



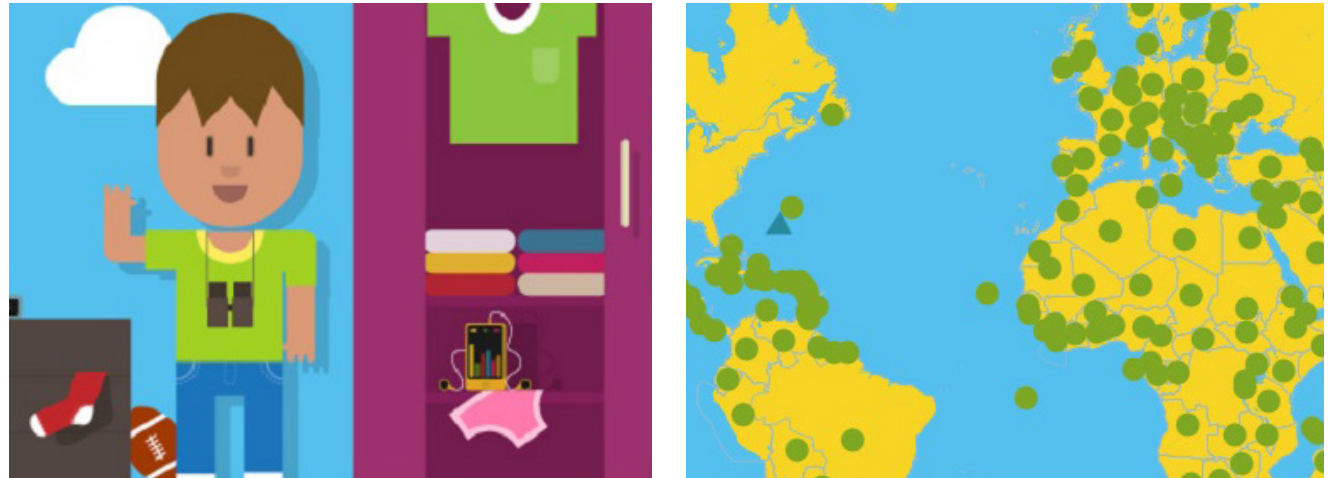
# Global Closet Calculator

## 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 21<sup>st</sup> 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

The *Global Closet Calculator* is an online educational interactive that highlights interdependence and the global nature of the clothes we wear. Students start by entering real information about the clothes in their closets and where those clothes were made. They can then see a map of where their clothes were made and compare it to a map of all data entered by other players. Next, students see a brief video highlighting economic, environmental, and human rights aspects of how jeans or MP3 players are manufactured. Students then use this knowledge to make decisions about how they would manufacture and sell those

Students enter information about the clothes in their closet.



products. The *Global Closet Calculator* introduces the complexities of manufacturing and selling goods in a global

economy in an accessible way and gives students a safe opportunity to practice making complex decisions.



## Learning Objectives

Students will:

- identify where items from their closet were made
- use a map to visualize the global flow of goods
- acquire, analyze, and apply information about environmental, economic, and societal impacts of manufacturing goods
- make complex decisions related to the manufacturing of goods

## Using the Interactive in Different Settings

The *Global Closet Calculator* 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 The *Global Closet Calculator* to students as part of a related geography, social studies, 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 topics of interdependence, globalization, and ethical and environmentally sustainable manufacturing practices introduced in the interactive. 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 playing the interactive as a class, pausing to discuss unfamiliar concepts. Teachers can also introduce and discuss vocabulary terms prior to playing the interactive.

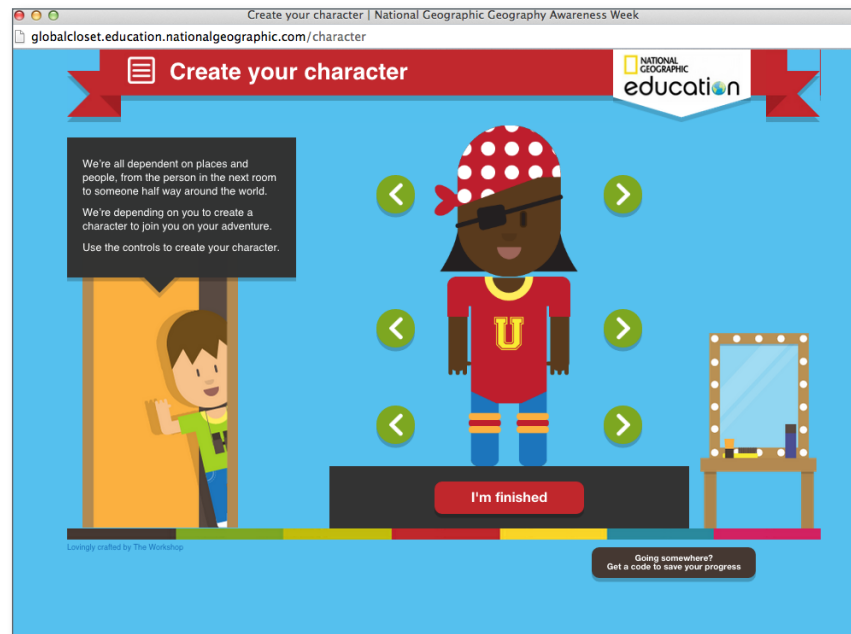
### At Home

Children can play The *Global Closet Calculator* independently at home. Parents or caregivers

Students create their own characters by selecting different outfits.

can facilitate the entry of real data from students' closets in the first part

of the interactive. Parents or caregivers can also play with children, pausing to discuss unfamiliar terms and concepts and using questions to encourage more thoughtful decision-making.



## Interactive Play Setup

### Technology Requirements

The *Global Closet Calculator* requires an Internet-connected computer or tablet device for each player or group of players. If using Internet Explorer, IE 8 or later is required. Sound capabilities are preferred but not required.

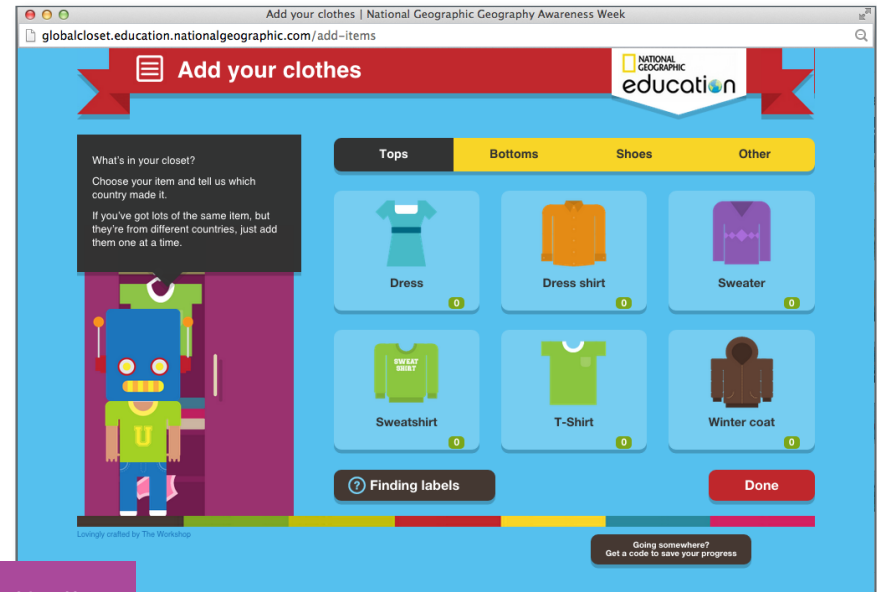
### Preparing to Play

The interactive begins by asking students to identify items from their closets and indicate where each item was made. Have students prepare for this in advance by assigning homework that asks them to list 10 items from their closets and include where each was made. Alternatively, students can work in small groups and enter information for the clothing group members are currently wearing, that they bring in, or that is provided to them.

### Saving Sessions

Students can save their progress in the interactive by retrieving a code. As soon as students have created their character, have them click the button in the lower right corner of the screen to get a code. To ensure that the codes are available when students return to the interactive, collect the codes in a list beside players' names or

Students identify what is in their closets and where the items were made.



have students email the code to you using the email field in the interactive. When students return to the interactive, they should begin as usual by clicking "Begin Your Journey." On the start screen, they should click the "Got a Code?" button in the upper right corner and enter their code to continue their play.

### Organizing Sessions

To maximize the learning potential for the interactive, organize play into two or three 30- to 45-minute sessions. Each session should include a brief focus period at the beginning, followed by interactive play and a 10-minute

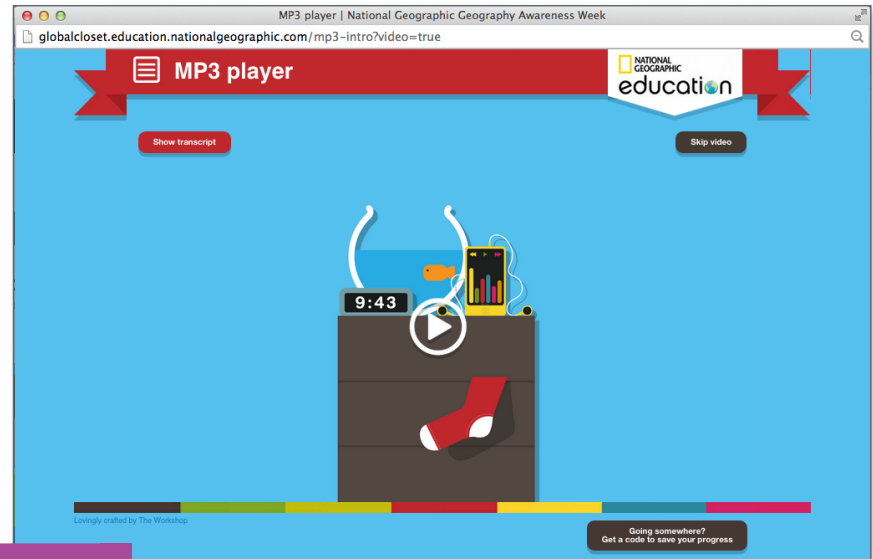
discussion period at the end of play. In the first session, introduce the interactive and have students enter clothing items to create their maps. In the second session, have students play through exploring either jeans or MP3 players. Then have students apply a decision-making strategy and play through exploring the same object again. Some ideas for using decision-making strategies with this interactive are included in the "During" portion of the Activities section of this guide. In the third session, have students play through exploring the object they did not explore in session two.

**Background Information**

In today's global economy, even the simplest, most common items can have a complex story behind them. Our global economy makes the world's nations interdependent, meaning that nations mutually rely on each other for things such as goods, services, and ideas. Because of this interdependence, items such as clothing or electronics can involve parts from all over the world. A shirt that you wear in Cincinnati, Ohio may have been designed in New York and made in China from cotton grown in Africa, dyes made in South America, and buttons manufactured in Europe.

The movement of parts across the globe is not the only part of the story that is complex. There are numerous decisions to be made in the manufacturing of even the simplest items. As the manufacturing process has become more global in nature, these decisions have become more

Students use knowledge gained from videos to make informed decisions.



complex. For example, in choosing a location for a factory, owners have to consider such factors as what incentives they will receive for locating there, the wages that workers in the area will accept, the taxes they will have to pay, and how easy it will be to receive parts and ship goods from

that area, among many other factors. The decision-making doesn't stop with the factory location. Other considerations include where to source parts or materials, what workforce to hire and how much to pay them, and what processes to use. Several factors must be considered when making

**The Role of the Facilitator**

The *Global Closet Calculator* 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.

these decisions. Economic considerations are important, since a company must make money to stay in business. Many people feel that ethical considerations are also important. Ethical considerations include human rights issues and impact on the environment. Economic, environmental, and human rights considerations must be weighed and balanced. Paying workers a living wage may be more ethical, but it will also result in higher-priced goods. Similarly, making clothing from organic cotton will help reduce chemical pollution but will also result in higher prices.

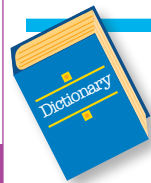
For consumers, the complexity of the manufacturing processes behind common goods can result in complex choices. Is where your shirt made more important than how much it costs? Is the impact of the shirt's creation on the environment more important? Or the pay and working conditions of the people who made the shirt? How do you know the story behind the goods you purchase?



## Activities

### Before Initial Play

1. Have students place a marker, such as a removable sticker, on a large world map ([www.NatGeoEd.org/mapmaker-kits](http://www.NatGeoEd.org/mapmaker-kits)) to show where they guess the clothes they are wearing were made. Give each student two or three markers to place. Make sure they do not look at the tags on their clothes at this point.
2. Ask students to contribute one clothing item (jacket, shoe, glove, etc.) to a classroom "pile." Have each student look at the tag on their clothing item to determine where it was made. Then have them mark the place where their clothing item was made on the world map, using a different color of marker than they used for their guesses. Discuss the distribution of the clothing items, and introduce the terms *imports* and *exports*.
3. Discuss with students what it means that a clothing item was made in a certain place. Does that mean it was designed there? Sewn there? Does it mean that the fabric or fabric dyes were made there?
4. For homework prior to playing the interactive, have students take an inventory of 10 items from their home closet and where each item was made.
5. Before students begin the interactive, use the information in the Interactive Overview section of this guide to introduce it.



## Vocabulary

- interdependence
- manufacturing
- knowledge capital
- sourcing
- human rights
- fair-trade



## 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 price of these goods?
- How will this choice affect the people who make these goods?
- 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 (economic, human rights, environmental) are most important to you? Why? Which choice most advances those factors?

### Following

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

#### Interdependence Map

- Where were most of your clothing items made? Did that surprise you? Why or why not?
- How did your map compare to the Everyone Else map?
- On the Everyone Else map, do you see any trends or patterns regarding where clothing is made? If so, what are they?
- Based on the Everyone Else map, is more clothing made in some parts of the world than others? Why do you think this might be?

#### Explore an Object

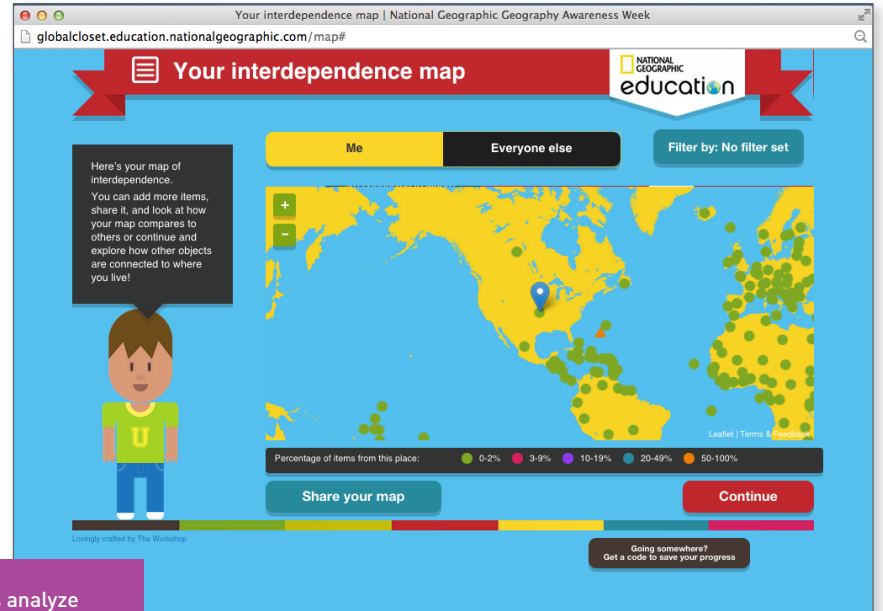
- What were your most important decisions? Why?
- What were the effects of the decisions you made?
- Which decisions were the most difficult? Why?
- Do you feel you successfully met the challenges presented during this session? Why or why not?
- Are you satisfied with the badges you received? Why or why not?
- What impact do you think the product you made will have on the environment? On human rights?
- Do you think the product you made will be affordable? Why or why not?
- Do you think people would buy the product you made? Why or why not?
- Has the game changed your thinking about what is most important when choosing your clothes? Why or why not?
- When you buy clothes, what is the most important factor you consider?
- Do you or would you consider factors like the impact on the environment and human rights? Why or why not?



### During Play

- If students brought in a list of clothing items and where they were made as homework, have them enter the items in the Global Closet Calculator, either individually or in small groups. If they did not bring in a list, have them work in small groups to enter the information for the shoes, shirts, jackets, etc., that they are wearing.
- After students have generated their interdependence map, have them view the Everyone Else map and click on a country where clothing items were made. Students should then click on “more information” and note the country data listed there. Have students create a table listing the population, land area, and the number of clothing items from 10 countries. Have students sort the table by population and then by land area to see if there is any correlation between these characteristics and the number of clothing items made there. Have students create a line graph showing the correlation between

Students analyze their independence maps and compare their information to other players’.



population and the number of clothing items from that country. Discuss whether there is a pattern in this correlation.

- Discuss the Everyone Else map. Why do we import goods from so many different places rather than making them all here? What are some advantages and disadvantages of importing clothing from other countries? As a class, create a cascading consequences web showing possible effects of importing clothing both on the U.S. and on the

people in the other country. See page 10 for ideas on how to create a cascading consequences web.

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

#### Elementary Level:

##### 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 several choices along with their benefits and drawbacks.

### Simplified cascading consequences web

A cascading consequences web is a way to analyze the impact of a decision on various stakeholders. Introduce students to this complex decision-making strategy in a simpler way. Begin by writing down the decision and drawing a box around it. Then draw a line straight up from this box and write the name of one

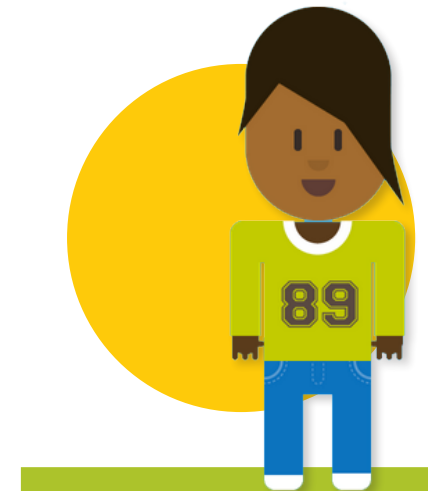
stakeholder that will be affected by the decision. Circle this name. Next, draw lines to the right and left of the decision box and write a possible consequence of this decision at the end of each line. If possible, put a decision with a positive consequence for the stakeholder to the right and with a negative consequence for the stakeholder to the left. Then, for each consequence, draw a line and list a possible further consequence. Continue until students can’t think of any more consequences. You can repeat this for different stakeholders or extend it by adding additional initial consequences for the same stakeholder.

### Additional Strategies for Upper Grades:

#### Grid analysis table

A grid analysis table aids in considering, comparing, and contrasting specific aspects of complex choices. In a grid analysis, possible options are row headings. Column headings are different aspects of these options that should be considered when making a decision. Model using a grid analysis table by listing a few options for

meeting a specific need as rows in a table (for example, whether to grow cotton without chemicals, with chemicals, or join a group to improve cotton farming). Brainstorm some things to consider about these options (for example, cost and environmental impact), and list each aspect as a column heading. Evaluate each aspect of each option and assign it a number between 0 and 5. For example, the fuel for a coal power plant is relatively inexpensive, so it might get a rating of 4 or 5 for cost. But a coal power plant would produce significant carbon emissions, so it would get a lower rating for environmental impact. Be sure to consider



the relative importance of each aspect and weigh them appropriately. A grid analysis can be used qualitatively to lay out the options or quantitatively to add up scores for each option. If you are using the table quantitatively, assign each aspect a number between 1 and 5 based on its relative importance. Multiply each rating by its relative importance number before adding them together to get a score for each option.

#### Stakeholder consequences decision-making process

Students first identify the constraints and considerations surrounding



their decision. They then make a cascading consequences web, showing the initial consequences of a decision and then branching out in a cause-and-effect chain to show the continuing effects of the decision. Students keep going until they can't think of more consequences. Students then identify stakeholders who will be impacted by the decision and assess the impact on each stakeholder. Finally, they weigh the importance of the impacts on various stakeholders to inform their decision.

- Have students list the badges they earn during play and describe in their own words what each means.
- As students play, have them list any questions they have about the choices they were offered. Give them time to research and discuss these choices before returning to play again.
- After playing through the interactive once, have students create a chart to analyze the effect of each badge on various stakeholders. Beside each badge, have them

list stakeholders that are affected, how they are affected, whether the effect is positive or negative on the stakeholder, and how important this effect is to them (the decision maker). Then have students return to the interactive and replay the Explore an Object section, making different decisions based on their analysis.

#### After Play

After each session of 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:

**Based on the Interdependence Map you created, describe how global your closet is.**

**Based on the badges you earned, create a mission statement for your company.**

- At the end of play, have students list the badges they earned. Have them come up with a name for the company for whom

they were making these decisions. Divide students into small groups and have each group represent a stakeholder, such as an environmental watch group, a workers' rights advocate, a union, financial investors, or a consumer. Have each stakeholder group analyze two or three companies based on their badges and rank them from one to 10. Discuss the rankings and compare how they differ for each stakeholder group.

- Challenge students to design a research study comparing where the clothing sold at different stores was made. For ease of comparison, have students select two or three specific kinds of clothes, such as t-shirts or jeans, to compare. Encourage students to choose a variety of store types, ranging from big-box stores to boutiques. Before students begin, have them predict what they will find. Will certain types of stores have clothing made from certain places or will the results be the same across stores? Have students conduct the research as homework or take a class field trip to a retail area. If students are conducting the research as homework, it would be best to

assign each student a store so you get a range of data for the whole class.

- Assign students to small groups and have each group research one of the aspects of manufacturing goods represented in the interactive's badges. For example, students could research fair trade, environmentally friendly manufacturing, workers' rights, etc. Have each group create a three-minute primer on the topic to share with the class. Encourage students to use specific examples to illustrate their points. Students can use the resources in the For Further Exploration section of this guide to get started.
- Have students research the ethical practices of three mainstream clothing companies. Encourage students to look for information both from the company and about the company from other sources. Students should assign each company badges from the interactive and justify their choices.
- Have students research fair trade and green clothing companies, such as those certified by Fair Trade USA.

How do these companies compare to larger, more mainstream clothing companies? What are some advantages and disadvantages of these companies?

- 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.



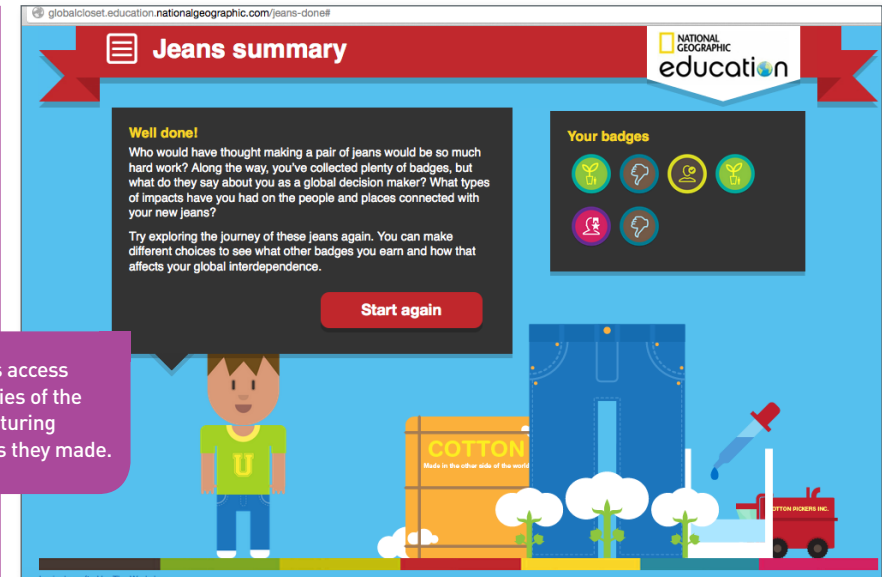
## Wrap-Up

To summarize what they learned in the interactive and assess student learning, have students write a paragraph explaining how what they have learned in the interactive will affect their clothing purchasing choices in the future. As a pre-writing exercise, students can create a list of factors they might use to decide which clothes to buy. Encourage students to consider as many factors as possible, including how the clothes look and feel, as well as the factors discussed in the interactive. They can then rank those factors and use that information to inform their writing.

## Extending the Learning

- Hold an international clothing swap. First, divide the class into one group for each continent except Antarctica. Depending on the number of students, you can then subdivide by region. Have students research some types of clothing worn on each continent or region and create a display of that clothing. Then invite students to bring in any clothing that they would like to swap. Divide that clothing into piles based on where it was

Students access summaries of the manufacturing decisions they made.



made and place the clothing from each continent or region on a table along with the display from that area. Allow students time to browse the clothing and the displays.

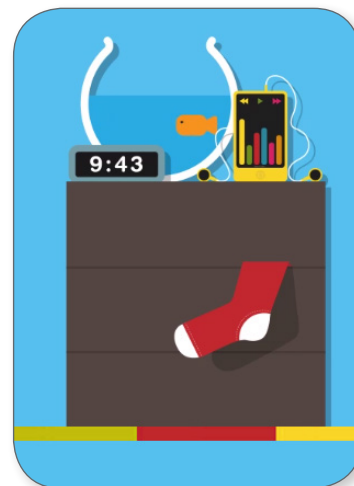
- Have students track the news for items related to clothing manufacturing, fair trade, and environmental issues with manufacturing and share them with the class.
- Take a tour of a local manufacturing plant and interview a supervisor to find out where the materials used in the plant come from and where the final product is sold. Have students use the

MapMaker Interactive ([www.NatGeoEd.org/mapmaker-interactive](http://www.NatGeoEd.org/mapmaker-interactive)) to create a map displaying this information.

- Extend the learning from the interactive to other goods, such as food, electronics, household items, etc. Discuss the complexity of the global supply and demand chain for all goods, not just clothing. Why are goods imported and exported? How does the global supply and demand chain affect the goods available to us? How does it affect the environment? How does it affect human rights in the United States?

In other countries? How can we as consumers have any control over the effects of this system?

- Have students research the role of recycling in manufacturing, using the ISRI (Institute for Scrap Recycling Industries) (<http://www.isri.org/>) website. Students can visit the Fact Sheet section of the website to view or download fact sheets about different types of materials that are recycled. Have small groups of students focus on one type of material and present the information they gather to the class.



## 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 18:**

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

#### ISTE Standards for Students

**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 Student Outcomes

##### Learning and Innovation Skills

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

## For Further Exploration

### Articles

**New York Times:**

Some Retailers Say More about Their Clothing's Origins  
<http://www.nytimes.com/2013/05/09/business/global/fair-trade-movement-extends-to-clothing.html>

**Green Choices:** Environmental Impacts

<http://www.greenchoices.org/green-living/clothes/environmental-impacts>

**MarketWatch:** Would You Pay More for Fair-Trade Socks?

<http://www.marketwatch.com/story/why-shoppers-dont-care-about-bangladesh-2013-05-14>

**National Geographic:** An Eco-Friendly Fashion Statement—  
An Interview With Fashion Designer Beth Doane

<http://newswatch.nationalgeographic.com/2012/04/18/an-eco-friendly-fashion-statement-an-interview-with-fashion-designer-beth-doane/>

### Videos and Audio

**NPR:** Planet Money T-Shirt Exposes Issues of Work,  
Trade and Clothes

<http://www.npr.org/templates/story/story.php?storyId=249339951>

**NPR:** Bangladesh Reveals Uphill Battle for Fair Trade Clothes

<http://www.npr.org/2013/05/13/183659323/bangladesh-reveals-uphill-battle-for-fair-trade-clothes>

**NPR:** Would You Pay a Higher Price for “Ethical” Clothing?

<http://www.npr.org/2013/05/01/180154279/would-you-pay-a-higher-price-for-ethical-clothing>

**NPR:** Ethical Fashion: Is the Tragedy in Bangladesh a Final Straw?

<http://www.npr.org/2013/05/02/180557959/ethical-fashion-is-the-tragedy-in-bangladesh-a-final-straw>

**NPR:** Can This Dominican Factory Pay Good Wages  
and Make a Profit?

<http://www.npr.org/blogs/parallels/2013/06/20/193491766/can-this-dominican-factory-pay-good-wages-and-make-a-profit>



### Websites

**MapMaker Interactive**

<http://www.NatGeoEd.org/mapmaker-interactive/>

**MapMaker Kits**

<http://www.NatGeoEd.org/mapmaker-kits/>

**ISRI Institute of Scrap Recycling Industries**

<http://www.isri.org/>

**National Geographic: Geography Awareness Week**

<http://www.gaweek.org>

**Sustainable Apparel Coalition**

<http://www.apparelcoalition.org/>

**Bureau of Labor Statistics: Apparel Manufacturing**

<http://www.bls.gov/iag/tgs/iag315.htm>

**Natural Resources Defense Council: Clean by Design**

<http://www.nrdc.org/international/cleanbydesign/>

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