



**MST Learning Standard #5- Technology Key Ideas Correlation  
with Introduction to Technology Syllabus Performance Goals**

Key Ideas - Technology	Syllabus Module Goals
• Engineering Design .....	3, 5, 7, 8, 12, 16, 32
• Tools, Resources and Technological Processes .....	4, 5, 7, 8, 10, 11, 12, 16, 17, 20, 22, 26, 32
• Computer Technology .....	3, 19, 21, 23, 27, 33
• Technological Systems .....	9, 11, 15, 18, 24, 26, 28, 31, 32
• History, Evolution of Technology .....	1, 2, 3, 6
• Impacts of Technology .....	2, 8, 13, 14, 15, 28, 29
• Management of Technology.....	5, 7, 11, 14, 15, 18, 30

**TABLE 1**

**MODULE: GETTING TO KNOW TECHNOLOGY**

**Goal:** Examining the historical evolution of technological innovation as a means through which human needs and wants are satisfied.

**Performance Objectives:**

1. Demonstrate how the evolution of physical, biologically related, and information/communication aspects of technology led to the shift from an agriculturally-based...to an industrially-based...to an information-based society.
2. Give one example (from each of the three aspects of technology) of an application of a modern tool, device, or method which has evolved from simple beginnings and describe how it has changed daily routines and contributed to human progress.
3. Research examples of technological innovations from each of the three aspects of technology which satisfy needs and wants and model one of these innovations.

**MODULE: LEARNING WHAT RESOURCES ARE NEEDED FOR TECHNOLOGY**

**Goal:** Exploring and using the seven basic resources which are necessary for technology.

**Performance Objectives:**

4. Investigate the different forms of each resource category. Select one (or more) resource(s) and demonstrate how it (they) can be used.
5. Utilize the seven resources to produce a product, transport an object, grow living material, communicate an idea, or utilize the seven resources to implement a process and describe how full access to resources would have led to improved results.
6. Identify technological alternatives which would be appropriate for two nations (with differing non-renewable resources) to satisfy a given human need.

## **MODULE: LEARNING HOW PEOPLE USE TECHNOLOGY TO SOLVE PROBLEMS**

**Goal:** Exploring and experiencing how people can solve technological problems by using a formalized problem solving "system".

**Performance Objectives:**

7. Design and implement the optimal solution to a given technological problem (which will involve biologically-related technology, information/communication technology and/or physical technology) and use a formalized problem solving method.
8. Identify constraints which prevent a technological problem from being solved. Classify the constraints as those imposed by resource limitations, values, and/or attitudes of people and scientific principles.

## **MODULE: LEARNING ABOUT SYSTEMS AND SUBSYSTEMS**

**Goal:** Becoming familiar with the structure, function, components and control of technological systems and gaining an understanding of the similarities that exist among physical, information/communication and biologically-related technological systems.

**Performance Objectives:**

9. Model a system in biologically-related, information/communication and physical technology using the basic systems block diagram.
10. Apply the technological systems model to the safe assembly or construction and operation of a system, which encompasses biologically-related, information/communication, and/or physical technology.
11. Add feedback to close the loop in an operable open-looped system and then safely operate the system in order to bring actual results closer to desired results.
12. Identify the subsystems of a modern, complex technological system from each of the three aspects of technology and explain how they have been combined to generate the new system resulting in improved or additional human capabilities.

## **MODULE: LEARNING HOW TECHNOLOGY AFFECTS PEOPLE AND THE ENVIRONMENT**

**Goal:** Understanding the positive and negative impacts of technology while instilling the perception that people must assume the responsibility for adapting technology to the environment and to the human user.

**Performance Objectives:**

13. Demonstrate (in one or more of the three aspects of technology) outputs that are desired, undesired, expected, and unexpected.
14. Identify instances of the lack of fit between the technological system and the human user, identify techniques for improving the match between the technology, the human user, and the human-made environment, and demonstrate alternatives in order to improve the match in one or more of the given examples.
15. Identify instances of the lack of fit between the technological systems and the natural environment, identify techniques for improving the match between the technology and the natural environment, and model alternatives in order to improve the match.

## **MODULE: CHOOSING APPROPRIATE RESOURCES FOR TECHNOLOGICAL SYSTEMS**

**Goal:** Learning how to make informed choices in selecting the proper resources for technological systems and choosing resources from seven resource categories.

**Performance Objectives:**

16. Identify needed resources and a range of possible alternative resources that can be used to solve a given problem situation in each of the three aspects of technology.
17. Investigate the properties of various synthetic, raw, and biological materials through testing and describe why materials are often chosen on the basis of their properties.
18. Substitute different resource inputs for those originally provided in a functioning technological system, in order to optimize system outputs within given constraints.

## **MODULE: HOW RESOURCES ARE PROCESSED BY TECHNOLOGICAL SYSTEMS**

**Goal:** Learning how resources are processed by technological systems to meet human wants and needs and solving problems based on the conversion of energy, information, and materials from one form to another.

**Performance Objectives:**

20. Perform a variety of traditional and modern material conversion processes within each of the three aspects of technology.
21. Process information and communicate a message using graphic, photographic, or electronic means.
22. Perform a variety of energy conversion processes within each of the three aspects of technology.
23. Process information using computer hardware and software to reach an informed decision on a problem with several variables.

## **MODULE: CONTROLLING TECHNOLOGICAL SYSTEMS**

**Goal:** Learning how technological systems are controlled in the three aspects of technology by feedback in closed-loop systems or by subsystems such as timers or computer programs in open-loop systems

**Performance Objectives:**

24. Describe examples graphically of open-loop and closed-loop systems in the three aspects of technology.
25. Demonstrate the use of human and technological sensors to monitor the output of a process.
26. Assemble and operate a closed-loop technological system when given plans and access to necessary equipment.
27. Use a computer to control a technological system when given access to the necessary hardware and software.

## **MODULE: TECHNOLOGY AND SOCIETY: NOW AND IN THE FUTURE**

**Goal:** Learning the social and environmental impacts of technology on society from a local, national, and global perspective by accessing current and future technological systems.

**Performance Objectives:**

28. Anticipate the consequences of a new technology using futuring techniques when given an example of a technological system in each of the three aspects of technology.

29. Describe how emerging technologies have created new jobs and made others obsolete in each of the three aspects of technology.

30. Propose alternative technological solutions to a local, national, and global issue and model one of the alternatives.

## **MODULE: USING SYSTEMS TO SOLVE PROBLEMS**

**Goal:** Learning how to apply knowledge of systems to solve problems in biologically-related, communications/information, and physical technology and to combine various subsystems to provide integrated solutions to realistic problems or challenges.

**Performance Objectives:**

31. Draw and label a systems diagram which depicts the systems approach solution to a problem in each of the three aspects of technology.

32. Use a systems approach to develop a technological solution to a technological problem.

33. Use the computer as a record keeping device to document progress while developing an optimal solution to the problem proposed in performance objective

## Key Idea Correlation between Math, Science, and Technology Standards at the Intermediate Level

Introduction to Technology Module Reference	Math	Science		Technology
		Physical Setting	Living Environment	
T-3, T-6, T-10	1, 2, 4, 5, 7	2, 3, 4, 5	1, 2, 4, 7	Engineering Design
T-2, T-6, T-7	2, 4, 5, 7	3, 4, 5	1	Tools, Resources & Technological Processes
T-1, T-8	2, 3, 4, 5	1, 3, 4, 5	5	Computer Technology
T-4, T-8, T-10	1, 2, 3, 4, 5, 7	1, 2, 3, 4, 5,	1, 4, 5, 7	Technological Systems
T-1	2, 3, 4, 5	1, 3, 4, 5		History, Evolution of Technology
T-1, T-5, T-9	2, 3, 4, 5	1, 2, 3, 4, 5, 6	4, 5, 6, 7	Impacts of Technology
T-2, T-9	2, 4, 5, 6	3, 4	4, 5, 6, 7	Management of Technology

**Table 2**

The math and science standards key idea areas indicated in this chart are examples of instances where these concepts are touched on in the *Introduction to Technology Grades 7 & 8* syllabus. This is not an all-inclusive correlation and many other examples are practiced in the field.

### Key to Key Ideas in Math and Science<sup>1</sup>

<b>Number</b>	<b>Math 8</b>	<b>Science 8</b>	
<b>1</b>	<b>Mathematical Reasoning</b>	<b>PS Celestial Phenomena</b>	<b>LE Living Things Similarities and Differences</b>
<b>2</b>	<b>Number and Numeration</b>	<b>PS The Earth and Phenomena</b>	<b>LE Genetic Inheritance</b>
<b>3</b>	<b>Operations</b>	<b>PS Matter</b>	<b>LE Change Over Time</b>
<b>4</b>	<b>Modeling/Multiple Representation</b>	<b>PS Energy</b>	<b>LE Reproduction and Development</b>
<b>5</b>	<b>Measurement</b>	<b>PS Energy and Matter</b>	<b>LE Dynamic Equilibrium</b>
<b>6</b>	<b>Uncertainty</b>		<b>LE Ecological Interdependency</b>
<b>7</b>	<b>Patterns/Functions</b>		<b>LE Human Impacts</b>

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<sup>1</sup>The key ideas for math, science and technology are mutually exclusive of each other by identifying number.



## Intermediate Assessment in Technology Comment Sheet

	Yes	Yes, With Comment	No
<b>Content-</b> Are the questions generally appropriate in content? Comments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Difficulty-</b> Are the questions generally appropriate in difficulty? Comments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Directions-</b> Are directions sufficient for students? Comments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Format-</b> Is the format of the sample assessment and questions satisfactory? Comments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Time -</b> Would most students be able to complete the assessment within the time allotted? Comments:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Additional Comments:**

