



The Impact of Progress

Middle School Food and Agricultural Literacy Curriculum

Precepts

- N. Decision Making
- N1. Demonstrate the decision making process.

National Standards

- CS.03.03.01.a. Research current and emerging technologies in AFNR.
- BS.01.01.01.a. Define biotechnology and explore the historical impact it has had on agriculture.
- BS.01.01.02.a. Investigate current applications of biotechnology in agriculture.
- NL-ENG.K-12.4 – Communication Skills
- NL-ENG.K-12.12 – Applying Language Skills
- NS.5-8.3 – Life Science
- NS.5-8.5 – Science and Technology
- NS.5-8.6 – Science in Personal and Social Perspectives
- NT.K-12.2 – Social, Ethical, and Human Issues

Student Learning Objectives

- As a result of this **unit** the students will...
- Identify key developments in the progression of agriculture.
- As a result of this **lesson** the students will ...
- Discuss the progression of agricultural research and technology and its impact on society.

Content Outline

- I. **Technology: the application of science to a certain objective.**
 - A. Identify "then" and "now" technologies.
 - B. How does technology help agriculturalists?
 - C. What are agriculture technology advances that affect agriculturalists?
- II. **Research: investigation into a subject in order to discover facts, theories, and applications.**
 - A. Research a product to make appropriate

Time

Instruction time for this lesson: 45 minutes

Resources

Definitions. Retrieved July 14, 2009, from Dictionary.com:
www.dictionary.com
National FFA Organization, LifeKnowledge® materials, 2009

Tools, Equipment, and Supplies

Overhead projector/transparencies
Markers
Whiteboard
Standard Telephone
Cellular Telephone
Note Cards – one per student
Bell/Buzzer
2 Apples of the Same Species
MS.AST.1.2.TM.A – one per teacher
MS.AST.1.2.TM.B – one per teacher
MS.AST.1.2.ASSESS.A – one per student
MS.AST.1.2.ASSESS.B – one per student

Key Terms

The following terms are presented in this lesson and appear in **bold italics**:

Technology
Research

decisions.

Interest Approach

If applicable, refer to context in the introduction taught in previous lessons that may set the stage for the information that is being covered in today's lesson. Example, "Last class we learned about five great inventions in agriculture. Today, we are going to dive in deeper and determine just how they impact our lives. Let's get started."

Good morning! Take your minds back to what we have learned about the basics of agriculture. Today, we are going to dive even deeper into how agriculture started. Let's look at how agriculture has progressed and how your life has been impacted. Here we go!

Hold up the regular phone.

In my left hand I have a_____?

Students should respond in unison.



Lesson Number: ??,???.?.?

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B Title

Hold up the cellular phone.

In my right hand I have a _____?

Everyone in unison says cell phone.

Ask students to consider what factor has allowed the progression of the standard phone to the cellular phone. Possible answers may include new inventions, experiments, etc. The desired answer is technology.

What factor has allowed the progression of the standard phone to the cellular phone?

Very good – **technology**.

Take five seconds and think of one word that you relate to the term **technology**.

Pause five seconds.

Please raise your hand to share your answer with the class.

Allow students to share their responses. Possible answers may include computers, cars, iPods, etc. Take three to four answers.

Great answers, thank you.

The definition of **technology** is: the application of science to a certain objective.

Project **MS.AST.1.2.TM.A** and call attention to the definition of technology.

Wow! That sounds a little complicated. Let's break it down.

Prior to the class, draw the following diagram on the board or display **MS.AST.1.2.TM.B**:

Then		Now
Horses, Cart, Buggy, Train, Bicycle	→	
Records, 8-Track Player, Cassette Tape	→	
Shovel, Hoe, Hand Plow, Ox	→	

On the left hand side of the board we have three boxes. Each box has items in it that were used

according to its invention in the timeline of history. On the right hand side of the board are three connecting boxes that we will fill with examples of those same types of items in today's world. We need three volunteers – please raise your hand.

Choose three students to come to the board. Provide students a marker and instruct them to stand off to the side and wait for their turn. Identify the words in the boxes on the left and ask the student assistants to identify what types of items would correspond to them in today's world. Instruct student assistants to fill in the boxes on the right with their answers.

In the first box on the left, the items are buggies, carts, horses, trains, and bicycles. What types of items replace these things today? Go ahead and fill in the box.

The first student assistant may write in responses such as automobiles, airplanes, dirt bikes, etc.

Positively support the student and ask them to take their seat.

Very good, you may sit down.

Now, the second box the items include an 8-track player, a record player, and cassette tapes.

What types of items replace these things today?

The second student assistant may write in responses such as iPods, CD players, MP3 players, etc. Positively support the student and ask them to take their seat.

Very good, you may sit down.

Now, in the third and final box the items are an ox, hand plow, shovel, and hoe. What types of items replace these things today?

The third student assistant may write in responses such as tractors, combines, sprayers, airplanes, backhoes, etc. Positively support the student and ask them to take their seat.

Very good, you may sit down. Thank you, volunteers, for your help.

Technology has made great changes in our world. Think about how our world has changed from the early 1900s even back to the life of the caveman.

Give students five seconds to ponder the thought.



Lesson Number: 22.222.2.2

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B Title

Advances in technology are constantly occurring and, therefore, changing our world.

With all of the changes that **technology** has made, it's easy to see how much our lives have benefited. Let's find out what your favorite piece of **technology** is.

Utilize the Me-You-Us e-Moment®.

Pass out one note card to each student. Students will take 30 seconds to decide what the most important piece of technology is that makes their lives better. After 30 seconds, ring a bell or buzzer and have students turn to a partner and share their answer and why. After time is up, select pairs to stand and share their answers with the class.

Although there are numerous inventions that make our lives fantastic and convenient, you are going to narrow down the number one piece of technology that you enjoy the most. When I say GO, we have 30 seconds to think of our favorite piece of technology and write down why on the note cards in front of us. When you hear this bell ring, we will have 15 seconds to turn to our neighbor and share our reason why. Also, be prepared to share your answers with the entire class. What questions do you have? GO!

Most likely, students will elicit responses that are of modern conveniences versus technologies that are vital to their everyday living. Direct their thinking toward major agricultural progressions that have impacted their lives. Validate student answers by repeating them to the class. Highlight some of the technologies that students may not think of because they have been around for more than 50 years.

Great job! Each of us came up with great answers. I heard a variety of great answers such as the microwave, MP3 players, and computers. How about heaters or air conditioning? Is this technology? These are pieces of technology that you might forget about since they have been around for more than 50 years, but keep in mind that they are still technology even if they have been around for longer than you've been alive. Let's keep in mind what our favorite piece of technology is and see that if by the end of the lesson, it changes. Get ready to move because our next activity requires you to use your brain and your legs.

Summary of Content and Teaching Strategies

Objective 1. Discuss the progression of agricultural research and technology and its impact on society.

Students will identify what agriculture inventions they benefit from through a physical recognition activity. Following the set of directions below, students will stand each time they believe they are impacted from an agricultural technology.

Raise your hand if you live on a farm.

Expect a few hands to be raised.

Raise your hand if you own an animal.

Expect a few more hands to be raised.

Raise your hand if you benefit from agriculture.

All students' hands should be raised.

You may not think agriculture is a big part of your life, but regardless of whether or not you were raised on a farm or ranch, your life is impacted by agriculture.

In just a moment we will hear several agriculture technologies that have been invented over time. When you hear an item or practice that you are impacted by, stand up. Remain standing until you are recognized, and then sit back down and I will say another. We will follow the same procedure for several items.

The first piece of agricultural technology is the tractor.

Students will stand now if they think they are impacted by the invention of the tractor. Wait a few seconds before calling the second item.

The second piece of agricultural technology is the cotton gin.

The third piece of agricultural technology is the plow.



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B Title

The fourth piece of agricultural technology is genetically modified foods.

The fifth piece of agricultural technology is cold storage buildings.

It looks like many of you believe that agricultural technology has impacted you over time. Now, how does it affect you specifically? If you're not a farmer or rancher who uses one of these agriculture technologies specifically, how does it impact you? What do these pieces of agricultural technology have in common? When I say TURN, you will have 15 seconds to discuss with your neighbor the answers to these questions.

So the first question to discuss was what?

Student's response will be, "How do the technologies impact me?"

And the second question was?

Student's response will be, "What do the technologies have in common?"

Very good. What questions do you have? TURN!

Show questions on **MS.AST.1.2.TM.A** to add a visual reminder.

Great discussions. Now, that we know just how agricultural technologies impact us, it's vital for our success to figure out just how it all happened. We are going to explore how agricultural technology comes about.

You may be wondering how the major agricultural technologies of the world came about. Let's explore this thought.

When you make the decision on what clothes to wear each morning, what is one way you decide?

Responses may include pairing clothes together, trying them on, etc.

One common way to determine what you're going to wear is to try the outfit on.

When you make the decision on what food to eat, what factors do you consider?

Responses may include your taste preferences, another's recommendation, smell, visual presentation, etc.

Many people might choose to try a food because of how it looks or they may base their decision on a combination of factors.

Deciding what to wear and what to eat are easy decisions, but what about hard decisions? What kinds of hard decisions have you had to make?

Elicit responses from students.

What factors did you take into account when deciding how to react to the situation?

Elicit responses from students.

When you decide what to wear or what to eat, it doesn't usually affect anyone but yourself, but some of the hard decisions you have described require you to be more thoughtful in considering the factors at hand.

Making decisions isn't always easy, is it? Sometimes making the right decision is harder than the wrong decision, but if you take all the information you have and take the time to make the most informed decision you can, you can make the right decision.

What is it called when an individual takes information, assesses the value of the information, and then makes a decision based on the information?

Student response should be research.

Research!

Excellent!

Project transparency **MS.AST.1.2.TM.A** with definition of research.

The definition of research is the investigation into a subject in order to discover facts, theories, and applications. This may sound complex, but really it can be simple.



Lesson Number: 22.222.2.2

Middle School Food and Agricultural Literacy Curriculum

B Title

Place two same species red apples next to each other for the class to see. Ask the students what visual characteristics they see about each apple. Record student answers on the board. Ask the students what other information they might want to know before choosing one of the apples. After all the data is collected on the board, tell the class that there is one major difference you forgot to tell them. One of these apples is genetically modified. Ask the students if that makes a difference. Select one volunteer who will be willing to take a bite from each apple without telling him which one is genetically modified. Elicit a response from the volunteer to determine if this agriculture technology makes the apple taste any different.

Lead students to recognize that research, such as the data they are collecting on the apples, brings about agriculture technologies that can impact their lives in many ways, regardless of how they may be connected to the agriculture industry.

In front of me are two different red apples. Let's take a look at apple number one. What do you like about it that you can see?

Capture responses on the board.

What do you not like about it?

Capture responses on the board.

Let's take a look at apple number two. What do you like about it that you can see? Capture responses on the board. What do you not like about it? Capture responses on the board.

What else might you want to know before you were to make a choice of one apple over the other?

Responses might include where it came from, how old it is, whether it's been sprayed, who touched it, etc. Capture responses on the board.

There is one thing that I have not yet told you about these two apples. One of the apples is genetically modified and the other is not. Knowing this new information, how might it change your decision on which apple you would eat? Elicit responses from students.

The teacher may need to explain genetically modified if students are unfamiliar with that term.

Ask the class for a volunteer to choose one of the apples and take a bite of it. Ask the question of why he/she chose that apple and what specific information/research from the previous discussion made him/her choose one over the other?

Based on the research you now know about these two apples, is there a volunteer who would be willing to choose one of these apples and take a bite out of it?

Bring up student to the front of the class, have him choose an apple and take a bite out of it.

Why did you choose that apple?

Elicit student response.

Now, please take a bite out of the apple you did not choose. Did the apple you chose taste better? Tell us why.

After the student eats part of each apple and explains his thoughts, thank the student and ask him/her to be seated.

After looking at each apple, asking important questions such as the age, species and handling procedures and its genetic qualities, we completed research and decided which apple we wanted to eat based on that research just the same way that individuals have conducted research to invent new agriculture technologies. We also identified an agriculture technology that was a result of research, but was also a factor in our research of which apple we would prefer to eat.

Review/Summary

Students will write a one-minute paper to summarize the concept or lesson.

Today, each of you chose your favorite piece of technology. Many of us came up with personal convenience pieces of technology. Although these are very important, how has your opinion changed? Earlier we concluded that agriculture technology affects everyone in some way, even if you're not a farmer or rancher. Now that we have opened our eyes to the big picture, let's put down our informed ideas on paper.



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B Title

When I say SUMMARIZE, write one or two paragraphs about how agricultural technologies have impacted your life. You will have one minute to write your summary. What questions do you have? SUMMARIZE!

Application

Extended Classroom Activity:

Students may research an agricultural technology and create a PowerPoint presentation or written report on its impact on the world.

FFA Activity:

Introduce students to the Agriscience CDE and what opportunities there are for students interested in this topic.

SAE Activity:

Students could pursue an exploratory SAE project investigating an agriculture question and create an Agriscience project.

Evaluation

MS.AST.1.2.ASSESS.A.

Answers to Evaluation

Use the rubric located on MS.AST.1.2.ASSESS.B.

Students should give examples of agriculture technologies and have students brainstorm how they have made an impact on their lives. Examples include: Tractor – efficient farming, prepare landscapes, Combines – harvest food, Biotechnology – increased availability of food, higher quality food. Utilize for this assessment MS.AST.1.2.TM.A

- I. **Technology: This means the application of science to a certain objective.**

Questions:

1. How do the technologies impact me?
2. What do the technologies have in common?

- II. **Research: This means to investigate into a subject in order to discover facts, theories, and applications.**



Then		Now
Horses, Cart, Buggy, Train, Bicycle	→	
Records, 8-track player, Cassette Tape	→	
Shovel, Hoe, Hand Plow, Ox	→	



Agriculture Technologies

Agriculture technologies have changed the world making your life very different from those of people who lived in the past. Assess the list of agriculture technologies below and brainstorm how each one has made an impact on your life.

1. **Tractors**
2. **Combines**
3. **Biotechnology**
4. **Fertilizer**
5. **Irrigation Systems**



Agriculture Technology	Impact identified – Yes/No	Points Possible – 2 pts. per answer
Tractors		
Combine		
Biotechnology		
Fertilizer		
Irrigation Systems		