

CTE CONTENT AREA: Agriculture

CONTENT MODULE TITLE: Stewardship of the Land

MODULE DESCRIPTION

This module introduces students to the ways natural resources are utilized by humans in daily life. Students will understand the ways that soil, water, air, and energy are used in the agriculture industry and examine issues related to the conservation of these natural resources in agriculture. Students explore the wide variety of career options related to conservation and natural resources and identify the knowledge, skills, education, and training necessary for success within these fields.

GUIDING QUESTION

What knowledge and skills are necessary to demonstrate introductory understanding of agricultural impacts on natural resource systems?

MODULE CONTENT

Stewardship of the Land

1. Soil

Students will

- a) Examine the physical and chemical properties of soil
- b) List and describe the various agricultural uses for land
- c) Apply knowledge of soil and conservation to management decisions
- d) Explain agricultural practices designed to protect land and soil quality

2. Air

Students will

- a) Understand the importance of clean air for all living things
- b) Analyze the impacts of human and agricultural use on air quality
- c) Define "air pollution" and interpret data measuring air pollution
- d) Describe the effects of air pollution on human populations and ecological interactions
- e) Explain agricultural practices designed to protect air quality

3. Water

Students will

- a) Describe how water moves throughout the environment
- b) Identify the importance of quality water to all living things
- c) Analyze the impacts of human and agricultural use on water quality
- d) Analyze water distribution and conservation methods
- e) Explain agricultural practices designed to conserve water and protect water quality

4. Energy

Students will

- a) List and describe conventional and alternative energy sources used in agriculture
- b) Compare and contrast the environmental impacts of conventional and alternative

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- energy sources
- c) Assess the environmental, economic, and social consequences of climate change
- d) Explain agricultural practices designed to conserve energy and protect Earth

5. Careers in Conservation and Natural Resources

Students will

- a) Investigate a career in conservation and natural resources and identify the pathways used to reach that career
- b) Assess personal knowledge, skills, and interest in careers in conservation and natural resources and evaluate personal suitability for these careers

ILLUSTRATIVE ACTIVITIES by Theme Module

Career and Community Connections

Career Bulletin Board

Students work in four small groups. Each group researches careers in conservation and natural resources for one category of resource: soil, air, water, or energy. Groups develop a career bulletin board or display of career opportunities for their natural resource, including facts on education needed, salary range, working conditions, potential for career growth, advantages, and disadvantages. Student groups present their displays to the class.

Communication and Interpersonal Relationships

Prepared Public Speaking

Students prepare 4-6-minute speeches on one aspect of protecting and conserving natural resources in agriculture. Students present their speeches in class, at an afterschool event, or as recorded public service announcements. Students may participate in the related FFA Jr. "Prepared Public Speaking" event([New York State FFA Jr. Prepared Public Speaking Contest](#))

Financial and Consumer Literacy

Renewable Energy Photo Essays

Students work in pairs to research renewable energy methods that small New York state farms use to minimize costs and to conserve resources. Each pair produces a photo essay for a class "Renewable Energy Showcase" highlighting the method and farm that was most interesting to them. Students participate in a gallery walk and prepare one question for each photo essay. Conduct a class discussion around the questions developed.

Health, Safety, and Wellness

Water Quality Testing

Students conduct water quality testing on tap water, stream water, and on contaminated samples to which pollutants such as fertilizer, detergent, and decomposed organic material have been added. Share findings and discuss impacts of poor water quality on human health and the ecosystem.

Problem Solving and Innovation

Protecting School Grounds

Take a walk around the school grounds and have students take notes on areas where there appears to be damage to the land (e.g., athletic fields, footpaths, parking areas). Invite the school facilities manager to class to discuss methods the school is using to address the damage, including turf treatments. Students investigate ways to manage the school grounds to protect the land and maintain soil quality. Students present their ideas to school leaders.

Sustainability

Model Landfill

Students research how landfills are designed to manage solid waste. Students collect various types of trash and predict what would happen to each item if it went to the landfill. Students test their predictions by burying pieces of trash in a model landfill outside. After a set number of months, uncover the trash to see which materials biodegrade in the soil.

STANDARDS ADDRESSED

New York State Career Development and Occupational Studies (CDOS) Standards Intermediate Level

<http://www.p12.nysed.gov/cte/>

Standard 1: Career Development

Students will be knowledgeable about the world of work, explore career options, and relate personal skills, aptitudes, and abilities to future career decisions.

Standard 2: Integrated Learning

Students will demonstrate how academic knowledge and skills are applied in the workplace and other settings.

Standard 3a: Universal Foundation Skills

Students will demonstrate mastery of the foundation skills and competencies essential for success in the workplace.

Common Career Technical Core Standards

<https://www.careertech.org/career-ready-practices>

Career Ready Practices

1. Act as a responsible and contributing citizen and employee
2. Apply appropriate and academic and technical skills
3. Attend to personal health and financial well-being
5. Consider environmental, social, and economic impacts of decisions
6. Demonstrate creativity and innovation
7. Employ valid and reliable research strategies
8. Utilize critical thinking to make sense of problems and persevere in solving them
9. Model integrity, ethical leadership, and effective management
10. Plan education and career paths aligned to personal goals
11. Use technology to enhance productivity

National Agricultural Education Standards

<https://www.ffa.org/thecouncil/afnr>

CS.05. Describe career opportunities and means to achieve those opportunities in each of

the Agriculture, Food, and Natural Resources career pathways

- NRS.01. Plan and conduct natural resource management activities that apply logical, reasoned, and scientifically-based solutions to natural resource issues and goals
 - NRS.02. Analyze the interrelationships between natural resources and humans
 - NRS.03. Develop plans to ensure sustainable production and processing of natural resources
 - NRS.04. Demonstrate responsible management procedures and techniques to protect, maintain, enhance, and improve natural resources
- * CRP .01, .02, .03, .05, .06, .07, .08, .09, .10, .11 Standards coincide with Common Career Technical Core Standards

RESOURCES

United States Department of Agriculture (USDA)

Forest Service

<https://www.fs.usda.gov/main/conservationeducation/educator-toolbox/middle-school>

This website offers a variety of Forest Service and partner conservation education programs and materials for middle school teachers and students.

New York Agriculture In The Classroom (NYAITC)

www.agclassroom.org/ny/

This website is a partnership of Cornell University, the NYS Department of Agriculture and Markets, the NYS Education department, Cornell Cooperative Extension, and the New York Farm Bureau. Resources include the Agricultural Literacy Curriculum Matrix, lesson plans, and websites for classroom use

National FFA

Ag Explorer

<https://www.agexplorer.com>

National FFA and Discovery Education have created a comprehensive career resource to help students explore the broad range of careers within the industry of agriculture. Students learn about agriculture careers by watching the videos, exploring the career pages and completing the Career Finder interactive.

New York State FFA

nysffa.org

The New York State FFA webpage contains information on events. Information on Junior Competition Events, FFA Manual, FFA Student handbook, and state contacts are available.

American Farm Bureau Foundation for Agriculture

www.agfoundation.org

This website contains free downloadable materials to help students develop agricultural literacy and links to other resources for classroom use. Some materials are specifically developed for middle-school students.

New York State Department of Labor

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New York State Career Zone

<https://www.careerzone.ny.gov>

Career Zone is a no-cost online career exploration and planning tool developed by the New York State Department of Labor. It offers career and education information on thousands of careers, as well as, self-assessment and career planning tools. Career Zone is appropriate for users from middle school through adult.

United States Department of Labor

CareerOneStop

<https://www.careeronestop.org>

CareerOneStop is the career, training, and job search website for the U.S. Department of Labor. The website serves job seekers, businesses, students, and career advisors with a variety of free online tools, information and resources.

Association of Career and Technical Education

Career Planning Guide

https://www.acteonline.org/wp-content/uploads/2018/02/ACTE_CC_Paper_FINAL.pdf

Research has identified middle school as a time when students can benefit the most from career exploration, a process of building self-awareness, learning about potential careers, and developing a plan for reaching future goals.

AdvanceCTE

Middle Level Career Interest Inventory

<https://cte.careertech.org/sites/default/files/StudentInterestSurvey-English.pdf>

AdvanceCTE provides a Career Interest Inventory worksheet to use with students in helping them identify the potential matches to the sixteen career clusters available to them.

Association of CTE Administrators (ACTEA)

CTE Strong Videos

<http://www.ctestrong.com>

Edge Factor has created a series of inspirational videos related to career and education that provide students with a very contemporary perspective on CTE options. Career Cluster videos provide a new look at the many career options that students have in high school and beyond

Career and Technical Education Technical Assistance Center of New York (CTE TAC)

<http://nyctecenter.org/>

The Career and Technical Education Technical Assistance Center (CTE TAC) operates under a state contract to assist the New York State Education Department (NYSED) in carrying out its mission of improving the quality, access, and delivery of career and technical education through research-based methods and strategies resulting in broader CTE opportunities for all students.