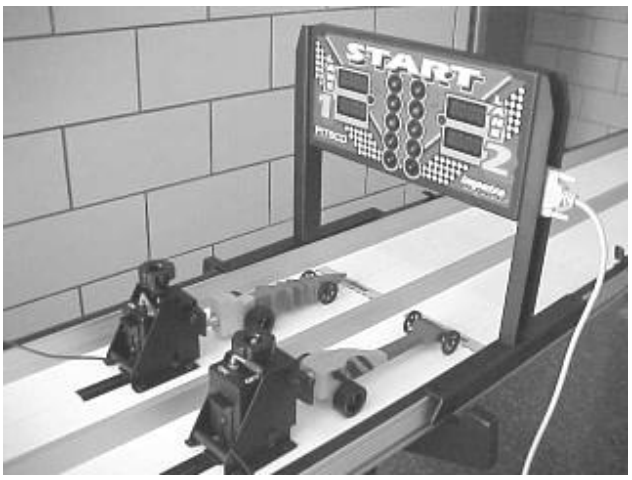
Creating and Applying Technology

Grade 8 – 45 Days

Creating and Applying Technology course core components of technology and provides the foundation for creating and applying those core technologies to to technological challenges.



Students will study the ways materials, energy, and information can be processed to design and produce a product. Special emphasis is given to the design process, which takes a product from concept to a reality.

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Introduction to Technology	

NATIONAL STANDARDS:
Standards 1, 2, 3: The Nature of Technology. Standards 4, 5, 6, 7: Technology and Society. Standards 8, 9, 10: Design. Standards 11, 12, 13: Abilities of a Technology World. Standards 14-20: The Designed World

STATE STANDARDS:	**UNIT OBJECTIVES:**
3.6.7.B: Explain information technologies of encoding, transmitting, receiving, storing, retrieving and decoding. 3.6.7.C: Explain physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design. 3.7.7.A: Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems. 3.7.7.B: Use appropriate instruments and apparatus to study materials. 3.7.7.C: Explain and demonstrate basic computer operations and concepts 3.7.7.D: Apply computer software to solve specific problems 3.7.7.E: Explain basic computer communications systems 3.8.7.A: Explain how sciences and technology are limited in their effects and influences on society. 3.8.7.B: Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life	- Develop technological literacy for the whole class including introductory understanding of the following: • The Power of Technology • Universals of Technology • Processes of Technology
ACTIVITIES: - Explore the nature and evolution of technology. - Discover how technological processes are developed, applied and used. - Examine informational, physical and biological systems. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Animation	

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ACTIVITIES: - Create a storyboard to map out an animated movie. - Use computer software to create a simple animated movie. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Artificial Intelligence	

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ACTIVITIES: - Program and operate an AI robot. - Construct an expert system. - Explore the future of AI research and applications. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Automation and Robotics	

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ACTIVITIES: - Execute programs for a robotic arm and assess the results. - Experiment with a succession of commands to perform specific operations with the robotic arm. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Bio-Technology	

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STATE STANDARDS:	UNIT OBJECTIVES:
3.6.7. A: Explain biotechnologies that relate to related technologies of propagating, growing, maintaining, adapting, treating and converting. 3.6.7. C: Analyze manufacturing steps that affect waste and pollutants. 3.7.7. A: Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems. 3.7.7. B: Use appropriate instruments and apparatus to study materials. 3.7.7.C: Explain and demonstrate basic computer operations and concepts 3.7.7.D: Apply computer software to solve specific problems 3.7.7.E: Explain basic computer communications systems 3.8.7. A: Explain how sciences and technology are limited in their effects and influences on society. 3.8.7. B: Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life. 3.8.7. C: Identify the pros and cons of applying technological and scientific solutions to address problems and the effects upon society.	- Explore the various fields that combine life science with technology: ergonomics, bioengineering, bionics, health and medicine, nutrition, energy, genetics and the environment. - Examine the impact of biotechnology on our society and on the environment, including issues related to global warming. - Explore career options available in biotechnology. - Analyze and understand the ethical issues and applications of technology to biological sciences. - Evaluate the advantages and disadvantages of advancements in biotechnology
ACTIVITIES: - Use computer software and games to solve problems related to biotechnological systems. - Analyze and solve hypothetical problems involving the application of biotechnology to human and environmental concerns. - Use a microscope to perform a diagnosis and observe living organisms. - Make recycled paper. **RESOURCES:** - Multimedia computer module - Student module guide - Microscope - Recycled paper-making kit	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Computer Graphic Design	

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ACTIVITIES: - Use computer software to create shapes and text, and add colors, patterns, special effects and textures. - Design a computer graphic logo with shapes and text, print it, and transfer the image onto a T-shirt. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Computer Problem Solving	

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ACTIVITIES: - Use simulation models and challenging games to solve a variety of conceptual and spatial problems. - Use existing knowledge to solve problems. - Use modeling as a method of solving problems. - Test and evaluate a solution. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Engineering and Stress Analysis	

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ACTIVITIES: - Test the stress and deflection of a structure using a stress analyzer. - Design, construct and test the efficiency of a balsa wood structure. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Flight Simulation	

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ACTIVITIES: - Locate and explain the flight instruments and execute basic instrument flight maneuvers. - Simulate a flight using flight controls - Demonstrate advanced flying skills, including advanced planning and plotting of a course, take-off, simulated flying, communication, and landing. **RESOURCES:** - Multimedia computer module - Student module guide	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Pneumatic Lego Principles	

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ACTIVITIES: - Discussion of Robotic issues - Connect various pneumatic systems - Design and build pneumatic devices which solve problems - Compare and contrast pneumatics and hydraulics **RESOURCES:** - Pneumatic Lego Kits	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Simple Machines with Lego's	

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ACTIVITIES: - Use gears, chain drives, and pulleys to change a rotation's speed force, and direction. - Use wheels and axles to deduce friction, store energy, and make crank handle winches. - Use levers to increase force, increase distance of movement, and change direction of force. **RESOURCES:** - Simple Machine with Lego Kits - Lego activity packets	**ASSESSMENTS:** - Pretests - Post tests - Worksheets - Workbook Activities - Ability to work effectively with a partner **REMEDIATION:** - Re-read - Re-test **ENRICHMENT:** - Level II activities

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: C0-2 Car	

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3.8.7.B: Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.

UNIT OBJECTIVES:

- Students will understand basic operations of a drill press.
- Students will understand basic operations of a scroll saw.
- Students will understand basic shaping and finishing procedures.
- Students will understand the application of paint and/or finish.
- Students will work effectively together.

ACTIVITIES:

- Cutting - Failing
- Drilling - Pointing
- Sanding - Finishing
- Work effectively together to facilitate the racing of student cars.

RESOURCES:

- Balsa Wood Blocks
- Scroll Saws
- Drill Press
- Wood
- Paint

ASSESSMENTS:

- Wind tunnel testing of student cars
- Infrared timing of car speeds
- Appearance of finished car compared to design
- Number of cars raced in given period of time

REMEDIATION:

ENRICHMENT:

COURSE: Creating and Applying Technology	GRADE: 8
UNIT: Technical Sketching and Design	

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ACTIVITIES: - Design, compare and contrast aerodynamic shapes - Orthographic and isometric sketching **RESOURCES:** **-** Isometric Graph Paper	**ASSESSMENTS:** - Wind tunnel testing of student's aerodynamic shape. - Completion of sketches and template incorporating the following criteria: • Accuracy • Neatness • Originality • Correct representation of object **REMEDIATION:** **ENRICHMENT:** - Sketching object in the classroom