



EDUCATOR GUIDE

Using an Educational Interactive to Explore Interdependence

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Learning with Educational Interactives

Using educational interactives to deliver content has a number of benefits. Educational interactives allow students to choose, manipulate, create, and otherwise interact with content to meet specific learning objectives. Rather than passively taking in information, students must apply skills and knowledge, explore possible outcomes, and think critically to achieve their objectives. Educational interactives can provide a way for students to practice decision-making skills and improve critical thinking and other 21st century skills in a low-risk environment. Interactives can promote collaborative learning, either through use in a small-group setting or through online collaboration, and allow students to move at their own pace. Many interactives also use feedback to allow students to see mistakes, explore other options, or weigh the consequences of decisions. Effective educational interactives guide students to actively engage with content on a higher order than memorization or passive listening, leading to improved learning outcomes and better attitudes toward the content.

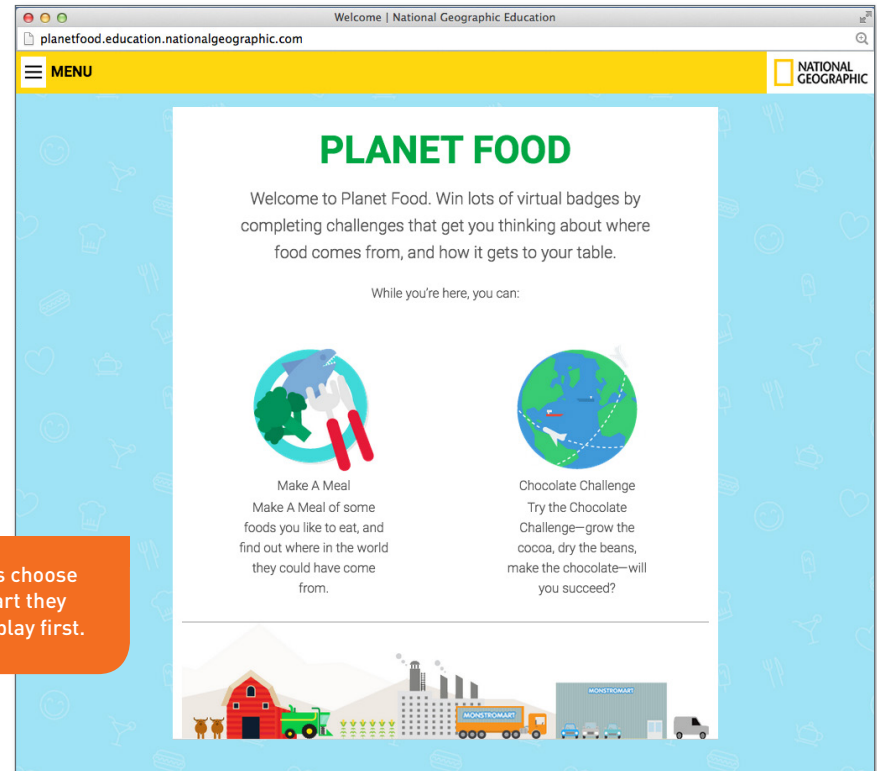
Interactive Overview

Planet Food (planetfood.education.nationalgeographic.com) is an online educational interactive that highlights the complexity and global nature of the food we eat. The interactive has two parts.

In **Make a Meal**, students select tableware common in different parts of the world and put food on the tableware. They then see a map showing how far each food may have traveled to get to their plate. Students earn badges by making meals based on various geographic parameters.

Students choose which part they want to play first.

In **Chocolate Challenge**, students watch short videos to learn about the steps in the



Welcome | National Geographic Education

planetfood.education.nationalgeographic.com


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PLANET FOOD

Welcome to Planet Food. Win lots of virtual badges by completing challenges that get you thinking about where food comes from, and how it gets to your table.

While you're here, you can:



Make A Meal
Make A Meal of some foods you like to eat, and find out where in the world they could have come from.



Chocolate Challenge
Try the Chocolate Challenge—grow the cocoa, dry the beans, make the chocolate—will you succeed?

MONSTERMART

production of chocolate and make decisions along the way. Students can earn badges by playing again, making decisions based on different goals each time. *Planet Food* provides an opportunity for students to explore the complexities of the global food system from several perspectives.

Using the Interactive in Different Settings

Planet Food can be used in a variety of settings:

Afterschool Programs:

Because learning opportunities are embedded in the interactive, students can play independently, either individually or in small groups. Playing in small groups encourages collaborative decision-making. Facilitators can check in with students and use questions to encourage thoughtful play. For a richer experience, facilitators can use the discussion questions and related activities described in this guide to engage small or large groups of students.

Classrooms:

Teachers can introduce *Planet Food* to students as part of a related geography, social



Learning Objectives

Students will:

- recognize that the food they eat can come from many different parts of the world.
- use a map to visualize the interconnectedness of our global food system.
- make decisions related to a food product based on different goals and values.
- make complex decisions related to the global food system.

studies, nutrition, or economics lesson or unit and allow students to play independently. Teachers can also use the interactive as a focal point for learning about the global food system and the many factors that go into making decisions about food. Teachers can take advantage of the level of engagement students generally experience with interactive materials to introduce students to other activities and

research opportunities related to the interactive's topics. Students can play individually or in small groups, which encourages collaborative decision-making skills. For students in the younger grades, the teacher should consider stepping through the interactive together as a class, pausing to discuss unfamiliar concepts as they are introduced in the interactive. Alternatively, teachers can introduce and discuss vocabulary terms prior to playing the interactive.

At Home:

Students can play *Planet Food* independently at home. Parents or caregivers can play with children, pausing to discuss unfamiliar terms and concepts and using questions to encourage more thoughtful decision-making.

The Role of the Facilitator

Planet Food offers a variety of learning opportunities in the context of play. Facilitators can encourage the deepest level of engagement with the content by challenging students to read and listen to all the available information in the interactive before making decisions. Having students take notes during play can

help ensure that they are reading and analyzing the information they are given. Facilitators can also encourage more thoughtful decision-making by posing questions for students to discuss and explore as they play.

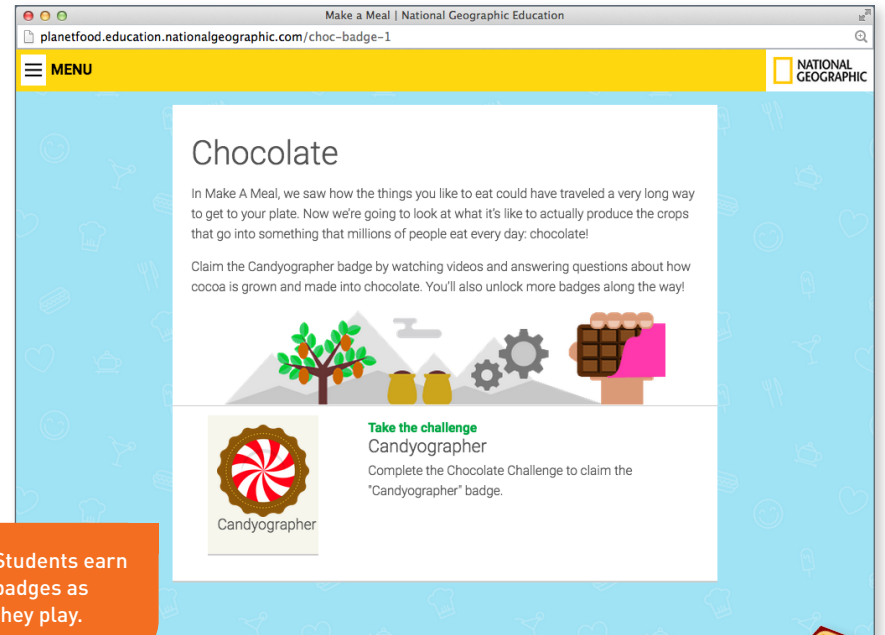
Interactive Play Setup

Technology Requirements

Planet Food requires an Internet-connected computer for each player or group of players. If using Internet Explorer, IE 8 or later is required. Sound capabilities are preferred but not required.

Organizing Sessions

To maximize the learning potential for the interactive, organize play into three 30 to 45-minute sessions. Each session should include a brief focus period at the beginning, followed by interactive play and a 10 to 15-minute discussion period at the end of play. In the first session, introduce the interactive and have students play *Make a Meal*, earning as many badges and stars as they can. In the second session, have students play *Chocolate Challenge*, pausing to introduce decision-making strategies as students play the interactive. In the third



Make a Meal | National Geographic Education
planetfood.education.nationalgeographic.com/choc-badge-1

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Chocolate

In *Make A Meal*, we saw how the things you like to eat could have traveled a very long way to get to your plate. Now we're going to look at what it's like to actually produce the crops that go into something that millions of people eat every day: chocolate!

Claim the Candyographer badge by watching videos and answering questions about how cocoa is grown and made into chocolate. You'll also unlock more badges along the way!

Take the challenge
Candyographer
Complete the Chocolate Challenge to claim the "Candyographer" badge.

Candyographer

Students earn badges as they play.

session, have students play *Chocolate Challenge* again to earn additional badges.

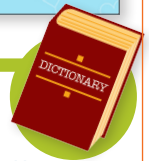
Saving Sessions

Students can save their progress in the interactive by retrieving a code. Have students click on the menu icon at the top left of the screen to open a sidebar menu. On the menu, have them select "Save Your Place." To ensure that the codes are available when students return to the interactive, collect the codes in a list beside players' names or have students email the code to you using the email field provided with the code in the inter-

Vocabulary

Definitions found at http://education.nationalgeographic.com/education/glossary/?ar_a=1

cacao bean
export
fair trade
fermentation
fertilizer
globalization
import
organic
pesticide
sustainability

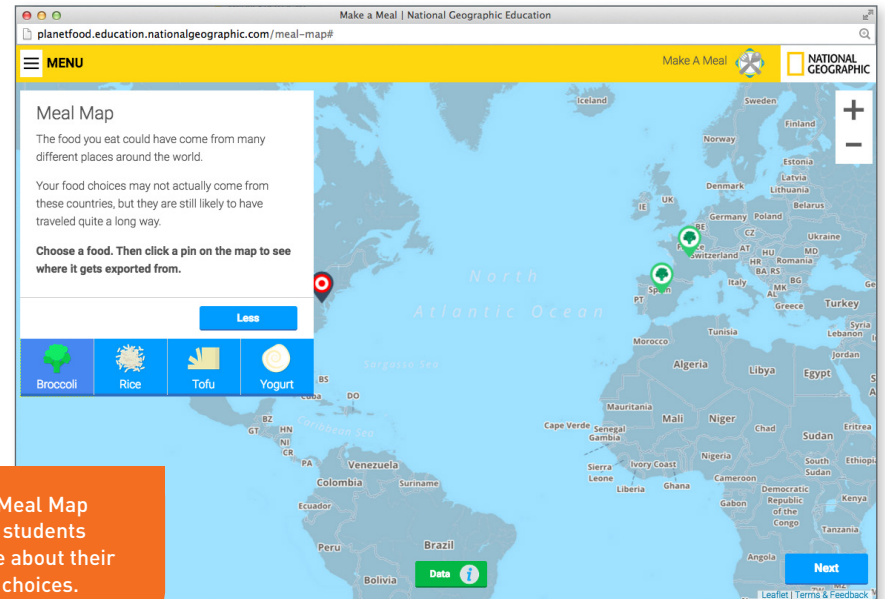


active. When students return to the interactive, they should open the sidebar menu, select “Got a Code,” and enter their code to continue their play.

Background Information

Where does the food we eat come from? How is it grown? What impact do our food choices have on local economies and the environment? In today’s global economy, the answers to these questions are highly complex, and balancing considerations such as these requires complex decision-making skills. These decision-making skills can be taught through gaming and in the context of learning information about our food system. Teaching systematic decision-making to students involves giving them practice with applying various strategies to make decisions based on real-life scenarios.

Food topics provide an excellent outlet for students to practice these decision-making skills because of their complexity and the influence of personal values on our choices. When it comes to food choices, there are rarely any straightforward right or wrong answers. A number of consid-



erations must be balanced and weighed in any food choice. The food we eat may have travelled a long distance to get to our table due to global food imports and exports. We may be eating beans from Asia and drinking milk from New Zealand. There are both benefits and drawbacks to this global food system. Because of imports, we can have access to a larger variety of foods and continue to eat our favorite foods

even when they are out of season. Yet there are environmental costs to transporting food long distances, and there are health costs associated with processing foods to last longer than their normal shelf life. Weighing these benefits and drawbacks and making decisions based on an analysis of them provides an excellent basis for honing decision-making skills.



Discussion Questions

Questioning strategies applied during interactive play, as well as discussion questions following play, can greatly enhance student learning.

DURING

Sample questions **during** the interactive (adapt for your specific learners and setup):

- What is your goal with this decision?
- What are your available options?
- What are some pros and cons of this choice?
- How will this choice affect the profit you can make?
- How will this choice affect your ability to grow this crop long-term?
- What are some environmental consequences of this choice?
- What are the alternatives to this choice?
- What are some advantages and limitations of these alternatives?
- Which factors (i.e. economic, environmental) are most important to you? Why? Which choice most advances those factors?

FOLLOWING

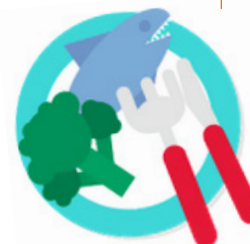
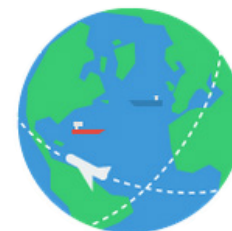
Sample discussion/reflection questions **following** each session of interactive play (adapt for your specific learners and setup):

Meal Map

- How far could the food you chose have travelled to get to you? Do you think the food you eat really comes from that far away? Why or why not?
- Do some countries both import and export the same food item? Why might that happen?
- Did any of the information on the map surprise you? Explain.
- Which regions of the world are the largest exporters of these food items? Which export the least?

Chocolate Challenge

- What were your most important decisions? Why?
- Which decisions were the most difficult? Why?
- Do you feel you successfully met the challenges presented during this session? Why or why not?
- How did your decisions change for each badge? Why did they change?
- How would you rank your own concerns about profit, sustainability, and fair trade? Which is the most important to you and which is the least? Why?
- What factors do you consider when you buy chocolate? How do these factors reflect your values and concerns? What changes could you make to better reflect your values and concerns?



Activities

BEFORE INITIAL PLAY

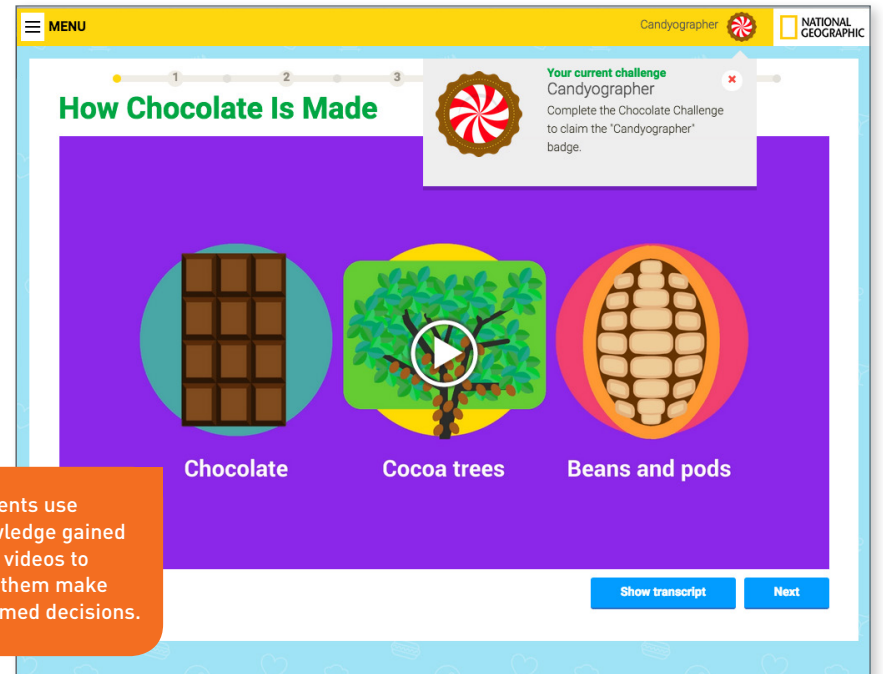
1. Have students keep a food chart for three days to one week. For each food item, they should list all the information they know about where they bought it, where it came from, and/or how it was grown (local, fresh or packaged, organic, etc.) Discuss the charts, keeping students' sensitivities about food in mind. Discuss how much information they were able to include about each item. Was it difficult to find information about the food they eat?
2. Have students write down their favorite chocolate item. Have them list what makes this their favorite.
3. Before students begin, use the information in the Interactive Overview section of this guide to introduce the interactive.

DURING PLAY

Make a Meal

- Have students look at the map and click on one of the foods

Students use knowledge gained from videos to help them make informed decisions.



they chose. Have them list the main exporters of that food. Then have them click on each of the exporters to see where the food is exported to. Ask students to make observations about what they see on the map. What is the farthest distance a food travels as shown on the map? Are there closer places that country could import the food from? What are some reasons they might import from so far away? Why do countries import from one place instead of another? Do some countries import the food product from more

than one place? Do any countries both import and export the same food? What might explain the import/export pattern they see?

- Have students use the map to identify two to three major exporting regions for the foods they chose. Have students draw the food on a sticker and place it on a large classroom map to mark each major exporting region. Once all foods are represented on the map, have students discuss their placement. Do some regions export more of

the foods overall than others? Do they see any other patterns? What might explain the patterns they see?

Chocolate Challenge

- As students play through this section the first time, pause and hold mini-sessions on decision-making strategies. Some strategies include:

Defining the problem or goal

Any decision must start with a clear understanding of the problem to be solved and/or the goal to be achieved. Model how to rephrase and summarize each choice given in the interactive to make sure it is clearly understood.

Narrowing choices through the process of elimination

Some choices can be eliminated early in the decision-making process. List all possible choices and eliminate the ones that have obvious flaws. Ask students to justify why they eliminated certain choices.

Benefits and drawback table

A benefits and drawbacks table includes possible options as row headers and “benefits” and “drawbacks” as column headers. Model how to create this type of table and how to use it to list

the choices along with their benefits and drawbacks.

Encourage students to earn badges. Earning badges in this section requires them to play through the interactive again, making choices with a particular goal (sustainability, profit, fair trade) in mind. Have students apply decision-making strategies, such as a benefits and drawbacks table, to help them look at the available choices from another perspective. Ask students to articulate how they were able to win the badges. Ask them to talk about the strategy and how they figured out what selections to make to earn the badges.

Encourage students to jot down a quick summary following each video segment.

This will provide a way to check for understanding, and provide notes that students can refer to as they re-play the interactive to earn additional badges.

AFTER PLAY

- **After each session of interactive play, discuss the session as a whole group.** Use the provided sample discussion questions as a starting point.

- **Have each student write a brief reflection of their experience in their journal.** Choose from the following prompts:

Describe some of the complexities surrounding our food distribution system. How do those complexities affect us as food shoppers?

Describe any new information you learned about the steps and decisions that go into making a chocolate bar. Will this information change your habits in any way? Why or why not?

- **Play Make a Meal, choosing milk as one of your foods.** Project the resulting map for all students to see. Click on milk, and have students note the main exporters of milk. List these on the board. Then click each exporter and have students note the main importers of milk from that country. List these on the board. Ask students to describe the import/export pattern. What are some possible reasons that France, Germany, and Belgium all import milk from each other and export milk to each other? What might be some advantages? What might be some drawbacks?

- **Have students research food grown in your local area or region.** Some questions students can investigate include: What foods are grown commercially in my local area? Where are these foods sold locally? Are foods grown in my local area processed nearby? Are there any exports from my local area? If so, where do they go? The United States Department of Agriculture (USDA) provides resources that can be used as a starting point for this investigation. You can contact the local extension office (<http://www.usda.gov/maps/maps/kyfcompassmap.htm>) or reference the programs available through the Know Your Farmer, Know Your Food initiative (<http://www.usda.gov/wps/portal/usda/knowyourfarmer?navid=-KNOWYOURFARMER>). Other resources include Local Harvest (<http://www.local-harvest.org/>), which can be used to identify organic farms, farmers market, and other sources by area, and Where is My Milk From? (<http://www.askthefarmers.com/where-is-my-milk-from/>), which can be used to track where your milk came from and to find dairies in your area. Once students

have gathered information, they can use it to create a map of farms, farmers markets, and food processing plants in your local area. If your area exports food, they can also map these exports.

- **Have students interview the person in charge of food services at your school to find out where the food originates.** If enough information is available, have students map the origins of their cafeteria food.
- **The global food distribution system does not always do the best job of getting food to the people who need it. Have students read the article *The Paradox of Undernourishment*** (http://education.nationalgeographic.com/education/news/paradox-undernourishment/?ar_a=1) and examine the associated map. Then have students list as many factors involved in getting food to people as they can. If they ran an organization focused on providing food to undernourished people, which of these factors would they focus on and why? Encourage them to use decision-making strategies to make an informed choice.



Know Your Sources

There is a wealth of information available at our fingertips, and sometimes it is difficult to sort through it all. Topics surrounding food are particularly popular, and information can be contradictory. Here are three tips to help make sure the information you use to make decisions about food is valid.

1. Look at the source.

Who published the information? If it is an individual, what are his or her qualifications? If it is an organization, what is their mission or goal? Do they have a bias?

2. Look at the date.

How old is this information? Is more current information available?

3. Look for more sources.

Are there other sources to confirm this information? Look for government or university studies to back up your sources.

- **Ask students if they remember the first time they tasted chocolate.** Then give each student a small piece of chocolate and ask them to write a description of the taste. Show students the video *First Taste of Chocolate in Ivory Coast* (https://www.youtube.com/watch?feature=player_embedded&v=zEN-4hcZut00), and discuss the video. Use these discussion questions as a starting point: Are students surprised that the people who grow the cocoa beans have never seen or tasted chocolate? What are some reasons they have never tasted chocolate? Since they have so many cocoa beans, why do they not make chocolate in their own homes? What words did the people tasting chocolate for the first time use to describe it? What clues does that give you about the foods they typically eat? Did the people seem to like the chocolate? The man who brought the chocolate described it to the cocoa farmer. Then, when they visited other people to share the chocolate, the cocoa farmer introduced chocolate to them. What information

did he give them about the chocolate? Why do you think he chose that information? Ask students if they think there are any delicious foods out there that they have never seen or tasted. Divide students into small groups and assign a country or region to each group. Have them research food common to that area and identify one or two that they would like to try. Have them share their choices with the class. As they share, have them show the location they investigated on a classroom map or map it using the [MapMaker Interactive](#).

- **Divide students into pairs and have each pair select a processed food product that they like.** Then have them research that product. How is it made? What are the main ingredients? Where do these ingredients come from? What decisions are involved in growing the main ingredients? Have students create a presentation to share with the class. First, have them outline the main parts of production. Then, depending on the time and resources available, students could use their outlines to create videos, animations, or poster presentations.

- **Have students explore some of the resources listed in the For Further Exploration section.** For each resource they explore, have students fill out an index card with the name of the resource, the URL, whether or not they would recommend the resource to other students, and an explanation of their reasoning. Display these cards, and encourage students to use them to select additional resources to explore.

Wrap-Up

- To summarize what they learned in the interactive and assess student learning, have students write a paragraph describing how changing your goal or perspective can affect the decisions you make. Have them use specific examples from their work in *Planet Food*.

Extending the Learning

- Have students track the news for related items and share them with the class.
- Place students into small groups and assign each group a different grocery store in

your local area. Identify five types of produce that students will investigate, such as carrots, apples, or oranges. Have students interview the produce manager at their assigned grocery store to find out where the produce sold in that grocery store originates. Have each group create a map showing this information, and then compare the different groups' maps. Were there differences among the stores in where the same type of produce originated? Are there any patterns in where the produce comes from? For example, do any of the stores you investigated source the produce more locally than others? Have students create a graph comparing the distances traveled by one type of produce at different stores.

- If students did not earn all the badges available in the game, encourage them to go back and play again to earn more badges.



APPENDIX

Connections to National Standards and Principles

National Geography Standards

Standard 1: [How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information](#)

Standard 11: [The patterns and networks of economic interdependence on Earth's surface](#)

Standard 16: [The changes that occur in the meaning, use, distribution, and importance of resources](#)

Standard 18: [How to apply geography to interpret the present and plan for the future](#)

National Educational Technology Standards for Students (NETS*S)

Standard 2: [Communication and Collaboration](#)

Standard 4: [Critical Thinking, Problem Solving, and Decision Making](#)

Standard 6: [Technology Operations and Concepts](#)

Connections to Skills

21st Century Skills

Learning and Innovation Skills

- [Critical Thinking and Problem Solving](#)
- [Communication and Collaboration](#)



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For Further Exploration

Articles

UPI: Food Tracing a Growing Concern for Global Food Supply
http://www.upi.com/Business_News/Consumer-Corner/2013/11/03/Food-tracing-a-growing-concern-for-global-food-supply/UPI-89771383476460/

National Geographic: The Global Food Crisis
<http://ngm.nationalgeographic.com/2009/06/cheap-food/bourne-text>

NPR: How to Find a Food Desert Near You
<http://www.npr.org/blogs/thesalt/2013/03/13/174112591/how-to-find-a-food-desert-near-you>

National Geographic: Learning to Make Systematic Decisions
<http://education.nationalgeographic.com/media/file/Learning-to-Make-Systematic-Decisions.pdf>

Videos or Audio

First Taste of Chocolate in Ivory Coast:
https://www.youtube.com/watch?feature=player_embedded&v=zEN-4hcZut00

National Geographic: Chocolate to Save Forests?
<http://video.nationalgeographic.com/video/news/wild-chronicles/domrep-cacao-wcvin>

Websites

United States Department of Agriculture:
<http://www.usda.gov/wps/portal/usda/usdahome>

National Geographic: Sustainable Agriculture
<http://environment.nationalgeographic.com/environment/habitats/sustainable-agriculture>

National Geographic Education: Food
http://education.nationalgeographic.com/education/food-education/?ar_a=1

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