

SECTION
II

Strategies for Education for Sustainability

Education for Sustainability is not a new program, theory, or pedagogy. Rather it is a perspective that we as teachers can use to design learning opportunities. This perspective recognizes that every student must be prepared to shape a better world—one with stronger communities, more efficient use of our natural resources, and a higher quality of life for all. In our complex and fast-changing world, we cannot know exactly what the future will require, but we are becoming aware of the interconnectedness of our world—both locally and globally. We know that all citizens should have (and teach) respect for the value and limits of our natural, economic, and human resources. We must also practice and teach the social skills of our communities, so we are better able to work together to meet the needs of all the planets' members.

EFS is an opportunity to build on successful teaching strategies, an understanding of the importance of community connections for students, and a growing awareness that as citizens, we need to think about the world in an integrated way. Learning from models in the natural world is central to this approach. According to David Orr, sustainability depends upon replicating the structure and function of natural ecosystems.

“Ecological sustainability”... recognizes humankind as part of nature, that there are limits to growth and carrying capacity and that nature should be regarded as a model for the design of housing, cities, neighborhoods, technologies and regional economies.

— DAVID ORR, ECOLOGICAL LITERACY, 1992





Students are the future and as such have an inherent interest in being involved in the decision making, planning, and sustainability of their communities. The pedagogical foundation of EFS is built upon interdisciplinary curriculum, hands-on activities, and both place-based and service learning. These educational methods alone have merit whether the focus is social studies, math, or art; but there's a synergy when these approaches are combined. Where disciplines once were taught in discrete units or blocks, they can now be interwoven through the theme of sustainability and community. Educators who facilitate these meaningful and relevant educational opportunities for their students are likely to see an increase in student attention and learning.

Promising Practices for Education for Sustainability

Through our work with educators, programs, and schools, ten promising practices have emerged as the most effective strategies in making Education for Sustainability a meaningful part of curriculum and programs.

PROMISING PRACTICE 1

Sustainability is a lens.

Sustainability is a lens through which educators, administrators, and students examine real-world questions on any topic, in any discipline. This lens looks for the connections between environmental integrity, social equity, and economic prosperity. By framing essential questions around the Big Ideas of Sustainability and connecting students to community, we can help them better understand the real interdependence and interconnections of our world. Sustainability can tie together an entire unit or program, a school year, or the K–12 experience into a cohesive curriculum. It provides a larger reason to be doing service-learning.



EXAMPLE: A 4/5th grade team of teachers develop a Land and Community unit integrating language arts, science and social studies. The teachers adapt two district science kits on soils and geology, and set the context for the exploration in a local community gardening center. In language arts student read fictional narratives about community gardening, as well as informational texts about the local gardening center from a series in the local newspaper. The unit comes together in a student-directed service-learning project that addresses food justice in their community.

PROMISING PRACTICE 2

Students gain an understanding of the Big Ideas of Sustainability.

From this integrative perspective, we also can recognize and build on the specific concepts and skills of sustainability. These include what are often referred to as the Big Ideas of Sustainability (see p. 3), as well as academic standards important to many schools' curricula. As they learn to apply the *Big Ideas* on a local level, through a hands-on curriculum, students become able to solve the complex problems of the future.




EXAMPLE: Students develop their understanding of diversity by studying a local waterway and a neighborhood. They find comparisons between the two "communities" and understand the need for diversity in both human and natural communities for survival.

PROMISING PRACTICE 3

Students actively think about creating a sustainable future.

The concept of sustainability is inherently forward thinking. It leads all of us—and especially young people—to not just understand issues, but to inquire about and act towards creating a healthy future for all. Many communities working on sustainable development include a public priority-setting component to these efforts, in an attempt to move away from top-down decision-making. It's important to

include all voices in this process, including students. Incorporating visioning into our curriculum can help students develop problem-solving, communication, and critical thinking skills, especially when the future-thinking is about real communities and issues, not just simulations or futuristic creations.


 *EXAMPLE: Students create drawings and models of ideal neighborhoods, look for the gaps between the current status and future vision, and then present recommendations to city council for neighborhood improvements.*

PROMISING PRACTICE

4

Past, present and future contexts and impacts are connected.

Frequently students see the past as just that—something that happened before their lifetime, with no significance or relevance to the present or the future. However, understanding the past provides clues to how we arrived at our current situation. It also suggests how we may maintain or alter our actions, decision-making processes, beliefs, and theories to create our vision for the future.

 *EXAMPLE: Students and families learn from community members about their city's history and how the messages in these events or stories relate to current issues impacting their neighborhood's quality of life.*

PROMISING PRACTICE

5

Students consider impacts of personal and community decisions.

As students build an understanding of the Big Ideas of Sustainability, they begin to consider their role in affecting change and making decisions for the community's, the planet's, and their own personal quality of life. A unit or program that includes this promising practice will not only outline information about an issue, but also offer students the chance to be part of assessing and deciding on a response to the issue.



EXAMPLE: Students do a "waste audit" of their school or community, studying how individual and collective actions can either help or hinder the local ecosystem.

PROMISING PRACTICE

6

Local and global perspectives, contexts, and needs are considered.

Investigating the local community from all angles is a fundamental element of Education for Sustainability. It is crucial that students be connected with their local natural and human communities to develop their understanding of cycles, diversity, and relationships. This prepares them to understand the interdependence of systems, and to take an active role in service. As their worldview expands, students use global issues for comparison and communication, but their local community remains the context for learning that is most accessible and immediate.



EXAMPLE: Teachers design a year-long theme focusing on cycles to build students' understanding of agricultural and natural systems and culture. Through video conferencing, students work with educators to learn about agricultural practices in Central America, and design collaborative project with students in Ecuador. Literacy connections are incorporated through related readings from local folktales, historical pieces, and storytelling. Science and math skills are applied in studying the local habitat.

PROMISING PRACTICE


7

Academic learning is connected to a real issue or situation.

When students apply their learning to issues that are relevant and meaningful to their daily lives, education comes to life. It is no longer confined to a textbook or school walls. Action in response to an issue can take many forms. It can be physical or kinesthetic (habitat study, river bank clean up, historic preservation work, etc.); or it can be analytical (creating a public




service announcement for a local fundraiser, writing letters to governmental representatives, or meeting with local officials). Through EFS, students have the opportunity to actually address issues with the goal of creating more vibrant, just, safe and healthy communities.

 *EXAMPLE: Students host a Community Forum at City Hall where they invite local and state government representatives to respond to questions they have developed. The questions, generated by the students, are related to their study of community health and well-being. The students take the role of event conveners and organizers, interviewers, reporters, and videographers during the forum. In the weeks that follow the students work to share the results of the forum with the local community through a newspaper article, a blog with photos, and a YouTube video. Students facilitate community response and dialogue through the blog and video posting.*

PROMISING PRACTICE 8

Students practice inquiry and an open-ended questioning process.


Inquiry-based learning involves more than merely asking simplistic questions. It requires the learner or learning community to apply critical thinking skills, find and process information, and utilize that knowledge in actual situations. This process can help to build a foundation for life-long learning.

 *EXAMPLE: An elementary grade unit uses sustainability to meet three different goals: local requirements to teach topics in Earth Science; state requirements to create standards-based units; and an educator's interests in encouraging students to think and care more about their school community. Students apply these goals to their overarching question of, "How can we care for, protect, and improve our community?"*

PROMISING PRACTICE 9

Students participate in problem solving, community building, and service-learning.


Helping students see the real-world connections between their education and their community enriches their learning in several ways. It increases students' awareness of how their community contributes to social, economic, and environmental sustainability through its decisions and practices. It also creates meaningful opportunities for students to contribute to their community. Through service-learning, students develop as active citizens, learn problem-solving skills, and experience a sense of social responsibility and personal efficacy by engaging in thoughtful action to help their communities.

 *EXAMPLE: Students realize that many buildings in their community are still not handicapped accessible. They research the issue, develop a plan to install ramps, propose it to local government who then pass a resolution to build it. Students participate in crafting a PR plan that included fundraising to offset costs.*

PROMISING PRACTICE 10

A program or curriculum demonstrates interdependence of economic, environmental, and social systems.

When an educational curriculum or program demonstrates the interdependence of the economy, environment, and society, it is reaching into the depths of sustainability. Using an integrated, interdisciplinary curriculum to show how individual systems are interwoven helps students study, experience, and understand the connections between all of the elements of their own lives. This in turn encourages them to expand that knowledge to the workings of their community, helping them become thoughtful and engaged citizens in the process.

 **EXAMPLE:** *Students are involved in helping their school use the lens of sustainability for all of its operations, curriculum, and decision-making. The institution actively uses sustainability thinking, integrating it into everything, from parent engagement to wages for food service employees to choosing cleaning products and classroom materials.*

Place, Experience, and Civic Engagement

Education for Sustainability brings together knowledge of place with the skills and strategies of experiential education to focus on improving our communities and our future. Service-learning combines the principles of experiential learning with service to the community to support students' personal, academic, and social development. Civic engagement is the keystone of all EFS work, helping young people become aware, motivated, capable, and active contributors to improving their communities. Sustainability is the overarching goal, embedded in the context of place, and the strategy of service-learning offers a framework for learning and action. With sustainability integrated in their curriculum and paired with the strategy of service-learning, students learn and apply their understanding in ways that build a sense that they themselves can make a difference. Thus, we help our students learn to be citizens in the here and now, as they work to build a community that is sustainable economically, environmentally, and socially.

Understanding connections

Students first need to understand that the world is built of connections. By seeing all the interconnections within their community, students better understand the complexity of the human and natural systems around them, and their learning gains meaning and depth. For example, when fifth graders or high school and college students learn about where their food comes from—the economic, social, and ecolog-

ical forces at play in their own communities—they can better consider multiple variables when deciding what food to eat. Connections are the foundation of the systems thinking that our young citizens and our communities need.

“Before you eat breakfast this morning, you’ve depended on more than half the world. This is the way our universe is structured. . . We aren’t going to have peace on earth until we recognize this basic fact of the interrelated structure of all reality.”

— DR. MARTIN LUTHER KING, JR.

Connecting to place

Side by side with the EFS goal of understanding interconnectedness is the goal of understanding place, the natural and human systems that make up our local communities, whether urban or rural. Place-based learning is therefore a crucial pedagogy to use with the practice of EFS. Both place-based learning and EFS begin with the goal of understanding one’s own place so that we can better understand the world. Beginning in the elementary grades, we need to cultivate student awareness and understanding of our natural and human communities. From that understanding or “sense of place,” they can begin to comprehend the complex interactions of local (and later





global) environmental, economic, and social needs, and learn to address them in ways that last into the future.

Research on place-based education, whether environmental or civic in focus, shows that students most effectively gain a positive affinity with their local place when they take an active role in its stewardship, when they have the opportunity to act on their own initiative, and when given opportunities to express their learning to an outside audience.

When we bring our students into the context of their community, we find that motivation soars and opportunities abound for meaningful projects where students can develop and apply their academic skills. At the same time, students become literate in their local place. They gain names and stories for the world around them: the source of their water and food; the long-ago business owner who built the big brick building on the corner; the name of the bird that sounds their wake-up call. With such knowledge, they have more reason to care for this world of theirs and an interest in becoming its stewards. Students can also then apply and transfer the skills and knowledge they have gained toward interpreting their own place to new communities. Grounded in their own local places they become much more agile in making the cognitive leap to an understanding of other places around their country and the globe.

Developmentally appropriate curriculum

When developing ways to engage students in sustainability it is also important to think about the developmental appropriateness of the curricula. Author David Sobel, for example, claims that introducing mathematical abstractions to young students too early is *“one of the major causes of math phobia among children in the primary grades. Unable to connect the signs and symbols on the paper with the real world, many children were turning off to math.”*

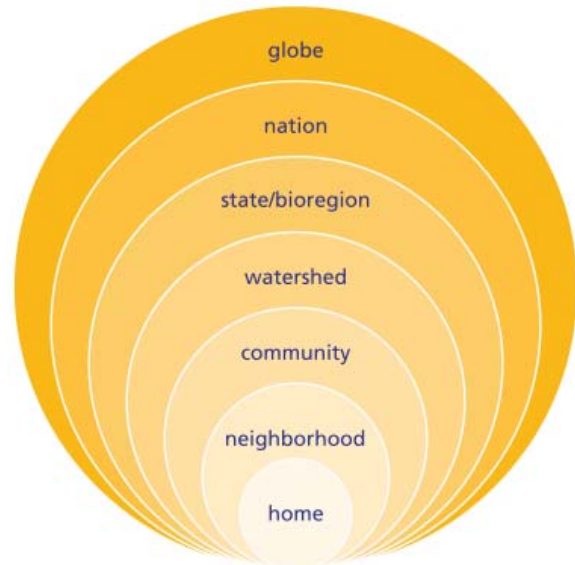


FIG.1. Defining Place: Home to Globe

Sustainability has a similar potential to be too abstract for students (and adults). *“If we prematurely ask children to deal with problems beyond their understanding and control, then... we cut them off from the possible sources of their strength.”* (Sobel) To prevent this from happening and to keep students engaged, empowered, and excited to learn, we can develop age-appropriate units that are anchored in a real-world, local context. For instance, leave destruction of the rainforest and toxic waste issues until the middle grades or higher. This will prevent what David Sobel refers to as ecophobia—fear and hopelessness in the face of natural disasters. Sobel basically suggests that there “be no tragedies before grade three.”


In addition to age- and developmentally-appropriate topics, it is also important to consider the definition of place as it relates to specific developmental stages. Figure 1 above defines the development of place concept in the curriculum. Figure 2 on the following page shows the scope and sequence of the Big Ideas across the K-12 spectrum.

Making a difference

Knowledge and connection to place do not necessarily foster an engaged citizen. Students need to feel confident in their ability and have actual opportunities to make a difference with this knowledge. They need to experience their own effectiveness (often called self-efficacy). We also must not let students get lost in the complexity of the world and its mounting issues, nor become simply rooted in compassion for it. They must experience some measure of control or power within themselves to effect the changes they now understand are needed. Service-learning, particularly when there is a strong commitment to student voice, provides specific opportunities for students to begin to exercise their power to create positive change.

How do we instill students with a sense of themselves as empowered citizens? As educators, we need to provide successful service-learning experiences to show students that they can actually make a difference in their school community, neighborhood, or town. A distant culture or ecosystem cannot fully supply such a context. Students need immediate context-

tual opportunities for decision-making—to inquire about their communities’ needs and to shape their contributions. Students also need the opportunity to reflect on their experience and to construct its meaning. Inquiry and reflection are crucial companions to helping students develop awareness of themselves as agents in the web of their communities.

 **EXAMPLE:** *Children decide that food donations should be the entry price for a school event, demonstrating interest in their community and awareness of others’ needs. Children ask the food shelf what food is most needed: Now they are considering the community’s system of providing food to people in need—its institutions and potential gaps. Children visit the food shelf and the farm that supplies surplus fresh produce. They then decide to make a cookbook featuring the fresh produce the food shelf supplies since they have learned that many clients are unfamiliar with cooking fresh produce. Now the children are inserting themselves into that food donation system and making it work better!*

**FIG. 2. Education for Sustainability K-12
Scope and Sequence of Big Ideas**

	Pre K- Kindergarten	1 st /2 nd Grades	3 rd /4 th Grades	5 th /6 th Grades	7 th /8 th Grades	9 th /10 th Grades	11 th /12 th Grades
Long-term Effects							
Limits							
Equity							
Interdependence							
Change							
Systems							
Diversity							
Cycles							
Community							
Self-Efficacy & Responsibility							
Sense of Place							




Engaging students in the sustainability of their community

“If education is responsible for helping students become aware of their options, then it should encourage them to become active and deliberate citizens.”

— STRAPP, WALSH, STANKORB, 1996

To successfully contribute to the sustainability of local communities—and eventually the planet—youth civic engagement depends on three essential tenets.

1. Students understand that the world is interconnected;
2. Students know the natural and human communities in their community;
3. Students believe in and exercise their ability to make a difference.

 **EXAMPLE:** *Students roam their local riverbank picking up garbage: It’s a great one-day community service activity that removes trash and reminds everyone of the river flowing through the heart of the town. Students also study the array of natural and human forces that have shaped the river—past and present, so they can put their experience in the complete context of the community. They can see the connections between their service project and the work of local farmers to stabilize their riverbanks. Maybe they have had the opportunity*



in class to learn about non-point source pollution, historical trade routes, or riparian tree nurseries. Perhaps they will become aware of the presence of low-cost housing in the floodplain, the paddle club’s frustration with losing access near the high school, the local fishermen’s requests for stocking fish, and other students’ service efforts to remove invasive species. Finally, they get a chance to reflect thoughtfully about their experiences and studies.

“Most students have a very short future view, ranging from days to weeks. Sustainability requires that we take a long view, often many generations into the future. So the challenge is to create learning opportunities for students to 1) look into the future and 2) understand the systems that affect the future through the use of system tools to plan for the future. Students should thus be empowered to affect the future both for themselves and for their communities. This future view needs to be seen through the lens of the environment, the economy and an equitable society.”

— WHEELER & BIJUR, 2000

Empowering students to become informed and active citizens is at the heart of the EFS work. Rather than feeding students information and projects to do, EFS is about students asking questions, developing research projects, finding answers, and sharing with others: the locus of control is with the students. In his book *Children’s Participation: From Tokenism to Citizenship*, Roger Hart shows a “ladder of participation” that outlines eight levels of participation (see Figure 3 on facing page). The steps move from “Manipulation” (least level of participation) to “Initiated by children, decisions shared with adults” (highest level of participation). The theory is that the more involved students are in their education, the more they learn, retain, and are inspired to act.

What are some ways to involve students in the sustainability of their community?

Gathering your colleagues and brainstorming answers to this question is a good way to start developing Education for Sustainability in your school or community. Below is an abbreviated list of what some teachers are doing.

Community Knowledge: Understanding and Assessing the Community

- Develop maps of the town
- Work with elders to gather oral history of the community
- Survey community to find out their issues/problems/solutions

Food, Fiber, and Nutrition

- Visit local farms, cultivate appreciation for local agriculture
- List essentials of life/living (needs), activities around those essentials
- Support development of a farmer's market

Ecological Awareness and Stewardship

- Measure air/water quality in the community
- Keep a nature journal
- Research school practices: energy and water use, cleaning supplies, food purchasing, etc.

Community Building

- Student government discusses issues for school to focus on for the year
- Build an informational kiosk
- Sponsor community functions

FIG. 3. Ladder of Young People's Participation

adapted from Hart, 1997, CHILDREN'S PARTICIPATION: THE THEORY AND PRACTICE OF INVOLVING YOUNG CITIZENS IN COMMUNITY DEVELOPMENT AND ENVIRONMENTAL CARE.



Civic Engagement: Decision Making and Governance

- Student forums on local issues and decision making
- Kids at town meeting: listening and/or presenting children's issues, videotaping meetings

The Benefits of Taking A School-Wide Approach

Experience and research both indicate that individual teachers can find more support, more excitement, and deeper, longer-lasting results when they work with their colleagues on curriculum innovation and school improvement. Often, school-wide efforts grow from the learning, experimentation, and innovation of a single teacher or team. When an effort becomes a more widely shared endeavor, teachers gain sup-



port from colleagues with discrete skills and expertise, and strengthen their professional community. While service-learning can certainly encompass an entire school through shared activities, fostering professional conversations, and collective learning, EFS can provide a larger and more compelling “umbrella” under which to work toward creating a contributing community of learners. Practitioners speak passionately to us about their sense of the importance of sharing the learning and successes that result from EFS and service-learning work. When adult educators work side by side with a shared passion, they also offer important positive role modeling for students.

A number of approaches to professional development consciously support school-wide participation. Study circles and transformational learning protocols, where teachers and administrators collaboratively explore aspects of their work, can help foster a professional learning community. Teachers who design their own on-site in-services and trainings can yield similar benefits. These teachers also develop a stronger sense of self-efficacy—an awareness of their own ability to make a difference. Models of teacher leadership and collaboration, including initially using a consulting teacher or coach throughout a school, help to build the unity, infrastructure, and attitude needed to sustain a long-term EFS effort. The shared learning and collegial critique that participants experience through such work together provide a powerful way to change the nature of learning itself. The strategies can also generate a common vocabulary and approach to EFS and service-learning, along with the shared purpose inherent to the effort.

How do I get others at my school or program interested in EFS?

Share your enthusiasm with colleagues by explaining the reasons why you’re interested in EFS. Service-learning often presents an excellent entry point, since overall awareness and support for service-learning

has been growing dramatically. Find out what your fellow educators are interested in. They may be interested in similar issues or concepts but be unaware that these ideas fall under the umbrella of Education for Sustainability. You could also hold a meeting with colleagues to identify how you are already practicing EFS and service-learning and together find ways to enrich and extend what you are doing.

How can I explain EFS to parents, my school board, and community members?

Sustainability is a concept that has immediate relevance both to students’ own lives and to their families and community. At its best, EFS involves students, families, and community in learning as a direct experience of what working towards sustainability means. Education for Sustainability is a way of approaching teaching and learning that helps students make sense of the many different concepts and skills that they must learn and master in school. But equally important, it helps them make sense of the world in which they live. Rather than asking, “Why do I have to learn this?” students can actually see meaning in the content and skills because they are engaged in real local issues that they and their community care about. In their eyes they are learning for a purpose. With the support of their teacher, they are able to gain and practice knowledge while experiencing what it means to be an active citizen. Likewise, with student work and accomplishments taking place in public view, community members are able to see learning and student achievement firsthand. What takes place in a school or program becomes part of the community itself as students’ studies and projects impact quality of life in neighborhoods and contribute to the collective understanding of social, environmental, and economic issues.

The 4-C's Model of Education for Sustainability

Schools as models of sustainable systems

For most students, school is the community with which they have the most contact and the strongest attachment. Therefore, EFS often starts with modeling, analyzing, and improving the school community. Campus ecology and culture, collaboration, and partnerships with the surrounding community might be considered the implicit curriculum. (See Figure 4.)

Students, teachers, administrators, parents, and local resource experts can work together to consider a school's ecological, social, and economic systems. We can apply to this mini-community many of the same measures of sustainability that have been (and are being), developed for municipalities, businesses, higher education institutions, and governments. Some of these measures include social well-being, genuine progress indicators (i.e. gross national happiness), true-cost accounting, and livable wage campaigns. Educators can use these measures for inquiry into a school's impact on various systems and to initiate improvement projects. In essence, the school is turned into a laboratory for sustainability. Experiential learning opportunities are created within the school building and grounds, where teachers and students can learn together. Whether seeking information or advice or demonstrating learning and improvements, educators can inspire the local community to engage with the school and to learn from its experience. Students often end up changing their community as well as their school.


 **EXAMPLE:** *Students conducted an investigation of their playground and discovered that the playground was unsafe with overall deterioration of the equipment and landscaping. They also noted that the play structures only targeted upper body physical fitness. The students researched play structures that promote*

FIG. 4. The 4 C's of EFS in Schools



CURRICULUM CONNECTIONS: Curriculum can be framed using the lens of sustainability to integrate curricular topics/themes, to teach skills and content, and to help students make connections.

COMMUNITY PARTNERSHIPS: On-going community partnerships are vital to connecting the curriculum to relevant, real-world issues. Our research shows that the development of community partnerships has staying power and carries on past the initial efforts to integrate sustainability into a school.

CAMPUS ECOLOGY & CULTURE: Sustainability must be modeled as well as taught. It could be integrated in everything from student-leadership and school-wide decision-making, to school lunch programs, to waste management, to cleaning products, and to purchasing policies.

COLLABORATION: To achieve sustainability, collaboration is an essential skill and process. Planning and learning must take place across all grade-levels, content areas, as well as with the larger community (families, businesses, government, non-profits) in order to create sustainable communities.



whole body fitness and shared these findings as well as the data about the unsafe conditions with the principal. Though the school was unable to replace the play structures at the time, they immediately addressed the safety hazards presented by the students.

We have developed the 4 C's model as a framework for the school-wide integration of EFS. In every community, there are opportunities for the school, its campus or schoolyard, and the surrounding neighborhoods to be rich components of the learning. They can help students see the connections between their everyday experiences, the world around them, and the curriculum.

Schools often begin by using the lens of sustainability to enhance either their curriculum or their campus practice. While it is possible to address each of the 4 C's as stand-alone components, it is more fruitful to integrate the four.