



Lesson Plan

Innovation Investigation

Created: 10/2017 by the National FFA Organization

STUDENT LEARNING OBJECTIVES:

After completing these activities, students will...

1. Determine the innovations that help with biomedical conditions.
2. Distinguish the connection between disease and agriculture.
3. Analyze the impact of an innovation that fights disease and strengthens agriculture.

TIME REQUIRED: 45 minutes

RESOURCES: FFA.org

EQUIPMENT AND SUPPLIES NEEDED:

1. A copy of the "Innovation Investigation" worksheet for each student
2. Internet access or embedded versions of the following videos:
 - a. One Billion Mosquito Nets: <https://youtu.be/agehS1OTuu0>
 - b. Mosquito Nets Save Lives: <https://youtu.be/-YV0zmcoriw>

THIS QUICK LESSON PLAN WOULD WORK WELL AS PART OF:

1. An agriscience unit.
2. A unit about global agriculture.

THESE ACTIVITIES ARE ALIGNED TO THE FOLLOWING STANDARDS:

FFA Precept

- FFA.PL-A.Action: Assume responsibility and take the necessary steps to achieve the desired results, no matter what the goal or task at hand.
- FFA.PG-I.Professional Growth: Assume responsibility for attaining and improving upon the skills needed for career success.
- FFA.PG-J.Mental Growth: Embrace cognitive and intellectual development relative to reasoning, thinking and coping.
- FFA.CS-M.Communication: Effectively interact with others in personal and professional settings.

AFNR Cluster Skills

- CS.01. Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food & Natural Resources Career Cluster.

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.
- CCSS.ELA-LITERACY.W.9-10.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

Common Core - Speaking and Listening

- 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 - Language

- CCSS.ELA-LITERACY.L.9-10.6 Acquire and use accurately general academic and domain-specific words and phrases, sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.

Common Core - Math Practices

- CCSS.MP3: Construct viable arguments and critique the reasoning of others.
- CCSS.MP6: Attend to precision.
- CCSS.MP7: Look for and make use of structure.

AFNR Career Ready Practices

- CRP.02. Apply appropriate academic and technical skills. Career-ready individuals readily access and use the

knowledge and skills acquired through experience and education to be more productive.

- CRP.04. Communicate clearly, effectively, and with reason. Career-ready individuals communicate thoughts, ideas and action plans with clarity, whether using written, verbal and/or visual methods.
- CRP.05. Consider the environmental, social and economic impact of decisions. Career-ready individuals understand the interrelated nature of their actions and regularly make decisions that positively impact and/or mitigate negative impact on other people, organizations and the environment.
- 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.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

- Civic Literacy
- Communication
- Critical Thinking and Problem Solving
- Information Literacy
- Information, Communications, and Technology Literacy
- Initiative and Self-direction
- Media Literacy

LESSON PLAN:

1. *Introduction:* Start the lesson or class by watching the video "One Billion Mosquito Nets." The direct URL is <https://youtu.be/YRRgfr0tA6o>. After the video is finished, have a class discussion about malaria by asking the following questions:
 1. What is malaria?
 2. What are the symptoms of malaria?
 3. What are some of the outcomes of contracting malaria?
 4. How do these mosquito nets help people?

Talk through the answers that students come up with. If students do not know the right answer that is okay as they will investigate these throughout the activity.

2. *Activity:* Each student needs a copy of the worksheet "Innovation Investigation."
 - a. Show the video "Mosquito Nets Save Lives." The direct URL is <https://youtu.be/-YV0zmcoriw>.
 - b. The video shows the process of creating a special mosquito net that combats malaria.
3. *Follow Up:* Have students discuss the impacts that malaria can have on a community and how those impacts can affect the agriculture industry in those areas. Make sure to discuss the scenarios in the worksheet where many people are infected by malaria and the potential detriments that could have on a community.
4. *Leveling Up:* Have students research three different countries to discover the number one biomedical threat in each area and the impacts that threat has on agriculture, both in that area and globally.

NAME: _____

Innovation Investigation

FFA.PL-A., FFA.PG-I., FFA.PG-J., FFA.CS-M., CS.01.,
W.9-10.2, W.9-10.4, SL.9-10.4, L.9-10.6, CCSS.MP3,
CCSS.MP6, CCSS.MP7, CRP.02., CRP.04., CRP.05.,
CRP.06., CRP.08.

DIRECTIONS:

Answer the questions below using the internet and information found in the videos.

Part 1: Define

What is malaria?			How do the mosquito nets in the videos help people?
	What are the symptoms of malaria?	What happens when someone contracts malaria?	

Part 2: Investigate

What makes the mosquito nets so innovative?



Why is having a dependable mosquito net important?



What if there were no mosquito nets? What impact would that have on people? What impact would that have on agriculture?



Part 3: Apply

Imagine you have a community of 20 farmers who are needed to keep a community of 100 individuals thriving.



Each farmer provides a crop of 20 bushels of corn to the community. How many total bushels does that provide?

= _____ Bushels



Each farmer also employs 3 people in the community. How many total people have jobs with the farmers?

 x 20 Farmers = _____ Employees

What if 9 of those farmers get sick with malaria and are no longer able to help sustain the community?



How many bushels are lost to the community? What percent of the supply is this?

= _____ Bushels Lost
_____ Percent of Supply



How many jobs are lost within the community? What percent of the job market is this?

 x 9 Farmers = _____ Jobs Lost
_____ Percent of the Job Market

How will the agricultural loss impact the community?

What if only one farmer got sick with malaria because mosquito nets were being used by all other community members?



How many bushels would be lost to the community? What percent of the supply is this?

= _____ Bushels Lost
_____ Percent of Supply



How many jobs would be lost within the community? What percent of the job market is this?

 x 1 Farmer = _____ Jobs Lost
_____ Percent of the Job Market

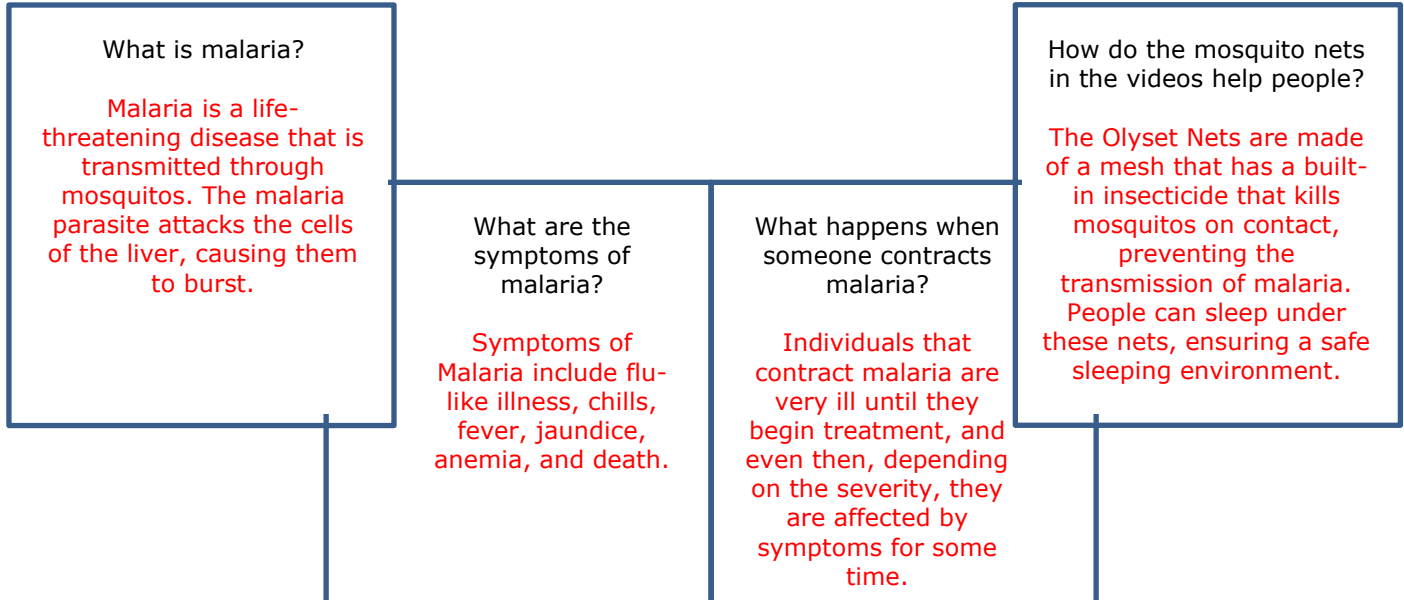
Innovation Investigation-KEY

FFA.PL-A., FFA.PG-I., FFA.PG-J., FFA.CS-M., CS.01., W.9-10.2, W.9-10.4, SL.9-10.4, L.9-10.6, CCSS.MP3, CCSS.MP6, CCSS.MP7, CRP.02., CRP.04., CRP.05., CRP.06., CRP.08.

DIRECTIONS:

Answer the questions below using the internet and information found in the videos.

Part 1: Define



Part 2: Investigate

What makes the mosquito net so innovative?



The Olyset Net is made of a mesh that includes a built-in pesticide. Other nets are just made of mesh, allowing the mosquitos to land and remain living.

Why is having a dependable mosquito net important?



Having a dependable mosquito net is important because an individual has no way of keeping mosquitos from biting them in their sleep. If the net being used can kill mosquitos, there is a lower chance of being infected with malaria.

What if there were no mosquito nets? What impact would that have on people? What impact would that have on agriculture?



If there were no mosquito nets, more people would be infected with malaria as people would be bitten while they are sleeping. If more people were infected, there would be more people that were sick and unable to work within the industry of agriculture.

Part 3: Apply

Imagine you have a community of 20 farmers that are needed to keep a community of 100 individuals thriving.



Each farmer provides a crop of 20 bushels of corn to the community. How many total bushels does that provide?

= 400 Bushels



Each farmer also employs 3 people in the community. How many total people have jobs with the farmers?

 x 20 Farmers = 60 Employees

What if 9 of those farmers get sick with malaria and are no longer able to help sustain the community?



How many bushels are lost to the community? What percent of the supply is this?

= 180 Bushels Lost
45 Percent of Supply



How many jobs are lost within the community? What percent of the job market is this?

 x 9 Farmers = 18 Jobs Lost
30 Percent of the Job Market

How will the agricultural loss impact the community?

The agricultural loss will impact the community negatively. There will be less food for each of the people within the community, resulting in famine.

What if only one farmer got sick with malaria because Olyset Nets were being used by all other community members?



How many bushels would be lost to the community? What percent of the supply is this?

= 20 Bushels Lost
5 Percent of Supply



How many jobs would be lost within the community? What percent of the job market is this?

 x 1 Farmer = 3 Jobs Lost
5 Percent of the Job Market