7

Action Projects

A Content Primer

Why Action Projects?

In previous chapters we presented fundamental science content embedded within environmental science and showcased numerous activities you can use to engage students in outdoor learning. Although each chapter represents this content individually, as separate pieces of a puzzle, we want teachers and students to learn these concepts in an integrated manner by using outdoor action projects to increase understanding. While *knowing* content of the science disciplines is important, effective environmentally based curricula must go beyond this aspect and have an impact on students' way of *thinking* as well as their *behavior*. Most environmental educators agree that a sound environmental program should achieve three goals:

1. increase student science content knowledge,
2. effect a positive change of student attitude toward the environment, and
3. effect a positive change of student behavior in regard to the environment.

7 Action Projects

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Simply put, an increase in the content knowledge of environmental science leads to a better understanding of an environmental issue. This understanding leads to a change in attitude, which then brings about a positive change in behavior. Although changes in attitude and behavior are more difficult to measure and also more difficult to achieve than increased understanding, our intent is to create young citizens who are well informed on the environmental issues affecting their communities and willing to take action to address these issues.

In this chapter we offer suggestions on how to plan action projects with your students that address environmental issues of importance, whether in your school grounds or in your community. We offer suggestions of how to begin this process, where to seek partnerships and funding, and how to garner support from faculty, administrators, and parents. Finally, we showcase actual student projects, including a storm drain rain garden, a native plant garden, habitat restoration, and a schoolwide focus on saving the local watershed.

How to Choose an Action Project

The best action projects are ones that serve to address a local environmental issue in the schoolyard or in the community and can be easily integrated into the existing science curriculum. Without a preexisting topic to study, the simplest way to begin is to complete the Schoolyard Report Card from Chapter 2. Using this assessment, students collect data pertaining to the schoolyard and then determine where improvements can be made. For example, if erosion seems to be a concern, students may elect to construct a rain garden or native plant garden that will absorb runoff after rainstorms. If there is a lack of habitat or food supply for animals, students may choose to plant native species that will provide fruit, nuts, or other food sources. A lack of habitat can also be addressed by adding such structures as bat boxes, bluebird nest boxes, toad houses, and rock gardens. With these myriad of possibilities the important point to remember is to have students use an assessment to determine need. The schoolyard assessment also serves the dual function of providing students with the ability to analyze data and play a role in choosing the project.

Integrating Action Projects Into Subject Area Content

We have found that the most common reason teachers give for choosing not to involve students in environmental action projects is that there is neither time nor resources to fit anything extra into an already overfilled curriculum, and many teachers tend to see these projects as an "add-on." However, if the environmental concepts to be taught and the projects chosen are closely aligned with state and national curricular standards, then teachers need to only teach the curriculum using an environmental approach rather than teaching the curriculum inside the classroom, in a traditional setting. These environmental concepts also have value for integration into other disciplines, thus there are a variety of ways to engage students in these types of experiences.

For example, let's assume that Mrs. Jones, a fourth-grade teacher, has a unit in her science curriculum that covers the concept of life cycles. For the past five years, she has taught the unit using butterfly larvae purchased from a biological supply company. The larvae are housed in the classroom until they hatch. The children observe them daily and record their observations in their science journals. This year, Mrs. Jones decides to have her students plan a butterfly garden plot on the school grounds. The students research the types of plants needed to

attract both adult and larval stages of the butterflies, determine how many plants will fit into the designated space, write letters to local community nurseries asking for donations, and finally procure the plants and create their garden. The plants are on the school grounds for many years to come, and each year Mrs. Jones takes her students outside to the butterfly garden to observe the various life stages they have learned about in class.

Science is not the only subject that can be integrated into an environmental action project. Listed below are some ways we have seen classroom teachers integrate various subject areas in their own projects.

- *Mathematics:* measuring the area of a garden plot, calculating the total cost of a project for grant applications, determining how many plants will fit into a single plot, measuring water temperature of a stream, measuring wood to cut in order to construct nest boxes
- *Language arts:* writing to persuade the school principal to allow an action project to be completed, writing to persuade a grantor to fund the project, writing to inform others why the project is important, visiting a completed action project site to write poetry or record observations, writing articles or letters to the editor to raise public awareness
- *Social studies:* incorporating politics and government into projects on environmental policy and local laws, writing to government officials regarding environmental issues in the community, studying the human impact on the environment and the history of land use near the school or in the community, creating a timeline of events
- *Art:* making habitat posters, public service brochures highlighting local environmental issues, fish print T-shirts, and handmade notepaper featuring local wildlife drawings

Garnering Support

School-Based Support

A successful environmental action project needs support from the school administration, faculty and staff, and parents. Before you start planning the project, make sure you have the necessary backing from relevant personnel at your school. Start with your administrator. Make sure he or she is aware of what you are planning, how it enhances learning experiences for your students, and how your plans are aligned with the curriculum. You will also want to obtain the support of your school grounds crew or custodial staff. We have unfortunately witnessed many "mow-overs" after projects were completed—incidents where the students created garden plots that were destroyed the next time the school grounds were mowed because the groundskeepers were not aware of the plantings. The groundskeepers may also assist with the care of the plants (such as watering needs) if they are made aware of what you and your class are planning.

Environmental action projects almost always come with a cost. The classroom teacher may be left wondering how to fund these projects. Here is a list of suggestions for funding, drawn from our experiences:

- Check with your school PTO/PTA. They may be willing to donate funds or assist with a fundraiser.
- Investigate parents as a resource. Do any of them own a landscaping business, nursery, or mulch business? Can any of them donate or lend lumber or tools? One school we worked with was able to obtain an entire

truckload of mulch for free. Another was able to use gardening tools without having to purchase them. Still another obtained lumber for a nature trail free of cost. All of these items were obtained from parents.

Community-Based Support

Local

While having the support of the school members is essential to the success of your project, you will enhance the likelihood of success by partnering with community organizations as well. We have found that many organizations will contribute to your project if it fits into their mission and goals. Local colleges and universities may also be willing to offer expertise in the science content and may have resources for funding. (As university faculty, we have assisted many schools in completing action projects.) Cooperative extension agencies (often affiliated with colleges and universities) may also be able to assist you with technical issues related to your project site, such as determining soil type and even soil testing.

If asked, local businesses will often donate or discount materials needed to complete the project. For example, we were once given 1,000 pounds of rock for a school rock garden from the local rock quarry. In addition, a cooperating teacher contacted a local nursery and, upon informing the clerk that she was purchasing for a school, was given the wholesale price instead of retail.

Regional/National

There are many national environmental education programs that can serve as a resource for field-based learning. For example, Project Learning Tree (PLT), which is sponsored by the American Forest Foundation, includes action components in many of the activities published in the preK–8 curriculum guide, as well as the secondary modules designed for grades 9–12. PLT also sponsors *GreenWorks!*, a service learning/community action program that partners PLT educators, students, and community in environmental neighborhood improvement projects. *GreenWorks!* blends service activities with the academic curriculum and addresses real community needs as students learn through active engagement. Some examples of past grant projects include habitat restoration, watershed improvement, outdoor classrooms, and energy conservation.

Several states across the country have implemented Green Schools programs, programs that recognize schools that commit to environmentally friendly practices, both in the curricula and in the completion of field-based action projects. One of the oldest and most successful is the state of Maryland's Green Schools program, which began in 1998 and, to date, has certified almost 300 schools across the state. The goal of all these programs is to get students involved in making changes in their school environments and local communities that result in greater environmental awareness and healthier environments for all.

Another option to consider is writing a grant. Many agencies that award funds for action projects have grant applications that are very teacher and student friendly and actually require student involvement in the grant-writing process (*GreenWorks!* and the Chesapeake Bay Trust, to name just two).

Process and Completion of the Project

Once you decide on a project, the next step is implementation. On the day of your culminating activity, make sure that you are well organized. Each student should have something to do, and there should be enough adults present

to properly supervise them. Ask for parent volunteers or, better yet, representatives from those agencies and businesses that donated funding or supplies for your project to help you supervise. Consider safety issues that may need addressing and review any precautions with your students and the adults who are supervising them. If the site of your action project is not on school grounds, you will need to arrange for transportation to and from the site. Some key reminders and tips from teachers who have gone through this process are included later in this chapter.

7 Action Projects

In this section we present examples of action projects completed at actual schools. First, we will describe a single classroom–based project that focused on runoff prevention by planting a native plant garden around a storm drain. Second, we will describe a schoolwide project involving the construction of a native plant garden. The third example is a schoolwide project involving multiple grade levels, a project best summarized as a wetlands restoration venture with students' removing invasive plants and replacing them with native ones. Finally, we will describe another project involving multiple grade levels, focused on saving the local watershed.

FIGURE 7.1
Storm Drain Rain Garden Before Planting

FIGURE 7.2
Storm Drain Rain Garden After Planting

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Single Classroom–Based Project: A Storm Drain Rain Garden

The lead teacher at this school was a participant in a grant project awarded from the National Oceanic and Atmospheric Administration (NOAA). Participants completed a weeklong summer workshop focusing on local watershed issues and how to address those issues with elementary-level children. Each participant was required to carry out an action project with their students. After investigating the school grounds and completing the Schoolyard Report Card, the students (grade 4) decided that their schoolyard was suffering from issues related to *lack of native plant species*, *runoff*, and *erosion*. The chosen action project was a rain garden filled with native plants. The purpose of the rain garden was to absorb rainwater before it ran off onto impervious surfaces on school grounds, thus alleviating problems resulting from erosion or pollutants that may be carried by the rainwater.

Rain gardens are a common choice for action projects; they can fit into almost any schoolyard and are often combined with a native plant garden. Potential locations for rain gardens are simple to identify. Any area near a storm drain, an area that has standing water after a storm, or even an area that remains wet longer than the surrounding landscape is a good choice for a rain garden (see Figures 7.1 and 7.2). In fact, rain gardens are such a common action project that an internet search reveals a number of websites that show teachers and students how to construct one (Table 7.1).

Schoolwide Single Project: A Native Plant Garden

Whether associated with a storm drain or as a stand-alone site, a native plant garden is an excellent project for students at all grade levels. Again, to determine a suitable site students can use the Schoolyard Report Card from Chapter 2. For example, students may choose an area of continuous standing water and plant wetland, or moisture-tolerant plants. Or, if the goal is habitat restoration, specifically to attract native insects,