FFA Blue 365: Lesson 2

Four Stages of Innovation

Created: 12/2018 by the National FFA Organization

The FFA Blue 365 lesson series is intended to bring innovative technology, science, research and entrepreneurship to the classroom. These lessons are designed to highlight the innovations and technologies transforming agriculture.

STUDENT LEARNING OBJECTIVES:

After completing these activities, students will …

1. Define innovation.
2. Identify prominent innovations in agriculture in the 21st century.
3. Describe the four stages of innovation.
4. Apply the four stages of innovation to an existing innovation, product or technology.
5. Analyze a current product or movement using the four stages of innovation.
6. Design a new product for or solution to a global issue using the four stages of innovation.

TIME REQUIRED: 90 minutes

RESOURCES:

1. Video: "The Future of Farming and Agriculture," (The Daily Conversation, 2017), https://youtu.be/Qmla9NLFBvU
2. Website: "Innovations at Work in Agriculture," (U.S. Department of Agriculture, 2017), https://newfarmers.usda.gov/innovations-work-agriculture
3. Website: "The 25 Most Innovative AgTech Startups in 2018," (Forbes, 2018), https://www.forbes.com/sites/maggiemcgrath/2018/06/27/the-25-most-innovative-agtech-startups-in-2018/#3b8ed1262302
4. Website: "Food and Companionship Enriching Life," (Elanco, 2018), https://www.elanco.com/en-us/about-us/our-journey
5. Website: "Abstraction," (Michael Michalko, 2011), https://www.creativity-portal.com/escribir/authors/michael-michalko/
6. Website: "27 Industrial Revolution Inventions that Changed the World," (McFaddin, 2018), https://interestingengineering.com/27-inventions-of-the-industrial-revolution-that-changed-the-world.
7. Website: "Nine Rules for Innovation," (Greg Satell [qtd. in Vora], 2017), https://www.forbes.com/sites/gregsatell/2016/02/28/if-you-want-to-innovate-learn-these-9-rules/
8. Website: National FFA Agriscience Fair, FFA.org/participate/awards/agriscience-fair/
9. Website: National FFA Living to Serve Grant Program, FFA.org/livingtoserve/grants/

EQUIPMENT AND SUPPLIES NEEDED:

1. Internet access to play the videos in real time or embed them in a PowerPoint
2. A copy of the "Creative Thinking and Abstractions" worksheet for each student
3. A copy of the "Innovations in the Classroom" worksheet for each student
4. A copy of the "Innovations in Agriculture" worksheet for each student
5. A copy of the "Four Stages of Innovation" worksheet for each student
6. A copy of the "Innovations to Address Global Issues" worksheet for each student
7. A copy of the "Nine Rules for Innovation" worksheet for each student
8. A copy of the "Where Is Innovation in This Career?" worksheet for each student
9. Colored pens/markers
10. Blank paper

THIS QUICK LESSON PLAN WOULD WORK WELL AS AN:

1. Introduction to innovations in agriculture.

2. Introduction to technology in agriculture.
3. Introduction to agricultural communications and agricultural literacy.
4. Introduction to agricultural leadership.
5. Introduction to critical issues in agriculture.

STUDENT ACTIVITY SHEETS

https://ffa.box.com/s/mo8upb6dxit8ibqgk2e5mnma7d9pyznx (Word)
https://ffa.box.com/s/o1hmjo3eq9mvx76tcdm1ae3w0s1mopnb (PDF)

THESE ACTIVITIES ARE ALIGNED TO THE FOLLOWING STANDARDS:

AFNR Performance Element

- CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster
- CS.02. Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster and the role of agriculture, food and natural resources (AFNR) in society and the economy.
- CS.05. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.
- CS.06. Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.

FFA Precept

- FFA.CS-M.Communication. Effectively interact with others in personal and professional settings.
- FFA.CS-N.Decision Making. Analyze a situation and execute an appropriate course of action.

Common Career Technical Core

- AG1. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.
- AG2. Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster and the role of agriculture, food, and natural resources (AFNR) in society and the economy.
- AG5. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.
- AG6. Analyze the interaction among AFNR systems in the production, processing, and management of food, fiber, and fuel and the sustainable use of natural resources.

NASDCTEc

- AGC09.02. Select, research and examine critical aspects of career opportunities in one or more AFNR career pathways in order to gain an understanding of the breadth of occupations within this cluster.
- AGC10.03. Compare and contrast issues affecting the AFNR industry including biotechnology, employment, safety, environmental and animal welfare to demonstrate an understanding of the trends and issues important to careers in this industry.
- AGC10.04. Envision emerging technology and globalization and project its influence on widespread markets to demonstrate an understanding of technologies and trends that will impact the AFNR industry.

Common Core – Reading: Informational Text

- CCSS.ELA-Literacy.RI.9-10.2. Determine a central idea of a text and analyze its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- CCSS.ELA-Literacy.RI.9-10.3. Analyze how the author unfolds an analysis or series of ideas or events, including the order in which the points are made, how they are introduced and developed, and the connections that are drawn between them.

Common Core – Writing

- CCSS.ELA-Literacy.W.9-10.2. Write informative/explanatory texts to examine and convey complex ideas, concepts, and information clearly and accurately through the effective selection, organization, and analysis of content.

Common Core – Speaking and Listening

- CCSS.ELA-Literacy.SL.9-10.2. Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.
- CCSS.ELA-Literacy.SL.9-10.4. Present information, findings, and supporting evidence clearly, concisely, and logically such that listeners can follow the line of reasoning and the organization, development, substance, and style are appropriate to purpose, audience, and task.

Common Core – Science & Technical Subjects

- CCSS.ELA-Literacy.RST.9.10.8. Assess the extent to which the reasoning and evidence in a text support the author's claim or a recommendation for solving a scientific or technical problem.

Common Core – Literacy in Science & Technical Subjects: Writing

- CCSS.ELA-Literacy.WHST.9.10.6. Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.

Next Generation Science

- HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.

Green/Sustainability Knowledge and Skill Statements

- AFNR Career Cluster, Statement 2. Analyze community practice or policy development related to sustainability in AFNR.

AFNR Career Ready Practices

- CRP.06. Demonstrate creativity and innovation. Career-ready individuals regularly think of ideas that solve problems in new and different ways, and they contribute those ideas in a useful and productive manner to improve their organization.
- CRP.07. Employ valid and reliable research strategies. Career-ready individuals are discerning in accepting and using new information to make decisions, change practices or inform strategies.
- CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them. Career-ready individuals readily recognize problems in the workplace, understand the nature of the problem, and devise effective plans to solve the problem.

Partnership for 21st Century Skills

- Communication
- Critical Thinking and Problem Solving
- Global Awareness
- Implement Innovations
- Information, Communications, and Technology Literacy
- Initiative and Self-Direction
- Think Creatively

LESSON PLAN:

1. *Bell Ringer:* Ensuring the food, fiber and natural resources systems will be able to sustain a growing human population in the future will require creative and innovative approaches to solving problems.
    a. One key to training the brain to think creatively and innovatively starts with using our imaginations to complete *abstractions*. "Abstract thinking" is the ability to create a picture or idea with objects, concepts and structures that are not physically or visibly present.
    b. Using the "Creative Thinking and Abstractions" worksheet, have students use their imaginations to complete the abstractions by drawing images, symbols, animals, people, shapes, etc. in the nine boxes on the handout.
        i. If time allows, encourage students to add color to their drawings.
        ii. Share creative illustrations with the class and/or display them in the classroom.
    c. Think about some critical challenges the agriculture industry will face in the next 10, 20 or 50 years. Discuss how using abstract thinking can help address critical challenges.

2. *Introduction:* As the world moves forward, finding creative and innovative ways to address key issues in agriculture will require out-of-the-box thinking and people who are willing to take risks. Innovation is defined as "a new method, idea, product, etc." (Merriam-Webster, 2018).
    a. Paul Sloane, motivational speaker and innovator, also said, "Creativity is thinking of something new; innovation is the implementation of something new."
        i. Divide students into pairs and have them discuss and complete the "Innovations in the Classroom" worksheet.
            1. Questions included in the worksheet:
                a. What does innovation mean to you? Look around your classroom. What innovation examples do you see? What makes them innovative? What role do you see innovation playing in the future of agriculture?

3. *Part 1 — Identifying Current Innovations in Agriculture:*
    a. The agriculture industry in the 21st century is constantly changing and adapting to find ways to produce more using fewer resources. An increased access to innovative and cutting-edge technology has also changed the face of modern agriculture.
        i. Watch "The Future of Farming and Agriculture" (The Daily Conversation, 2017). The video is available at https://youtu.be/Qmla9NLFBvU.
        ii. Identify two to three innovations described in the video and complete the "Innovations in Agriculture" worksheet.
            1. *Optional:* If watching YouTube is not an option, have students visit the U.S. Department of Agriculture's "Innovations at Work in Agriculture" (2017) website. The URL is https://newfarmers.usda.gov/innovations-work-agriculture.
            2. Or, visit the Forbes' "The 25 Most Innovative AgTech Startups in 2018" website. The URL is https://www.forbes.com/sites/maggiemcgrath/2018/06/27/the-25-most-innovative-agtech-startups-in-2018/#3b8ed1262302.
        iii. Capture thoughts on the "Innovations in Agriculture" worksheet. Each student will select one innovation or movement to expand on in the next objective.
        iv. As a class, discuss agricultural innovations that stood out from the video or the reading. What parts of the innovations/movements could benefit or harm the agriculture industry?

4. *Part 2 — Analyzing the Four Stages of Innovation:*
    a. Innovative ideas can be better implemented with the help of a model. Several individuals and businesses use models to help organize new and creative ideas.
    b. For example, Elanco's research and development team uses four stages of innovation to enhance their vision of "Food and Companionship Enriching Life." Elanco's (2018) vision can be found at https://www.elanco.com/en-us/about-us/our-journey.
        i. The four phases include:
            1. Research and external innovation (identify ideas, products or technologies to address challenges).
            2. Early development (design specific measures to help maintain safety, efficiency and effectiveness).
            3. Late development (conduct studies to ensure the quality of the products).
            4. Support (provide technical expertise to support products and customers).
                a. If time permits, draw an outline of the four stages on the board or tape an outline on the floor for the class to create a visual of what each stage does.
        ii. Research how the innovation selected from "The Future of Farming and Agriculture" (The Daily Conversation, 2017) video (https://youtu.be/Qmla9NLFBvU) is using or has used each of the four stages.
            1. *Optional:* If YouTube is unavailable, use the U.S. Department of Agriculture's "Innovations at Work in Agriculture" (2017) website at https://newfarmers.usda.gov/innovations-work-agriculture.
        iii. Record responses on the "Four Stages of Innovation" worksheet.

5. *Part 3 — Applying the Four Stages of Innovation:*
    a. Addressing critical issues in the agriculture industry requires thinking creatively and implementing new innovations.
    b. As a class, identify two to three current issues and trends in agriculture that can only be solved with innovative solutions.
        i. Students may have already practiced this step in "The Future of Agriculture: Critical Challenges" lesson plan. If so, have students complete "Innovations to Address Global Issues: Part 2."
        ii. If students have not completed "The Future of Agriculture: Critical Challenges" lesson, have students think through possible solutions to solve identified issues. If you were to invent something new (a product, method, technology, etc.) to help feed the world, what would it look like? What would it do? Who could use it? Is it affordable for producers to buy?
            1. For additional inspiration and context for students, have students consider innovations and products that revolutionized agriculture throughout history. Students can use "27 Industrial Revolution Inventions that Changed the World" on Interesting Engineering's (McFaddin, 2018) website as a resource. The URL is https://interestingengineering.com/27-inventions-of-the-industrial-revolution-that-changed-the-world. Use the four stages of innovation as a framework to describe the new innovation on the "Innovations to Address Global Issues" worksheet.
            2. Students should address what need the innovation is meeting within the industry and describe how it can connect future agricultural needs with people who are currently leading the industry.
            3. Create an illustration of the new, innovative solution (a product, method, technology, etc.) on the "Innovations to Address Global Issues" worksheet.

6. *Follow-up:* As a class, review the proposed innovations. Which of the four stages of innovation was the easiest to plan? Which of the four stages of innovation was the most difficult to plan? If time allows, divide students into groups of two or three to create an innovation summary poster to hang in the classroom.

7. *Leveling Up:*
    a. "Thinking creatively" written report or graphic/poster:
        i. Visit Michael Michalko's (2011) website on creativity and abstraction at https://www.creativity-portal.com/escribir/authors/michael-michalko/.
        ii. Read about the role abstractions play in practicing creative thinking.
        iii. Develop a three- to five-page written report or an illustrated graphic/poster on how to apply abstract thinking to a specific issue in agriculture.
    b. "Future of farming and agriculture" innovations infographic:
        i. Watch "The Future of Farming and Agriculture" (The Daily Conversation, 2017) video at https://www.youtube.com/watch?v=Qmla9NLFBvU&t=619s.
            1. *Optional:* If watching YouTube is not an option, have students visit the U.S. Department of Agriculture's "Innovations at Work in Agriculture" (2017) website. The URL is https://newfarmers.usda.gov/innovations-work-agriculture.
        ii. Students should select two to three agriculture innovations that stood out to them in the video or on the website.
        iii. Research the topics and prepare an infographic about the selected innovations.
    c. "Future of farming and agriculture" oral presentation:
        i. Watch "The Future of Farming and Agriculture" (The Daily Conversation, 2017) video at https://www.youtube.com/watch?v=Qmla9NLFBvU&t=619s.
            1. *Optional:* If watching YouTube is not an option, have students visit the U.S. Department of Agriculture's "Innovations at Work in Agriculture" (2017) website. The URL is https://newfarmers.usda.gov/innovations-work-agriculture.
        ii. Select one topic presented in the video or on the website that stood out.
        iii. Prepare a five- to seven-minute speech on the selected topic and explain how the topic relates to innovation in agriculture.
    d. "Nine rules for innovation" application:
        i. Apply Greg Satell's (qtd. in Vora, 2017) "Nine Rules for Innovation" to the final selected innovation and complete the "Nine Rules for Innovation" handout. The URL is https://www.forbes.com/sites/gregsatell/2016/02/28/if-you-want-to-innovate-learn-these-9-rules/.
        ii. Discuss the full diagram and steps with the class.
    e. "Agriscience fair" project:
        i. Read the overview and rules for the National FFA Agriscience Fair at https://www.ffa.org/participate/awards/agriscience-fair/.
        ii. Identify a need within one of the six agriscience fair categories: animal systems; environmental service/natural resource systems; food products and processing systems; plant systems; power, structural and technical systems; and social science.
        iii. Use the four stages of innovation as a framework and the National FFA Agriscience Fair handbook and resources provided on the website to prepare an agriscience fair project to investigate the identified need.
    f. School or community service project:
        i. Identify a need on the school campus or in the community.
        ii. Use the four stages of innovation to develop a solution to address the identified need.
    g. Apply for a Living to Serve Grant:
        i. As a class, identify one need within the school or community, and develop a plan to address the need using the four stages of innovation.
        ii. Revise the proposed solution to address one of the key focus areas for the National FFA Living to Serve Grant Program (FFA.org/livingtoserve/grants/).
        iii. Develop an implementation plan, and complete a grant application to apply for chapter funding.

8. *Exit Ticket:* Link proposed innovation or movement to potential careers.

Agriculture has a role in everyone's life that goes far beyond providing food and clothing. Agriculture includes scientists, engineers, computer programmers, mathematicians, artists, communicators, educators and many other individuals in diverse careers, and they all play a role in introducing new innovations to improve the agriculture industry.

Visit AgExplorer (AgExplorer.ffa.org) to discover different careers that interest you. Identify one to two specific examples of innovation within each different career system. Complete the "Where Is Innovation in This Career?" worksheet.

NAME: _____

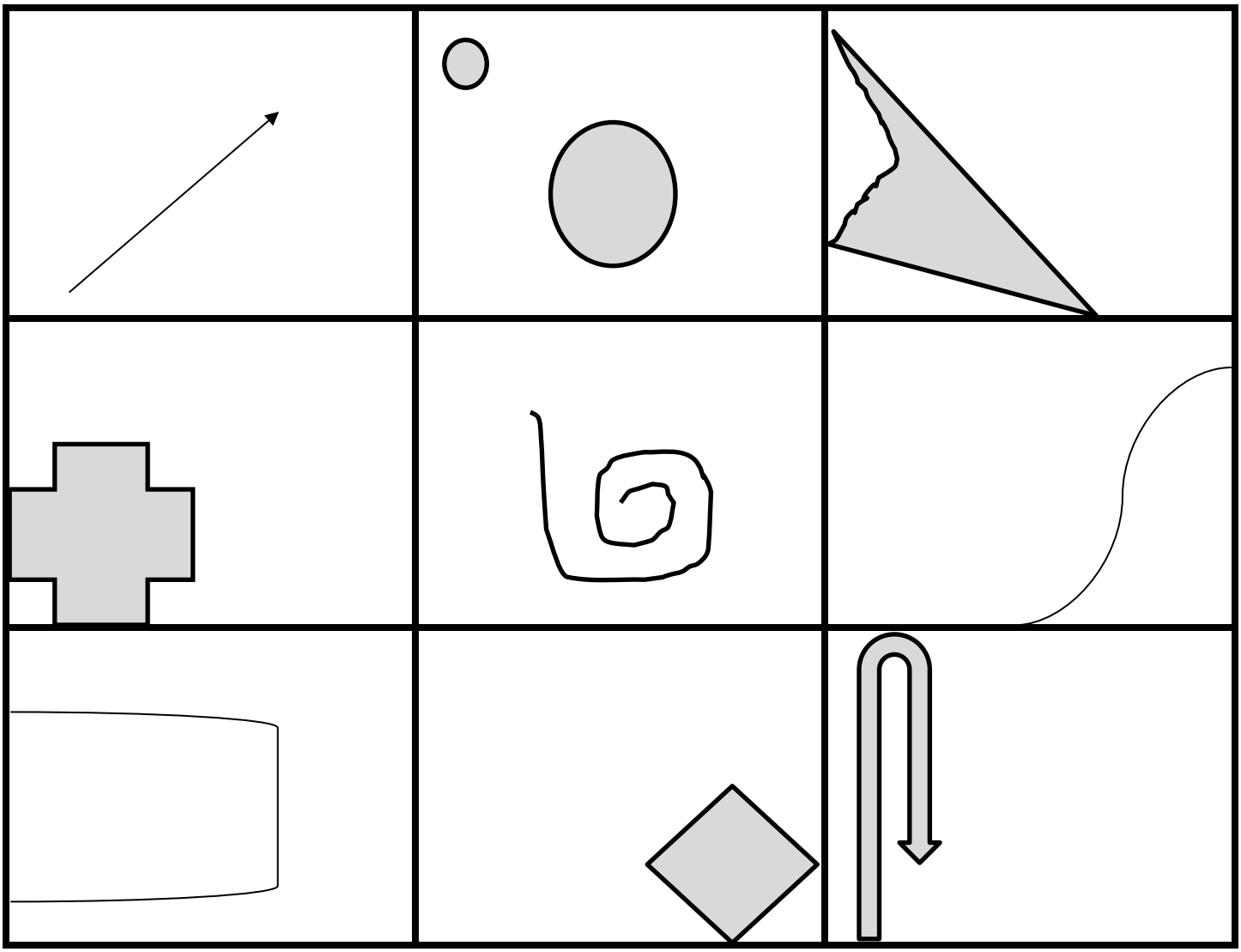
Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

Creative Thinking and Abstractions

DIRECTIONS:

Ensuring the food, fiber and natural resources will be able to sustain a growing human population in the future will require creative and innovative approaches to solving problems. One key to training the brain to think creatively and innovatively starts with using our imaginations to complete ***abstractions***.

"Abstract thinking" is the ability to create a picture or idea with objects, concepts and structures that are not physically or visibly present. Using the worksheet below, complete the abstractions by using the provided shapes/lines to draw an image, symbol, animal, person, shape, etc. for each of the nine boxes. Think outside the box and get creative!



Think about 2 to 3 critical challenges the agriculture industry will face in the next 10, 20 or 50 years. How can using abstract thinking help address those critical challenges?

1.	***Abstract thinking addresses critical challenges by:***
2.	
3.	

NAME: _____

Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

Innovations in the Classroom

DIRECTIONS:

As the world moves forward, finding creative and innovative ways to address key issues in agriculture will require outside-of-the-box thinking and people who are willing to take risks.

Innovation is defined as "a new method, idea, product, etc." (Merriam-Webster, 2018). Paul Sloane, motivational speaker and innovator, also said, "Creativity is thinking of something new; innovation is the implementation of something new." Consider the following questions, and then write your responses below each question.

1) What does innovation mean to you?

2) Look around the classroom. What innovative examples do you see? Illustrate them below.

3) What makes them innovative? Describe what makes them different from other products or items.

4) What role do you see innovation playing in the future of agriculture?

NAME: _____

Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

Innovations in Agriculture

DIRECTIONS:

The agriculture industry in the 21st century is constantly changing and adapting to find ways to produce more using fewer resources. An increased access to innovative and cutting-edge technology has also changed the face of modern agriculture. Complete the following questions as you watch "The Future of Farming and Agriculture" (The Daily Conversation, 2017) at https://youtu.be/Qmla9NLFBvU.

Optional: If YouTube is unavailable, complete the worksheet using the U.S. Department of Agriculture's "Innovations at Work in Agriculture" (2017) website at https://newfarmers.usda.gov/innovations-work-agriculture or the Forbes' "The 25 Most Innovative AgTech Startups in 2018" website at https://www.forbes.com/sites/maggiemcgrath/2018/06/27/the-25-most-innovative-agtech-startups-in-2018/#3b8ed1262302.

	Describe the innovation.	What need does it address?	What makes it innovative?	How do you predict it will evolve over time?
Innovation				

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Innovation				

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Innovation				

Innovation	Describe the innovation.	What need does it address?	What makes it innovative?	How do you predict it will evolve over time?

Select one innovation to investigate further. Write it below. Why did you select this innovation?

NAME: _____

Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

Four Stages of Innovation

DIRECTIONS:

Innovative ideas can be better implemented with the help of a model. Several individuals and businesses use models to help organize new and creative ideas. For example, Elanco's research and development team uses four stages of innovation to enhance their vision of "Food and Companionship Enriching Life." Elanco's (2018) vision can be found at https://www.elanco.com/en-us/about-us/our-journey.

Using the innovation selected from "The Future of Farming and Agriculture" video at https://youtu.be/Qmla9NLFBvU, describe how the innovation is using or has used each of the four stages of innovation.

Optional: If YouTube is unavailable, complete the worksheet using the U.S. Department of Agriculture's "Innovations at Work in Agriculture" (2017) website at https://newfarmers.usda.gov/innovations-work-agriculture.

Existing Innovation Name: _____

Identify ideas, products or technologies to address challenges.

Research & External Innovation

Design specific measures that help maintain safety, efficiency and effectiveness.

Early Development

Describe studies that should be conducted to ensure the quality of the products.

Late Development

Describe technical expertise that will support the innovation and the customers.

Support

NAME: _____

Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

Innovations to Address Global Issues

DIRECTIONS:

Addressing critical issues in the agriculture industry requires thinking creatively and implementing new innovations to address issues. Describe 2 to 3 current issues in the agriculture industry that can only be solved with innovative solutions.

Global issue:	Global issue:	Global issue:

DIRECTIONS:

Using the four stages of innovation, describe a new, innovative solution (a product, method, technology, etc.) to address one global issue selected from above.

New Innovation Name: _____

Identify ideas, products or technologies to address global issue.

Research & External Innovation

Describe specific need it addresses and how it will maintain safety, efficiency and effectiveness.

Early Development

Describe studies that can be conducted to ensure the quality of the innovation.

Late Development

Describe technical expertise that will support the innovation and the customers.

Support

NAME: _____

Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

DIRECTIONS:

Using the four stages of innovation diagram, design and illustrate the new, innovative solution (a product, method, technology, etc.).

- Diagram of the innovation/product (provide labels and descriptions):

- Projected cost of the innovation/product:

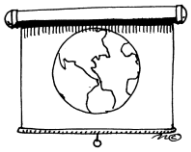
NAME: _____

Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

Innovations to Address Global Issues
Part 2

DIRECTIONS:
Find information on an agricultural innovation of your choice. Choose an innovation in an area that you are interested in, such as animal science, agronomy, forestry, technology or agribusiness.

Answer the following questions to build your understanding of the innovation you chose.



Presentation Points

1. If you had 5 minutes to describe and explain your chosen agricultural innovation to your class, what would be your top 5 talking points? List these points below, and write a few sentences to describe them.

1.
2.
3.
4.
5.

2. How will this innovation advance agriculture? How will it help use resources (natural/financial/human) more effectively? Will it help increase production?

3. Is this innovation being used effectively? Describe how it is being used.

4. How could this innovation be advanced in the future? What ideas do you have to improve this innovation? Could you use these ideas as a starting point for upcoming career development events (CDE) or your supervised agricultural experience (SAE) program?

NAME: _____

Nine Rules of Innovation

Aligned to the following standards:
CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

DIRECTIONS:
Implementing new innovations requires complex thinking and comprehensive planning. Read Greg Satell's (qtd. in Vora, 2017) "Nine Rules for Innovation" and answer the following questions.

New Innovation Name: _____

(Vora, 2017); URL: http://qaspire.com/2017/10/23/the-9-rules-of-innovation-by-greg-satell/

How can you combine your innovation with additional existing ideas?
After the innovation is developed, how can you incorporate the 70/20/10 rule?
What additional collaborations could you use to strengthen your network?

NAME: _____

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CS.01; CS.02; CS.05; CS.06; FFA.CS-M; FFA.CS-N; AG1; AG2; AG5; AG6; AGC09.02; AGC10.03; AGC10.04; CCSS.ELA.RI.9-10.2; CCSS.ELA.RI.9-10.3; CCSS.ELA.W.9-10.2; CCSS.ELA.SL.9-10.2; CCSS; .SL.9-10.4; CCSS.RST.9.10.8; CCSS.ELA.WHST.9.10.6; HS-ETS1-3; AFNR Career Cluster, Statement 2; CRP.06; CRP.07; CRP.08

Where Is Innovation in This Career?

DIRECTIONS:

Agriculture has a role in everyone's life that goes far beyond providing food and clothing. Agriculture encompasses scientists, engineers, computer programmers, mathematicians, artists, communicators, educators and many other individuals in diverse careers, and they all play a role in introducing new innovations to improve the agriculture industry.

Visit AgExplorer (AgExplorer.ffa.org) to discover different careers that interest you. Identify one to two specific examples of innovation within each different career system.

Agribusiness Systems	**Animal Systems**	**Biotechnology Systems**
Environmental Service Systems	**Food Products & Processing Systems**	**Natural Resources Systems**
Plant Systems	**Power, Structural & Technical Systems**	**Agricultural Education**