



SCIENCE ON THE FARM

Florida Standards for Dairy Lesson

Activity 1 – Farm Technology

Computer Science/Technology

SC.68.CS-PC.2.3	Describe the influence of access to information technologies over time and the effects those changes have had on education, the workplace, and the global society.
SC.68.CS-PC.2.6	Identify and discuss the technology skills needed in the workplace.
SC.68.CS-PC.2.8	Identify interdisciplinary careers that are enhanced by computer science.
SC.68.CS-CS.6.1	Explain why some tasks can be accomplished more easily by computers.
SC.68.CS-CS.6.2	Describe how humans and machines interact to accomplish tasks that cannot be accomplished by either alone.
SC.68.CS-CS.6.3	Identify novel ways humans interact with computers, including software, probes, sensors, and handheld devices.
SC.68.CS-CS.6.4	Describe ways in which computers use models of intelligent behavior (e.g., robot motion, speech and language understanding, and computer vision).
SC.68.CS-CS.6.6	Design and demonstrate the use of a device (e.g., robot, e-textile) to accomplish a task, individually and collaboratively.

Science Standards

SC.68.N.1.3	Explain the difference between an experiment and other types of scientific investigation, and explain the relative benefits and limitations of each. Content Complexity: Level 3: Strategic Thinking & Complex Reasoning
SC.68.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.
SC.68.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.

Health Standards

HE.6.B.5.1	Investigate health-related situations that require the application of a thoughtful decision-making process.
HE.6.B.6.1	Use various methods to measure personal health status.
HE.6.B.6.3	Determine strategies and skills needed to attain a personal health goal.
HE.6.B.6.4	Monitor progress toward attaining a personal health goal.

ELA

ELA.68.C.1.3	Write and support a claim using logical reasoning, relevant evidence from sources, elaboration, and a logical organizational structure with varied transitions.
ELA.68.C.2.1	Present information orally, in a logical sequence, using nonverbal cues, appropriate volume, clear pronunciation, and appropriate pacing.
ELA.68.C.3.1	Follow the rules of standard English grammar, punctuation, capitalization, and spelling appropriate to grade level.
ELA.68.C.4.1	Conduct research to answer a question, drawing on multiple reliable and valid sources, and refocusing the inquiry when appropriate.
ELA.68.V.1.1	Integrate academic vocabulary appropriate to grade level in speaking and writing.

Enhancement Activities

1. Have the students present their paragraphs from part 2 to the class.
2. Split the students into groups of 3 or 4 and research technology the students utilize in their lives that they think would also be useful on a modern farm. Examples: tablets, drones, virtual reality, apps, etc.
3. Ask a local dairy farmer for a list of somethings that cause them issues on their farm. Examples: Cows scratching their backs on fencing or other equipment and breaking it. Split the students into groups. Have them brainstorm, research, and design possible solutions for the issue you assigned them. They will present these to the class.

Activity 2 – Farm Biology

Science Standards

SC.68.N.1.3	Explain the difference between an experiment and other types of scientific investigation and explain the relative benefits and limitations of each.
SC.68.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.
SC.68.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.
SC.7.L.16.1	Understand and explain that every organism requires a set of instructions that specifies its traits, that this hereditary information (DNA) contains genes located in the chromosomes of each cell, and that heredity is the passage of these instructions from one generation to another.
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society, and the environment.

Health Standards

HE.6.B.5.1	Investigate health-related situations that require the application of a thoughtful decision-making process.
HE.6.C.2.9	Identify the influence of personal values, attitudes, and beliefs about individual health practices and behaviors.
HE.6.P.8.2	State a health-enhancing position on a topic and support it with accurate information.

ELA.68.C.1.3	Write and support a claim using logical reasoning, relevant evidence from sources, elaboration, and a logical organizational structure with varied transitions.
ELA.68.C.2.1	Present information orally, in a logical sequence, using nonverbal cues, appropriate volume, clear pronunciation, and appropriate pacing.
ELA.68.C.3.1	Follow the rules of standard English grammar, punctuation, capitalization, and spelling appropriate to grade level.
ELA.68.C.4.1	Conduct research to answer a question, drawing on multiple reliable and valid sources, and refocusing the inquiry when appropriate.
ELA.68.V.1.1	Integrate academic vocabulary appropriate to grade level in speaking and writing.

Enhancement Activities

Create a poster for part 2 from the information you learned in the lesson. Hang the information PSA Posters around the school.

Health Standards

HE.68.P.8.2	State a health-enhancing position on a topic and support it with accurate information.
HE.68.P.8.3	Work cooperatively to advocate for healthy individuals, families, and schools.

Create a visual aid, or digital media project studying the history of genetic engineering (include the Punnett square and selective breeding vs. natural breeding). Put students into groups for this project. They will present to the class when completed.

Science

SC.7.L.16.2	Determine the probabilities for genotype and phenotype combinations using Punnett Squares and pedigrees.
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Social Studies

SS.68.G.3.1	Explain how the physical landscape has affected the development of agriculture and industry in the ancient world.
SS.68.G.5.1	Identify the methods used to compensate for the scarcity of resources in the ancient world.
SS.6.W.2.2	Describe how the developments of agriculture and metallurgy related to settlement, population growth, and the emergence of civilization.
SS.8.A.1.1	Provide supporting details for an answer from text, interview for oral history, check validity of information from research/text, and identify strong vs. weak arguments.
SS.8.A.1.3	Analyze current events relevant to American History topics through a variety of electronic and print media resources.
SS.8.A.1.4	Differentiate fact from opinion, utilize appropriate historical research and fiction/nonfiction support materials.

ELA

ELA.68.C.5.1	Integrate diverse digital media to enhance audience engagement in oral or written tasks.
ELA.68.C.5.2	Use digital tools to produce writing.

Activity 3 – Farm Ecology

Science Standards

SC.68.N.1.3	Explain the difference between an experiment and other types of scientific investigation and explain the relative benefits and limitations of each.
SC.68.N.1.4	Discuss, compare, and negotiate methods used, results obtained, and explanations among groups of students conducting the same investigation.
SC.68.N.1.5	Recognize that science involves creativity, not just in designing experiments, but also in creating explanations that fit evidence.
SC.6.N.2.2	Explain that scientific knowledge is durable because it is open to change as new evidence or interpretations are encountered.
SC.6.E.7.1	Differentiate among radiation, conduction, and convection, the three mechanisms by which heat is transferred through Earth's system.
SC.7.L.16.4	Recognize and explore the impact of biotechnology (cloning, genetic engineering, artificial selection) on the individual, society, and the environment.
SC.7.N.2.1	Identify an instance from the history of science in which scientific knowledge has changed when new evidence or new interpretations are encountered.
SC.7.P.11.1	Recognize that adding heat to or removing heat from a system may result in a temperature change and possibly a change of state.
SC.7.P.11.3	Cite evidence to explain that energy cannot be created nor destroyed, only changed from one form to another.
SC.7.L.17.2	Compare and contrast the relationships among organisms such as mutualism, predation, parasitism, competition, and commensalism.
SC.7.E.6.6	Identify the impact that humans have had on Earth, such as deforestation, urbanization, desertification, erosion, air and water quality, changing the flow of water.

ELA

ELA.68.C.1.3	Write and support a claim using logical reasoning, relevant evidence from sources, elaboration, and a logical organizational structure with varied transitions.
ELA.68.C.2.1	Present information orally, in a logical sequence, using nonverbal cues, appropriate volume, clear pronunciation, and appropriate pacing.
ELA.68.C.3.1	Follow the rules of standard English grammar, punctuation, capitalization, and spelling appropriate to grade level.
ELA.68.C.4.1	Conduct research to answer a question, drawing on multiple reliable and valid sources, and refocusing the inquiry when appropriate.
ELA.68.V.1.1	Integrate academic vocabulary appropriate to grade level in speaking and writing.

Enhancement Activities

Split students into groups of 3 or 4. Have them pick a current practice used on a dairy farm. Examples: the cooling of milk, methane digesters, milking machine, how cattle are moved around the operation, etc. Research and compare how that practice was done through different periods of time vs. how it is done now. Create a presentation to teach the class about the history of the practice you chose.

Social Studies

SS.6.W.2.2	Describe how the developments of agriculture and metallurgy related to settlement, population growth, and the emergence of civilization.
SS.8.A.1.1	Provide supporting details for an answer from text, interview for oral history, check validity of information from research/text, and identify strong vs. weak arguments.
SS.8.A.1.3	Analyze current events relevant to American History topics through a variety of electronic and print media resources.
SS.8.A.1.4	Differentiate fact from opinion, utilize appropriate historical research and fiction/nonfiction support materials.

ELA

ELA.68.C.5.1	Integrate diverse digital media to enhance audience engagement in oral or written tasks.
ELA.68.C.5.2	Use digital tools to produce writing.
ELA.68.C.2.1	Present information orally, in a logical sequence, using nonverbal cues, appropriate volume, clear pronunciation, and appropriate pacing.

Have students write a short essay on what they think the dairy industry will look like or practices/ technologies they will use in the year 2050. Doesn't have to be something that currently exists. They can use their imaginations and come up with some ideas of inventions that can be used on dairies. This is a fun creative writing activity!