

Then and Now...and in the Future

Resources and Sustainability

Grade Levels 7-8

Objectives: In order to understand the essential question of, “How do humans impact the landscape over time?” students analyze resource use in historic photographs, reflect on changes in the present, and make inferences about the future. Students create and present “images” of their future local landscape.

Time Needed: 6+ hours

Vermont’s Framework of Standards and Learning Opportunities:

- 3.9 Sustainability (awareness of personal and collective actions on human/natural systems)
- 4.5 Continuity and Change (understand continuity and change)
- 7.18 Outputs and Impacts (people control outputs and impacts of technological activities)

Grade Level Expectations:

Earth Science S7-8:49 (responsible resource use & human impacts on natural resources)

Materials & Resources:

Landscape Change Program Archive, www.uvm.edu/landscape For example, LS01429_000/001, “Aerial Photograph of the Winooski River and Capitol Building.”
Earth Then and Now: Amazing Images of Our Changing World, Fred Pearce, Firefly Books, 2007.
 Then and Now Image Questionnaire (below)
 Now...and in the Future Image Questionnaire (below)

Essential Background Knowledge: prior knowledge of sustainability, natural resources and climate change.

Activities:

<p style="text-align: center;">1. Hook Your Students</p> <p>Students are shown startling image(s) that show significant changes in the landscape. Students answer questions about and discuss a historical image as it compares to a contemporary one. Focus on observation skills and natural resource identification.</p>	<p style="text-align: center;">4. Culminating Activity</p> <p>Students use prior knowledge of sustainability, natural resources and climate change to make inferences about the future. Students create two potential pathways, one reflecting responsible (or desirable) policy choices, the other reflecting irresponsible (undesirable) policy choices.</p>
<p style="text-align: center;">2. Introduce Concepts</p> <p>Students explore local images from the <i>Landscape Change Program</i> and select a pair of images for analysis.</p>	<p style="text-align: center;">5. Assessment</p> <p>Student Presentations. PowerPoint Checklist (below) and Presentation Rubric (below)</p>
<p style="text-align: center;">3. Apply Skills</p> <p>Students respond to their locality using observation skills built on day 1 and prior knowledge relating to natural resources.</p>	<p style="text-align: center;">6. Extensions</p> <ul style="list-style-type: none"> • Students take their own “now” pictures. • Classroom “Town Meeting” where student groups advocate for a particular pathway. • Bring “images” of the future to public arena and students voice their ideas/concerns.

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Lesson Plan Details

Detailed summary of curricular format:

Overview: Students will observe historical photographs within their town or community that are paired with more contemporary images of the same location. Through comparing these images and the similarities and differences represented in them, students will make inferences about the changes they see. Students will then construct “images” of the future landscape of that location given what they know about potential or likely impacts of climate change and resource use in the future. The purpose is to develop a better sense of changes through time and make inferences about the potential future of their local landscape.

1. Part One: The Hook (~one 70 minute block): Show a historical photograph of a location outside of their local community. Have students respond to a series of prompts: (Note: An image that depicts shocking change might help the wow factor. Example Image LS01429_000/001 or text *Earth Then and Now: Amazing Images of Our Changing World*, Fred Pearce)

- What natural resources are depicted in this image?
- Are there other resources not shown in this image that are being used in this scene?
- How have humans impacted the landscape depicted in this image?
- What do you think this place will look like in the future (ie now)?

Have students share their responses.

Now show a new image/slide that has the historical image paired with the contemporary image. Have students respond to the following:

- What changes do you notice?
- What didn't change?
- How accurate were your predictions of landscape change?
- What changes are human induced?
- What changes are natural?
- Why did these changes take place?
- Do you feel like the changes that you see were a necessary change to the landscape?

Have students share their responses and have a discussion of resource uses and sustainability.

2. Part Two: Explore photographs from their own town/community: (~one 70 minute block) Introduce students to searching for images on the *Landscape Change Program* website <http://www.uvm.edu/landscape>. Show students advanced searches where they add criteria (ie specific town and multiple images).

Have students select an image of their local town that has a companion contemporary image (then and now). (*Extension:* students can find a historical image that lacks companion and go to the location and photograph it.)

Using Questionnaire “Then and Now,” have students write about their chosen images.

Have students share their images and responses. As they do, compile a list of local resources and the potential impact of using those resources (changes to landscape or lack-there-of).

Essential Background Knowledge Review

Using the compiled list from above as starting point, look at current local resource use and impacts on landscape, etc both locally and globally. Remind students of previously studied topics involving sustainability, natural resources and climate change. Resources for these topics could include:

Fish Banks Activity: http://www.bpa.gov/Corporate/KR/ed/step/fishing_game/Fishing_Model.shtml
Consumer Consequences online game, <http://sustainability.publicradio.org/consumerconsequences/>
EPA Climate Change and Vermont sheet at:
[yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BWJ5J/\\$File/vt_impct.pdf](http://yosemite.epa.gov/oar/globalwarming.nsf/UniqueKeyLookup/SHSU5BWJ5J/$File/vt_impct.pdf)

3. Part Three: Students look into the future (three 70 minute blocks)

Student now create two “images” that infers how their location could change in the next 50-75 years (When they are 65-90 years old!). One image should consider responsible or desired policy choices while the other does not. Students will create a visual representation (the image) and written description (answers to Now...and in the Future Questionnaire) of how their location changes through time. For each possible pathway examples should demonstrate how policy decisions affect the landscape.

“Images” should be created through digital or manual (pen on printed image) manipulation of original images. Students should complete Image Questionnaire “Now...and in the Future” for **each** of their future landscapes. (Image LS01320_000, “Mixed-Media Futuristic View of Ascutney” from the *Landscape Change Program* would serve as a nice example for how this might be done and makes for a nice discussion on how future change was perceived in the past.)

*Students will also need time to construct PowerPoint presentations of their image sequences.

4. Part Four: Students presentations. (one to two 70 minute blocks) Through the use of PowerPoint students display their original images as well as their 2 images of the future and provide oral descriptions of the changes through time. Students should draw conclusions about local/global impacts of resource use, technology, sustainability and climate change and how decisions related to these ideas shape our future.

Then and Now

Image Questionnaire

Respond to the following questions as you view a *historical* image of a location in Vermont:

1. What natural resources are depicted in this image?
2. Are there other resources not shown in this image that are being used in this scene? (ie Fuel in an automobile, coal burned to power lights on street, etc)
3. How have humans impacted the landscape depicted in this image?
4. What do you think this place will look like in the future (ie now)?

As you look at the historical image next to a *contemporary* image, answer the questions below:

1. What changes do you notice?
2. What didn't change?
3. How accurate were your predictions of landscape change?
4. What changes are human induced?
5. What changes are natural?
6. What role did the use of natural resources have on these changes?
7. What role did climate change have on these changes?
8. Do you feel like the changes that occurred were necessary changes to the landscape? (ie Could they be avoided? Were policy-makers responsible? Was sustainability considered?)

Now...and in the Future

Image Questionnaire

As you look at the contemporary image next to your future image, answer the questions below:

1. What changes have occurred?
2. What didn't change?
3. What changes are human induced?
4. What changes are natural?
5. What role did the use of natural resources have on these changes?
6. What role did climate change have on these changes?
7. Do you feel like the changes that occurred were necessary changes to the landscape?
(ie Could they be avoided? Where policy-makers responsible? Was sustainability considered?)

Then and Now...and in the Future

PowerPoint Checklist

NAME _____ TOPIC _____

TEXT

- ___ easy to read (font and size are appropriate)
- ___ clear color and style
- ___ spell check
- ___ text transitions are consistent throughout the show

GRAPHICS

- ___ appropriate to the slide
- ___ clear, not blurry
- ___ proportionally sized (do not look stretched out)
- ___ enhance the text on the slide

CITATIONS

- ___ included a bibliography with sources of your information
- ___ cited source of images as well as text

TRANSITIONS AND BACKGROUND COLOR

- ___ background enhances each slide
- ___ consistency to each background (same color range)
- ___ limited to a few select transitions for all slides
- ___ transitions occur quickly

SLIDE SHOW

- ___ hyperlinks connect correctly
- ___ information is clear, easy to understand

OPTIONAL

- ___ animation
- ___ scanning
- ___ video clip
- ___ sound related to topic

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Rubric

Teacher Score	Your Score	Attribute	4 Wow!	3 Got It.	2 Getting There	1 Beginning
		Observation and interpretation of change. (historical to present day)	<ul style="list-style-type: none"> Changes noted including subtle and unseen details. Inferences about what changed and why (related to practices/technologies of yesterday and today) 	<ul style="list-style-type: none"> Change noted with explanations that fit understanding of practices/technologies of the past. 	<ul style="list-style-type: none"> Some change noted. Little to no explanation of those changes. 	<ul style="list-style-type: none"> Little to no changes noted.
		Identification of natural resources.	<ul style="list-style-type: none"> Nearly all natural resources identified. Distinction between local and imported resources Inferences about unseen resources used during the time. 	<ul style="list-style-type: none"> Appropriate level of natural resources identified including some less obvious. Distinction between local and imported resources. 	<ul style="list-style-type: none"> Some obvious natural resources identified. 	<ul style="list-style-type: none"> Little to no natural resources identified.
		Application of principles of sustainability and an understanding of the difference between sustainable and unsustainable practices.	<ul style="list-style-type: none"> Future images demonstrate potential affects of sustainable vs unsustainable practices based on thorough understanding of those principles. 	<ul style="list-style-type: none"> Future images demonstrate potential affects of sustainable vs unsustainable practices based on firm understanding of those principles. 	<ul style="list-style-type: none"> Future images demonstrate a basic understanding of sustainable vs unsustainable practices. 	<ul style="list-style-type: none"> Future images lack demonstration of implications of sustainable or unsustainable practices.
		Climate Change Awareness	<ul style="list-style-type: none"> Application of climate change to image of the future based on science. Deeper consideration for the affects of those changes as they relate to sustainability. 	<ul style="list-style-type: none"> Application of climate change to image of the future that is based on science. 	<ul style="list-style-type: none"> Some consideration for climate change that is not based on current science or is inaccurate. 	<ul style="list-style-type: none"> No consideration for climate change
		Communication of knowledge.	<ul style="list-style-type: none"> Well organized PowerPoint checklist complete Clearly articulated ideas 	<ul style="list-style-type: none"> Well organized PowerPoint checklist complete 	<ul style="list-style-type: none"> Some basic organization Some items on PowerPoint checklist not considered 	<ul style="list-style-type: none"> Presentation lacking organization Few items on PowerPoint checklist considered.

*Prior to teacher feedback students should rate themselves on a scale of 1-4 for each attribute.