

**2006 Pennsylvania's Governor's Institute for Technology Education**  
**California University of Pennsylvania**  
**July 23<sup>rd</sup>-28<sup>th</sup>**  
**Elementary Strand Pre-Institute Assignment Requirement**

NOTE- In order to receive the two graduate credits provided by the PA Department of Education for participation in the Governor's Institutes, each participant is **required** to complete a pre-Institute assignment, which should constitute five hours of study/learning.

As a pre-Institute assignment for the Governor's Institute for Technology Education, each participant is expected to read the enclosed document *Technology for All Americans: A Rationale and Structure for the Study of Technology* and answer a set of related questions. Completing this assignment will help elementary classroom teachers learn more about Technology Education, why it is important that each teacher become familiar with technology (in a broad sense beyond hardware like computers), what it means to be technologically literate, and what and how technology should be taught and learned in the classroom.

**Assignment**

Read the document *Technology for All Americans: A Rationale and Structure for the Study of Technology* and answer the related 10 questions. The questions are structured after the format of the document in four sections:

- The Power and the Promise of Technology
- A Structure for the Study of Technology
- Teaching Technology
- Academic Standards for Science and Technology

Use the attached format to complete the assignment.

**Submission Requirements**

Each Governor's Institute participant is required to complete five hours of pre-Institute work. The participants of Governor's Institute for Technology Education should submit an electronic version of the assignment by July 14, 2006 to Dr. Daniel Engstrom ([engstrom@cup.edu](mailto:engstrom@cup.edu))

**References:**

International Technology Education Association (1996). *Technology for all Americans: A rationale and structure for the study of technology*. Reston VA: Author.  
Pennsylvania Department of Education (2002). *Academic standards for science and technology*. Harrisburg, PA: Author.

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**Questions taken from** *Technology for All Americans: A Rationale and Structure for the Study of Technology and Academic Standards for Science and Technology*

**The Power and the Promise of Technology**

Technology has the power to change the world. In the drive to satisfy needs and wants, people have developed and improved ways to travel, ways to communicate, build structures, make products, cure disease, and provide food. Each technological advance builds on a prior development. Each advance creates greater development and sometimes problems as well. Technology is created, managed, and used by societies and individuals, according to their goals and values.

1. The phrase “technological literacy” is used quite often in the document *Technology for All Americans: A Rationale and Structure for the Study of Technology*. After reading this document, define technological literacy in your own words.
2. What are some key characteristics a “technologically literate” person might possess?
3. Considering the students that you teach, describe how “technologically literate” they are with respect to the answers from questions one and two.

**A Structure for the Study of Technology**

Many Americans will agree that there is a need for technological literacy. It is also realized that in order for all to achieve technological literacy, a massive effort is required that should involve the schools, the mass media and entertainment outlets, book publishers, and museums. Our nations’ schools must bear the bulk of this effort. The difficult problem is determining how to develop this literacy. Technology continually changes; knowledge, processes and systems sometimes become obsolete soon after they are developed. This is the very reason that it becomes increasingly important to define and set boundaries for its study. Technology is “human innovation in action”, in other words, knowledge and processes must be generated to develop systems that solve problems and extend human capabilities. Therefore, technology has a process, knowledge, and context base that is definable and universal. Thus, these concepts are the universals of technology.

4. Summarize your understanding of technological processes in a short paragraph.
5. Summarize your understanding of technological knowledge in a short paragraph.
6. Summarize your understanding of the contexts of technology in a short paragraph.

## Teaching Technology

To achieve technological literacy for all students, schools must establish effective technological literacy efforts that begin in kindergarten and continue through high school and beyond. Incorporating the universals of technology structure throughout the curriculum and in technology courses, students will develop the necessary knowledge and abilities necessary to become technologically literate. Consequently, students will perform better in other subjects and will graduate capable of being able to pursue education and careers in the various technological professions.

7. Children at the elementary level should be engaged in technological experiences that encourage the design of products, systems and environments, in both hands-on and minds-on learning. After reading the section on elementary technology education (pages 36 & 37), briefly explain how you could modify a lesson that you currently instruct into a technological experience.
8. Technology education at the middle school level should be a required curriculum for all students. During the middle school years, instructional experiences should be organized that help students explore and develop a broader view of technology. Generally speaking, what knowledge and understandings of technology would an educator hope their students achieve by the end of middle school?

## Pennsylvania Academic Standards for Science and Technology

On January 5, 2002 the Academic Standards for Science and Technology were signed into law (22 Pa. Code, Ch. 4, Appendix B). These standards describe what students should know and be able to do by the end of fourth, seventh, tenth and twelfth grade. In addition, these standards reflect the increasing complexity and sophistication that students are expected to achieve as they progress through school. Access the standards using either of the websites listed below and answer the following questions.

Standards in PDF format: <http://www.pde.state.pa.us/k12/lib/k12/scitech.pdf>

Standards in Word format: <http://www.pde.state.pa.us/k12/lib/k12/scitech.doc>

9. The technology standards are included in standards 3.1, 3.2, 3.6, 3.7, and 3.8. At grade four, what technology standards do you feel you currently meet and how?
10. After reading *Technology for All Americans: A Rationale and Structure for the Study of Technology*, and the *Academic Standards for Science and Technology*, how has your view of technology changed?