Grades: 6-7  
Subject: Science and Social Studies  
Time Required: Four 45- to 60-minute class periods  
Author: Ethan Morris, Teaching with Primary Sources—MTSU

OVERVIEW
In the following activity, students will examine and research the ecosystems depicted in primary source images of plants and animals found in various countries around the world. Students will then use the skills they learned analyzing primary source images to examine and research the ecosystems of plants and animals around their school building. Students will be judged according to their performance during class discussion, a writing assignment, and a poster presentation.

UNDERSTANDING GOAL
Students will understand what makes up an ecosystem, that similar ecosystems can be found in different areas of the world, and why some plants and animals can be found in more than one place.

OBJECTIVES
Students will understand how to conduct research individually and in groups, analyze primary sources, take scientific field notes, lead class discussions, prepare and present presentations, complete writing assignments, and build critical thinking skills.

INVESTIGATIVE QUESTION
How is it possible for the same plant or animal to grow successfully in different parts of the world?
### Lesson Materials

**Image sets from the Library of Congress:**
- Images of Hollyhocks
- Images of Potatoes
- Images of Mulberry Trees
- Images of Wheat
- Images of Horses
- Images of Dogs

**Worksheets:**
- Plant Travel Writing Prompt
- Plant Travel Poster Checklist
- Phone app: Leafsnap (designed by Columbia University, the University of Maryland, and the Smithsonian Institution)

**Supplies:**
- Blank, white sheet of paper
- Plastic snack bags
- Poster board
- Thumb tacks, stapler, art supplies

### Procedures

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<tr>
<th>Day 1</th>
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<tbody>
<tr>
<td><strong>Step 1</strong></td>
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<td><strong>Step 2</strong></td>
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<td><strong>Step 3</strong></td>
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<td><strong>Step 4</strong></td>
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| **Step 5** | In a library or media lab, groups will conduct research on their plants or animals. Inform each group that its members will be responsible for:
   1. A description of the plant or animal’s ecosystem in regards to the soil, land, and sunlight type as modelled in the hollyhock image example.
   2. A brief history of the origin and migration of the plant or animal (e.g. the potato is native to the Americas, was taken overseas during the Columbian Exchange, and has become a popular foodstuff in Europe).
   3. Relating their ecosystem descriptions and brief histories of origins and migrations to the countries depicted on the image sheets. |
<p>| <strong>Step 6</strong> | Remind each group that it will be sharing the results of its research with the class in the form of a short, informal presentation. Additionally, students will be using the results of their own research, and the shared results of others, to complete a writing assignment on the ecosystem, origin, and migration of plants and animals. With this in mind, tell your students to take individual notes on their own research and during the presentations of other classmates. |</p>
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<thead>
<tr>
<th>Step 7</th>
<th>Have each group designate a group speaker and prepare to deliver a brief one-to-two-minute presentation about its findings. Then have students present to the class. Encourage students to ask questions and take notes during each of the presentations for use on their writing assignment.</th>
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<td>Step 8</td>
<td>Distribute Plant Travel Writing Prompt. The writing assignment should be taken home, completed, and turned in the following day.</td>
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**Day 2**

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<th>Step 1</th>
<th>Collect students writing assignments.</th>
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<td>Step 2</td>
<td>Explain to the students they will be going outside to look at plant ecosystems around the schoolyard.</td>
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<td>Step 3</td>
<td>When students reach the schoolyard, each student needs his or her own plant to study. Depending on how many plants can be found around your school, students may have to share the same plant. Try, however, to limit three students to one plant.</td>
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<td>Step 4</td>
<td>After the students find their plants, explain that they will need to identify their plants by name. Have each students bring you a leaf from his or her plant. Using the free app Leafsnap, discover what plant the leaf comes from. In order for Leafsnap to determine what plant a leaf comes from, the app requires that you take a picture of the leaf on a white background. Bring a blank, white sheet of paper outside with you to serve as the background. Tell students the names of their plants. As a possible time-saving measure, if you would like, you can have students with iPhones download Leafsnap as well.</td>
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<td>Step 5</td>
<td>Instruct the students to describe the ecosystem of their plants and record their findings on a piece of notebook paper. Students should be exhaustive in their description of the ecosystem. They should examine and take notes on leaf shape and size, flower petals, type of tree bark, height and size of plant, etc. Students should also take samples of leaves and soil (provide students with plastic bags if necessary). If possible, students should take pictures as well.</td>
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<tr>
<td>Step 6</td>
<td>Remain outside, monitor students so they stay on task, and check to see that they are recording thorough information. When the students appear to have completed their observations of the ecosystem, the class may return inside.</td>
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| Step 7 | Reminding students of the previous day’s activity, explain that they will now research other countries around the world where they can find the plants they just looked at in the schoolyard. Once they have located another country, they will need to:  
   1. Explain the origins and migration of the plant (i.e. how did the plant got from the schoolyard to the foreign country, or if the plant originated in the foreign place, how did it get to the schoolyard?).  
   2. Describe the ecosystem of the foreign country and compare it to the ecosystem of the schoolyard. |
### Step 8
Students can go to the library or media lab, or remain in the classroom to use classroom computers or any device with a wireless internet connection to conduct research. They should spend the remainder of class completing their research. If they do not finish in class, they should finish up research at home. If it is difficult or impossible for some students to complete research at home you may provide accommodations (e.g., let them come in before school, stay after school, or allow them extra time in class the following day).

### Step 9
Remind students to put their best effort into the research. Tell students they will be responsible for displaying the content they research in an upcoming poster project.

### Day 3

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<tr>
<th>Step 1</th>
<th>Print and distribute the <a href="#">Plant Travel Poster Checklist</a>.</th>
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<tr>
<td>Step 2</td>
<td>Explain to students that they will be creating posters on an individual basis. The poster project should reflect the Plant Travel Poster Checklist and include the information, samples, and photos from the student’s exploration of the schoolyard ecosystem and the subsequent research about the plant’s origins, migrations, and ecosystem in other countries. Tell students to once again put their best work into the poster because they will be presenting the work before the class. Remind them to also be planning what they want to say during their presentations.</td>
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<td>Step 3</td>
<td>Distribute poster board and art supplies.</td>
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<td>Step 4</td>
<td>Move around the classroom to monitor student progress, guide students who may be struggling, and remind students to read and follow the Plant Travel Poster Checklist.</td>
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<tr>
<td>Step 5</td>
<td>Students will have the whole class to make the poster and prepare for the presentation. What they do not finish in class should be taken home, completed, and brought in the next day. (If students do not have access to art supplies at home, you may make individual accommodations as needed.) If there are students who do not need extra time to complete their posters, they should leave their posters in the classroom. Remind students to put their names on posters.</td>
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### Day 4

| Step 1 | Give students sufficient time to look over their posters and notes and prepare for their presentations. |
| Step 2 | Students will present their posters before the class. |

### Evaluation

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<tr>
<th>40%</th>
<th>Plant Travel Writing Prompt—This can be taken as a grade, or it can simply be used as a formative assessment: read, critiqued, and returned with feedback to help the student prepare for the poster project or simply improve the student’s writing skills.</th>
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<tbody>
<tr>
<td>60%</td>
<td>Plant Travel Poster—On the fourth day of class, you can collect the Plant Travel Poster Checklist from students before they present their posters and use the checklist as a guide for grading and a space to record any comments. Return the checklist, feedback, and grade to each student.</td>
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</tbody>
</table>
Images of Hollyhocks


[United States: Hollyhocks] Rural mailbox and hollyhocks, Morgan County, Indiana [1941]

[Israel: Hollyhocks] Types and character, etc. Pink Hollyhocks in Galilee [1950-1960]

[Japan: Landscape] Kōshū inume-tōge [1890-1940]

[Japan: Hollyhocks] Hollyhocks [1908]
Images of Potatoes

[Ireland: Landscape] Howth and Ireland's Eye, County Dublin, Ireland [ca. 1890-ca. 1900]

[Ireland: Potatoes] Harvesting the spuds, Zooming in for [...] [2008] Courtesy of Wikimedia Commons

[Finland: Potatoes] Finn, kopaiushchī kartofel' [1905-1915]

[Finland: Landscape] Miscellaneous lot of photographs by Barbara Wright, Finland [ca. 1941]

Images of Mulberry Trees


[United States: Mulberry Trees] BILL ROOTHIER, ENTOMOLOGIST WITH THE [... ] [1972]

Courtesy of the National Archives and Records Administration
Images of Wheat

[United States: Landscape] Landscape view [1935-1942]


[Russia: Wheat] Three female and one male peasant eating a meal in a wheat field [1870-1886]

[Russia: Landscape] Valley landscape with river, Shelomya, Russia [2000]

(France: Wheat) Wheat field in April in Burgundy, France [2014] Courtesy of Wikimedia Commons
Images of Horses


[Middle East, Jordan: Horses] Line of Bedouin men with rifles on horseback [1921, detail]

[Middle East, Israel: Landscape] Descent upon the Valley of Jordan [1843, detail]
Images of Dogs

[China: Landscape] Pond in a garden, with a small pagoda-style kiosk in the background, in China [1979]

[Ireland: Landscape] Dunmore, Ill., County Waterford, Ireland [ca. 1890-ca. 1900]

[United States: Landscape] Great Falls of the Potomac [1802, detail]

[United States: Dog] Police dog, Gus Buchholz [1923]

[China: Dog] Child carrying a dog, China, ca. 1918-1938 [ca. 1918-1938] Courtesy of Wikimedia Commons

[Ireland: Dog] The call to arms. Irishmen don't you hear it? [1915, detail]
PLANT TRAVEL WRITING PROMPT

Directions: Answer the following prompt in the space provided.

Choose TWO plants or animals discussed in class. For each of your choices, complete the following steps:

1. Describe the ecosystem (i.e. soil, land, and sunlight) of this plant or animal.

2. Compare the ecosystems of all of the countries where this plant or animal can be found.

3. Briefly describe how the plant or animal migrated, or moved, from one country to the next.

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**PLANT TRAVEL POSTER CHECKLIST**

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<tr>
<th>REQUIREMENTS</th>
<th>CHECK MARK</th>
<th>TEACHER COMMENTS</th>
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<td>Describes all three aspects of ecosystems discussed in class (i.e. soil, land, and sunlight).</td>
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<td>Describes other aspects of ecosystems not discussed in class (e.g. climate, availability of water, tolerance of heat or cold, etc.). *You will receive one check for each extra aspect you discuss in your presentation. Maximum three checks.</td>
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<tr>
<td>Provides either photos, internet images, or field samples (i.e. soil, leaf, or bark samples) of the various aspects of ecosystems discussed in the presentation.</td>
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<td>Properly cites all internet photos or information.</td>
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<tr>
<td>Compares the ecosystem of the schoolyard with the ecosystem of the foreign country.</td>
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<td>Explains what country and region the plant originated from.</td>
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<tr>
<td>Explains how the plant migrated from one country to another (i.e. from the schoolyard to the foreign country or the foreign country to the schoolyard)</td>
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**TOTAL CHECKS**

(Multiply total by two for grade)

NAME: ____________________________