




Why Technological Literacy Matters

Karen Falkenberg
President-Education Division
Concept Catalysts
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Presentation Overview

- ✦ Technology
- ✦ Literacy
- ✦ TL: Technological Literacy
- ✦ Characteristics of a TL Citizen
- ✦ Benefits of TL
- ✦ Connections to math and science education



A technologically literate citizenry
is important to our country





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).



Technological literacy vs. educational technology

- ✦ They are not synonymous
- ✦ Educational technology focuses on the use of technology to enhance learning
- ✦ ISTE: International Society for Technology in Education
- ✦ TL concerned with learning about our technological world



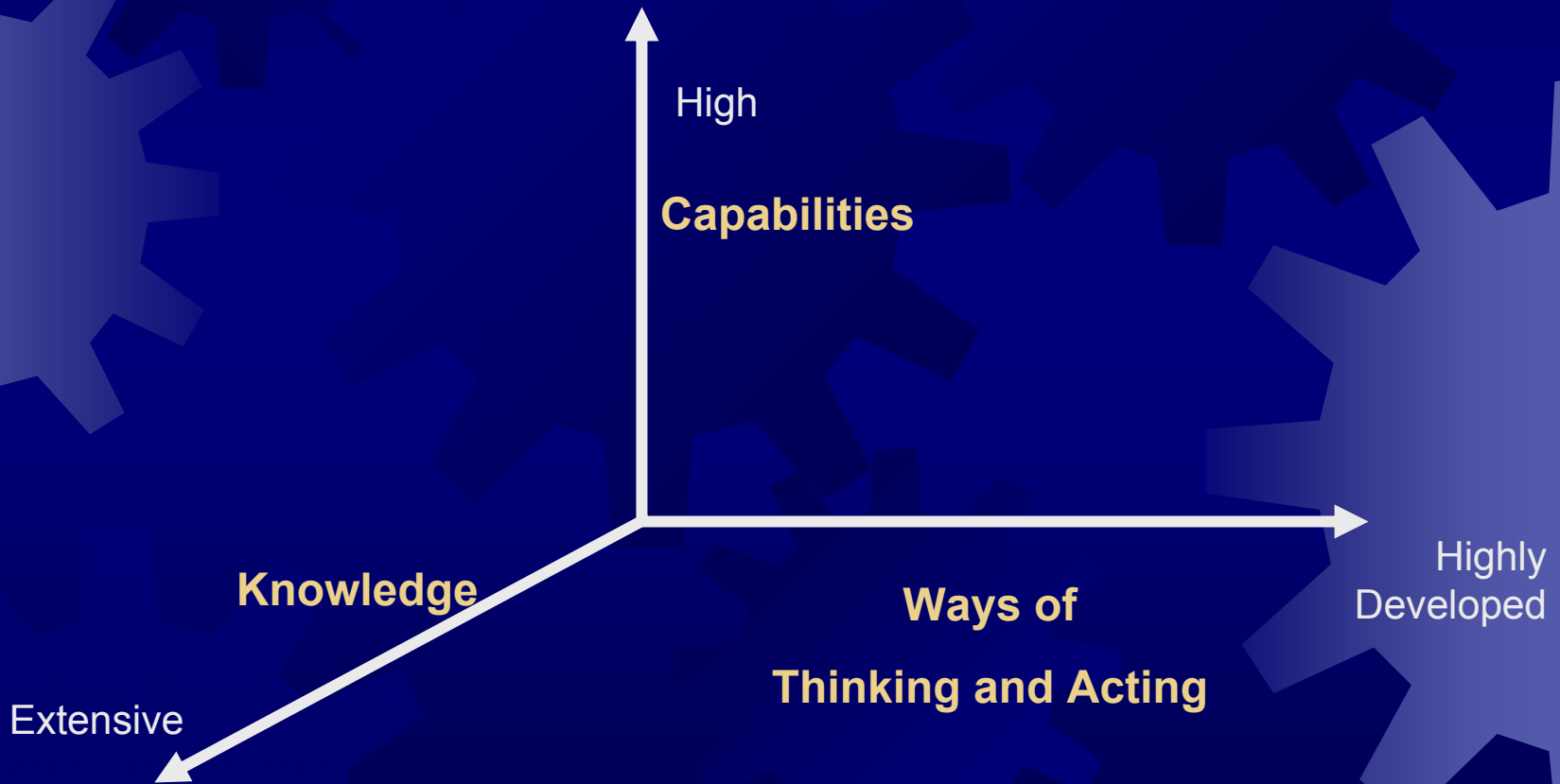
What is technological literacy?

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



What is technological literacy?





Knowledge

- ✦ Recognizes pervasiveness of technology.
- ✦ Understands basic concepts and terms in technology.
- ✦ Is familiar with design process and its 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.



Why does TL matter?

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



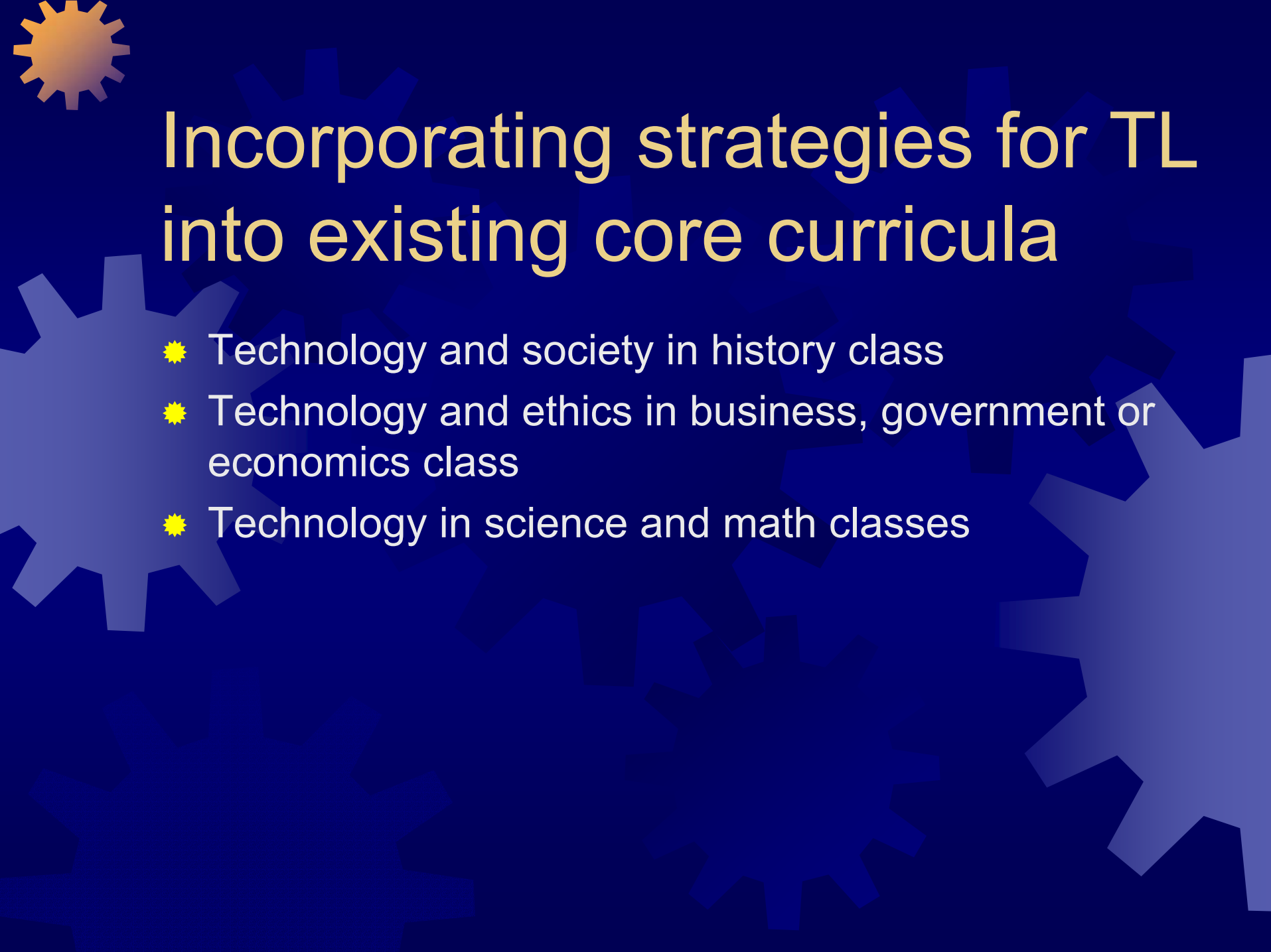
- ☀ Colleges and Universities
- ☀ Museums and technical centers
- ☀ Hobbies and clubs
- ☀ K-12 curriculum



Technology in the curriculum




- ✦ State of Massachusetts
- ✦ International Technology Education Standards
- ✦ New courses such as PTLW, MST, Infinity project
- ✦ SEEK-16 (Strategies for Engineering Education K-16)



Incorporating strategies for TL into existing core curricula

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



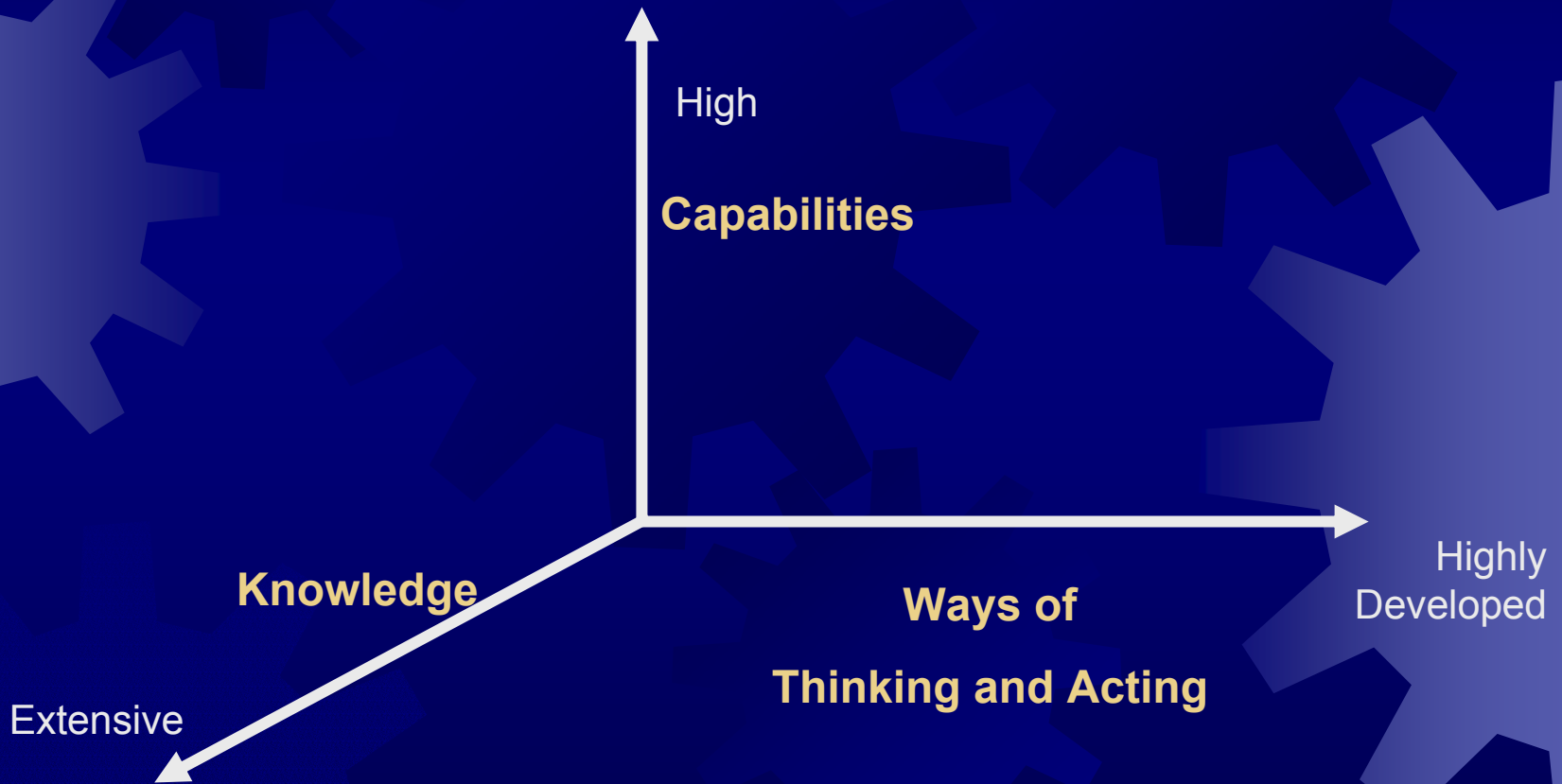
Current research on how people learn



Supports

- ✦ Inquiry curricula
- ✦ Inquiry pedagogy
- ✦ Technological literacy and HOTS

TL and HOTS





TL in Science and Math classes

- ✦ Increased Knowledge, Enhanced Capabilities
- ✦ “Ways of Thinking and Acting”
- ✦ Using technology in science and math classes is not synonymous with the study of technology
- ✦ Design supports problem solving skills, logical thinking, expository writing, science and math conceptual understanding



Linking Science, Math and Technology

- ★ Look for ways to link math and science courses with the technology education program
- ★ Technology education can provide a relevance to math and science that is sometimes missing in traditional courses
- ★ Technology education can be a motivator
- ★ A strong tech ed program provides alternative ways of learning

Science, Math and TL Citizens

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

