

East Asian Design- Lesson Plans

6th Gr. Science

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“Observed Human Impact around Asia”

Rationale:

For 6th grade Science, two Next Generation Science Standards focus on the impact of humans on the environment and tracking that impact, such as the use of natural resources. In our lecture, we looked at the geography of China and Korea, two areas that had gone through rapid growth and change over a few hundred years. Students will make observations of time lapse images over decades and will learn about some of the historical events that influenced some examples.

Skill Objective:

Students will be able to track and record changes observed in time lapse images. Students will be able to support an argument that human growth and consumption of resources has changed Earth over time using observations as evidence.

Content Standards:

MS-ESS 3-3. Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*

MS-ESS 3-4. Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

Prior Knowledge:

Students can identify geoscience processes such as weathering, erosion, deposition and recognize natural features such as meanders, deltas and alluvial plains.

Day 1 Opening Activity



Presenting the image to class, ask students what differences they notice in the river and landscape around it (the delta moved, deposition occurred further north east, urban development in western area). Ask students “why do you think this occurred? And what evidence do you see that could cause that?” and have them record responses in their notebooks.

Activity

We will look at this example of human impact on the environment and find other examples using a NASA website (“World of Change” : <https://earthobservatory.nasa.gov/world-of-change>). As a class, we will use NASA’s World of Change time lapse to look at a sequence of 5 images of the Yellow River from 1989 to 2009 (https://earthobservatory.nasa.gov/world-of-change/yellow_river.php) and make observations of the physical changes. The teacher will provide historical background information to provide the cause of these changes, year by year, to use as an argument for the effect of human development on the area. (Ex. Increased use of water upriver, seen by growth of land development in the western section of the image, has lessened the amount of water reaching the natural wetlands at the river mouth).

As another example of human impact on a natural environment, students will explore resources ([Washington Post Video Article](#), [NPR Article](#), [KBS New Video](#)) about the Demilitarized Zone between North & South Korea. The teacher will provide a quick historical background of the area, and the lack of human activity in the area since the war. These observations presented show how human impact and lack thereof change the natural environment. Students will then be directed to the “World of Change” website to choose a timelapse of their choice and record observations and evidence. They should be looking for changes that are related to human development or influence.

Debrief & Assessment

Students will present observations from a “World of Change” timelapse of their choice and research what possible causes of observed changes were due to human impact. They should have a description or visual of the sequence of changes, along with supporting evidence of human involvement.

Day 2 Opening Activity



Presenting the Ukiyo-E images to class, ask students “what do you notice about the artwork?” and “what do you know about this type of artwork?”. If students are unfamiliar, explain the images originated in Japan and are a woodblock printing technique traditionally used in the Edo Period. They were used for art and media as well, such as posters for shows or events.

Activity

We will look at some art forms that are related to human consumption of natural resources and sustainability. Teacher can present info, or students can research, about the popularization of Ukiyo-E in Western culture after it was being “recycled” as wrapping paper for shipments of pottery and lacquerware (<https://www.kumon-ukiyo-e.jp/en/history.php>). Instead of being trashed or other paper being used as packing materials, old Ukiyo-E prints were repurposed as art for the recipients and later, purchased by Westerners in Japan. Teacher can then present the video about the exhibition “Pause” by artist Jean Shin (<https://exhibitions.asianart.org/exhibitions/jean-shin-pause/>) to show another example of recycling of discarded items for use as art. Ask students to discuss comparisons between the two examples- possible discussion questions: “What do Ukiyo-E and E-waste have in common in both societies?”, “Why did people choose to reuse these materials?”, “What are some benefits of reusing these kinds of materials for different purposes?”, “What are some other possible purposes for these items?”.

Students will use the examples as inspiration for looking at ways to sustainably use resources and materials around them. They will pick a material or kind of commonly discarded item and research different possible reuses for them.

Debrief & Assessment

While the students may be familiar with the “Reduce, Reuse, Recycle” phrase, they should discuss the benefits of aiming for reducing consumption in general, or reusing items as opposed to recycling- which can lead to increased use or further expenditure of resources and energy.

Students will present a possible plan for sustainable use of a particular common item in their house or community. They should give some examples of ways to reuse the item, or how use of that item can be reduced. Their presentation can include a physical example of a way to reuse an item along with an explanation of the benefits of reusing it.

Extension

Students can create artwork from upcycled or reused materials that helps express a message regarding human use of natural resources.

Day 3 Closing Activity

Activity

Students' presentations can be finished and shared. They should be able to present an example of how human impact or development affected a natural environment. Their example can include time lapse images or another explanation of the changes over time. It should also include evidence of human involvement in the changes. Their presentation must also include a plan for sustainability or reduction of human impact on natural resources. These can include their proposals for reusing or repurposing commonly used items around their community. They can also include design solutions that are engineered out of repurposed materials.