Great Meadows Regional School District

Great Meadows, New Jersey-Warren County

Educational Technology Curriculum

K-8

2012

CURRICULUM DEVELOPMENT COMMITTEE

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Great Meadows Regional School District

Mission

The GMRSD will provide quality educational opportunities that ensure the individual success of all students within a safe and supportive environment and build life-long learners who will meet society's challenges into and beyond the 21st century. To that end, it is anticipated that all students will achieve the in line with National Common Core and New Jersey CCCS.

Vision

The vision of the GMRSD is to provide the opportunity for students, faculty, staff, parents, and community to develop, through involvement, a sense of ownership, spirit, and pride in the school community. Not only must students be prepared academically, they must be nurtured with a sense of cultural awareness, which includes an appreciation of the arts, of others, of diversity, and the community.

Values

We believe:

- The focus must be on the needs of the students
- Learning is a lifelong continuous process and that we are a community of learners.
- Individuals must develop the knowledge, skills and attitudes to make wish choices about themselves and their environment.
- Effective learning takes place in an atmosphere of personal relevance and enthusiasm.

ADDENDUM

The curricula in this guide are modified through varying techniques, strategies, supplemental materials, etc. to meet the needs of all **L.E.P.** students by the **E.S.L.** teacher, as noted in the teacher's weekly lesson plans.

The curricula in this guide are modified through varying techniques, strategies, supplemental materials, etc. to meet the needs of students receiving ***Basic Skills Instruction.***

This curriculum is designed to meet the educational needs of students at various ability levels. Specific instructional strategies and supplemental materials will be used to meet the needs of educationally disadvantaged students, as listed in each student's **I.E.P.**

It is the policy of the Great Meadows Regional School District not to discriminate on the basis of race, color, creed, religion, sex, ancestry, national origin, social or economic status or handicaps in its educational programs or activities and employment policies as required by Title IX of the Educational Amendments 1972 (prohibiting sex discrimination in education) N.J.A.C. 6:4 (Equality in Education Program) and Section 504 of the Rehabilitation Act of 1973 as amended (prohibiting discrimination on the basis of handicaps). Inquiries regarding compliance may be directed to **Catherine Mozak, Interim Superintendent of Schools** (908-637-6576; cmozak@gmrsd.com.

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Mission Statement: ***The mission of the Great Meadows Regional School District Technology Curriculum is to ensure the seamless integration of technology into the curriculum and foster acquisition of 21st century skills.***

Stage 1: Desired Results	
Strand A: Technology Operations and Concepts	
Standard 8.1 A Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge by the end of grade 5.	
Essential Questions	**Enduring Understandings**
In a world of constant change, what skills should we learn? Do I know how to use the technology that I need? What type of technological tools will students use?	Technology is constantly changing and requires continuous learning of new skills. Selection of technology should be based on personal and /or career needs assessment. Knowledge of technology tools and operational procedures enables people to use technology

Knowledge and Skills: By the end of grade 5, students will

1. Use basic technology vocabulary.
2. Use basic computer icons.
3. Demonstrate a basic ability to use a computer, including two hands on a keyboard by June of 2nd grade
4. Use content-specific technology tools and MSOFFICE software Sept. – ongoing
5. Use simple menus and screen prompts
6. Use basic operational features of school technology (accessing programs, input devices, printing, output devices, keyboard, etc.)
7. Use content-specific technology tools and software Use ABC World software K - 1
8. Use basic touch typing focused on accuracy, speed and rhythm grades 2 - 5
9. Demonstrate the ability to use basic features (entering information/data, editing, calculating, manipulating text, sound and graphics, saving files) of productivity software grades K - ongoing
10. Identify common hardware and software problems and seek assistance K - June grade 5
11. Produce a simple finished document using word processing software and enhance it by inserting a digital image
12. Produce and interpret a simple graph or chart by entering and editing data on a prepared spreadsheet template.

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Integration of 21st Century Skills

FLEXIBILITY AND ADAPTABILITY

Adapt to Change

- Work effectively in a climate of ambiguity and changing priorities

Be Flexible

- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects

- Prioritize, plan and manage work to achieve the intended result

Produce Results

- Demonstrate additional attributes associated with producing high quality products including the abilities to:
  - Work positively and ethically
  - Manage time and projects effectively
  - Participate actively, as well as be

Integration of 21st Century Learning

Information Literacy

- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information

Media Literacy

Analyze Media

- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

- Use technology as a tool to research, organize, evaluate and communicate information
- Use digital technologies
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

reliable and punctual - Present oneself professionally and with proper etiquette - Be accountable for results **LEADERSHIP AND RESPONSIBILITY** ***Guide and Lead Others*** • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** • Act responsibly with the interests of the larger community in mind	

Stage 2: Evidence of Understanding

Great Meadows Benchmarks: (Do or Say)

Students will be able to:

- Students will be able to log on and off properly using ctrl-alt-delete combination by Nov. of 1st. grade
- Students will be able to open, create and save a document by June of 2nd. grade.
- Students will be able to minimize and maximize programs by June of 3rd. grade.
- Students will have knowledge of the proper home row finger placement. by end of 5th grade

Assessment Methods:

Formative:	**Summative:**
• Observation • Teacher Checklist • Large Group Discussion • Critiques • Participation/Student Performance • Oral Responses • Worksheets	• Finished Project • Presentation • Projects

Other Evidence and Student Self-Assessment:

Stage 3: Learning Plan

	Students ***will*** know the expectations for this unit through: • stating, reviewing and reflecting upon the essential questions.
	This unit will ***hook and hold*** students' attention by: • utilizing interdisciplinary activities that emphasize the use of computer skills to become life-long learners.
	Students will ***reflect, rethink, revise, and refine*** by: • group discussion • student practice

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

	Students will ***exhibit*** understanding through: • selecting correct applications for assignment in an age appropriate manner. • Using computer hardware carefully • classroom discussion of procedures • completion of assignment
	Differentiation opportunities to ***tailor*** learning will include: • teacher / student conferencing of guiding questions. • peer tutoring of computer class procedures. • Adjust level of instruction according to student needs
Time Allotment	• Varies according to grade and/or project assignment
Resources: •	Student Materials: • Hand-outs • Technology: • Software: • Teaching Materials:

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Stage 1: Desired Results

Strand B: Creativity and Innovation

Core Content Curriculum Number & Strands

Standard 8.1 B Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

Essential Questions	Enduring Understandings
How can digital tools be used for creating original and innovative works, ideas, and solutions?	Digital tools provide enhanced opportunities to design innovative solutions, and express ideas creatively.

Knowledge and Skills: By the end of 5th grade students will:

- Create a simple non-research based multimedia presentation by the end of 4th. grade
- Use word processing to create original work and know how to enter text, format text, edit text 1st. grade - ongoing
- Insert graphics into a document 2nd. grade (Feb.) - ongoing
- Use technology to present information in a variety of ways (graph, paragraph) by June, 2nd. grade
- Use technology to present information in a variety of ways (e.g. table, graph, paragraph, bulleted list) by June, 5th grade
- Create a customized multimedia presentation by 3rd. grade - ongoing
- Use word processing skills to enhance meaning by visually displaying text and images by June, 2nd. grade – Ongoing.

Integration of 21st Century Skills

FLEXIBILITY AND ADAPTABILITY

Adapt to Change

- Work effectively in a climate of ambiguity and changing priorities

Be Flexible

- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Integration of 21st Century Learning

Information Literacy

- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information

Media Literacy

Analyze Media

- Understand both how and why media messages are constructed, and for what

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects

- Prioritize, plan and manage work to achieve the intended result

Produce Results

- Demonstrate additional attributes associated with producing high quality products including the abilities to:
  - Work positively and ethically
  - Manage time and projects effectively
  - Participate actively, as well as be reliable and punctual
  - Present oneself professionally and with proper etiquette
  - Be accountable for results

LEADERSHIP AND RESPONSIBILITY

Guide and Lead Others

- Use interpersonal and problem-solving skills to influence and guide others toward a goal
- Inspire others to reach their very best via example and selflessness
- Demonstrate integrity and ethical behavior in using influence and power

Be Responsible to Others

- Act responsibly with the interests of the larger community in mind

purposes

- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

- Use technology as a tool to research, organize, evaluate and communicate information
- Use digital technologies
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Assessment Methods:

Formative:	**Summative:**
• Observation • Teacher Checklist • Large Group Discussion • Critiques • Participation/Student Performance • Oral Responses • Worksheets	• Finished Project • Presentation • Projects

Stage 3: Learning Plan

Students ***will*** know the expectations for this unit through:
- stating, reviewing and reflecting upon the essential questions.

This unit will ***hook and hold*** students' attention by:
- utilizing interdisciplinary activities that emphasize the use of computer skills to become life-long learners.
-

The following learning ***experiences*** that will help the students ***explore*** the big ideas and essential questions:
- students engage in hands-on practice

Students will ***reflect, rethink, revise, and refine*** by:
- student practice
- peer tutoring
- teacher / student conferencing.

Students will ***exhibit*** understanding through:
- use of age appropriate research .
- creation of a research project.
- evaluation of assignment for accuracy, relevancy, currency and comprehensiveness.
- production of an age-appropriate interdisciplinary research project.

Differentiation opportunities to ***tailor*** learning will include:
- teacher / student conferencing
- peer tutoring
- student choice of assignments topic

Time Allotment: Varies per project/grade

Resources:
Student Materials:
- MS office software
- Handouts

Technology:

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

- Concept Mapping software (Kidspiration)
- Word Processing software
- Graphing software
- Presentation software
- Typing programs
- Reading software
- Age appropriate sources
- Practice exercises
- Sample searches
- Games
- Interdisciplinary research tasks

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Strand C: Communication and Collaboration

Stage 1: Desired Results

Topic: Standard 8.1 C Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

Essential Questions	Enduring Understandings
• What are some guiding principles for selecting various types of media ? • How has the use of digital tools improved opportunities for communication and collaboration?	• Members of a learning community demonstrate responsible behavior towards people and materials. • Technology may be used to enhance the acquisition of information. • Digital tools allow for communication and collaboration anytime/anyplace worldwide

Knowledge and Skills:

1. Discuss the common uses of computer applications and identify their advantages and disadvantages.
2. Recognize and practice responsible social and ethical behaviors when using technology, and understand the consequences of inappropriate use including:
    - Internet access
    - Copyrighted materials
    - On-line resources
    - Personal security and safety issues
3. Practice appropriate Internet etiquette.
4. Recognize the ethical and legal implications of plagiarism of copyrighted materials.

Stage 2: Evidence of Understanding

Great Meadows Benchmarks:

Students will:

- Conduct searches using websites safely
- Engage in a variety of developmentally appropriate learning activities with students in other classes, schools, or countries using electronic tools. (http://www.arcademicskillbuilders.com)
- Digital tools foster collaboration in solving local or global issues and problems. Web site to help world hunger (http://www.freerice.com)

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Assessment Methods:

Formative:	**Summative:**
• Observation • Teacher Checklist • Large Group Discussion • Critiques • Participation/Student Performance • Oral Responses • Worksheets	• Finished Project • Presentation • Projects

Stage 3: Learning Plan

	Students ***will*** know the expectations for this unit through: stating, reviewing and reflecting upon the essential questions.
	This unit will ***hook and hold*** students' attention by: utilizing interdisciplinary activities that emphasize the use of technology skills to become life-long learners.
	The following learning ***experiences*** that will help the students ***explore*** the big ideas and essential questions: students engage in hands-on practice in conducting various searches to locate specific information
	Students will ***reflect, rethink, revise, and refine*** by: student practice peer tutoring teacher / student conferencing.
	Students will ***exhibit*** understanding through: locating materials for a specific purpose. use of age appropriate software.
	Differentiation opportunities to ***tailor*** learning will include: • teacher / student conferencing • peer tutoring of search procedures. • student choice of topic.

Time Allotment: Varies per project/grade

Resources:

- Student Materials:
- Technology:
- Teaching Materials:
- Age appropriate handouts
- Internet searches

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Integration of 21st Century Skills	Integration of 21st Century Learning
FLEXIBILITY AND ADAPTABILITY ***Adapt to Change*** • Work effectively in a climate of ambiguity and changing priorities ***Be Flexible*** • Incorporate feedback effectively • Deal positively with praise, setbacks and criticism **INITIATIVE AND SELF-DIRECTION** ***Manage Goals and Time*** • Set goals with tangible and intangible success criteria • Balance tactical (short-term) and strategic (long-term) goals • Utilize time and manage workload efficiently ***Work Independently*** • Monitor, define, prioritize and complete tasks without direct oversight ***Be Self-directed Learners*** • Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise • Demonstrate commitment to learning as a lifelong process • Reflect critically on past experiences in order to inform future progress **SOCIAL AND CROSS-CULTURAL SKILLS** ***Interact Effectively with Others*** • Know when it is appropriate to listen and when to speak • Conduct themselves in a respectable, professional manner ***Work Effectively in Diverse Teams*** • Respect cultural differences and work effectively with people from a range of social and cultural backgrounds • Respond open-mindedly to different ideas and values **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively	***Information Literacy*** • Access and Evaluate Information • Access information efficiently (time) and effectively (sources) • Evaluate information critically and competently ***Use and Manage Information*** • Use information accurately and creatively for the issue or problem at hand • Manage the flow of information from a wide variety of sources • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information **Media Literacy** ***Analyze Media*** • Understand both how and why media messages are constructed, and for what purposes • Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media ***Create Media Products*** • Understand and utilize the most appropriate media creation tools, characteristics and conventions • Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments **ICT Literacy** ***Apply Technology Effectively*** • Use technology as a tool to research, organize, evaluate and communicate information • Use digital technologies • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

- Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Be accountable for results **LEADERSHIP AND RESPONSIBILITY** ***Guide and Lead Others*** • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** • Act responsibly with the interests of the larger community in mind	

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Strand D:Digital Citizenship

Stage 1: Desired Results

Topic: Standard 8.1 D Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge of Digital Citizenship

Essential Questions	Enduring Understandings
What are an individual's responsibilities for using technology? What constitutes misuse and how can it best be prevented? What is responsible online behavior?	Technology use can have positive or negative impact on both users and those affected by their use. Advocate and practice safe, legal, and responsible use of information and technology. Designing and creating from the appropriate types of media for a specific purpose enhances learning. Skills learned and mastered at school can be used at home.

Knowledge and Skills:
Student discussion in class and use of Internet safety skills using web site Brainpop website gr.2
http://www.brainpopjr.com/health/besafe/internetsafety/

Practice cybersafety by completing grade specific lessons K - 5
http://cybersmartcurriculum.org/lessonsbygrade/
http://www.cybercrime.gov/rules/kidinternet.htm

safety, cyber security and cyber ethics and post online

Stage 2: Evidence of Understanding

Students will:

- Describe the problems and consequences when technology and information are used inappropriately.
- Use computer programs and input/output devices with respect.
- Students will engage in class discussion/participation and create a document and/or slideshow that explains the importance of cyber safety / cyber security and cyber ethics.

- Recognize ownership of work by identifying the title and author of a seasonal poem provided by the teacher, to be typed by students using skills learned in Microsoft Word.

Assessment Methods:

Formative:	**Summative:**
• Observation • Teacher Checklist • Large Group Discussion • Critiques • Participation/Student Performance • Oral Responses • Worksheets	• Finished Project • Presentation • Projects

Stage 3: Learning Plan

	Students ***will*** know the expectations for this unit through: stating, reviewing and reflecting upon the essential questions.
	This unit will ***hook and hold*** students' attention by: utilizing interdisciplinary
	The following learning ***experiences*** that will help the students ***explore*** the big ideas and essential questions: .
	Students will ***reflect, rethink, revise, and refine*** by: active listening student practice peer tutoring teacher / student conferencing.
	Students will ***exhibit*** understanding through: utilizing strategies to
	Differentiation opportunities to ***tailor*** learning will include: teacher / student conferencing . peer tutoring .
	.

Time Allotment: Varies per project/grade

Resources:

Student Materials:
CD-ROMs, electronic databases, internet
Teaching Materials:
Age appropriate websites

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Mission Statement: ***The mission of the Great Meadows Regional School District Technology Curriculum is to ensure the seamless integration of technology into the curriculum and foster acquisition of 21st century skills***

Core Curriculum Content Number and Strand

Strand E: Strand E: Research and Information Literacy

STANDARD 8.1

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Standard 8.1 E Use digital tools and online resources to explore a problem or issue affecting children, and discuss possible solutions

Big Idea: Understanding the purpose, organization, and retrieval methods for using non-print electronic resources facilitates the access, evaluation, and use of information and promotes life-long literacy skills.

Essential Questions	Enduring Understandings
What retrieval strategies can be used to locate information in an electronic source? How do determining appropriate search methods and words facilitate accessing needed information? How does a researcher access, save and print information that has been found in an electronic resource? What electronic sources can help in accessing information? How can search engines be effectively, appropriately, and responsibly used to access information from the internet?	Acquisition, evaluation and use of information found from an electronic resource should meet a specific need. Technology may be used to enhance the acquisition, evaluation and use of information. Designing and creating knowledge from information using appropriate types of media for a specific purpose enhances learning. Members of a learning community practice the ethical use of information and information technologies. Information is spread worldwide within seconds due to technological advancements and has an immediate impact.

Knowledge and Skills:

How to access: Favorites, homepage, icons, Internet, keyword, link, results, search engine, search strategy, , enchanted learning, URL, website, World Wide Web, flash drive, monitor, screen, desktop, folder, icon, tool bar, CPU, Microsoft Office Programs, menu, window.

Use websites that provide age appropriate current events articles such as www.timeforkids.com and find 2-3 important facts about an issue that relates to children.

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Stage 2: Evidence of Understanding

Great Meadows Benchmarks:

Students will:

Use age appropriate retrieval strategies to locate information. (file, open, save)
Use a variety of electronic sources to access information including age appropriate non-subscription and websites (from our student resources on our home page)
Retrieve information from electronic resources. (PP projects)
Use information ethically.
Compare information from age appropriate print and non-print sources to meet a specific information purpose.
5. Use a computer or software to access, organize, and evaluate information.
6. Produce a project utilizing information from research.(word, excel and/or pp)
7. Establish the authenticity of an electronic source.

Locate available non-print sources from the Internet and online reference websites
Utilize information in creative and various formats in generating understanding and new knowledge.

Assessment Methods:

Formative:	Summative:
• Observation • Teacher Checklist • Large Group Discussion • Critiques • Participation/Student Performance • Oral Responses • Worksheets	• Finished Project • Presentation • Projects

Stage 3: Learning Plan

Students ***will*** know the expectations for this unit through:
stating, reviewing and reflecting upon the essential questions.

This unit will ***hook and hold*** students' attention by:
utilizing interdisciplinary activities that emphasize the use of technology skills to become life-long learners.

The following learning ***experiences*** that will help the students ***explore*** the big ideas and essential questions: .
students use technology to access, organize, evaluate and use information from an electronic resource for a specific research need or problem solving situation.
students demonstrate effective research skills to organize information using study, research, reference and critical thinking strategies to create knowledge.
students create knowledge from information using age appropriate media to promote understanding and learning.
students ethically and responsibly use information from electronic sources.

Students will ***reflect, rethink, revise, and refine*** by:
Student practice
Peer tutoring
Teacher/student conferencing

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

	Students will ***exhibit*** understanding through: reviewing prior knowledge to develop strategies for accessing information. creating guiding questions to access, evaluate and synthesize age appropriate information. utilizing age appropriate electronic information in problem solving research. developing age appropriate criteria for gathering, evaluating, and using information. utilizing age appropriate retrieval strategies to locate information. examining a variety of electronic sources to access information including age appropriate non-subscription, subscription databases, websites and CD-ROMs. evaluating information from electronic resources. manipulating information found in an electronic resource including accessing, sorting, saving and/or printing information. demonstrating ethics and responsibility in using electronic information. synthesizing information from age appropriate print and nonprint sources to meet a specific information purpose. documenting sources of information used for research. accessing computer technologies to gather, organize, and evaluate information. creating a project demonstrating knowledge and understanding from information obtained from electronic sources. establishing the authenticity of an electronic source.
	Differentiation opportunities to ***tailor*** learning will include: • Teacher / student conferencing of research processes. • Peer tutoring of research procedures. • Collaboration in developing research strategies. • Collaboration in examining information for problem solving. • Student choice of age appropriate electronic resources.
	Organizational and sequencing considerations include student's application of library browsing, selection and circulation of library materials.
Time Allotment: Varies according to project/grade	
Resources: Student Materials: hard copy print materials *Technology:* CD-ROMs, electronic databases, reference / information software, search engines, websites Teaching Materials: Age appropriate websites Electronic databases Pre-selected websites Search engines Sample searches **Resources** • Time For Kids Weekly Reader	

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Stage 1: Desired Results

Strand F **Strand F: Critical Thinking, Problem Solving, and Decision-Making**

Standard 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge by the end of grade 5.

Essential Questions	Enduring Understandings
How do I choose which technological tools to use and when it is appropriate to use them? How can I transfer what I know to new technological situations/experiences?	Selection of technology should be based on personal and/or career needs assessment. A tool is only as good as the person using it.

Knowledge and Skills:
Internet access (double click on icon) (grades 2-4)
Excel: enter data into a spreadsheet and create a graph (grade 4)

Stage 2: Evidence of Understanding

Great Meadows Benchmarks:
By the end of grade 2, Students will:

- Make a list of addresses of the local police station, fire house, hospital, and library. Use Google's mapping tools to identify where each of these buildings is located in relation to the school. (use map quest-directions)
- Decide which building is closest to the school using map quest from the school to each building.

By the end of grade 4, Students will gather information from weather.com and use a graphing software to graph weather for seven days in order to plan outside activities.

Learning Expectations/Objectives

Integration of 21st Century Skills	Integration of 21st Century Learning
FLEXIBILITY AND ADAPTABILITY ***Adapt to Change*** • Work effectively in a climate of ambiguity and changing priorities ***Be Flexible*** • Incorporate feedback effectively	***Information Literacy*** • Access and Evaluate Information • Access information efficiently (time) and effectively (sources) • Evaluate information critically and competently ***Use and Manage Information***

- Deal positively with praise, setbacks and criticism

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects

- Prioritize, plan and manage work to achieve the intended result

Produce Results

- Demonstrate additional attributes associated with producing high quality products including the abilities to:
  - Work positively and ethically
  - Manage time and projects effectively
  - Participate actively, as well as be reliable and punctual
  - Present oneself professionally and with proper etiquette
  - Be accountable for results

LEADERSHIP AND RESPONSIBILITY

Guide and Lead Others

- Use interpersonal and problem-solving skills to influence and guide others toward a goal
- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information

Media Literacy

Analyze Media

- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of media

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

- Use technology as a tool to research, organize, evaluate and communicate information
- Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

• Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** • Act responsibly with the interests of the larger community in mind	

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Assessment Methods:

Formative:	Summative:
• Observation • Teacher Checklist • Large Group Discussion • Participation/Student Performance • Oral Responses	• Finished Project • Presentation • Projects

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students
B	Show evidence of understanding by completing the following assessment: •
C	Provide differentiated instruction through any and all of the following strategies: • Readiness/ability • Adjusting questions • Compacting Curriculum • Tiered Assignments • Acceleration/Deceleration • Peer teaching
D	Students will ***reflect, rethink, revise, and refine*** by: • Reconsidering key assumptions • Reflection logs • Peer Critiquing

Resources:
Student Materials
Technology
Teaching Materials

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Elementary Education Technology Curriculum Map

Fifth Grade

1st Marking Period

Microsoft Word
Mavis Beacon teaches typing begins

Study Island begins

2nd Marking period

Microsoft Word
internet Searches
Mavis Beacon teaches typing
Intro to Power Point

3rd Marking Period

Microsoft Word
Power Point
Microsoft Excel
Internet usage
Mavis Beacon

4th Marking period

Microsoft Word
Power Point
Microsoft Excel
Internet usage
Mavis Beacon
Fifth Grade Skills Assessment

Fourth Grade

1st Marking Period

Microsoft Word
Study Island
Keyboarding (Type to Learn)

2nd Marking period

Microsoft Word
Study Island
Keyboarding (Type to Learn)
PowerPoint
Internet Usage

3rd Marking Period

Microsoft Word
Study island
PowerPoint
Excel
Keyboarding (Type to Learn)
Internet Usage

4th Marking period

Microsoft Word
Study Island
PowerPoint
Excel
Keyboarding (Type to Learn)
Internet Usage

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

Third Grade

1st Marking Period

Microsoft Word
Keyboarding (Type to Learn)
Internet website
Study Island

2nd Marking period

Microsoft Word
Keyboarding (Type to Learn)
Internet website
Study Island

3rd Marking Period

Microsoft Word
Keyboarding (Type to Learn)
Into to Microsoft PowerPoint
Study Island
Intro to Excel
Internet Usage

4th Marking period

Microsoft Word
Keyboarding (Type to Learn)
PowerPoint
Study Island
Excel
Internet Usage

Second Grade

1st Marking Period

Microsoft Word
Paint program
Internet website

2nd Marking period

Microsoft Word
Paint program
Internet website
Keyboarding (Dance Mat Typing)
Microsoft Excel

3rd Marking Period

Microsoft Word
Paint program
Internet Searches
Keyboarding
Microsoft Excel

4th Marking period

Microsoft Word
Paint program
Internet Searches
Keyboarding
Microsoft Excel
Microsoft PP

Great Meadows
Educational TECHNOLOGY Curriculum
Grade Level: K - 5

First Grade

1st Marking Period
Reading software
Microsoft Word
Paint Program
Internet Websites

2nd Marking period
Reading software
Microsoft Word
Paint Program
Internet Websites

3rd Marking Period
Reading software
Microsoft Word
Paint program
Internet websites

4th Marking period
Reading software
Microsoft Word
Paint Program
Internet websites

Kindergarten

1st Marking Period

Reading software
Internet websites

2nd Marking period

Reading software
Internet websites
Basic Microsoft Word

3rd Marking Period

Reading software
Internet websites
Microsoft Word
Paint program

4th Marking period

Reading software
Internet websites
Microsoft Word
Paint Program

Great Meadows Regional School District
Computer Applications
Grades 6

Mission Statement: The mission of the Great Meadows Regional School District Technology Curriculum is to ensure the seamless integration of technology into the curriculum and foster acquisition of 21st century skills.

Program Overview:
All grade 6 students in Great Meadows Middle School will participate in a Computer Applications program in grade 6. The program will be conducted over a 45 day cycle. The purpose of this program is to reinforce previously covered computer application skills and to introduce new techniques, strategies, applications, and components. The intent is to provide students in grade 6 with the computer applications skills that will allow them to work independently as they integrate these skills into the other curricular areas. The primary focus will be on Microsoft Office skills concentrating on word processing, spreadsheets and graphing, multimedia production with PowerPoint, and Internet Explorer.

Great Meadows Regional School District
Computer Applications
Grades 6

Mission Statement: The mission of the Great Meadows Regional School District Technology Curriculum is to ensure the seamless integration of technology into the curriculum and foster acquisition of 21st century skills

Stage 1: Desired Results

Topic: Grade 6 Computer Applications
Timeline- 45 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.
   - 8.1.8.A.1 Create professional documents (e.g., newsletter, personalized learning plan, business letter or flyer) using advanced features of a word processing program.
   - 8.1.8.A.3 Create a multimedia presentation including sound and images.
   - 8.1.8.A.4 Generate a spreadsheet to calculate, graph and present information.
   - 8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.
   - 8.1.8.D.1 Model appropriate online behaviors related to cyber safety, cyber bullying, cyber security, and cyber ethics.
   - 8.1.8.D.2 Summarize the application of fair use and creative commons.
   - 8.1.8.D.3 Demonstrate how information may be biased on a controversial issue.

E. Effective use of digital tools assists in gathering and managing information.
   - 8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design
ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

A. Technology systems impact every aspect of the world in which we live.
   - 8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

Great Meadows Regional School District
Computer Applications
Grades 6

Essential Questions	Enduring Understandings
• How can productivity software and basic computer applications increase our efficiency and accuracy? • How can word processing be a better option than handwriting? • How can multimedia allow us to present information in a manner that is more conducive to understanding by a wider range of audience? • How can spreadsheets allow us to manipulate data quickly and easily? • What are some benefits to charting data using a spreadsheet? • What are some search strategies that allow us to locate reliable information quickly and accurately when using the Internet? • How can we determine the accuracy and reliability of information located on the Internet, and how can we ensure that we are finding reliable and accurate information?	• The use of productivity software allows us to create accurate and professional documents in a much more efficient manner. • The features of word processing (such as formatting, spell check, thesaurus, saving, and others) provide us with the options to create professional documents with a wide variety of uses. • Multimedia presentations allow for the presentation of information using text, graphics, sound, animation and video. These accommodate a wide variety of learning styles and allow the presentation of information in a stimulating creative manner. • Spreadsheets give us the ability to streamline more mundane mathematical tasks allowing for the more efficient manipulation of data. • Charting using spreadsheets gives us the ability to present data in a variety of styles, allows for the use of color and formatting, and efficiently allows for the manipulation of data. • Using effective search terms and strategies allows us to quickly and accurately locate relevant information on the Internet. • The Internet contains a wealth of both useful information as well as a great deal of harmful, inappropriate, and misleading information. It is important to identify the means to differentiate between the two.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

Word Processing

- define word processing and infer the ways that word-processing is advantageous over handwriting.
- open a new word processing document; input text; format text as to alignment, font, size and style; correctly name and save the file
- insert a graphic from Microsoft clip art, resize, text wrap, and move document.
- Analyze placement of graphics within a document and place graphics appropriately.
- insert and format bullets within a document
- locate and describe page setup and print options in word processing

- identify the uses of cut, copy, and paste
- differentiate between cut, copy, and paste
- copy text and graphics from one application and paste into another.
- determine the positive and negative aspects of spell checking
- develop guidelines for successful use of spell checking in documents
- determine the positive and negative aspects of using the thesaurus
- develop guidelines for successful use of the thesaurus in documents
- compare and contrast different tab functions, set a tab.
- Set multiple tabs, differentiate between tab alignment options, determine the alignment option for specific uses, and set tabs with leaders
- Use a variety of word processing commands and skills to complete a finished document

Spreadsheet

- Identify a spreadsheet and infer some of the uses of spreadsheets
- Differentiate between rows, columns, and cells.
- Identify the types of data that can go into a cell and determine the procedure for correct input.
- Use a simple formula to use a spreadsheet for addition, subtraction, multiplication, and division.
- Use a simple formula to link results from other formulas.
- Determine how one simple change in a spreadsheet can affect global changes.
- Insert a function, describe its purpose
- Format cells for different number functions
- Develop a plan for a more complicated spreadsheet
- Determine the correct cell layout and types of cells
- Develop simple formulas and use the fill command
- Analyze data to achieve a desired result

Graphing

- Develop a simple poll to gain data
- Convert data into a simple pie graph
- Compare and contrast between different types of charts
- Construct a column graph from given data
- Research current data and construct a double line graph from given data

Multimedia

- Define multimedia and determine the 5 components of multimedia
- Describe the purpose of a multimedia authoring program
- Design one slide in PowerPoint using background, text, and graphics.
- Insert graphics, text boxes, and backgrounds to a PowerPoint slide show
- Insert additional slides into a PowerPoint slide show
- Develop slide transitions between slides
- Create hyperlinks between slides.
- Identify custom animations and their functions
- Create custom animations for different objects on slides
- Organize and arrange custom animations
- Use components of multimedia to create a PowerPoint slide show

The Internet

- Identify components of a URL and determine their meaning
- Evaluate URL suffixes and paths to determine how they can assist in locating information
- Examine browser shortcuts and their use

- Use favorites to organize web resources
- Determine the print selection command to facilitate efficient use of web resources
- Determine appropriate search strategies to find information on the Internet
- Evaluate search options including search engines, directories, links, etc. to locate information on the Internet
- Evaluate data and information found on the Internet for accuracy and relevance.
- Determine strategies for finding reliable information on the Internet.

Learning Expectations/Objectives

Integration of 21st Century Skills

FLEXIBILITY AND ADAPTABILITY

Adapt to Change

- Adapt to varied roles, jobs responsibilities, schedules and context
- Work effectively in a climate of ambiguity and changing priorities

Be Flexible

- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects

- Set and meet goals, even in the face of obstacles and competing pressure
- Prioritize, plan and manage work to achieve the intended result

Produce Results

- Demonstrate additional attributes associated with producing high quality products including the abilities to:
  - Work positively and ethically
  - Manage time and projects effectively
  - Multi-task
  - Participate actively, as well as be reliable and punctual
  - Present oneself professionally and with proper etiquette
  - Collaborate and cooperate effectively with teams
  - Respect and appreciate team diversity
  - Be accountable for results

LEADERSHIP AND RESPONSIBILITY

Guide and Lead Others

Use interpersonal and problem-solving

Integration of 21st Century Learning

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Create Media Products

- Understand and utilize the most appropriate media creation tools,

• Know when it is appropriate to listen and when to speak • Conduct themselves in a respectable, professional manner ***Work Effectively in Diverse Teams*** • Respect cultural differences and work effectively with people from a range of social and cultural backgrounds • Respond open-mindedly to different ideas and values • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work • skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** • Act responsibly with the interests of the larger community in mind	characteristics and conventions • Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments **ICT Literacy** ***Apply Technology Effectively*** • Use technology as a tool to research, organize, evaluate and communicate information

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Teacher observation, Skills practice documents, Questioning Techniques, Peer Review, Oral Responses** **Summative: (Culminating) Rubrics for student completed documents. Menu Project (Word Processing), Million Dollar Project (Spreadsheet), Comparative Temperatures (Charting), PowerPoint Presentation (Multimedia), Internet Scavenger Hunt (Search Strategies), Critical Thinking About Web Resources (Internet Accuracy and Reliability)**
Other Evidence and Student Self-Assessment: (Project Based Learning) Completion of projects following rubric guidelines.

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students- The nature of technology and computers is inherently interesting and fascinating to students. It is an integral part of their everyday life. By realizing the ease at which they can create professional documents quickly and easily, they will naturally want to pursue this in greater detail. The ability to

	exercise creativity and employ the use of a wide variety of media provides students with the stimulation to succeed.
B	Show evidence of understanding by completing the following assessment: • Menu Project • Million Dollar Project • Comparative Temperature Chart • Multimedia Presentation • Internet Scavenger Hunt • Critical Thinking About Web Resources Challenge
C	Provide differentiated instruction through any and all of the following strategies: • Different modalities are all accommodated • Different intelligences are addressed • Cooperative and collaborative work is encouraged • Spell check and thesaurus are constantly available • Reliance on language is minimalized
D	Students will ***reflect, rethink, revise, and refine*** by: • Non-graded practice activities and documents • Constant opportunities for editing • Ability to use rubric as a checklist for requirements
Resources: Student Materials: Computers, Microsoft Office applications, Internet access	

Great Meadows Regional School District
Technology Education
Grades 7-8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependant on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Program Overview:
All students in Great Meadows Middle School will participate in a Technology Education program in grades 7 and 8. The program will be conducted over a 60 day cycle. Each cycle will be divided into two separate curricular areas. In all aspects of the program students will work in a collaborative and cooperative manner employing communication and problem solving techniques and strategies.

One 30 day cycle will be spent with ScanTek 2000 Technology Education modules allowing the students to explore from a variety of technology topics. These will include:

- Alternative Energy
- Construction Technology
- Computer Aided Design
- Biomedical Technology
- Aerodynamics Technology
- Digital Sound Technology
- Robotics and Automation
- Mechanisms
- Graphics and Animation
- Multimedia Production

The other 30 day cycle will be spent with the Build IT! Program. Build IT! is a program allowing the students the opportunity to work together as teams to built Remotely Operated Vehicles (ROV) from LEGOs and to operate them in a water environment. The program will consist of three primary challenges requiring the students to design, build, and modify vehicles to operate in a pool. Each challenge will sequentially build upon the previous challenge resulting in a final vehicle capable of navigating throughout the pool both horizontally and vertically to complete a final challenge.

Great Meadows Regional Schools
Technology Education Grades 7

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: Build IT! Underwater Robotics
Timeline- 30 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.
   8.1.8.A.3 Create a multimedia presentation including sound and images.
   8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

E. Effective use of digital tools assists in gathering and managing information.
   8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design
ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

A. Technology systems impact every aspect of the world in which we live.
   8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.
   8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
   8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be

improved) by completing a design problem and reporting results in a multimedia presentation.

8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.

8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	**Enduring Understandings**
• What skills are necessary to function collaboratively as a member of a team? • How can we build a Remotely Operated Vehicle (ROV) to perform desired tasks? • How can the design process be used to complete a problem solving activity?	• Successful teamwork involves the ability to communicate effectively, respect other's point of view, assign specific roles and responsibilities, and work in a collaborative manner. • Following design parameters and incorporating the aspects of gearing and buoyancy it is possible to create a ROV to perform specific functions. • The design process provides the framework for design, building, testing, evaluating and modifying a vehicle to successfully address a problem or a challenge.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

Challenge 1- The Straight Line Challenge- (Approx. 10 class periods)
Use a single motor to build a vehicle that can travel the diameter of the pool on the surface as quickly as possible; optimize gearing to achieve the best propeller speed.

- Working in teams of 4-5 students, assign roles to facilitate collaboration

- Determine how gears can be used to increase the speed of a propeller.
- Identify buoyancy and develop a design to maintain balance and buoyancy of a vehicle.
- Determine strategies to ensure strength and stability of a vehicle.
- Follow the design process to design, build, test, and modify a design to achieve optimal success.
- Complete a design log identifying the process followed and provide documentation for each stage.
- Prepare and present a multimedia presentation outlining the process, difficulties encountered, remediation developed, and final evaluation of the challenge.

Challenge 2- The Figure 8 Challenge- (Approximately 5 class periods)
Use a second motor to enable steering and two-dimensional movement; maneuver on the surface of the water through a slalom course around two buoys in shortest time.

- Working in teams of 4-5 students, assign different roles to facilitate collaboration
- Identify methods of steering a vehicle using a second motor.
- Choose an appropriate method to steer a vehicle using a second motor.
- Determine modifications needed to accommodate buoyancy issues involved with the addition of a second motor.
- Determine additional strategies to ensure strength and stability of a more complex vehicle.
- Modify the design to make appropriate changes needed to facilitate the new parameters.
- Follow the design process to design, build, test, and modify a design to achieve optimal success.
- Complete a design log identifying the process followed and provide documentation for each stage.
- Prepare and present a multimedia presentation outlining the process, difficulties encountered, remediation developed, and final evaluation of the challenge.

Challenge 3- The Final Challenge- (Approximately 15 class periods)
Combine the products of previous challenges to produce a vehicle which can retrieve the greatest number of wiffle balls from the bottom of the pool within a specified period; balls must be deposited in various bins to score points.

<u>Sub-Challenge- The Vertical Challenge-</u>
Use a third motor and other materials to control buoyancy in order to descend and rise vertically in water.

<u>Sub-Challenge- The Grabber Challenge-</u>
Use a fourth motor and other materials to design an apparatus which will grab and release the wiffle balls.

- Working in teams of 4-5 students, assign different roles to facilitate collaboration
- Identify Newton's Third Law of Motion and determine the effect on vertical motion.
- Determine modifications needed to accommodate buoyancy issues to allow the vehicle to descend and rise vertically in the water.
- Relate the topic of component building in relation to the new design.
- Determine additional strategies to ensure strength and stability of a more complex vehicle.
- Modify the design to make appropriate changes needed to facilitate the new parameters.
- Follow the design process to design, build, test, and modify a design to achieve optimal success.
- Complete a design log identifying the process followed and provide documentation for each stage.
- Prepare and present a multimedia presentation outlining the process, difficulties encountered, remediation developed, and final evaluation of the challenge.

Learning Expectations/Objectives

Integration of 21st Century Skills

FLEXIBILITY AND ADAPTABILITY

Adapt to Change

- Adapt to varied roles, jobs responsibilities, schedules and context
- Work effectively in a climate of ambiguity and changing priorities

Be Flexible

- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects

- Set and meet goals, even in the face of obstacles and competing pressure
- Prioritize, plan and manage work to achieve the intended result

Produce Results

- Demonstrate additional attributes associated with producing high quality products including the abilities to:
  - Work positively and ethically
  - Manage time and projects effectively
  - Multi-task
  - Participate actively, as well as be reliable and punctual
  - Present oneself professionally and with proper etiquette
  - Collaborate and cooperate effectively with teams
  - Respect and appreciate team diversity
  - Be accountable for results

LEADERSHIP AND RESPONSIBILITY

Guide and Lead Others

Use interpersonal and problem-solving

and/or curriculum to explore and expand one's own learning and opportunities to gain expertise • Demonstrate initiative to advance skill levels towards a professional level • Demonstrate commitment to learning as a lifelong process • Reflect critically on past experiences in order to inform future progress **SOCIAL AND CROSS-CULTURAL SKILLS** ***Interact Effectively with Others*** • Know when it is appropriate to listen and when to speak • Conduct themselves in a respectable, professional manner ***Work Effectively in Diverse Teams*** • Respect cultural differences and work effectively with people from a range of social and cultural backgrounds • Respond open-mindedly to different ideas and values • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work • skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** • Act responsibly with the interests of the larger community in mind	**Integration of 21st Century Learning** ***Use and Manage Information*** • Use information accurately and creatively for the issue or problem at hand • Manage the flow of information from a wide variety of sources **Media Literacy** ***Create Media Products*** • Understand and utilize the most appropriate media creation tools, characteristics and conventions • Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments **ICT Literacy** ***Apply Technology Effectively*** • Use technology as a tool to research, organize, evaluate and communicate information

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Teacher observation** **Summative: (Culminating) Challenge score, Design Log score, and Presentation score for each challenge.**
Other Evidence and Student Self-Assessment: (Project Based Learning) Collaborative and cooperative team work. Student assessment as a component of the design process.

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students Students are naturally engaged by the uniqueness of the program- team work, LEGOs, robotics, swimming pool, computer, programming, competition, etc.
B	Show evidence of understanding by completing the following assessment: • Challenge score, Design Log score, Presentation score for each challenge
C	Provide differentiated instruction through any and all of the following strategies: • Cooperative and collaborative work allowing for mutual assistance between team members. • Minimal written directions given • Roles assigned can be matched to students strengths • Opportunities for success for students geared toward more kinesthetic activities.
D	Students will ***reflect, rethink, revise, and refine*** by: • Collaborative work • Design log modifications • Following the design process
Resources: Student Materials: LEGO kits, floats, battery boxes, switch boxes, design logs Technology: Microsoft Office software Teaching Materials: swimming pool, battery chargers Teaching Resources: Build IT! Curriculum guides	

Great Meadows Regional Schools
Technology Education Grades 8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: Build IT! Underwater Robotics
Timeline- 30 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

B. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.
8.1.8.A.3 Create a multimedia presentation including sound and images.
8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

E. Effective use of digital tools assists in gathering and managing information.
8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design
ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

B. Technology systems impact every aspect of the world in which we live.
8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.
8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a

multimedia presentation.

8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.

8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	**Enduring Understandings**
• What skills are necessary to function collaboratively as a member of a team? • How can we build a Remotely Operated Vehicle (ROV) to perform desired tasks? • How can the design process be used to complete a problem solving activity? • How can a computer program be used to interface with other hardware to control a vehicle?	• Successful teamwork involves the ability to communicate effectively, respect other's point of view, assign specific roles and responsibilities, and work in a collaborative manner. • Following design parameters and incorporating the aspects of gearing and buoyancy it is possible to create a ROV to perform specific functions. • The design process provides the framework for design, building, testing, evaluating and modifying a vehicle to successfully address a problem or a challenge. • Computer programs can be created to interface with other hardware to operate a ROV.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

Challenge 1- The Straight Line Challenge- (Approximately 10 class periods)

Use a single motor to build a vehicle that can travel on the surface to traverse the diameter of the pool and return as quickly as possible; optimize gearing to achieve the best propeller speed.

- Working in teams of 4-5 students, assign roles to facilitate collaboration.
- Identify the LEGO Nxt as the programming module, Mindstorms software as the software component and connect them to establish communication.
- Use graphical programming to create simple programs.
- Incorporate loops, switches, and sensors into programs to develop controller units.
- Use the controller units to control the ROV to complete the challenge.
- Determine how gears can be used to increase the speed of a propeller.
- Identify buoyancy and develop a design to maintain balance and buoyancy of a vehicle.
- Determine strategies to ensure strength and stability of a vehicle.
- Follow the design process to design, build, test, and modify a design to achieve optimal success.
- Complete a design log identifying the process followed and provide documentation for each stage.
- Prepare and present a multimedia presentation outlining the process, difficulties encountered, remediation developed, and final evaluation of the challenge.

Challenge 2- The Figure 8 Challenge- (Approximately 5 class periods)
Use a second motor to enable steering and two-dimensional movement; maneuver on the surface of the water through a slalom course around two buoys in shortest time.

- Working in teams of 4-5 students, assign different roles to facilitate collaboration
- Incorporate nested switches into the programming and add additional sensors to write a controller program for Challenge 2.
- Identify methods of steering a vehicle using a second motor.
- Choose an appropriate method to steer a vehicle using a second motor.
- Determine modifications needed to accommodate buoyancy issues involved with the addition of a second motor.
- Determine additional strategies to ensure strength and stability of a more complex vehicle.
- Modify the design to make appropriate changes needed to facilitate the new parameters.
- Follow the design process to design, build, test, and modify a design to achieve optimal success.
- Complete a design log identifying the process followed and provide documentation for each stage.
- Prepare and present a multimedia presentation outlining the process, difficulties encountered, remediation developed, and final evaluation of the challenge.

Challenge 3- The Final Challenge- (Approximately 15 class periods)
Combine the products of previous challenges to produce a vehicle which can retrieve the greatest number of wiffle balls from the bottom of the pool within a specified period; balls must be deposited in various bins to score points.

Sub-Challenge- The Vertical Challenge-

Use a third motor and other materials to control buoyancy in order to descend and rise vertically in water.

- Working in teams of 4-5 students, assign different roles to facilitate collaboration
- Incorporate wires into the programming to control a vertical motor using an additional sensor.
- Identify Newton's Third Law of Motion and determine the effect on vertical motion.
- Determine modifications needed to accommodate buoyancy issues to allow the vehicle to descend and rise vertically in the water.
- Relate the topic of component building in relation to the new design.
- Determine additional strategies to ensure strength and stability of a more complex vehicle.
- Modify the design to make appropriate changes needed to facilitate the new parameters.
- Follow the design process to design, build, test, and modify a design to achieve optimal success.
- Complete a design log identifying the process followed and provide documentation for each stage.
- Prepare and present a multimedia presentation outlining the process, difficulties encountered, remediation developed, and final evaluation of the challenge.

Learning Expectations/Objectives

Integration of 21st Century Skills	**Integration of 21st Century Learning**
FLEXIBILITY AND ADAPTABILITY ***Adapt to Change*** • Adapt to varied roles, jobs responsibilities, schedules and context • Work effectively in a climate of ambiguity and changing priorities ***Be Flexible*** • Incorporate feedback effectively • Deal positively with praise, setbacks and criticism • Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments **INITIATIVE AND SELF-DIRECTION** ***Manage Goals and Time*** • Set goals with tangible and intangible success criteria • Balance tactical (short-term) and strategic (long-term) goals • Utilize time and manage workload	**LEADERSHIP AND RESPONSIBILITY** ***Guide and Lead Others*** • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** Act responsibly with the interests of the larger community in mind **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Set and meet goals, even in the face of obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result

efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values
- Leverage social and cultural differences to create new ideas and increase both innovation and quality of work

- Present oneself professionally and with proper etiquette
- Collaborate and cooperate effectively with teams
- Respect and appreciate team diversity
- Be accountable for results

Produce Results

- Demonstrate additional attributes associated with producing high quality products including the abilities to:

- Work positively and ethically
- Manage time and projects effectively
- Multi-task
- Participate actively, as well as be reliable and punctual

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

- Use technology as a tool to research, organize, evaluate and communicate information

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Teacher observation** **Summative: (Culminating) Challenge score, Design Log score, and Presentation score for each challenge.**
Other Evidence and Student Self-Assessment: (Project Based Learning) Collaborative and cooperative team work. Student assessment as a component of the design process.

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students- Students are naturally engaged by the uniqueness of the program- team work, LEGOs, robotics, swimming pool, computer, programming, competition, etc.
B	Show evidence of understanding by completing the following assessment: • Challenge score, Design Log score, Presentation score for each challenge
C	Provide differentiated instruction through any and all of the following strategies: • Cooperative and collaborative work allowing for mutual assistance between team members. • Minimal written directions given • Roles assigned can be matched to students strengths • Opportunities for success for students geared toward more kinesthetic activities.
D	Students will ***reflect, rethink, revise, and refine*** by: • Collaborative work • Design log modifications • Following the design process
Resources: Student Materials: LEGO kits, floats, battery boxes, switch boxes, design logs, NXT modules Technology: Microsoft Office software, Mindstorms software, multiplexor units. Teaching Materials: swimming pool, battery chargers Teaching Resources: Build IT! Curriculum guides	

Great Meadows Regional Schools
Technology Education Grades 7-8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: ScanTek 2000- Module ST100- Alternative Energy
Timeline- Approximately 20-25 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology

ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.

8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.

8.1.8.D.3 Demonstrate how information may be biased on a controversial issue.

E. Effective use of digital tools assists in gathering and managing information.

8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design

ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

C. Technology systems impact every aspect of the world in which we live.

8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.
8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.
8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.
8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	**Enduring Understandings**
• How can energy be produced? • How can energy be transformed? • What are the impacts of alternative energy sources on our world and society?	• Energy can be produced from a variety of different sources • Energy can be transformed from one type to another. • There are many factors used to determine a reliable source of energy • Conservation of energy and the use of renewable resources is important to all of us. • There are potential dangers and hazards with different forms of energy.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. Energy and Pollution

Tests the pH of given solutions.
Indicates that the use of fossil fuels harms the environment.
Defines alternative energy.
Interprets data from a color reading chart.

2. The Transformation of Energy

States the function of components in a model rocket.
States that energy can be transformed.

3. The Technology of Solar Energy

Builds and tests a model car powered by solar energy.
Identifies two transducers used in the solar powered car.
Calculates the speed in RPM of a motor.

4. Energy from the Wind

Identifies the device used to convert wind energy to electrical energy.
States that a device which changes energy from one form to another is called a transducer.
Determines the most efficient number of blades for a wind-powered generator.
States that wind energy can be used to generate electricity.
Compares results in a table and identifies the highest wind speeds.

5. Energy from Water

Uses an IT package to research the application and operation of a hydroelectric power plant.
State the purpose of the sub-systems within a hydroelectric power plant.
States that water can be used to generate electricity.

6. Wind, Water or Solar power?

Analyzes data to select the most appropriate technology for a given problem.

7. Nuclear Power

Identifies the processes involved when using nuclear energy to generate electricity.
Identifies the possible dangers of using nuclear energy.
Calculates 95% of 800.
Calculates 1/60 of 360.

8. Exploring Energy for Societies

Identifies the need to preserve existing energy resources and to find new methods of providing energy.
Identify some of the ways in which alternative energy sources are being used globally.
Follows written instructions to complete a crossword.

9. Conserving Energy

Investigates the greenhouse effect using experimental models.
Identifies substances which will allow light to pass through.

10. The Future of Alternative Energy

Identifies factors affecting the price of electricity.
Identifies jobs provided by the alternative energy industries.
Demonstrates a knowledge of computers.
Uses multiplication to work out electricity cost.
Works with algebra to convert watts into kilowatts.

Learning Expectations/Objectives

Integration of 21st Century Skills

FLEXIBILITY AND ADAPTABILITY

Adapt to Change

- Adapt to varied roles, jobs responsibilities, schedules and context
- Work effectively in a climate of ambiguity and changing priorities

Be Flexible

- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work

Integration of 21st Century Learning

LEADERSHIP AND RESPONSIBILITY

Guide and Lead Others

- Use interpersonal and problem-solving skills to influence and guide others toward a goal
- Leverage strengths of others to accomplish a common goal
- Inspire others to reach their very best via example and selflessness
- Demonstrate integrity and ethical behavior in using influence and power

Be Responsible to Others

Act responsibly with the interests of the larger community in mind

Information Literacy

- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Analyze Media

- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

effectively with people from a range of social and cultural backgrounds • Respond open-mindedly to different ideas and values • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Set and meet goals, even in the face of obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	• Use technology as a tool to research, organize, evaluate and communicate information • Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Assignment Scores following each assignment** **Summative: (Culminating) Post Test Part 1, Post Test Part 2**
Other Evidence and Student Self-Assessment: (Project Based Learning) **Student Workbooks** **Team evaluation following each assignment and task**

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students- Students are naturally engaged by the uniqueness of the program- partner work, the ability to work independently at their own pace, the range of different technologies from which to choose, the abundance of interesting hardware and manipulatives, and the application of problem solving skills to real world situations.
B	Show evidence of understanding by completing the following assessment: • Assignment quizzes, module pre-tests and post-tests, recording of data in student workbooks.
C	Provide differentiated instruction through any and all of the following strategies: • Cooperative and collaborative work allowing for mutual assistance between team members. • Availability of text to speech technology for difficulties in reading comprehension • Option for retake on all assignments and quizzes for evaluation and remediation. • Online math help for identified math difficulties • All teams will be able to work independently at their own pace
D	Students will ***reflect, rethink, revise, and refine*** by: • Assignment retake options • Completing student workbooks to evaluate data • Perform tasks multiple times to determine accurate data • Collaborative work
Resources: Student Materials: ST-100 Accessory Kit and accompanying materials ie. Solar cell, solar lamp, wind generator, etc. Technology: Computer CAI and on-screen directions. Logger software and Vernier probes Teaching Materials: Teacher management workstation Teaching Resources: Online access to all student work during each class	

Great Meadows Regional Schools
Technology Education Grades 7-8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: ScanTek 2000- Module ST120- Construction Technology
Timeline- Approximately 20-25 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.

8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.

8.1.8.D.3 Demonstrate how information may be biased on a controversial issue.

E. Effective use of digital tools assists in gathering and managing information.

8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design
ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

D. Technology systems impact every aspect of the world in which we live.

8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.
8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.
8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.
8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	**Enduring Understandings**
• How is the term "technology" related to the construction of structures? • What shapes provide the most strength and stability in a structure? • How is knowledge of construction technology relevant to today's world?	• Technology refers to any tool that can make work easier. • Different shapes provide strength in relation to different forces. • The design process can be used to build a bridge based upon specific parameters.
Knowledge and Skills: (Say or Do, Task, Benchmarks)	

1. Exploring Construction
Defines the term 'technology'.
Interprets the term Construction Technology.
Identifies the role of Construction Technology.
Calculates angles in structural shapes.
Identifies structural shapes.

2. Shapes in construction technology
Identifies the importance of shape in structures.
Identifies areas of weakness in structures.
Calculates a load on a bridge.
Calculates the circumference of a circle.

3. Force in construction technology
Identifies the types of forces operating in structures.
Examines material properties.

4. Exploring Forces on Structures
Uses test equipment to analyze deflection.
Relates structural shape and strength.
Plots and reads a graph of load against beam deflection.

5. Insulation Properties of Double Glazing
Identifies insulation as a property of construction material.
Calculates insulation efficiency.

6. Earthquake Considerations
Identifies the effect of earthquakes on skyscrapers.
Calculates the average of skyscraper heights.

7. Sky Scraper Technology
Defines torsion.
Defines tension.
Identifies areas of weakness in a skyscraper.
Calculates the averages of building heights and areas.

8. Building a Beam Bridge
Identifies the benefits of bridge construction.
Identifies structural differences between different bridge constructions.
Identifies forces applied to bridge construction.
Calculates structural material quantities.

9. Building a suspension bridge
Identifies compression.
Identifies tension.
Calculates a load on a suspension bridge.

10. Designing your own bridge
States properties of structures.
Interprets a brief to design a bridge.

Learning Expectations/Objectives	
Integration of 21st Century Skills	**Integration of 21st Century Learning**
FLEXIBILITY AND ADAPTABILITY	**LEADERSHIP AND RESPONSIBILITY**
Adapt to Change	***Guide and Lead Others***
• Adapt to varied roles, jobs	• Use interpersonal and problem-solving

responsibilities, schedules and context
- Work effectively in a climate of ambiguity and changing priorities

Be Flexible
- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time
- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently
- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners
- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others
- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams
- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values
- Leverage social and cultural differences to create new ideas and increase both innovation and quality

skills to influence and guide others toward a goal
- Leverage strengths of others to accomplish a common goal
- Inspire others to reach their very best via example and selflessness
- Demonstrate integrity and ethical behavior in using influence and power

Be Responsible to Others

Act responsibly with the interests of the larger community in mind

Information Literacy
- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information
- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Analyze Media
- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors

Create Media Products
- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively
- Use technology as a tool to research, organize, evaluate and communicate information
- Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and

of work **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Set and meet goals, even in the face of obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Assignment Scores following each assignment** **Summative: (Culminating) Post Test Part 1, Post Test Part 2**
Other Evidence and Student Self-Assessment: (Project Based Learning) **Student Workbooks** **Team evaluation following each assignment and task**

Stage 3: Learning Plan	
For this unit consider how you will	
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B	Show evidence of understanding by completing the following assessment: • Assignment quizzes, module pre-tests and post-tests, recording of data in student workbooks.
C	Provide differentiated instruction through any and all of the following strategies: • Cooperative and collaborative work allowing for mutual assistance between team members. • Availability of text to speech technology for difficulties in reading comprehension • Option for retake on all assignments and quizzes for evaluation and remediation. • Online math help for identified math difficulties • All teams will be able to work independently at their own pace
D	Students will ***reflect, rethink, revise, and refine*** by: • Assignment retake options • Completing student workbooks to evaluate data • Perform tasks multiple times to determine accurate data • Collaborative work
Resources: Student Materials: ST-120 Accessory Kit and accompanying materials ie. earthquake simulator, thermal chambers, bridge builder kit, etc. Technology: Computer CAI and on-screen directions, Logger software and Vernier probes Teaching Materials: Teacher management workstation Teaching Resources: Online access to all student work during each class	

Great Meadows Regional Schools
Technology Education Grades 7-8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: ScanTek 2000- Module ST130- Computer Assisted Design
Timeline- Approximately 20-25 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.

8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

E. Effective use of digital tools assists in gathering and managing information.

8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design
ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.

8.2.8.B.2 Identify the design constraints and tradeoffs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.

8.2.8.B.3 Solve a science-based design challenge and build a prototype

using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.

8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

8.2.12.F.3 Select and utilize resources that have been modified by digital tools in the creation of a technological product or system (CNC equipment, CAD software).

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.

8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	Enduring Understandings
• How do architects and other designers use computer based applications to complete a design? • How can a 3 dimensional design be created?	• The coordinate system is the basis for computer aided design. • Designers can work more efficiently and effectively through the use of computer aided design. • Designs can be completed in 3 dimensions and can be view from different angles

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. Introduction to Computer Aided Design

Investigates the wide range of CAD applications.

Identifies menu and toolbar options in a CAD package.

Follows instructions to open sample CAD files.

2. Drawing in X's and Y's

Recognizes the principles of coordinate systems used in CAD.

Creates a CAD drawing using coordinate systems.

Calculates a value working with negative numbers.

3. The CAD Kitchen

Explores the role of CAD in the design process.
Determines the dimensions and settings for the drawing area.
Recognizes commands used in CAD software.

4. Designing a Kitchen Plan

Recognizes commands used in CAD software.
Completes a CAD drawing of a kitchen plan.

5. Drawing for Manufacturing

Distinguishes between the different lines used in drafting.
Draws the top view of a component part.
Determines the center point of an object.

6. Drawing for Manufacturing (II)

Draws the front view of a component part.
States the meanings of commands in CAD software.

7. Building Up Skills!

Explores the principles of orthographic projection.
Determines the size of the drawing area.

8. Drawing in Three Dimensions

Investigates three-dimensional coordinate systems.
Identifies how to draw a three-dimensional object by adding elevation.
Identifies the properties of a polygon.

9. Drawing a Component

Draws a three-dimensional mechanical component.
Calculates the difference between the radii of two circles.

10. Problem and Solution: Redesigning a Component

Demonstrates how to use CAD commands.
States why the specifications have changed for a component part.
Calculates the angle between posts arranged in a circle.
Calculates the height of a component part.
Calculates the diameter of a circle.

Learning Expectations/Objectives

Integration of 21st Century Skills	Integration of 21st Century Learning
FLEXIBILITY AND ADAPTABILITY ***Adapt to Change*** • Adapt to varied roles, jobs responsibilities, schedules and context • Work effectively in a climate of ambiguity and changing priorities ***Be Flexible*** • Incorporate feedback effectively • Deal positively with praise, setbacks and criticism • Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in	**LEADERSHIP AND RESPONSIBILITY** ***Guide and Lead Others*** • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** Act responsibly with the interests of the larger community in mind

multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values
- Leverage social and cultural differences to create new ideas and increase both innovation and quality of work

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects

- Set and meet goals, even in the face of obstacles and competing pressure
- Prioritize, plan and manage work to achieve the intended result

Produce Results

- Demonstrate additional attributes associated with producing high quality

Information Literacy

- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Analyze Media

- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

- Use technology as a tool to research, organize, evaluate and communicate information
- Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy
- Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Assignment Scores following each assignment** **Summative: (Culminating) Post Test Part 1, Post Test Part 2**
Other Evidence and Student Self-Assessment: (Project Based Learning) **Student Workbooks** **Team evaluation following each assignment and task**

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students- Students are naturally engaged by the uniqueness of the program- partner work, the ability to work independently at their own pace, the range of different technologies from which to choose, the abundance of interesting hardware and manipulatives, and the application of problem solving skills to real world situations.
B	Show evidence of understanding by completing the following assessment: • Assignment quizzes, module pre-tests and post-tests, recording of data in student workbooks.
C	Provide differentiated instruction through any and all of the following strategies: • Cooperative and collaborative work allowing for mutual assistance between team members. • Availability of text to speech technology for difficulties in reading comprehension • Option for retake on all assignments and quizzes for evaluation and remediation. • Online math help for identified math difficulties • All teams will be able to work independently at their own pace
D	Students will ***reflect, rethink, revise, and refine*** by: • Assignment retake options • Completing student workbooks to evaluate data • Perform tasks multiple times to determine accurate data • Collaborative work
Resources: Student Materials: Orthographic projection pieces, Technology: Computer CAI and on-screen directions, printer, CAD software Teaching Materials: Teacher management workstation Teaching Resources: Online access to all student work during each class	

Great Meadows Regional Schools
Technology Education Grades 7-8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: ScanTek 2000- Module ST170- Biomedical Technology
Timeline- Approximately 20-25 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.

8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.

8.1.8.D.3 Demonstrate how information may be biased on a controversial issue.

E. Effective use of digital tools assists in gathering and managing information.

8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design
ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

E. Technology systems impact every aspect of the world in which we live.

8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.
8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.
8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.
8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	Enduring Understandings
• How can technology be used to better understand the human body? • How can models give us an accurate representation of the body? • What can various tests teach us about the health of a person?	• Technology provides us with an easy yet reliable insight into the workings of the human body. • Organs and systems need to work together efficiently for a healthy body. • Results of test can give us useful information to diagnose various conditions in the human body.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. Growing Pains

Plots weight and age data for infants on a growth chart.
Interprets data from growth charts.

Uses data to create a growth chart.
Calculates the percentage loss in body weight of an infant.

2. Building Blocks of the Human Body

Compares healthy and diseased cells using microscopic examination.
Describes the structure of a cell.
States responsibilities of medical technicians.
Selects parts from a diagram of a cell.

3. Bodybuilding for Beginners

Uses human body software to identify and locate body parts.

4. So you wanna be a Brain Surgeon, huh?

Uses models to gain insight into eye structure and function.
Identifies the name and function of the different regions of the human brain.
States the responsibilities of opticians and associated personnel.
Measures distance between lines to show that they are parallel.

5. T.P.R. - Vital Signs

Measures temperature, pulse and respiration rates.
Interprets basic information about vital signs.
States responsibilities of nursing personnel.
States how to use a thermometer.
Takes temperature readings using traditional and hi-tech thermometers.
Identifies the location of a pulse point.

6. Recording Vital Signs

Completes a Temperature, Pulse and Respiration chart.
Uses a Temperature, Pulse and Respiration chart to recognize the health state of patient.
Interprets data from a Temperature, Pulse and Respiration chart.

7. Missing Labels

Uses urinalysis test strips.
Analyzes symptoms of diabetes.
Distinguishes between samples of blood and urine from diabetics and non-diabetics.

8. Kidneys in Crisis

Describes the role of the kidneys.
States the responsibilities of personnel working in therapeutic services.
Calculates the cost of different forms of treatment for kidney failure.

9. Biomedical Materials

Identifies the properties of the materials used for making denture casts.
Evaluates the importance of different properties of alginate to dentists.
States the responsibilities of dentists and associated personnel.
Describes the form that alginate is bought in.

10. You, Me and Biomedical Technology

Describes how different treatments are carried out.
Investigates the impact of orthotics and prosthetics on society.
States the responsibilities of paramedics, physicians and veterinary personnel.

Learning Expectations/Objectives	
Integration of 21st Century Skills	**Integration of 21st Century Learning**
FLEXIBILITY AND ADAPTABILITY ***Adapt to Change*** • Adapt to varied roles, jobs responsibilities, schedules and context • Work effectively in a climate of ambiguity and changing priorities ***Be Flexible*** • Incorporate feedback effectively • Deal positively with praise, setbacks and criticism • Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments **INITIATIVE AND SELF-DIRECTION** ***Manage Goals and Time*** • Set goals with tangible and intangible success criteria • Balance tactical (short-term) and strategic (long-term) goals • Utilize time and manage workload efficiently ***Work Independently*** • Monitor, define, prioritize and complete tasks without direct oversight ***Be Self-directed Learners*** • Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise • Demonstrate initiative to advance skill levels towards a professional level • Demonstrate commitment to learning as a lifelong process • Reflect critically on past experiences in order to inform future progress **SOCIAL AND CROSS-CULTURAL SKILLS** ***Interact Effectively with Others*** • Know when it is appropriate to listen and when to speak • Conduct themselves in a respectable, professional manner ***Work Effectively in Diverse Teams*** • Respect cultural differences and work effectively with people from a range of social and cultural backgrounds	**LEADERSHIP AND RESPONSIBILITY** ***Guide and Lead Others*** • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** Act responsibly with the interests of the larger community in mind ***Information Literacy*** • Access and Evaluate Information • Access information efficiently (time) and effectively (sources) • Evaluate information critically and competently ***Use and Manage Information*** • Use information accurately and creatively for the issue or problem at hand • Manage the flow of information from a wide variety of sources **Media Literacy** ***Analyze Media*** • Understand both how and why media messages are constructed, and for what purposes • Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors ***Create Media Products*** • Understand and utilize the most appropriate media creation tools, characteristics and conventions • Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments **ICT Literacy** ***Apply Technology Effectively*** • Use technology as a tool to research,

• Respond open-mindedly to different ideas and values • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Set and meet goals, even in the face of obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	organize, evaluate and communicate information • Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Assignment Scores following each assignment** **Summative: (Culminating) Post Test Part 1, Post Test Part 2**
Other Evidence and Student Self-Assessment: (Project Based Learning) **Student Workbooks** **Team evaluation following each assignment and task**

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students- Students are naturally engaged by the uniqueness of the program- partner work, the ability to work independently at their own pace, the range of different technologies from which to choose, the abundance of interesting hardware and manipulatives, and the application of problem solving skills to real world situations.
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C	Provide differentiated instruction through any and all of the following strategies: • Cooperative and collaborative work allowing for mutual assistance between team members. • Availability of text to speech technology for difficulties in reading comprehension • Option for retake on all assignments and quizzes for evaluation and remediation. • Online math help for identified math difficulties • All teams will be able to work independently at their own pace
D	Students will ***reflect, rethink, revise, and refine*** by: • Assignment retake options • Completing student workbooks to evaluate data • Perform tasks multiple times to determine accurate data

	• Collaborative work

Resources:
Student Materials: ST-170 Accessory Kit and accompanying materials ie. eye model, bioviewer, etc.
Technology: Computer CAI and on-screen directions, Human Body software
Teaching Materials: Teacher management workstation
Teaching Resources: Online access to all student work during each class

Great Meadows Regional Schools
Technology Education Grades 7-8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: ScanTek 2000- Module ST180- Aerodynamics Technology
Timeline- Approximately 20-25 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.

8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.

8.1.8.D.3 Demonstrate how information may be biased on a controversial issue.

E. Effective use of digital tools assists in gathering and managing information.

8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

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ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

F. Technology systems impact every aspect of the world in which we live.

8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.
8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.
8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.
8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	Enduring Understandings
• What is the cause of lift and drag? • How can a wind tunnel be used to measure lift and drag? • What effect does lift and drag have on objects such as cars or airplanes?	• Air has a profound effect on different objects • The structure of an airplane allows air to create lift and can also be used to control airplanes. • A wind tunnel can be used to measure lift and drag.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. What is Aerodynamics

Investigate aerodynamic forces on objects.
Demonstrate aerodynamic principles using simple experiments.
Identifies the cause of lift and drag.

2. Looking At Wind Tunnels

Identifies the uses of airstream indicators.

Observes airstreams in the wind tunnel.
Interprets meter readings using a graph.
Observes the effect of adjusting instrument controls.

3. Measuring Drag

Describes the nature of drag.
Uses the wind tunnel to measure drag.
Observes turbulent airstreams in the wind tunnel.
Calculates the effect of adjusting the drag range on meter readings.
Plots a graph to convert drag meter readings into grams.
Calculates facing area of shapes.

4. Testing Vehicle Designs

States the factors that can affect drag.
Describes the effect of down force.
Observes the effect of vehicle shape on airstreams.
Measures the effect of vehicle design on drag.

5. Car Building On Computer

Identifies the ways car design affects performance.
Uses car performance simulation software to design a streamlined car.
Designs and tests car on computer.

6. Introducing Lift and Aeronautics

Describes the process of lift.
Observes airstreams around different wing designs.
Selects a lighter-than-air craft from a list of flying vehicles.

7. Wings And The Angle Of Attack

Indicates how lift is affected by the angle of attack.
Describes the theory behind wing design.
Demonstrates the effect of changing the angle of attack on lift.
Observes the effect of changing wind speed on lift.
States vertical angle measured using protractor and plumb line.
Measures chord length of wing section.

8. Measuring Lift Force

Measures the effect of increasing the angle of attack.
Calibrates a wind tunnel lift meter.
Measures lift force created by a flat wing section.
Calculates the effect of adjusting the lift/drag range on meter readings.
Calculates value of lift meter reading.

9. Comparing Different Types Of Wing

Evaluates the differences between different types of wing.
Measures lift readings to compare different wing types.
Sets up a model wing in a wind tunnel.
Measures chord length of wing section.

10. Problem Solving: Designing a Glider

Describes the role of aircraft in the modern world.
Identifies the function of different parts of an aircraft.
Makes a glider that can perform simple maneuvers.

Learning Expectations/Objectives

Integration of 21st Century Skills

FLEXIBILITY AND ADAPTABILITY

Adapt to Change

- Adapt to varied roles, jobs responsibilities, schedules and context
- Work effectively in a climate of ambiguity and changing priorities

Be Flexible

- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds

Integration of 21st Century Learning

LEADERSHIP AND RESPONSIBILITY

Guide and Lead Others

- Use interpersonal and problem-solving skills to influence and guide others toward a goal
- Leverage strengths of others to accomplish a common goal
- Inspire others to reach their very best via example and selflessness
- Demonstrate integrity and ethical behavior in using influence and power

Be Responsible to Others

Act responsibly with the interests of the larger community in mind

Information Literacy

- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Analyze Media

- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

- Use technology as a tool to research,

• Respond open-mindedly to different ideas and values • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Set and meet goals, even in the face of obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	organize, evaluate and communicate information • Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Assignment Scores following each assignment** **Summative: (Culminating) Post Test Part 1, Post Test Part 2**
Other Evidence and Student Self-Assessment: (Project Based Learning) **Student Workbooks** **Team evaluation following each assignment and task**

Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students- Students are naturally engaged by the uniqueness of the program- partner work, the ability to work independently at their own pace, the range of different technologies from which to choose, the abundance of interesting hardware and manipulatives, and the application of problem solving skills to real world situations.
B	Show evidence of understanding by completing the following assessment: • Assignment quizzes, module pre-tests and post-tests, recording of data in student workbooks.
C	Provide differentiated instruction through any and all of the following strategies: • Cooperative and collaborative work allowing for mutual assistance between team members. • Availability of text to speech technology for difficulties in reading comprehension • Option for retake on all assignments and quizzes for evaluation and remediation. • Online math help for identified math difficulties • All teams will be able to work independently at their own pace
D	Students will ***reflect, rethink, revise, and refine*** by: • Assignment retake options • Completing student workbooks to evaluate data • Perform tasks multiple times to determine accurate data • Collaborative work

Resources:
Student Materials: ST-180 Accessory Kit and accompanying materials ie. balsa wood blocks, wind tunnel, streamer rod, etc.
Technology: Computer CAI and on-screen directions, Car Builder software
Teaching Materials: Teacher management workstation
Teaching Resources: Online access to all student work during each class

Great Meadows Regional Schools
Technology Education Grades 7-8

Mission Statement: Technology is the application of tools, materials, processes and systems by humans to solve problems and provide benefits to mankind. The study of technology will require students to work collaboratively to design, create, use, evaluate and modify technological systems to solve problems. By solving these problems, students will be given the unique opportunity to apply numerous academic concepts through practical hands-on application. As a society, we are becoming increasingly dependent on technology. In order to become informed and responsible decision-makers, students must understand the ways in which technology may be used to change and control our environment, and its effect on humanity and the world.

Stage 1: Desired Results

Topic: ScanTek 2000- Module ST210- Digital Sound Technology
Timeline- Approximately 20-25 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology

ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.

8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.

8.1.8.D.3 Demonstrate how information may be biased on a controversial issue.

E. Effective use of digital tools assists in gathering and managing information.

8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design

ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

G. Technology systems impact every aspect of the world in which we live.

8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.
8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.
8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.
8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	Enduring Understandings
How can sounds be modified and changed? How can voice recognition software be used to complete tasks? What are uses for speech synthesis software?	• Digital sounds can be modified and manipulated for a particular need and use. • Voice recognition software can be used to complete a large variety of tasks. • Many of our common everyday objects such as cell phones, automobiles, and video games use digital sound technologies.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. What is Digital Sound Technology?

Identifies parts of the human anatomy that allow us to speak and hear.
Identifies the tools used to perform specified operations using audio software.

Obtains technical information about wave files from various sources.

2. Talk to me

Records a sentence to a computer using audio software.
Identifies characteristics of a digital speech wave pattern.
Evaluates sampled value of an analog signal trace.
Relates the recording frequency to playback frequency of a speech file.
Calculates number of samples from time and sample frequency.
Identifies the characteristics of a high volume low pitch sound.

3. Creating a Digital Soundtrack

Constructs a mixed sound file using two sources.
Evaluates storage space required for a recorded sound file.
Calculates the maximum sample size from a given audio track.
Calculates the number of audio samples obtained in a given time period.

4. Applications of Digital Speech

Identifies uses for digital speech synthesis.
Recognizes the processes required for speech processing.

5. Text to Speech

Converts text to speech using computer software.
Alters the sound of a voice using software.

6. Digital and Analog Sound

Differentiate between digital and analog sound
Convert digital sound into analog sound

7. 'Listen to me you silly machine'

Trains a voice recognition system.
Calculates word recognition rate of a speech recognition system.
Tests voice trained commands following written instructions.

8. 'Talk your way out of that'

Adds control to a voice trained command.
Uses voice command to control the movement of an object on screen.
Identifies how voice recognition is achieved.

9. Building an Interactive Digital Speech Application

Recognizes the way computers regard input information.
Completes calculations using a voice-activated calculator.

10. Problem Solving - Crack the safe

Uses a voice recognition system to open a virtual safe.
Calculates the number of combination of access codes to open a virtual safe.

Learning Expectations/Objectives

Integration of 21st Century Skills	**Integration of 21st Century Learning**
FLEXIBILITY AND ADAPTABILITY ***Adapt to Change*** • Adapt to varied roles, jobs responsibilities, schedules and context • Work effectively in a climate of ambiguity and changing priorities ***Be Flexible*** • Incorporate feedback effectively	**LEADERSHIP AND RESPONSIBILITY** ***Guide and Lead Others*** • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best

- Deal positively with praise, setbacks and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams

- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values
- Leverage social and cultural differences to create new ideas and increase both innovation and quality of work

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects

- Set and meet goals, even in the face of

via example and selflessness

- Demonstrate integrity and ethical behavior in using influence and power

Be Responsible to Others

Act responsibly with the interests of the larger community in mind

Information Literacy

- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information

- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Analyze Media

- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors

Create Media Products

- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

Apply Technology Effectively

- Use technology as a tool to research, organize, evaluate and communicate information
- Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy
- Apply a fundamental understanding of

obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	the ethical/legal issues surrounding the access and use of information technologies

Stage 2: Evidence of Understanding
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D	Students will ***reflect, rethink, revise, and refine*** by: • Assignment retake options • Completing student workbooks to evaluate data • Perform tasks multiple times to determine accurate data • Collaborative work
Resources: Student Materials: ST-210 Accessory Kit Technology: Computer CAI and on-screen directions, Voice Assist and Text Assist software, Sound Forge software, microphone Teaching Materials: Teacher management workstation Teaching Resources: Online access to all student work during each class	

Great Meadows Regional Schools
Technology Education Grades 7-8

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Stage 1: Desired Results
Topic: ScanTek 2000- Module ST240- Robotics and Automation **Timeline- Approximately 20-25 class periods**
Core Content Curriculum Number & Strands **8.1 Educational Technology** ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE. A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications. 8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems. D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors. 8.1.8.D.3 Demonstrate how information may be biased on a controversial issue. E. Effective use of digital tools assists in gathering and managing information. 8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology. **8.2 Technology Education, Engineering and Design** ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT. H. Technology systems impact every aspect of the world in which we live. 8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time. B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.
8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.
8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

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F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.
8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.
8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	Enduring Understandings
• Why are there different types of robots and what is their purpose? • How can a robot be controlled to complete various tasks? • How can you program a robot to carry out a task?	• Robots have transformed the world workforce and can be used in a wide variety of ways. • Robots can be controlled manually as well as by programming a sequence of movements.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. How a Robot Moves

Identifies the joints of a model robot and how they cause the robot to move.
Recognizes the principle features of a robot.
Follows written instructions to discover the degree of base rotation of a model robot.

2. Robot Control

Identifies suitable applications for robots.
Follows a program sequence to control a robot.
Interprets information from robot sequence diagrams.
Calculates the lifting capability of a robot for a given percentage increase of gripper strength.

3. Receiving Loud and Clear

Predicts robot movement from a program sequence.
Identifies the angular movement of a robot joint.

4. Ways of Control

Identifies basic characteristics in the manual control of a robot.
Identifies elements of a model robot.
Identifies basic angles in use on a robot.
Calculates output of a robot using basic multiplication.

5. Work Spaces and Work Envelopes

Identifies characteristics of work envelopes and work spaces.
Distinguishes between basic power sources that drive robots.
Calculates the volume of a robot workspace using fractions.
Calculates cost of robot elements using basic addition and subtraction.

6. Computer Control

Accounts for the importance of computers in automation.
Indicates key features in flow diagrams.
Calculates number of divisions in a sheet of metal using fractions.
Interprets information from computer control of robots text.

7. Sequences and Programs

Identifies basic characteristics in the programmed control of a robot.
Recognizes elements in programming logic.
Interprets written instructions to operate a robot.
Calculates robot position coordinates using algebra.

8. Sensors and Drives

States typical uses for sensors and actuators.
Accounts for the importance of sensors in manufacturing.
Calculates the number of items on a production line using basic multiplication.
Calculates the number of cars coming off a production line using basic addition.

9. Decision Making

Evaluates the importance of decision making in automation.
Determines the importance of decision making in robot control.
Calculates the area of a factory floor.
Interprets information from written text as to the positive features of different robots.

10. Assembly

Adds robot movements to an existing sequence.
Recognizes characteristics of a model robot work-cell.
Calculates the production figures of a robot using basic multiplication.
Calculates area and volume using units of measure.

Learning Expectations/Objectives	
Integration of 21st Century Skills	**Integration of 21st Century Learning**
FLEXIBILITY AND ADAPTABILITY ***Adapt to Change*** • Adapt to varied roles, jobs responsibilities, schedules and context • Work effectively in a climate of ambiguity and changing priorities ***Be Flexible*** • Incorporate feedback effectively • Deal positively with praise, setbacks and criticism • Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments **INITIATIVE AND SELF-DIRECTION** ***Manage Goals and Time*** • Set goals with tangible and intangible success criteria • Balance tactical (short-term) and strategic (long-term) goals • Utilize time and manage workload efficiently ***Work Independently*** • Monitor, define, prioritize and complete tasks without direct oversight ***Be Self-directed Learners*** • Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise • Demonstrate initiative to advance skill levels towards a professional level • Demonstrate commitment to learning as a lifelong process • Reflect critically on past experiences in order to inform future progress **SOCIAL AND CROSS-CULTURAL SKILLS** ***Interact Effectively with Others*** • Know when it is appropriate to listen and when to speak • Conduct themselves in a respectable, professional manner ***Work Effectively in Diverse Teams*** • Respect cultural differences and work effectively with people from a range of social and cultural backgrounds	**LEADERSHIP AND RESPONSIBILITY** ***Guide and Lead Others*** • Use interpersonal and problem-solving skills to influence and guide others toward a goal • Leverage strengths of others to accomplish a common goal • Inspire others to reach their very best via example and selflessness • Demonstrate integrity and ethical behavior in using influence and power ***Be Responsible to Others*** Act responsibly with the interests of the larger community in mind ***Information Literacy*** • Access and Evaluate Information • Access information efficiently (time) and effectively (sources) • Evaluate information critically and competently ***Use and Manage Information*** • Use information accurately and creatively for the issue or problem at hand • Manage the flow of information from a wide variety of sources **Media Literacy** ***Analyze Media*** • Understand both how and why media messages are constructed, and for what purposes • Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors ***Create Media Products*** • Understand and utilize the most appropriate media creation tools, characteristics and conventions • Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments **ICT Literacy** ***Apply Technology Effectively*** • Use technology as a tool to research,

• Respond open-mindedly to different ideas and values • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Set and meet goals, even in the face of obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	organize, evaluate and communicate information • Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

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Resources: Student Materials: ST-240 Accessory Kit and accompanying materials ie. bobbins, panel control, etc. Technology: Computer CAI and on-screen directions, Robotek II robot, Robotek software. Teaching Materials: Teacher management workstation Teaching Resources: Online access to all student work during each class	

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Stage 1: Desired Results
Topic: ScanTek 2000- Module ST260- Mechanisms **Timeline- Approximately 20-25 class periods**
Core Content Curriculum Number & Strands **8.1 Educational Technology** ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE. A. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications. 8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems. D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors. 8.1.8.D.3 Demonstrate how information may be biased on a controversial issue. E. Effective use of digital tools assists in gathering and managing information. 8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology. **8.2 Technology Education, Engineering and Design** ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT. I. Technology systems impact every aspect of the world in which we live. 8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time. B. The design process is a systemic approach to solving problems.

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Essential Questions	Enduring Understandings
• How can simple machines make work easier? • How are simple machines incorporated into more complex machines?	• Simple machines can change force, distance, and direction. • Simple machines and other mechanisms can create a mechanical advantage. • Mechanisms can be combined to complete a more complicated task.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. Gears

Operates the mechanical systems trainer safely.
Examines direction changes in a gear train.
States the direction of rotation of gears in a gear train.

2. Spur Gears - Changing speed

Identifies speed changes in moving gear trains.
Performs calculations and makes inferences about gear train speeds.
Performs gear ratio calculations.

3. Stepped Pulleys and Belt Drives

Assembles and uses a stepped pulley and belt system.
Investigates the problem of slippage in pulley belt systems.
Calculates ratios in a belt driven system.

4. Cams

Assembles a cam and follower system.
Investigates applications of cams and followers.

5. Fixed Pulleys

Uses the mechanical trainer to investigate pulley systems.
Recognizes an application of mechanical technology.
Interprets force diagrams.

6. Double, moveable pulleys or instant weight loss

Builds and tests a moveable pulley system.
Solves problems involving mechanical advantage.
Calculates mechanical advantage for system of mechanisms.

7. Levers 1st Order

Demonstrates mechanical advantage using first order levers.
Makes inferences based on experiments using first order levers.
Uses formula to calculate mechanical advantage.

8. Levers 2nd & 3rd Order

Builds and uses 2nd and 3rd order lever systems.
Interprets experimental observations.
Measures force.
Estimates distance.

9. Inclined planes

Measures forces on an inclined plane.
Examines force of friction when rolling and sliding loads.
Uses ratios to calculate mechanical advantage.

10. Mixing Mechanisms Together

Designs a transmission system for a winch.

Learning Expectations/Objectives

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and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

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Manage Goals and Time
- Set goals with tangible and intangible success criteria
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- Monitor, define, prioritize and complete tasks without direct oversight

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- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
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- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others
- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Work Effectively in Diverse Teams
- Respect cultural differences and work effectively with people from a range of social and cultural backgrounds
- Respond open-mindedly to different ideas and values
- Leverage social and cultural differences to create new ideas and increase both innovation and quality of work

PRODUCTIVITY AND ACCOUNTABILITY

Manage Projects
- Set and meet goals, even in the face of obstacles and competing pressure
- Prioritize, plan and manage work to
- Demonstrate integrity and ethical behavior in using influence and power

Be Responsible to Others

Act responsibly with the interests of the larger community in mind

Information Literacy
- Access and Evaluate Information
- Access information efficiently (time) and effectively (sources)
- Evaluate information critically and competently

Use and Manage Information
- Use information accurately and creatively for the issue or problem at hand
- Manage the flow of information from a wide variety of sources

Media Literacy

Analyze Media
- Understand both how and why media messages are constructed, and for what purposes
- Examine how individuals interpret messages differently, how values and points of view are included or excluded, and how media can influence beliefs and behaviors

Create Media Products
- Understand and utilize the most appropriate media creation tools, characteristics and conventions
- Understand and effectively utilize the most appropriate expressions and interpretations in diverse, multi-cultural environments

ICT Literacy

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achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	access and use of information technologies

Stage 2: Evidence of Understanding
Assessment Methods: **Formative: (On-going) Assignment Scores following each assignment** **Summative: (Culminating) Post Test Part 1, Post Test Part 2**
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Stage 3: Learning Plan	
For this unit consider how you will	
A	Engage Students- Students are naturally engaged by the uniqueness of the program- partner work, the ability to work independently at their own pace, the range of different technologies from which to choose, the abundance of interesting hardware and manipulatives, and the application of problem solving skills to real world situations.
B	Show evidence of understanding by completing the following assessment: • Assignment quizzes, module pre-tests and post-tests, recording of data in student workbooks.
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D	Students will ***reflect, rethink, revise, and refine*** by: • Assignment retake options • Completing student workbooks to evaluate data • Perform tasks multiple times to determine accurate data • Collaborative work
Resources: Student Materials: ST-260 Accessory Kit and accompanying materials ie. mechanisms trainer, Mechanisms resource text, pullies, etc. Technology: Computer CAI and on-screen directions Teaching Materials: Teacher management workstation Teaching Resources: Online access to all student work during each class	

Great Meadows Regional Schools
Technology Education Grades 7-8

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Stage 1: Desired Results

Topic: ScanTek 2000- Module ST300- Graphics and Animation
Timeline- Approximately 20-25 class periods

Core Content Curriculum Number & Strands

8.1 Educational Technology
ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE.

C. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications.
- 8.1.8.A.3 Create a multimedia presentation including sound and images.
- 8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems.

D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors.
- 8.1.8.D.3 Demonstrate how information may be biased on a controversial issue.

E. Effective use of digital tools assists in gathering and managing information.
- 8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology.

8.2 Technology Education, Engineering and Design
ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT.

J. Technology systems impact every aspect of the world in which we live.
- 8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

B. The design process is a systemic approach to solving problems.

8.2.8.B.1 Design and create a product using the design process that addresses a real world problem with specific criteria and constraints.

8.2.8.B.2 Identify the design constraints and trade offs involved in designing a prototype, (how the prototype might fail, and how it might be improved) by completing a design problem and reporting results in a multimedia presentation.

8.2.8.B.3 Solve a science-based design challenge and build a prototype using science and math principles throughout the design process.

E. Digital tools facilitate local and global communication and collaboration in designing products and systems.

8.2.8.E.1 Develop a product using the design process, data analysis and trends and maintain a digital log with annotated sketches to record the development cycle in collaboration with peers and experts in the field.

F. Technology is created through the application and appropriate use of technological resources.

8.2.8.F.1 Explain the impact of resource selection and processing in the development of a common technological product or system.

8.2.8.F.2 Explain how the resources and processes used in the production of a current product can be modified to have a more positive impact on the environment (e.g., recycled metals, alternate energy sources) and the economy.

G. The designed world is the product of a design process that provides the means to convert resources into products and systems.

8.2.8.G.1 Explain why human designed systems, products and environments need to be constantly monitored, maintained, and improved.

8.2.8.G.2 Explain the interdependence of a subsystem that operates as part of a system.

Essential Questions	**Enduring Understandings**
• How can software be used to create an animation?	• Layers, frames, and tweens allow drawings to be manipulated and to create movement. • Software allows animators to work more efficiently to create moving images.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. Making a Scene

Discovers major milestones in the history of animation.
Identifies the foreground and background structures of a scene.
Identifies the tools of an animation editor.
Indicates the number and position of layers contained in an animation.

Recognizes the filename convention for saving animations.
Interprets text describing milestones in the history of animation.

2. Motion

Recognizes the purpose of frames and keyframes in animation.
Identifies the use of layers in a Motion Tweened animation.
Views frames of an animation.
Uses Motion Tweening to animate an object moving on a scene.
Interprets from a piece of text when tweening occurs in animation.

3. Shape Changing

Creates animations to change the shape of objects using shape tweening.
Explores animation methods, including celluloid, 3D 'stop motion' and time lapse animation.
Interprets text describing various methods of animation.

4. Using Layers

Uses labeled layers to create an animation with a foreground, background and a moving animation.
Interprets text describing a theme for an animation.
Interprets text stating the problem of animating two objects on the same layer.
Calculates the number of frames when the number of frames is doubled.

5. Highlights and Shadows

Describes the effect of the position of a light source on the color of an object.
Identifies the purpose of locking layers.
Creates a shadow for an object according to the position of a light source.
Identifies the actions of an animation that includes a moving light source.
Interprets text and diagrams showing the effect of light source positions on an object.

6. Adding Sound

Adds sound effects to an animation.
Creates an animation of a horn which contains a sound effect.
Describes the position of a shape in a diagram.
Describes the reason for keeping sound effects on separate layers of an animation.

7. Ball Animation - Deformation

Describes different forms of deformation and why they occur.
Creates an animation of a bouncing ball using deformation techniques.
Interprets text describing the effects of gravity, stretch and squash in animation.
Identifies the name of a graphic symbol contained in an animation library.

8. Ball Animation - Follow Through

Describes the principles of 'follow through'.
Completes an animation of a bouncing ball using 'follow through' techniques.
Interprets text describing the effects of follow through in animation.

9. Super Heroes

Creates a theme based animation from a design brief.
Designs a super hero character for use in an animation.
Interprets from a list what to remember when creating animation scenery.
Interprets from a piece of text the use of x-ray vision.

10. Personal Profile

Uses a design loop to create a personal profile for a fictional school web site.

Identifies the method by which a school web site can be viewed.
Identifies from a design brief which parts of a personal profile need to be animated.

Learning Expectations/Objectives

Integration of 21st Century Skills

FLEXIBILITY AND ADAPTABILITY

Adapt to Change

- Adapt to varied roles, jobs responsibilities, schedules and context
- Work effectively in a climate of ambiguity and changing priorities

Be Flexible

- Incorporate feedback effectively
- Deal positively with praise, setbacks and criticism
- Understand, negotiate and balance diverse views and beliefs to reach workable solutions, particularly in multi-cultural environments

INITIATIVE AND SELF-DIRECTION

Manage Goals and Time

- Set goals with tangible and intangible success criteria
- Balance tactical (short-term) and strategic (long-term) goals
- Utilize time and manage workload efficiently

Work Independently

- Monitor, define, prioritize and complete tasks without direct oversight

Be Self-directed Learners

- Go beyond basic mastery of skills and/or curriculum to explore and expand one's own learning and opportunities to gain expertise
- Demonstrate initiative to advance skill levels towards a professional level
- Demonstrate commitment to learning as a lifelong process
- Reflect critically on past experiences in order to inform future progress

SOCIAL AND CROSS-CULTURAL SKILLS

Interact Effectively with Others

- Know when it is appropriate to listen and when to speak
- Conduct themselves in a respectable, professional manner

Integration of 21st Century Learning

LEADERSHIP AND RESPONSIBILITY

Guide and Lead Others

- Use interpersonal and problem-solving skills to influence and guide others toward a goal
- Leverage strengths of others to accomplish a common goal
- Inspire others to reach their very best via example and selflessness
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Work Effectively in Diverse Teams • Respect cultural differences and work effectively with people from a range of social and cultural backgrounds • Respond open-mindedly to different ideas and values • Leverage social and cultural differences to create new ideas and increase both innovation and quality of work **PRODUCTIVITY AND ACCOUNTABILITY** ***Manage Projects*** • Set and meet goals, even in the face of obstacles and competing pressure • Prioritize, plan and manage work to achieve the intended result ***Produce Results*** • Demonstrate additional attributes associated with producing high quality products including the abilities to: - Work positively and ethically - Manage time and projects effectively - Multi-task - Participate actively, as well as be reliable and punctual - Present oneself professionally and with proper etiquette - Collaborate and cooperate effectively with teams - Respect and appreciate team diversity - Be accountable for results	**ICT Literacy** ***Apply Technology Effectively*** • Use technology as a tool to research, organize, evaluate and communicate information • Use digital technologies (computers, PDAs, media players, GPS, etc.), communication/networking tools and social networks appropriately to access, manage, integrate, evaluate and create information to successfully function in a knowledge economy • Apply a fundamental understanding of the ethical/legal issues surrounding the access and use of information technologies

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Assessment Methods: **Formative: (On-going) Assignment Scores following each assignment** **Summative: (Culminating) Post Test Part 1, Post Test Part 2**
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Resources:
Student Materials: ST-300 Reference Guide
Technology: Computer CAI and on-screen directions, Macromedia Flash software
Teaching Materials: Teacher management workstation
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Stage 1: Desired Results
Topic: ScanTek 2000- Module ST320- Multimedia Production **Timeline- Approximately 20-25 class periods**
Core Content Curriculum Number & Strands **8.1 Educational Technology** ALL STUDENTS WILL USE DIGITAL TOOLS TO ACCESS, MANAGE, EVALUATE, AND SYNTHESIZE INFORMATION IN ORDER TO SOLVE PROBLEMS INDIVIDUALLY AND COLLABORATIVELY TO CREATE AND COMMUNICATE KNOWLEDGE. D. The use of technology and digital tools requires knowledge and appropriate use of operations and related applications. 8.1.8.A.3 Create a multimedia presentation including sound and images. 8.1.8.A.5 Select and use appropriate tools and digital resources to accomplish a variety of tasks and to solve problems. D. Technological advancements create societal concerns regarding the practice of safe, legal and ethical behaviors. 8.1.8.D.3 Demonstrate how information may be biased on a controversial issue. E. Effective use of digital tools assists in gathering and managing information. 8.1.8.E.1 Gather and analyze findings to produce a possible solution for a content-related or real world problem using data collection technology. **8.2 Technology Education, Engineering and Design** ALL STUDENTS WILL DEVELOP AN UNDERSTANDING OF THE NATURE AND IMPACT OF TECHNOLOGY, ENGINEERING, TECHNOLOGICAL DESIGN AND THE DESIGNED WORLD AS THEY RELATE TO THE INDIVIDUAL, GLOBAL SOCIETY, AND THE ENVIRONMENT. K. Technology systems impact every aspect of the world in which we live. 8.2.8.A.1 Explain the impact of globalization on the development of a technological system over time.

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Essential Questions	Enduring Understandings
• What is multimedia? • How can software be used to create a multimedia presentation?	• Text, graphics, video, animation, and sound are components of multimedia. • Software allows for the creation of multimedia presentations.

Knowledge and Skills: (Say or Do, Task, Benchmarks)

1. Enjoy the Show!

Investigates the operation of a multimedia presentation.

Identifies terms used in multimedia presentation production.

Creates a user directory to store graphic files by following written instructions.

2. The Story So Far

Relates storyboard planning information with the corresponding multimedia presentation.

Identifies slide information in a storyboard.

3. Adding a Second Slide

Identifies drawing and text tool buttons in a multimedia presentation editor.
Identifies the slide editing view options in a multimedia presentation editor.
Copies and positions graphic objects.
Creates a transition to move from one slide to another.

4. A Room with a View

Locates and selects a background scene and appropriate overlay graphics.

5. Lights, Camera, Action!

Creates a slide with a background scene to display a movie object.
Locates and selects movie files.
Makes objects interactive to link to and from a movie slide
Uses a font editor to enter and format text for a movie slide.

6. Music to Your Ears!

Reads a storyboard to identify requirements for a music player slide.
Creates a slide for a movie player and inserts sound objects.
Makes objects interactive to link to and from a movie player slide.
Interprets a diagram of linked slides.

7. Put up a Poster

Examines transition special effects to move from one slide to another.
Creates and links to and from a poster slide.
Enter and formats text in a poster slide.
Interprets a diagram of linked slides.

8. You Can Read my Diary

Creates and links to and from a diary slide.
Enter and formats text in a diary slide.
Interprets a diagram of linked slides.

9. Mouse Overs

Describes types of mouse over effects.
Selects and applies mouse over effects to objects.

10. Special FX

Describes types of object animation effects.
Select and applies object animation effects to enhance the appearance of a multimedia presentation.

Learning Expectations/Objectives

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