High-Altitude Ballooning
Populations: Movement, Growth, & Decline
Created by: Sydney White
University of Northern Iowa

Grade Level: 11th – 12th
Content Area: Geography
Time Frame: 1-2 class periods
Connections to Other Disciplines: Science and History

Materials Needed: Aerial photos from balloon and access to library and internet for research
New Vocabulary: high altitude ballooning, GPS, settlement, aerial photograph,

Goal: Students will be able to evaluate photos and maps of the past and present to see how they have changed over time and plan for the future.

Objective: Students will be able to explain the movements of settlements or the changes in settlements over time due to human factors and the distribution of resources using past and present photos and maps.

Anticipatory Set/Introduction: We have been learning throughout the semester how to use GPS units and high altitude balloons to take aerial photos. We have also been discussing the importance of resources to societies. Now it is time to apply that knowledge. We will now analyze the photos we have taken using the high altitude balloon to learn how settlements can grow or decline over time, using our understanding of the past and distribution of resources to plan for the future.

Instructional Sequence/Procedure:
1) Project or distribute photos you have collected of your local area from your various balloon launches and discuss what you see as a class. (10-15 minutes)
2) Break students into small groups and have them choose an area displayed in the photos to research more on. Hand out instructions for small group research and the essay (that will be completed individually) that will follow. (5-10 minutes)
3) Go to the school library or computer lab for student research. During research students will look for maps and aerial photos of their chosen area from different time periods. Have students compare the current photos and maps of the local area to those of the past. Throughout the research process conduct informal assessment, asking students planned questions, providing guidance as needed, and prompting them to think about the change of physical features over time. (Let students research until the last five minutes of class, then return to classroom)
4) Regroup as a class and see how much students have found. If needed, let students continue research during the next class. Give them a timeline for when their essay will be due.
5) Once research is complete regroup as a whole class and invite volunteers from each small group to share their findings (can show photos and maps as well). Open discussion for
possible causes of changes over time and what may be done to plan for the future. Provide guidance as needed.

**Formative Evaluation:** Through research process conduct informal assessment, asking students planned questions and providing guidance as needed.

**Summative Assessment:** Students will write an essay demonstrating their understanding through the evaluation and comparison of the photos/maps they gathered through research to those gathered from the high altitude balloon. The essay will demonstrate their thinking about how human factors and the distribution of resources can affect the development of a society and the movement of populations.

**Common Core E/LA Curriculum Standards Used:**
- Reading literacy in history/social studies 3.2.A – Evaluate various explanations for actions or events and determine which explanation best accords with textual evidence, acknowledging where the text leaves matters uncertain. – Identify and explain how historical, environmental, economic, political, and technological factors have influenced the current population distribution.
- Reading literacy in history/social studies 2.3.A – Determine the central ideas or information of a primary or secondary source; provide an accurate summary that makes clear the relationships among the key details and ideas. – Analyze and explain the spatial features, processes, and organization of people, places, and environments using models of human/and or physical systems (e.g., urban structure, sediment transport, and spatial interaction).

**NGS Standards Used:**
- Geographic Standard 12.2.A – Functions of Settlements: Settlements can grow and/or decline over time
- Geographic Standard 18.1.A&B - Using Geography to Interpret the Present and Plan for the Future

*Supported by: NASA-Iowa Space Grant Consortium, Geographic Alliance of Iowa, National Geographic Society Education Foundation, and University of Northern Iowa*
## Research Report Rubric:
### High-Altitude Ballooning - Populations: Movement, Growth, & Decline

**Teacher Name:** Ms. White  
**Student Name:** ______________________  
**Total Score:** _____/24

<table>
<thead>
<tr>
<th>Written Report</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quality of Information</strong></td>
<td>Demonstrates understanding of how human factors and the distribution of resources may have caused the growth, decline, or the movement of a population over time. It includes several supporting details and/or examples.</td>
<td>Demonstrates understanding of how human factors and the distribution of resources may have caused the growth, decline, or the movement of a population over time. It provides 1-2 supporting details and/or examples.</td>
<td>Demonstrates understanding of how human factors and the distribution of resources may have caused the growth, decline, or the movement of a population over time. No details and/or examples are given.</td>
<td>Information has little or nothing to do the growth, decline, or movement of populations.</td>
</tr>
<tr>
<td><strong>Amount of Information</strong></td>
<td>All topics are addressed and all questions answered with at least 2 sentences about each topic.</td>
<td>All topics are addressed and most questions answered with at least 2 sentences about each topic.</td>
<td>All topics are addressed, and most questions answered with 1 sentence about each topic.</td>
<td>One or more topics were not addressed.</td>
</tr>
<tr>
<td><strong>Sources Cited in Paper</strong></td>
<td>All sources (information and graphics) are accurately documented in the desired format.</td>
<td>All sources (information and graphics) are accurately documented, but a few are not in the desired format.</td>
<td>All sources (information and graphics) are accurately documented, but many are not in the desired format.</td>
<td>Some sources are not accurately documented.</td>
</tr>
</tbody>
</table>

**Written Report:** _____/12

<table>
<thead>
<tr>
<th>Group Research</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ideas/Research Questions</strong></td>
<td>Researchers independently identify at least 4 reasonable, insightful, creative ideas/questions to pursue when doing the research.</td>
<td>Researchers independently identify at least 4 reasonable ideas/questions to pursue when doing the research.</td>
<td>Researchers identify, with some teacher help, at least 4 reasonable ideas/questions to pursue when doing the research.</td>
<td>Researchers identify, with considerable teacher help, 4 reasonable ideas/questions to pursue when doing the research.</td>
</tr>
<tr>
<td><strong>Delegation of Responsibility</strong></td>
<td>Each student in the group can clearly explain what information is needed by the group, what information s/he is responsible for locating, and when the information is needed.</td>
<td>Each student in the group can clearly explain what information s/he is responsible for locating.</td>
<td>Each student in the group can, with minimal prompting from peers, clearly explain what information s/he is responsible for locating.</td>
<td>One or more students in the group cannot clearly explain what information they are responsible for locating.</td>
</tr>
<tr>
<td><strong>Quality of Sources</strong></td>
<td>Researchers independently locate at least 2 reliable, interesting information sources for EACH of their ideas or questions.</td>
<td>Researchers independently locate at least 2 reliable information sources for EACH of their ideas or questions.</td>
<td>Researchers, with some adult help, locate at least 2 reliable information sources for EACH of their ideas or questions.</td>
<td>Researchers, with extensive adult help, locate at least 2 reliable information sources for EACH of their ideas or questions.</td>
</tr>
</tbody>
</table>

**Group Research:** _____/12

---

Supported by: NASA-Iowa Space Grant Consortium, Geographic Alliance of Iowa, National Geographic Society Education Foundation, and University of Northern Iowa
Photos/maps to compare may look like this:
Supported by: NASA-Iowa Space Grant Consortium, Geographic Alliance of Iowa, National Geographic Society Education Foundation, and University of Northern Iowa
Supported by: NASA-Iowa Space Grant Consortium, Geographic Alliance of Iowa, National Geographic Society Education Foundation, and University of Northern Iowa