
Example of a Unit Makeover:

3rd-4th grade unit on sustainable communities

How do curriculum and instruction change as a result of using a sustainability approach? How does the content become richer, and level of inquiry deepen? This document shows what happens when a teacher applies sustainability concepts and approaches to create a unit “makeover.” This report summarizes the “before” and “after” unit in terms of guiding questions, instructional strategies, assessment, and other factors that impact student achievement.

Background

The unit makeover was an outcome of the 2006 Summer Sustainability Institute sponsored by the Children’s Environmental Literacy Foundation (<http://www.celfoundation.org>), with facilitation provided by Creative Change Educational Solutions (www.creativechange.net) and Scott Beall consulting. During the intensive week-long institute, teachers gained content knowledge, resources, and strategies to rethink their approach to curriculum and instruction using the lens of sustainability. Guided planning time and one-on-one mentoring at the institute enable teachers to walk away with a unit “makeover” like this one that was implemented during the school year.

After the week-long institute the teachers were provided on-going support and communication. Teachers sent their in-progress lesson plans to CELF and Creative Change, and received feedback and mentoring via phone and e-mail. This document is an outcome of this process.

About this example

After the 2006 Summer Institute a team of 4th grade teachers turned in the list of ideas for sustainability instruction, shown on p. 2. The list is very broad, showing that the teachers’ understanding of sustainability greatly increased and moved beyond just “the environment.” However, the list is unfocused and does not serve as a clear guide for quality instruction. Pages 3-6 show the feedback provided by CELF and Creative Change.

This page: Teachers' initial ideas for the unit

Guiding question: "How can we become responsible members of a sustainable community?"

Big Ideas: Students will understand that:

- They are part of a community.
- A community is made up of human and non-human members and that we have a responsibility as active members of the community to support a sustainable interdependence.
- Members of a community share an interdependence and a responsibility to the well being of the community.
- As responsible members of a community we need to be aware of the impact we have on the community.

Learning Activities: Selected activities to increase awareness, knowledge and skills and show understanding in different ways

- Define the following terms appropriate to each grade level: sustainability, energy, and recycling.
- Name five natural resources. List ways to use natural resources constructively and responsibly.
- List how many uses water has in their daily lives. Learn about water through a series of activities and its importance to the community (through various creative arts).
- Explain what is meant by "ecological footprint." Measure their ecological footprint using Kidsfootprint.org. Using this information and information presented, students will list steps to lessen their footprint.
- Participate in experiments - e.g. using renewable batteries (clock, light) and compare/contrast results.
- After an assembly about recycling with a guest speaker, student awareness will increase regarding the city's recycling program. Begin/extend the school/classroom recycling program. Enter NYS "I'm a Green Nation" contest (creating poems, video, etc) about the importance of recycling.
- Create a mural on paper showing their neighborhood (using various art materials) around the school neighborhood. This mural will reflect their understanding of their neighborhood community.
- List and research local wildlife on the school grounds. Use native plantings to support wildlife on school grounds. Construct feeders/birdhouses/gardens and add to school grounds (utilizing "Journey North" interactive global Internet site).

Student work, products, and assessments

- Student awareness/ability to communicate responsible practices.
- Participation/Evidence of work in these activities, discussions and practices, and presentations.
- Recycling (work samples, reflections, etc. as a result of activities).
- Letter writing to various community members.

Feedback Provided to Teachers

Note: As part of an overall support package, CELF and Creative Change provided feedback and coaching to the teachers to help them better structure their unit. An initial note to the teachers is below; detailed feedback begins on the next page. (Names have been changed.)

Dear Karen and Tim,

Your original document had many well-defined indicators about many aspects of sustainability (energy, water, natural resources in general). This shows your broad understanding of the issue. And, I thought it was fabulous that you included the most fundamental concepts of community, interdependence and impacts.

In this document, I've organize your many ideas to 1) better align instruction and assessment, and 2) provide a meaningful sequence that both introduces broad concepts and deepens them through the study of more specific topics.

The basics concepts of community and interdependence are at the beginning of the unit to establish a foundation. Then, to deepen these ideas with academic content, I proposed other sections of the unit, each based on a specific topic you provided (schoolyard habitat, EF quiz, etc.). The goal was to make each of these topics a vehicle to 1) reinforce the concepts of community, interdependence, and impacts; and 2) connect these ideas to more academic learning through added emphasis on geography, science, the water cycle, etc. In this way, the sustainability themes become the basis of rigorous instruction that meets multiple standards.

The proposed structure also gives multiple opportunities to produce work products such as letter, presentations, and other items you mentioned.

As you review the feedback, additions and comments are in blue.

Additions, comments, and questions from CELF and Creative Change appear in blue text throughout.

Outcomes (big ideas): Students will understand that	Indicators: We know students understand when they can as demonstrated through these activities/products
<p>The community is made up of human and non-human members, and they are one part of the community. Members of a community interact are dependent on each other. (Concept: community; interdependence)</p>	<p>-Identify the various components of a community, (e.g. people, animals, environment, resources). -Identify ways the members of the community interact and depend on each other.</p>	<p>Create a mural on paper showing their neighborhood (using various art materials) around the school neighborhood. This mural will reflect their understanding of their neighborhood community and interdependence by identifying human and non-human members of the community and describing or showing ways these members interact.</p> <p>This might be a good time to have students map where some of their basic needs come from (water, energy) and where their wastes go.</p>
<p>We have an impact on the community. (Concept: impacts) This is a big concept that can be spiraled throughout the unit. Students should understand impacts on the environment, and on each other. Thus, the concept of impacts and responsibility affects relationships with human and non-human members.</p>	<p>Examples of indicators that show preliminary understanding: -List everyday habits that impact natural resources in the community.</p> <p>- List ways (human) community members can support each other. Identify actions that can weaken the community. (teasing, fighting, etc.)</p>	<p>At this early point in the unit I would introduce the concept of impacts (either human-environmental or human-human), and then cover the issue of 'impacts' later with more concrete examples when you talk about water, resource use, etc. Even a review of classroom rules would be appropriate, perhaps linking them to other community laws students would know about (don't steal, etc.)</p>
<p>As members of a community there is a responsibility to the well being of the community. (Concept: common good) We have a responsibility as citizens to be active members of the community to support a sustainable interdependence. (Concept: citizenship)</p>	<p>Describe ways they can affect the common good.</p>	<p>You could start with simple things such as how to respect each other, how to respect the school, etc. More specific actions related to habitats, etc. are included in the following sections.</p>

Next, investigating the school grounds would be a great and concrete way to continue with the ideas established above. Here's one way it could look:

Outcomes (big ideas): Students will understand that	Indicators: We know students understand when they can as demonstrated through these activities/products
<p>The community is made up of human and non-human members, and the students are one part of the community.</p> <p>This Big Idea, introduced at the beginning of the unit, is reinforced again in the context of the school grounds.</p> <p>You could take this further and focus on interactions in the schoolyard ecosystem. This would be a great way to emphasize science standards.</p>	<p>-List local plants and wildlife on the school grounds.</p> <p>Perhaps add other science outcomes – understanding food chains, seasons; classifying types of species; examining how plants and animals reproduce, etc.</p>	<p>-Research local wildlife on the school grounds.</p> <p>Other ideas:</p> <p>Students research specific species in the school habitat. Then, they create a nature guide of the school grounds and lead tours for family members or younger students.</p>
<p>What else do you want students to understand about plants? Can you verbalize a Big Idea that addresses the importance of native plants?</p>	<p>How would you know students know about the importance of native plants?</p>	<p>What would they do to demonstrate this?</p>
<p>Here's another Big Idea that gets at the action component:</p> <p>As a community, we can increase the helpful species in the habitat around our school.</p>	<p>Students assess and map out ways to increase native plants and bird habitat. (Then, students follow with the project in the next square.)</p>	<p>- Increase native plantings to support wildlife on school grounds. Construct feeders/birdhouses/gardens and add to school grounds.</p> <p>These activities are good projects to help advance sustainability at school and are meaningful ways for students to apply their learning.</p> <p>Think backwards from here: How can we help students understand WHY birdhouses and native plants are beneficial? This should come before; students should build a knowledge base about the importance of native plants, birds, habitats, etc. so that they understand the rationale for the projects. See if you can articulate some of this in the rows above.</p>

Next, you could focus on the Ecological Footprint because by now, students have begun to understand interactions and impacts between humans and the environment. A specific focus on the EF will deepen this knowledge.

Outcomes (big ideas): Students will understand that	Indicators: We know students understand when they can as demonstrated through these activities/products
<p><i>People depend on materials from the environment to meet their needs.</i> This 'Big Idea' extends the concept of 'interdependence' and asks students to think in more specific terms.</p>	<p>-Name five natural resources and ways students (and other species) depend on them.</p>	<p>Students can create concept maps showing where their food, water, energy come from, and the many types of resources needed for these needs. (They will need some structure or text to work with.)</p> <p>A good example would be to compare a local potato with a French fry. Through discussion, concept mapping and simple reading*, students can begin to understand that the French fry takes more energy, ingredients, and transportation than the local potato. This will set them up for the EF quiz.</p> <p>*I have some readings on this, but they'd have to be adapted. Let me know if you'd like me to send them to you.</p>
<p><i>The way we meet our needs has impacts on the environment.</i> This builds on the earlier concept of 'impacts', and is really at the heart of the EF quiz.</p>	<p>-Explain what is meant by "ecological footprint." -Explain what makes for an EF-friendly choice in the Bobby Bigfoot quiz. (Why oatmeal instead of a fast food meal? etc.) Other examples: Compare and contrast the resources needed to produce two familiar food items. OR Compare and contrast the energy needed for different forms of transportation (bike, car, bus)</p>	<p>-Measure their ecological footprint using Kidsfootprint.org. - Write responses and explanations of the different choices. -Reflect on the impacts of choices they made that day, and how they could have been different.</p>
<p><i>Sustainability means living within the capacity of the earth to provide resources. (basic definition)</i> <i>We can help advance sustainability with our daily choices. We can also work together to influence what happens in the school or larger community.</i></p>	<p>-State what the term "sustainability" means. -List ways to use natural resources constructively and responsibly, both individually and as a community</p>	<p>-Using this information and information presented students will list steps to lessen their footprint. Enter NYS "I'm a Green Nation" contest (creating poems, video, etc) about the importance of recycling Yes. These are all activities that allow students to apply what they have learned about the EF.</p>