

**Teacher / Library Media Specialist Points of Collaboration**  
Leatherstocking Library Information Literacy Skills Scope and Sequence

Curriculum Area: Math / Science / Technology - Intermediate	Library/Information Skill Learner Outcome	Collaborative Lesson Ideas with Library Media Specialist
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**Standard 1: Analysis, Inquiry, and Design**

*Students will use mathematical analysis, scientific enquiry, and engineering design, as appropriate, to pose questions, seek answers, and develop solutions.*

**Mathematical Analysis**

1.1 Extend mathematical notation and symbolism to include variables and algebraic expressions in order to describe and compare quantities and express mathematical relationships.	15 - Locate books on the shelves by using the call numbers 17 - Use the card/electronic catalog to locate materials by title, author, subject 23 - Use preselected/bookmarked sites on the Internet	LMS will assist students in finding resources needed to write algebraic expressions; LMS will also preselect websites on the Internet
1.2 Use inductive reasoning to construct, evaluate, and validate conjectures and arguments, recognizing that patterns and relationships can assist in explaining and extending mathematical phenomena.	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 33 - Search appropriate commercial electronic and online resources to access information	LMS will collaborate with teacher to find examples of inductive reasoning to present to students
1.3 Apply mathematical knowledge to solve real-world problems and problems that arise from the investigation of mathematical ideas, using representations such as pictures, charts, and tables	15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 21 - Identify and use electronic resources 22 - Comply with the district's Acceptable Use Policy for the Internet 23 - Use preselected/bookmarked sites on the Internet 29 - Be able to paraphrase information 32 - Use specialized encyclopedias and subject dictionaries (print and nonprint) 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet.	LMS will assist teacher in developing real-life scenarios for students to solve using mathematical principles learned

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<b>Scientific Inquiry</b>		
<p>1.1 Formulate questions independently with the aid of references appropriate for guiding the search for explanations of everyday observations</p>	<p>3 - Know the layout and organization of the library            14 - Know what the reference section is in the library            15 - Locate books on the shelves by using call numbers            16 - Locate and use the magazines in the library 17 - Use the card/electronic catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet            27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information            36 - Use magazine indices to retrieve articles for pleasure and information (print/nonprint) 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 40 - Analyze and</p>	<p>LMS will guide students to finding reference materials (print and electronic) to help them formulate needed questions</p>
<p>Construct explanations independently for natural phenomena, especially by proposing preliminary visual models of phenomena.</p>	<p>17 - Use the card/electronic catalog to locate materials on particular subjects 21 - Identify and use electronic resources            25 - Be able to take simple notes            26 - Be able to cite sources            27- Select appropriate resources for reference information            29 - Be able to paraphrase information            41 - Use an electronic catalog to locate and borrow resources through interlibrary loan</p>	<p>LMS will collaborate with teacher to instruct students on notetaking and paraphrasing information collected</p>

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<p>Represent, present, and defend their proposed explanations of everyday observations so that they can be understood and assessed by others.</p>	<p>32 - Use specialized encyclopedias and subject 33 - Search appropriate commercial electronic and online resources to access information 36 - Use magazine indices to retrieve articles for pleasure and information (print/nonprint) 37 - Use multimedia software to produce presentations 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered. 47 - Prepare a works cited page using different types of material using a standard District format such as MLA using a standard</p>	<p>LMS will instruct students in how to present proposed explanations using Microsoft PowerPoint</p>
<p>Seek to clarify, to assess critically, and to reconcile with their own thinking the ideas presented by others, including peers, teachers, authors, and scientists</p>	<p>3 - Know the layout and organization of the library 7 - Develop retelling skills 17 - Use the card/electronic catalog to locate materials by title, author, subject, or series 21 - Identify and use electronic resources 27 - Select appropriate resources for reference information 39 - Use a search strategy to access and retrieve information</p>	<p>LMS will collaborate with teacher to teach a lesson on students' beliefs and misconceptions and then investigate the truth</p>
<p>1.2 Develop, present, and defend formal research proposals for testing their own explanations of common phenomena, including ways of obtaining needed observations and ways of conducting simple controlled experiments</p>	<p>25 - be able to take simple notes 27 - Select appropriate resources for reference information 29 - Be able to paraphrase information 32 - Use specialized encyclopedias and subject dictionaries 33 - Search appropriate commercial electronic and online resources to access information 36 - Use magazine indices to retrieve articles for pleasure and information (nonprint/print) 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered 41 - Use an electronic catalog to locate and borrow resources through interlibrary loan 43 - Recognize the difference between a citation, an abstract, and a full-text article 44 - Use cross references and/or related terms to access additional information (e.g. see or see also) 45 - Use the electronic catalog to locate materials using keywords, subject headings, and Boolean searching 46 - Use</p>	<p>LMS will work with students to help them research information that substantiates their proposals</p>

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Carry out their research proposals, recording observations and measurements (e.g. lab notes, audio tape, computer disk, video tape) to help assess the explanation	25 - Be able to take simple notes 37 - Use multimedia software to produce presentations	LMS will demonstrate how to use Microsoft Excel so students will be able to record their information; LMS will also show students how to take simple notes
Interpret the organized data to answer the research question or hypothesis and to gain insight into the problem	40 - Analyze and synthesize the information gathered.	LMS will assist students in finding resources on the scientific method
<b>Engineering Design</b>		
1.1 Locate and utilize a range of printed, electronic, and human information resources to obtain ideas	17 - Use the card/electronic catalog to locate materials on particular subjects 21- Identify and use electronic resources 25 - Be able to take simple notes 26 - Be able to cite sources 29 - Be able to paraphrase information 31 - Prepare a brief works cited page 33 - Search appropriate commercial electronic and online resources to access information 35 - Understand plagiarism and the need for documentation when doing a research project 36 - Use magazine indices to retrieve articles for pleasure and information (print/nonprint) 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered 41 - Use an electronic catalog to locate and borrow resources through interlibrary loan 43 - Recognize the difference between a citation, an abstract, and a full-text article 44 - Use cross references and/or related terms to access additional information	LMS will instruct students on the research process and focus on notetaking, paraphrasing, and citing resources
Consider constraints and generate several ideas for alternative solutions, using group and individual ideation techniques (group discussion, brainstorming, forced connections, role play); defer judgment until a number of ideas have been generated; evaluate (critique) ideas; and explain why the chosen solution is optimal	18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 20 - Locate and use simple dictionaries, thesauri, and encyclopedias 21 - Identify and use electronic resources 25 - Be able to take simple notes 27 - Select appropriate resources for reference information	LMS will provide resources from various formats including print and electronic sources to enable teams of students to gather a variety of information with which to consult and present within their group
Develop plans, including drawings with measurements and details of construction, and construct a model of the solution, exhibiting a degree of craftsmanship	16 - Locate and use the magazines in the library 17 - Use the card/electronic catalog to locate materials on particular subjects 21 - Identify and use electronic resources	LMS will provide examples of drawings so students can develop their own

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**Standard 2: Information Systems**

*Students will access, generate, process, and transfer information using appropriate technologies.*

**MST2 - Information Systems**

2.1 Use a range of equipment and software to integrate several forms of information in order to create good quality audio, video, graphic, and text-based presentations	37 - Use multimedia software to produce presentations	LMS will instruct students in how to make a slide show using Microsoft PowerPoint
Use spreadsheets and data-base software to collect, process, display, and analyze information. Students access needed information from electronic data bases and on-line telecommunication services.	21 - Identify and use electronic resources 25 - Be able to take simple notes 32 - Use specialized encyclopedias and subject dictionaries (print/nonprint) 33 - Search appropriate commercial electronic and online resources to access information 35 - Understand plagiarism and the need for documentation when doing a research project 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 40 - Analyze and synthesize the information gathered.	LMS will instruct students in using electronic databases and Microsoft Excel
Systematically obtain accurate and relevant information pertaining to a particular topic from a range of sources, including local and national media, libraries, museums, governmental agencies, industries, and individuals	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 21 - Identify and use electronic resources 24 - Know that interlibrary loan is available and follow appropriate procedures 27 - Select appropriate resources for reference information 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered. 41 - Use an electronic catalog to locate and borrow resources through interlibrary loan	LMS will assist students in finding and using newspapers, electronic, and print resources and help students obtain information from other agencies
2.2 Understand the need to question the accuracy of information displayed on a computer because the results produced by a computer may be affected by incorrect data entry	39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered.	LMS will teach students how to evaluate web resources for accuracy and authenticity
Understand why electronically stored personal information has greater potential for misuse than records kept in conventional form	40 - Analyze and synthesize the information gathered.	LMS will show students personal webpages with misinformation and have them compare them to authoritative, accurate sites

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2.3 Use graphical, statistical, and presentation software to present projects to fellow classmates	25 - Be able to take simple notes 29 - Be able to paraphrase information 37 - Use multimedia software to produce presentations	LMS will instruct students in how to use graphical software and Microsoft PowerPoint to present their projects
Describe applications of information technology in mathematics, science, and other technologies that address needs and solve problems in the community	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 21 - Identify and use electronic resources 24 - Know that interlibrary loan is available and follow appropriate procedures 27 - Select appropriate resources for reference information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered. 41 - Use an electronic catalog to locate and borrow resources through interlibrary loan	LMS will work with students to help them research applications of information technology
Explain the impact of the use and abuse of electronically generated information on individuals and families	38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered.	LMS will teach students how to evaluate web resources for accuracy and authenticity

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**Standard 3: Mathematics**

*Students will understand mathematics and become mathematically confident by communicating and reasoning mathematically, by applying mathematics in real-world settings, and by solving problems through the integrated study of number systems, geometry, algebra*

<b>Mathematical Reasoning</b>		
<b>3.1</b> Make conclusions based on inductive reasoning	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 21 - Identify and use electronic resources 27 - Select appropriate resources for reference information 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered.	LMS will provide resources with examples of inductive reasoning
<b>3.2 Number and Numeration</b>		
Understand and apply ratios, proportions, and percents through a wide variety of hands-on explorations	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 23 - Use preselected/bookmarked sites on the Internet	LMS will booktalk trade books that have practical applications of math
<b>3.3 Operations</b>		
Demonstrate an understanding of operational algorithms (procedures for adding, subtracting, etc.)	25 - Be able to take simple notes	LMS will teach students how to take simple notes in an effort to explain operations such as adding and subtracting
Apply concepts of ratio and proportion to solve problems	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 23 - Use preselected/bookmarked sites on the Internet	LMS will preselect Internet sites involving realistic scenarios dealing with ratios
<b>3.4 Modeling/Multiple Representation</b>		
Visualize, represent, and transform two- and three-dimensional shapes	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 23 - Use preselected/bookmarked sites on the Internet 37 - Use multimedia software to produce presentations	LMS will assist students in creating 2 and 3 dimensional shapes using multimedia software

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Use maps and scale drawings to represent real objects or places	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information	LMS will instruct students on using local geographic resources
Use concrete materials and diagrams to describe the operation of real world processes and systems	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information	LMS will help students find resources that they can use as guides for making their own diagrams
<b>3.5 Measurement</b>		
Estimate, make, and use measurements in real-world situations	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information	LMS will provide some resources on different forms of measurement and guide students in finding other sources
Explore and produce graphic representations of data using calculators/computers	25 - Be able to take simple notes 37 - Use multimedia software to produce presentations	LMS will demonstrate how to produce graphic representations with computer software

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<b>3.6 Uncertainty</b>		
Use estimation to check the reasonableness of results obtained by computation, algorithms, or the use of technology	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 23 - Use preselected/bookmarked sites on the Internet 37 - Use multimedia software to produce presentations	LMS will demonstrate how to display students' results using Microsoft Excel
<b>3.7 Patterns/Functions</b>		
Recognize, describe, and generalize a wide variety of patterns and functions	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 23 - Use preselected/bookmarked sites on the Internet 37 - Use multimedia software to produce presentations	LMS will find books and media showing patterns that students will need to describe
Describe and represent patterns and functional relationships using tables, charts and graphs, algebraic expressions, rules, and verbal descriptions	25 - Be able to take simple notes 37 - Use multimedia software to produce presentations	LMS will teach students how to make tables in Microsoft Word or Excel
Use patterns and functions to represent and solve problems	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 23 - Use preselected/bookmarked sites on the Internet	LMS will help students find real-life scenarios to solve problems by applying mathematical concepts

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**Standard 4: Science**

*Students will understand and apply scientific concepts, principles, and theories pertaining to the physical setting and living environment and recognize the historical development of ideas in science.*

<b>Physical Setting</b>		
<p><b>4.1</b> Explain daily, monthly, and seasonal changes on earth</p>	<p>17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 21 - Identify and use electronic resources 27 - Select appropriate resources for reference information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered.</p>	<p>LMS will help students navigate and utilize websites like the National Weather Bureau</p>
<p><b>4.2</b> Explain how the atmosphere (air), hydrosphere (water), and lithosphere (land) interact, evolve, and change</p>	<p>14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet</p>	<p>LMS will assist students in finding resources (print and electronic) on ecology such as the environment of the rainforest</p>

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Describe volcano and earthquake patterns, the rock cycle, and weather and climate changes	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will help students find material on meteorology, geology, and volcanology
4.3 Observe and describe properties of materials, such as density, conductivity, and solubility	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will help students find examples involving physical properties of matter such as conducting electricity through steel vs. plastic

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4.4 Describe the sources and identify the transformations of energy observed in everyday life	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will provide resources on energy and its uses in everyday life
4.5 Describe different patterns of motion of objects	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will provide physics resources (electronic and print)
<b>Living Environment</b>		
4.1 Compare and contrast the parts of plants, animals, and one-celled organisms	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 23 - Use preselected/bookmarked sites on the Internet 25 - Be able to take simple notes	LMS will teach students how to write a compare/contrast essay

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Explain the functioning of the major human organ systems and their interactions	14 - Know what the reference section is in the library 15 - Locate books on the shelves by using call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 37 - Use multimedia software to produce presentations 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will find resources (multimedia and online) on human anatomy and help students search for needed information
4.2 Describe sexual and asexual mechanisms for passing genetic materials from generation to generation	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will help students find resources on reproduction in plants and animals
4.3 Describe sources of variation in organisms and their structures and relate the variations to survival	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will find resources on evolution, Darwin, and survival of the fittest for students to explore in greater depth
4.4 Observe and describe cell division at the microscopic level and its macroscopic effects	25 - Be able to take simple notes	LMS will teach students how to jot down notes when studying cells under a microscope

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4.5 Compare the way a variety of living specimens carry out basic life functions and maintain dynamic equilibrium	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will provide resources on ecosystems and biomes
Describe the importance of major nutrients, vitamins, and minerals in maintaining health and promoting growth and explain the need for a constant input of energy for living organisms	25 - Be able to take simple notes 29 - Be able to paraphrase information 35 - Understand plagiarism and the need for documentation when doing a research project 37 - Use multimedia software to produce presentations	LMS will guide students through print, electronic, and software resources on the human body and nutrition; LMS will also teach students how to take notes and paraphrase
4.6 Describe the flow of energy and matter through food chains and food webs	25 - Be able to take simple notes 29 - Be able to paraphrase information 35 - Understand plagiarism and the need for documentation when doing a research project	LMS will find information on the food chain and help students graph information gathered in food webs
Provide evidence that green plants make food and explain the significance of this process to other organisms	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will compile print and nonprint hotlists for students to gather information from

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<p>4.7 Describe how living things, including humans, depend upon the living and nonliving environment for their survival</p>	<p>17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet</p>	<p>LMS will help students find sources on the environment and ecosystems</p>
<p>Describe the effects of environmental changes on humans and other populations</p>	<p>17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet</p>	<p>LMS will explore effects of acid rain and the greenhouse effect to provide examples environmental changes</p>

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**Standard 5: Technology**

*Students will apply technological knowledge and skills to design, construct, use, and evaluate products and systems to satisfy human and environmental needs.*

**5.1 Engineering Design**

<p>Identify needs and opportunities for technical solutions from an investigation of situations of general or social interest</p>	<p>17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet</p>	<p>LMS will share and discuss How Willy Got His Wheels, a story of a dog who was given the chance to walk because of a special device created for him</p>
<p>Locate and utilize a range of printed, electronic, and human information resources to obtain ideas</p>	<p>15 - Locate books on the shelves by using the call numbers 17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 20 - Locate and use simple dictionaries, thesauri, and encyclopedias 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 24 - Know that interlibrary loan is available and follow appropriate procedures 27 - Select appropriate resources for reference information 28 - Use primary and secondary information resources 32 - Use specialized encyclopedias and subject dictionaries (print and nonprint) 33 - Search appropriate commercial electronic and online resources to access information 34 - Use biographical reference works 36 - Use magazine indices to retrieve articles for pleasure and information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet</p>	<p>LMS will provide a variety of resources for students to explore, navigate, and become proficient in using</p>

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Consider constraints and generate several ideas for alternative solutions, using group and individual ideation techniques (group discussion, brainstorming, forced connections, role play); defer judgment until a number of ideas have been generated; evaluate (critique) ideas; and explain why the chosen solution is optimal	18 - Use the card/electronic catalog to locate materials by title, author, subject, and/or series 20 - Locate and use simple dictionaries, thesauri, and encyclopedias 21 - Identify and use electronic resources 25 - Be able to take simple notes 27 - Select appropriate resources for reference information	LMS will provide resources from various formats including print and electronic sources to enable teams of students to gather a variety of information with which to consult and present within their group
<b>Tools, Resources, and Technological Processes</b>		
5.2 Choose and use resources for a particular purpose based upon an analysis and understanding of their properties, costs, availability, and environmental impact	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will create a project whereby students will incorporate costs, availability, etc. within a specified budget
<b>Computer Technology</b>		
5.3 Assemble a computer system including keyboard, central processing unit and disc drives, mouse, modem, printer and monitor	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information	LMS will help students locate sources that detail how to assemble computer parts

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Use a computer system to connect to and access needed information from various Internet sites	33 - Search appropriate commercial electronic and online resources to access information 36 - Use magazine indices to retrieve articles for pleasure and information (print/nonprint) 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered. 41 - Use an electronic catalog to locate and borrow resources through interlibrary loan 43 - Recognize the difference between a citation, and abstract, and a full-text article 44 - Use cross references and/or related terms to access additional information	LMS will create an electronic scavenger hunt for students to become familiar with electronic databases and websites
Use a computer system to monitor and control external events and/or systems	33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered. 43 - Recognize the difference between a citation, and abstract, and a full-text article 44 - Use cross references and/or related terms to access additional information	LMS will help students monitor and navigate weather satellites displaying information online
<b>Technological Systems</b>		
Select appropriate technological systems on the basis of safety, function, cost, ease of operation, and quality of post-purchase support	33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered. 43 - Recognize the difference between a citation, and abstract, and a full-text article 44 - Use cross references and/or related terms to access additional information	LMS will devise a research project in which students will explore various computer companies and purchase the best computer system for home use on the basis of cost, ease of operation, etc.

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<b>History and Evolution of Technology</b>		
5.5 Describe how the evolution of technology led to the shift in society from an agricultural base to an industrial base to an information base	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information	LMS will provide examples of how technological advances have changed society by finding articles pertaining to the Industrial Revolution
Understand the contributions of people of different genders, races, and ethnic groups to technological development	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will highlight collections on inventions and contributions made
Describe how new technologies have evolved as a result of combining existing technologies (e.g. photography combined optics and chemistry; the airplane combined kite and glider technology with a lightweight gasoline engine)	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will help students research existing technology in order for them to combine several and create a new technology

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<b>Impacts of Technology</b>		
5.6 Describe how outputs of a technological system can be desired, undesired, expected, or unexpected	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will expose students to accidental discoveries causing unforeseen consequences which they will have to explore and research themselves; LMS will guide them through research process
Describe through examples how modern technology reduces manufacturing and construction costs and produces more uniform products	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will gather information on car manufacturing and assembly line techniques that have improved as a result of technological advances
<b>Management of Technology</b>		
5.7 Provide examples of products that are well (and poorly) designed and made, describe their positive and negative attributes, and suggest measures that can be implemented to monitor quality during production	33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet 39 - Use a search strategy to access and retrieve information 40 - Analyze and synthesize the information gathered. 43 - Recognize the difference between a citation, and abstract, and a full-text article 44 - Use cross references and/or related terms to access additional information	LMS will expose students to the Edsel car which was envisioned to be an outstanding model but became known as the "lemon;" students will research this under the guidance of the LMS

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**Standard 6: Interconnectedness: Common Themes**

*Students will understand the relationships and common themes that connect mathematics, science, and technology and apply the themes to these and other areas of learning.*

<b>Systems Thinking</b>		
6.1 Describe the differences and similarities between engineering systems, natural systems, and social systems	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will gather materials for students to research different systems
<b>Magnitude and Scale</b>		
6.3 Cite examples of how different aspects of natural and designed systems change at different rates with changes in scale	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will gather resources on thermodynamics, the study of heat, and how it affects substances for students to explore further

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<b>Equilibrium and Stability</b>		
6.4 Describe how feedback mechanisms are used in both designed and natural systems to keep changes within desired limits	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will provide the example of how a thermostat and a person's body temperature (homeostasis) are regulated similarly and map this in a venn diagram for students to use with their own research topic
<b>Patterns of Change</b>		
6.5 Observe patterns of change in trends or cycles and make predictions on what might happen in the future	23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information	LMS will teach students how to use an almanac and census data to study population growth over time
<b>Optimization</b>		
6.6 Use graphs of information for a decision making problem to determine the optimum solution	37 - Use multimedia software to produce presentations	LMS will teach students how to graph their information collected using multimedia software

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**Standard 7: Interdisciplinary Problem Solving**

*Students will apply the knowledge and thinking skills of mathematics, science, and technology to address real-life problems and make informed decisions.*

<b>Connections</b>		
7.1 Analyze science/technology/society problems and issues at the local level and plan and carry out a remedial course of action	25 - Be able to take simple notes 29 - Be able to paraphrase information 35 - Understand plagiarism and the need for documentation when doing a research project	LMS will assist teacher in compiling a list of local or school problems for students to choose from and remediate
<b>Strategies</b>		
7.2 Students participate in an extended, culminating mathematics, science, and technology project. The project would require students to work effectively, gather and process information, generate and analyze ideas, observe common themes, realize ideas, and present results.	17 - Use the card/electronic catalog to locate materials on particular subjects 18 - Use the electronic/card catalog to locate materials on particular subjects 21 - Identify and use electronic resources 23 - Use preselected/bookmarked sites on the Internet 27 - Select appropriate resources for reference information 33 - Search appropriate commercial electronic and online resources to access information 38 - Use appropriate search engines, metasearch engines, and directories to access information on the Internet	LMS will help teacher create a project in which students must solve a problem