



A Fishing Trip into the Aquaculture Industry

Middle School Food and Agricultural Literacy Curriculum

Precepts

- B. Relationships
- B2. Interact and work with others.

National Standards

AS.01.01.02.b. Outline the development of the animal industry and the resulting products, services and careers.

FPP.04.02.01.a. Identify and describe foods derived from meat, egg, poultry, fish, and dairy products.

CS.01.02.02.b. Utilize communication skills to collaborate in a group setting.

NS.5-8.3 – Life Science

Student Learning Objectives

As a result of this **unit** the students will...

Recognize basic terminology used in the animal industry.

As a result of this **lesson** the students will...

Define basic terminology related to **aquaculture** and seafood production.

Content Outline

I. Terms in the aquaculture industry

- A. **Aquaculture**: The raising and harvesting of fresh and saltwater plants and animals
- B. **Aquaculture** Products
 - 1. **Fish** – an aquatic vertebra with fins
 - a. Examples: salmon, catfish, and swordfish
 - 2. **Crustacean** – aquatic arthropods with modified appendages
 - a. Examples: crawfish, shrimp, and lobsters
 - 3. **Shellfish** – an aquatic invertebrate with a shell
 - a. Examples: oysters, clams, and mussels
 - 4. **Aquatic Plants** – a plant that grows partially or wholly in water
 - a. Examples: seaweed

Time

Instruction time for this lesson: 45 minutes.

Resources

Aquaculture. (n.d.) Encyclopedia.com Retrieved on July 13, 2009, from <http://www.qanda.encyclopedia.com/question/aquaculture-80121.html> — Aquaculture. (n.d.) Merriam-Webster's online dictionary (11th ed.). Retrieved on July 13, 2009, from <http://www.merriam-webster.com/dictionary/aquaculture> — Batis, Jeff. (2000). "World aquaculture." Retrieved July 13, 2009, from <http://www7.taosnet.com/platinum/data/index2.html> — Crustacean. (n.d.) Merriam-Webster's online dictionary (11th ed.). Retrieved on July 13, 2009, from <http://www.merriam-webster.com/dictionary/crustacean> — Shellfish. (n.d.) Merriam-Webster's online dictionary (11th ed.). Retrieved on July 13, 2009, from <http://www.merriam-webster.com/dictionary/crustacean>

Tools, Equipment, and Supplies

Overhead projector/transparencies
Fishing net
Tackle box (envelope will work) – one per group of four students
MS.AS.1.2.AS.A – one per group of four students, cut up prior to beginning of class and placed inside tackle box
MS.AS.1.2.AS.B – one per student
MS.AS.1.2.TM.A – one per class
MS.AS.1.2.ASSESS.A – one per student

Key Terms

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

Aquaculture
Capture
Culture
Freshwater
Saltwater
Brackish
Fish
Crustaceans
Shellfish
Aquatic Plants

C. **Aquaculture** Methods

- 1. ***Capture*** – capturing wild or ***shellfish*** including commercial and sport fishing
- 2. ***Culture*** – form of ***aquaculture*** that includes cultivation, propagation, and marketing



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D. Sources of **Aquaculture** Products

1. **Freshwater** – water that contains no salt
2. **Saltwater** – water containing salt
3. **Brackish water** – area where **freshwater** and **saltwater** meet resulting in a mixture of the two

Interest Approach

We have been learning about the language used in the agriculture industry. Today we will focus on a special market, **fish**, and seafood production. With a show of hands, how many of you enjoy eating **fish** and seafood? How many of you have gone fishing before?

Using a *Hole in One e-Moment®* students will reflect on what they know about fishing. This activity couples mental imaging with a few practice "swings" to increase student success. Students mentally prepare to perform a new skill. First, they visualize how they will perform the step or process. Then they take a few "practice swings." Finally, they take a shot.

Let's talk about going fishing. What does it take to be a successful fisherman? Close your eyes. We are going to go fishing today and it is time to get ready. What supplies will you gather?

Pause for five seconds for students to envision what they would do.

Where will you be going to fish today?

Pause for five seconds for students to envision what they would do.

What will you **fish** for?

Pause for five seconds for students to envision what they would do.

Open your eyes – who will share about their fishing trip?

Allow one or more students to share their adventure.

What three questions did we talk about on your fishing trip?

Solicit answers of how we will **fish**, where we will **fish**, and what we will **fish** for. Write these questions on the board; we will reflect back on them later.

These are the three areas we will focus on today when we learn about **fish** and seafood production: How to **fish**, where to **fish**, and what to **fish** for.

Summary of Content and Teaching Strategies

Objective 1. Define basic terminology related to **aquaculture** and seafood production.

Students should be divided into groups of four. Each group will need a tackle box (an envelope will work if the box is not available) and a copy of **MS.AS.1.2.AS.A** per group. Students will begin by "fishing" for the terms and definitions that have been cut previous to the beginning of class. The first team done will place their **fish** and poles in the net at the front of the room.

You will be fishing, and to do this you will need to interact and work with others.

What are some signs of a high-functioning group?

Anticipated responses: everyone participates; create a high quality product; etc.

What do you need to do to be a good team member?

Anticipated responses: participate, support others, etc.

Today's activity will require brainstorming and looking at all options, being supportive, listening to all team members, and striving to get the highest quality product.

It's time to go fishing! In your tackle box you have 10 "poles" or terms and 10 "**fish**" or definitions. When I say **FISH**, your group's challenge is to be the first to match all of the "**fish**" to the proper "poles." When you believe your group is done, raise your hand and I will come around to check. I will tell you how many are correct, and you can keep working until you have all of them correct. In order to win, you have to have all of your **fish** on a pole in the net at the front of the room. You will be working in groups of four. What questions are there? **FISH!**



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Monitor student progress. If they are struggling, provide a set amount of time they can use resources in the classroom including textbooks or the Internet.

Congratulations, you have quite a catch!
Return to your seats and let's take a deeper look at these terms.

Pass out **MS.AS.1.2.AS.B**, one per student. Show MS.AS.1.2.TM.A to review the terms, have students write the terms and definitions onto the graphic organizer.

I. Terms in the aquaculture industry

- A. **Aquaculture:** The raising and harvesting of fresh and **saltwater** plants and animals
- B. **Aquaculture** Products
 1. **Fish** – an aquatic vertebra with fins
 - a. Examples: salmon, catfish, and swordfish
 2. **Crustacean** – aquatic arthropods with modified appendages
 - a. Examples: crawfish, shrimp, and lobsters
 3. **Shellfish** – an aquatic invertebrate with a shell
 - a. Examples: oysters, clams, and mussels
 4. **Aquatic Plants** – plants that grows partially or wholly in water
 - a. Example: seaweed
- C. **Aquaculture** Methods
 1. **Capture** – capturing wild or **shellfish** including commercial and sport fishing
 2. **Culture** – form of **aquaculture** that includes cultivation, propagation, and marketing
- D. Sources of **Aquaculture** products
 1. **Freshwater** – water that contains no salt
 2. **Saltwater** – water containing salt
 3. **Brackish water** – area where **freshwater** and **saltwater** meet resulting in a mix of the two

Along with defining the terms, we have also grouped the terms in three categories: methods, sources, and products. At the beginning of class we reflected on going fishing and asked a few questions. We learned how to **fish** today by looking at two different methods. What were those methods?

Solicit answers; you are listening for **capture** and **culture**.

We talked about where to **fish**. What are the three sources of **fish** and seafood?

Solicit answers; you are listening for **freshwater**, **saltwater**, and **brackish water**.

Finally we talked about what you would **fish** for. What are the four different products?

Listen for **fish**, **crustacean**, **shellfish**, and **aquatic plants**.

What makes these products different from one another?

Listen for where they were raised, how they were raised, and their characteristics.

Just like seafood products are different because of these factors, the same factors make each of us unique and special from one another.

Review/Summary

Use the *Hole in One e-Moment®* to reflect on learning today.

We will again go on a fishing trip, using the new information you have learned. Close your eyes and stay silent on our imaginary journey to catch some **fish**. Envision the type of **fish** you will be catching today.

Pause five seconds for students to reflect.

Where will you go to **fish** for that?

Pause five seconds for students to reflect.

What methods will you use?

Pause five seconds for students to reflect.

Wow! We have gotten a lot done today; not only have we learned about how to **fish**, but also where the **fish** we eat comes from. The next time you eat **fish** or seafood think about its source, the methods used to raise or harvest it, and the product you are eating!



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Application

Extended classroom activity:

Watch an episode or part of an episode of the show *Deadliest Catch*.

FFA activity:

As an FFA chapter or with your PALS group, go on a fishing trip in your area.

SAE activity:

Explore SAE opportunities in the **aquaculture** area by having students create posters, collages, or PowerPoint presentations to display.

Evaluation

MS.AS.1.2.ASSESS.A.

Answers to Evaluation

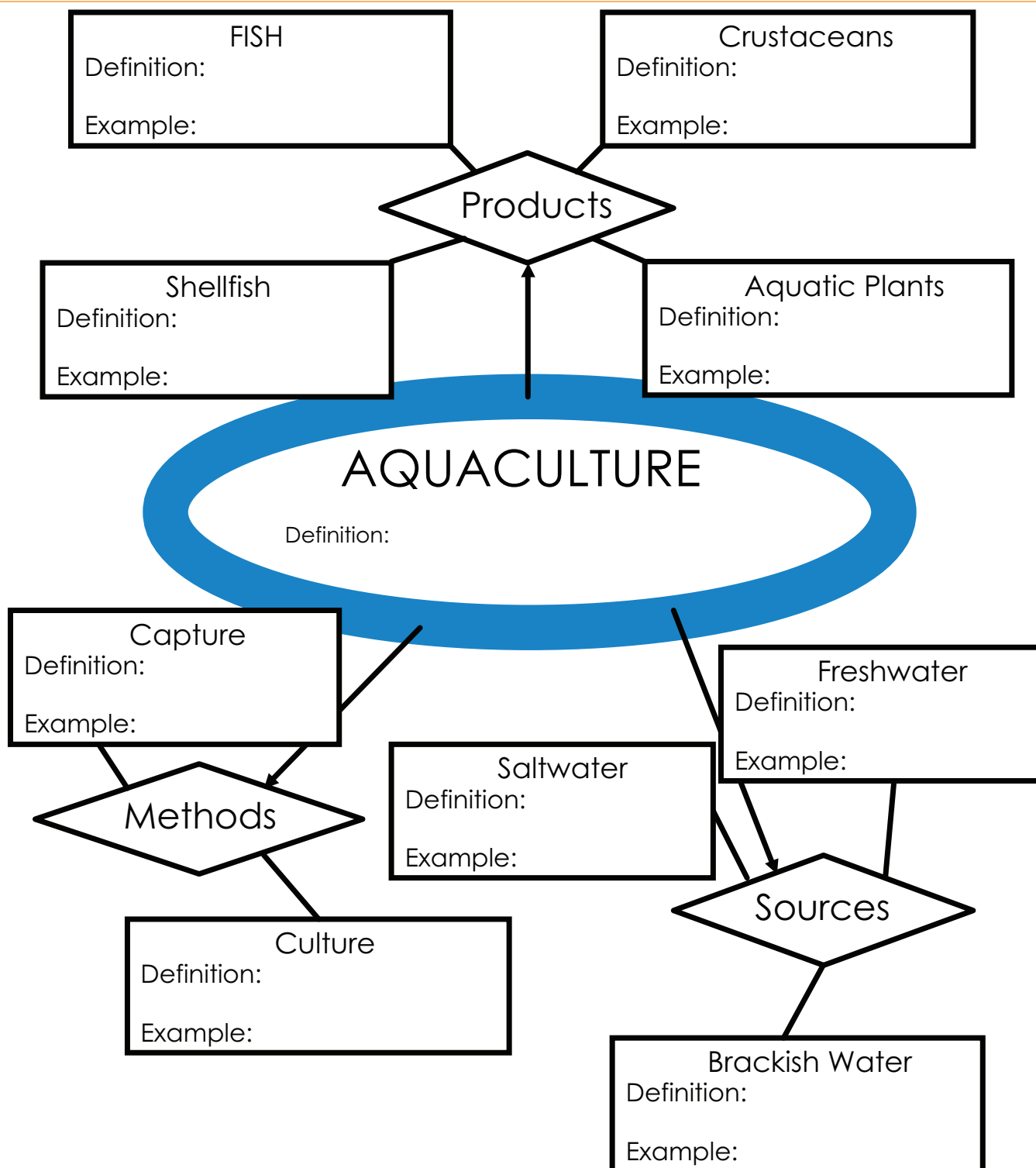
1. E
2. B
3. J
4. D
5. H
6. C
7. G
8. F
9. I
10. A
11. Short Answer: Answers will vary



TERMS MATCHING

Cut apart terms and definitions on dotted lines.

Aquaculture	The raising and harvesting of fresh and saltwater plants and animals
Fish	An aquatic vertebrate with fins. Examples: salmon, catfish, and swordfish
Crustacean	Aquatic arthropods with modified appendages. Examples: crawfish, shrimp, and lobsters
Shellfish	An aquatic invertebrate with a shell. Examples: oysters, clams, and mussels
Aquatic Plants	A plant that grows partially or wholly in water. Example: seaweed
Capture	Capturing wild or shellfish including commercial and sport fishing
Culture	A form of aquaculture that includes cultivation, propagation, and marketing
Freshwater	Water that is not salty
Saltwater	Water containing salt
Brackish water	Area where freshwater and saltwater meet resulting in a mix of the two





Aquaculture Terminology

Aquaculture: The raising and harvesting of fresh and saltwater plants and animals

Aquaculture Products

- **Fish – an aquatic vertebrate with fins:** *salmon, catfish, and swordfish*
- **Crustacean – aquatic arthropods with modified appendages:** *crawfish, shrimp, and lobsters*
- **Shellfish – an aquatic invertebrate with a shell:** *oysters, clams, and mussels*
- **Aquatic Plants – plants that grow partially or wholly in water:** *seaweed*

Aquaculture Methods

- **Capture** – capturing wild or shellfish including commercial and sport fishing
- **Culture** – form of aquaculture that includes cultivation, propagation, and marketing

Sources of Aquaculture Products

- **Freshwater** – water that is not salty
- **Saltwater** – water containing salt
- **Brackish water** – area where freshwater and saltwater meet resulting in a mix of the two



Aquaculture Terminology Quiz

Name _____

Not only have we learned about how to fish, but also where the fish we eat comes from. The next time you eat fish or seafood think about its source, the methods used to raise or harvest it and the product you are eating!

Directions: Write the letter of the definition next to the term

1.____ Aquaculture	A. Area where freshwater and saltwater meet resulting in a mix of the two
2.____ Fish	B. An aquatic vertebrate with fins. Examples: salmon, catfish, and swordfish
3.____ Crustacean	C. Capturing wild or shell fish including commercial and sport fishing
4.____ Shellfish	D. An aquatic invertebrate with a shell. Examples: oysters, clams, and mussels
5.____ Aquatic Plants	E. The raising and harvesting of fresh and saltwater plants and animals
6.____ Capture	F. Water that is not salty
7.____ Culture	G. A form of aquaculture that includes cultivation, propagation, and marketing
8.____ Freshwater	H. A plant that grows partially or wholly in water. Example: seaweed
9.____ Saltwater	I. Water containing salt
10.____ Brackish water	J. Aquatic arthropods with modified appendages. Examples: crawfish, shrimp, and lobsters

11. Write a paragraph about or draw a picture of the “fishing trip” you envisioned at the end of class. The paragraph or picture should demonstrate three things: 1) where you went (source); 2) what you were fishing for (product); and 3) how you fished (method). This is worth 5 points.
