HOICS: A Foundation of a Technologically Literate Society

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Presentation Overview

- Technology
- Literacy
- TL: Technological Literacy
- Characteristics of a TL Citizen
- Benefits of TL
- HOICS as a building block in achieving TL

Linking a technologically literate citizenry to HOICS

What is technology?

The process by which humans modify nature to meet their needs and wants (ITEA, 2000).

It includes:

* Artifacts e.g., computers, aircraft, microwave ovens.

* Knowledge and processes necessary to create and operate those products such as engineering know-how and design, manufacturing expertise, various technical skills.

* The infrastructure necessary for the design, manufacture, operation, and repair of technological artifacts, from corporate headquarters and engineering schools to manufacturing plants and maintenance facilities.

(NRC, 2002).

Misconceptions about technology

- Technology is just the application of science to solve practical problems

- Technology is only computer software and hardware (Gallup, 2002)

- Technology is either all good or all bad

What is literacy?

A shared body of knowledge that allows people to make sense of the world around them and to communicate with others.
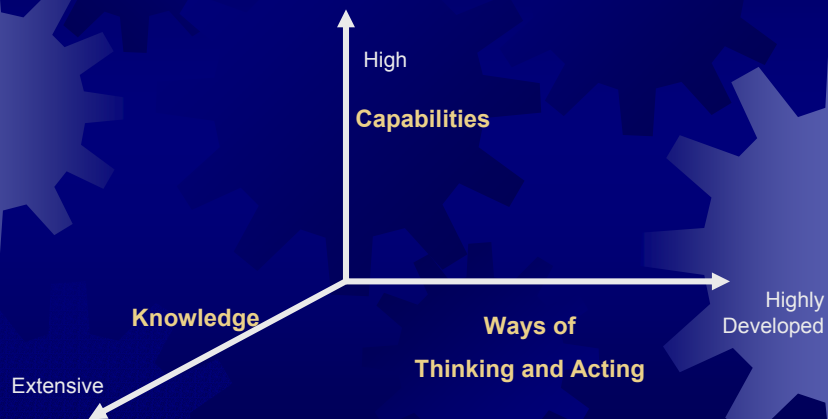
(Hirsch, 1988).

What is technological literacy?
The ability to:

* Engage with technology in productive ways
* Understand technologies relevant to life
* Ask questions about technology
* Gather information on technological issues to make informed decisions

* It includes 3 interdependent dimensions: knowledge, ways of thinking and acting, and capabilities
  (NRC, 2002)

What is technological literacy?

High

Capabilities

Knowledge

Ways of Thinking and Acting

Extensive

Highly Developed

Knowledge

* Recognizes pervasiveness.
* Understands basic concepts and terms.
* Is familiar with design process and it limitations.
* Knows technology shapes history and people shape technology.
* Knows that all technologies entail risk.
* Appreciates trade-offs and a balance of costs and benefits.
* Understands that technology reflects the values and culture of society.

Ways of Thinking and Acting

* Asks pertinent questions, of self and others, regarding the benefits and risks of technologies.
* Seeks information about new technologies.
* Participates, when appropriate, in decisions about the development and use of technology.

Capabilities

* Has a range of hands-on skills, such as using a computer for word processing and surfing the internet and operating a variety of home and office appliances.
* Can identify and fix simple mechanical or technological problems at home or work.
* Can apply basic mathematical concepts related to probability, scale, and estimation to make informed judgments about technological risks and benefits.

Benefits of TL

* Economic vitality for the nation.
* Technological skills for workers.
* More informed decision making in business, government and media.
* Citizens better prepared to make well-informed decision on matters that affect, or are affected by, technology.
* More equitable access to information and higher paying jobs.

Ways to become TL

* Colleges and Universities
* Museums and technical centers
* Hobbies and clubs
* K-12 curriculum

Technology in the curriculum

* State of Massachusetts

* International Technology Education Standards

* Others

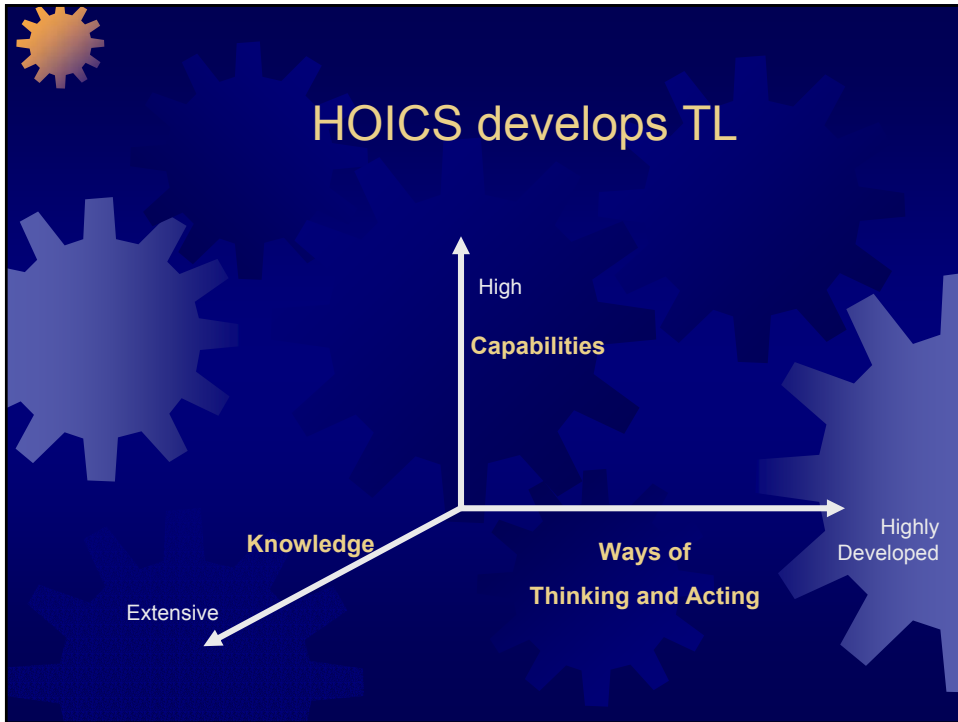# Incorporating strategies for TL into existing courses

- Technology and society in history class
- Technology and ethics in business, government or economics class
- Technology in science class

HOICS

Current research on how people learn supports HOICS curricula and pedagogy

HOICS develops TL

High

Capabilities

Knowledge

**Ways of
Thinking and Acting**

Highly
Developed

Extensive

HOICS

* Increased Knowledge
* Enhanced Capabilities
* "Ways of Thinking and Acting"
    * Utility of data
    * Active and independent pursuit of knowledge
    * Asking good questions
    * Analyzing problems
    * Dialog and discussion on scientific and tech issues

HOICS and TL Citizens

- It develops deeper knowledge in science and technology.
- It helps to make science and technology interesting and more relevant to students.
- It develops important life long skills that prepare students for productive lives as adults.