology.

***Standard 7:*** Students will develop an understanding of the influence of technology on history.

## *Design*

**Standard 8:** Students will develop an understanding of the attributes of design.

**Standard 9:** Students will develop an understanding of engineering design.

**Standard 10:** Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving.

## *Abilities of a Technological World*

**Standard 11:** Students will develop abilities to apply the design process.

**Standard 12:** Students will develop abilities to use and maintain technological products and systems.

**Standard 13:** Students will develop abilities to assess the impact of products and systems.

## *The Designed World*

**Standard 14:** Students will develop an understanding of and be able to select and use medical technologies.

**Standard 15:** Students will develop an understanding of and be able to select and use agricultural and related biotechnologies.

**Standard 16:** Students will develop an understanding of and be able to select and use energy and power technologies.

**Standard 17:** Students will develop an understanding of and be able to select and use information and communication technologies.

**Standard 18:** Students will develop an understanding of and be able to select and use transportation technologies.

**Standard 19:** Students will develop an understanding of and be able to select and use manufacturing technologies.

**Standard 20:** Students will develop an understanding of and be able to select and use construction technologies.