

GROW YOUR PALS PROGRAM GUIDE



THE NATIONAL FFA MENTORING PROGRAM

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LESSON 3

Technology Tool Belt

Unit:
TECHNOLOGY

PRECEPTS

- F. Continuous Improvement
 - F4. Adapt to emerging technologies

NATIONAL STANDARDS

- NT.K-12.1 Basic Operations and Concepts
- NT.K-12.3 Technology Productivity Tools



Lesson Type:
Large Group

STUDENT LEARNING OBJECTIVES

As a result of this lesson, the student will ...

1. Describe examples of the benefits from technology.
2. Differentiate between technologies used by different segments of the agricultural industry.





TIME

Instruction time for this lesson: **50 minutes.**



RESOURCES

Burton, L. D., & Cooper, E. L. (2007). *Agriscience: Fundamentals and applications* (4th Ed.). Clifton Park, NY: Thomson Delmar Learning.

National FFA Organization (1999). *Partners in active learning support: Student activity handbook* (Vol. 2). Indianapolis, IN: National FFA Organization.



TOOLS, EQUIPMENT AND SUPPLIES

- ✓ **wheat** (actual wheat or included picture)
- ✓ **loaf of Bread** (actual bread or included picture)
- ✓ **cotton** (real cotton or included picture)
- ✓ **blue jeans** (actual jeans or included picture)
- ✓ **flip chart paper**
- ✓ **markers**
- ✓ **scrap paper** -- 1 sheet per student
- ✓ **long strips of paper: approximately 3 inches by 40 inches** --1 per student
- ✓ **technology arrows** -- 1 set per group
- ✓ **masking tape**



KEY TERMS

technology
agriculturalist

INTEREST APPROACH

Use wheat and a loaf of bread to help the mentees begin to understand that many people are involved in producing the food that we eat. Before you begin, write the steps listed below individually on flip chart paper so you can post them around the room in order of the process, as the mentees come up with them. Those Agri-Food Chain steps would include:

*Producer – grows the wheat and determines its readiness for harvest
Harvester – removes the wheat from the plant in the field and transports
Processor – cleans, handles, bakes and packages the bread
Distributor – stores the loaves of bread until requested by a regional market
Wholesaler – sells the bread to the retailer after purchasing in large quantities
Retailer – sells bread directly to the consumer
Consumer – eats the bread like you and me*

Have the mentees brainstorm the steps that wheat goes through before it reaches our table in the form of bread. Use the following directions to have the students share their ideas. As the mentees share ideas, you will want to write them on the board or on a flip chart so the mentees can see all the ideas. You may need to help them along if they struggle. To prompt them you might ask, “How does the wheat get to the place the bread is made?” or “Where did the grocery store get the bread?” When mentees mention the Agri-Food Chain steps, use the flip chart papers you created before class to post the steps individually around the room in the correct processing order.



What does it take for this (hold up wheat) to become this (hold up bread)?

Allow students to give ideas and write down their answers on the board or on a flip chart.



It takes several steps and many people to produce this wheat, change it into bread and finally make it to our stomachs. There are seven steps in the Agri-Food Chain that this product went through. You have named specific people and businesses that work with the product. Now let's see if we can group them. What might those groups be?

You may need to get them started by pointing out producer as the first step or maybe the consumer as the last step. Post the steps around the room in order as the mentees come up with them.

Once you have led the mentees through the wheat example, see if they can talk through the same process with an example of cotton to blue jeans. Remind them to use the steps posted on the wall as a reference. There may be some different terminology used, such as *manufacturer*, but it still takes numerous steps. Those steps would include:

Producer – grows the cotton and determines its readiness for harvest
Harvester – removes the cotton from the plant in the field and transports
Processor – cleans, handles and prepares cotton to be used
Manufacturer – makes the blue jeans
Distributor – stores the blue jeans until requested by a regional market
Retailer – sells blue jeans directly to the customer
Customer – wears the blue jeans like you and me



Look around the room at the seven steps or groups in the Agri-Food Chain that it takes to get this loaf of bread (*hold up bread*) to our table. This is cotton (*hold up cotton*) and it is used in blue jeans (*hold up or point to blue jeans*). Thinking about the steps on the wall, what might be the groups that are needed in producing a pair of blue jeans for you and me?

(Allow mentees to give ideas. Lead them through the process, mentioning that the terminology may be a little different depending upon the industry.)



It takes a lot of people to produce a product. Around the room you see the who but what about the how? Each of these groups use their knowledge and skills to keep the process going. Many of these people are called **agriculturalists**. An **agriculturalist** is someone working in or concerned with the food and fiber industry. Everyday they use and are developing new types of **technology**. **Technology** is the application of science and innovation to make tasks easier and/or better.

SUMMARY OF CONTENT AND TEACHING STRATEGIES

OBJECTIVE 1. | Describe examples of the benefits from technology.



I. List 10 or more examples of how the mentee benefits from **technology**.

Lead students through a Me-You-Us E-Moment. Me-You-Us asks students to reflect on a question posed by the teacher (Me), and then allows pairs of students to pair in order to share thoughts (You), finally the pairs share with larger groups or the entire class to combine all students' thoughts (Us).

*Have mentees list on their scratch paper as many examples they can think of about how they benefit from **technology**. Then have them share those benefits with their neighbor in an attempt to add to their list. And finally have them share a few example benefits with the class. Give them an example to get them started. For instance, a car is an example of **technology** that makes it easier to get to school or a cell phone is an example of **technology** that allows them to talk to their friends. Give each mentee a piece of scratch paper after you have given them the following directions.*



We are surrounded by **technology** every day and we benefit from it. Think of the different types of **technology** that you benefit from. An example might be the car you rode to school in. The car is an example of **technology** that makes it easier to get to school. Look around the room and you'll see there are many items you could add to the list.

In a moment when I say BEGIN, you will have three minutes to write down as many examples of **technology** and how you benefit from them that you can think of. Jot these on the scratch paper that's being passed out to you now. You might put down "cell phone" as an example. Then you'd write that its benefit is to allow you to talk to your friends.

How long will you have?

Three minutes.



What questions are there?

Hand out scrap paper.

BEGIN!

*Move around the room to help the mentees that may be struggling or have questions. If the mentees are struggling, you may want to give them more examples. For instance, a calculator is an example of **technology** that helps them with their math homework, or a clock is an example of **technology** that helps them know when to do things throughout their day. Tell the mentees when they have one minute remaining and 30 seconds remaining.*

One minute left.

Thirty seconds left.



Time is up. Let's see if we can add even more examples of **technology** and their benefits to your list. When you hear the word SHARE, you will have two minutes to go over your list with your neighbor, add the new ideas that you gain from your neighbor to your list and make your list even better.

What questions do you have?

SHARE.

Move around the room to help mentees that may be struggling or have questions. Tell the mentees when they have 30 seconds remaining.

Thirty seconds remaining.



Stop and put a period on that sentence. Turn and thank your neighbor for sharing his or her list.

Thank you for sharing your list!



Now it is time to share with the entire group. When I point to your team, share one example of **technology** and how it benefits all of us. Listen to the other teams as they share, and if you don't have the example they mention, add it to your list so yours becomes even better.

Point to each team a couple of times so that everyone has a chance to share an example.



Thank you for sharing your examples. As you can see, we are surrounded by **technology**, and it is an important part of our lives. We all use some of the same technologies like cars and phones, but some people use specific forms of **technology** depending upon their jobs and careers. A scientist might use a microscope or a TV broadcaster might use a microphone. It is no different in agriculture; many specific forms of **technology** are used.



OBJECTIVE 2. | Differentiate between technologies used by different segments of the agricultural industry.



I. Match the following **technology** examples with the stage in the Agri-Food Chain that corresponds. Some may be used at more than one stage.

(Stage)	(Technology)
a. Producer	examples include tractors, fertilizer and genetically enhanced seed
b. Harvester	examples include combines, moisture tests and global positioning systems
c. Processor	examples include sanitation chemicals, ovens and refrigeration units
d. Distributor	examples include forklifts, telephones and fax machines
e. Wholesaler	examples include trucks, computers and printers
f. Retailer	examples include cash registers, scanners and advertisements
g. Consumer	examples include debit cards, toasters and microwaves

Lead mentees through a modified Go-With-The-Flow e-Moment. The Go-With-The-Flow e-Moment is a teaching strategy that uses symbols and shapes to show a process through the creation of a flowchart.

You already have some of the pieces posted with the seven stages in the Agri-Food Chain. The challenge for the mentees is to add the technologies that move the product from one stage to the next. Cut out the example **technology** arrows that can be found on AS.1. Hand each team of mentees a set of technology arrows and ask them to place the arrows on the wall where they think the **technology** fits between each stage. Some **technology** arrows may be used in more than one place. Include some blank arrows and challenge the mentees to come up with examples of **technology** that are not included in the example arrows. Offer the mentees an example and show them what you want them to do. Give the directions below before passing out the arrows. .



We benefit from **technology** every day. Think about the wheat-to-bread scenario we used at the beginning of class. We could eat plain wheat but it wouldn't be the same. Think about all the **technology** that went into producing this loaf of bread.

Hold up loaf of bread.



The Agri-Food Chain shows the process that wheat goes through to become bread. During that process many forms of **technology** are used. Think about the technologies that you could write down between each step that was used in the process.

To figure out the steps in the process, quickly and quietly find and focus your attention to the front of the room.

Great, does everyone have a partner?

In a moment when you hear the word GO, you and your teammate will have four minutes to take this bunch of arrows (*hold up **technology** arrows*) and sort through them to decide where you think they fit in the process. You will also have blank arrows. When you and your teammate think of a **technology** that is used in this process that is not on an arrow, use the markers and make an arrow with that **technology** on it.

What questions do you have? Good luck!

*Distribute the **technology** arrows.*

GO!

Move around the room to help mentees that may be struggling or have questions, or divide mentors among each group to help facilitate the process. Tell the mentees when they have one minute remaining.

One minute remaining.



If you can hear me, clap once.

Wait for response.



If you can hear me, clap twice.

Wait for response.



Great, please put the arrows down, and thank your teammate for sharing their **technology** knowledge.

Thank you for sharing your technology knowledge.



When you hear the word **RETRIEVE**, I would like one of you to come forward and get a long piece of masking tape from me and take it back to your seat.

RETRIEVE.

Once each group has a piece of tape, continue.



Lastly, when I say **TECHNOLOGY**, each group will use the tape to stick the arrows up around the room in between the stages, to complete the Agri-Food Chain process. Some arrows may be able to be placed in multiple locations. Continue until you have all your arrows positioned where you want them, and then patiently wait for everyone to finish.

If we were to put up the arrow that says, “combine,” I would place it next to the harvester like this (*place the combine arrow between the harvester and processor stages*).

The harvester uses the combine to get the wheat closer to the processor stage.



What questions do you have?

TECHNOLOGY!



REVIEW / SUMMARY

*Listed below are the directions to quickly review the main objectives from the lesson. Mention that they are surrounded by **technology** used in the Agri-Food Chain, and it is like a **technology** tool belt. We use the tools in the belt at different times to make situations easier and/or better. Lead the mentees through a review of the technologies used in the Agri-Food Chain by saying the step and having them say examples of **technology** used in that step. You may want to work your way around the room as you review the steps and technologies. Then have them design their own **technology** tool belt using markers and long strips of paper to aid them in reviewing all the technologies that they benefit from every day.*



Look around the room. You are surrounded by examples of **technology** that we all benefit from in the Agri-Food Chain. It is almost like a big **technology** tool belt. Each one of the technologies is a tool that we use to make a task easier and/or better. If we start at the producer, an example of **technology** in the tool belt is genetically enhanced seed. If we go to the harvester, examples of **technology** would include:

*Point to harvester and have mentees respond with example **technologies**.*

At the processor, examples of **technology** would include:

*Point to processor and have mentees respond with example **technologies**.*

At the distributor, examples of **technology** would include:

*Point to distributor and have mentees respond with example **technologies**.*

At the wholesaler, examples of **technology** would include:

*Point to wholesaler and have mentees respond with example **technologies**.*

At the retailer, examples of **technology** would include:

*Point to retailer and have mentees respond with example **technologies**.*

At the consumer, examples of **technology** would include:

*Point to consumer and have mentees respond with example **technologies**.*



Thank you for helping describe the **technology** tool belt in the Agri-Food Chain. Take two minutes using the markers provided and this strip of paper (*hold up long strips of paper*) to design your own **technology** tool belt. On the paper tool belt, write down 10 examples of technologies that you benefit from every day.

Hand out long strips of paper.



You now have your own **technology** tool belt to remind you that we use and benefit from **technology** every day.



APPLICATION

Small Group Suggestion: Have mentees develop a list of technologies that they and their family use every day. Discuss how each of those technologies is a benefit. Lead the mentees through a Hieroglyphic e-Moment. The Hieroglyphic e-Moment challenges students to create an “icon” or symbol that represents a concept – or a “picture that is worth a thousand words.” Have the mentees pick five technologies and draw a picture or icon that will help them remember that **technology** and the benefit it brings to them and their family. Upon completion allow the mentees to share their hieroglyphics with their classmates.



One-on-One Session: Present the Agri-Food Chain to the mentee and talk about the technologies that go along with the process. Then have the student use magazines to find pictures that represent each of the stages and technologies that are used at each stage. The mentee should then cut those pictures out and glue them on poster paper to make their own pictorial flowchart of the Agri-Food Chain and associated **technologies**.

PALS.3.ASSESS.A | EVALUATION - ANSWER KEY

1. Define **technology**. (*Technology is the application of science and innovation to make tasks easier and/or better.*)
2. List three examples of **technology** and how you benefit from them. (*Answers will vary.*)
3. What are two forms of **technology** used by each step in the Agri-Food Chain?
 - a. Producer *examples include tractors, fertilizer and genetically enhanced seed*
 - b. Harvester *examples include combines, moisture tests and global positioning systems*
 - c. Processor *examples include sanitation chemicals, ovens and refrigeration units*
 - d. Distributor *examples include forklifts, telephones and fax machines*
 - e. Wholesaler *examples include trucks, computers and printers*
 - f. Retailer *examples include cash registers, scanners and advertisements*
 - g. Consumer *examples include debit cards, toasters and microwaves*

PALS.3.ASSESS.A | EVALUATION

Technology Tool Belt

Answer the following questions to the best of your ability.

1. Define technology.
2. List three examples of technology and how you benefit from them.
3. What are two forms of technology used by each step in the Agri-Food Chain?
 - a. Producer -
 - b. Harvester -
 - c. Processor -
 - d. Distributor -
 - e. Wholesaler -
 - f. Retailer -
 - g. Consumer -

PALS.3.AS.A

(Example given below.)

Technology Arrows

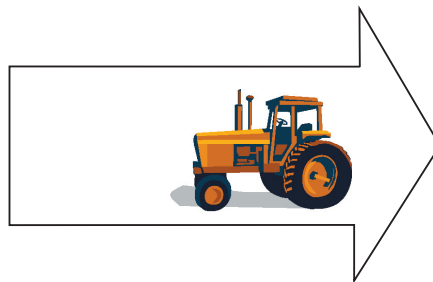
Position the following technology arrows in the place where they are used in the Agri-Food Chain. Included are a few blank arrows for you and your teammate to add your own examples of technology (that are not already included on the arrows) that are used in the Agri-Food Chain .

(List of example technologies.)

tractors, fertilizer, genetically enhanced seed, combines, moisture tests, global positioning systems, sanitation chemicals, ovens, refrigeration units, forklifts, telephones, fax machines, trucks, computers, printers, registers, scanners, advertisements, debit cards, toasters, and microwaves

Include eight blank arrows.

Example arrow:



Tractors
Fertilizer
Combines
Genetically enhanced seed
Global positioning systems
Moisture tests
Sanitation chemicals

Ovens
Printers
Computers
Trucks
Fax machines
Telephones
Forklifts

Microwaves
Toasters
Debit cards
Advertisements
Scanners
Registers
Refrigeration units

Example Picture of Wheat (Example given here.)

