Chapter 15
Using Environment-Based Education to Transform the School Campus

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ABSTRACT
A focus on building environmentally sustainable schools emerged in the 1990s; however, building green schools is cost prohibitive due to limited education construction budgets. One solution is to engage children in transforming existing schools while incorporating environment-based education. Environment-based education is a form of project-based learning that employs a student-centered approach to teaching integrated curriculum. Project-based learning has been shown to be beneficial in supporting the social, emotional, physical, and cognitive development of students. Benefits of project-based learning include building a sense of community within the classroom, encouraging parent involvement, increased motivation and engagement, and increased academic achievement. This chapter explores possibilities for transforming existing schools to be more environmentally friendly, considering the benefits of engaging students in authentic projects and providing examples of ways to get students of all ages involved in projects that can extend environmental awareness from the school to home and into the community.

INTRODUCTION
Earth Day, April 22, originated in the 1970s focusing attention on a healthy environment, air quality, and water pollution, “which culminated in the creation of the United States Environmental Protection Agency and the passage of the Clean Air, Clean Water, and Endangered Species Act” (Earth Day Network, 2014, Para 1). Educators have been involved in these efforts on some level, from affixing stickers to light switches as a reminder to “Turn off the lights” in the seventies to building schools with the idea of reducing harmful effects on the environment in the nineties. One problem with building green schools is the cost. Therefore, an endeavor to
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establish green schools cannot be limited to the construction of new schools. Education budgets infrequently allow for the replacement of buildings; consequently, efforts to make schools more environmentally sustainable should include the transformation of existing schools. In this chapter the authors will explore possibilities for transforming existing schools to be more environmentally friendly, consider the benefits of engaging students in authentic projects, and provide examples of ways to get students of all ages involved in projects that can extend environmental awareness from the school to home and into the community.

Involving children and teenagers in the process of transforming a school to an environmentally friendly place is an authentic way to simultaneously build environmental awareness and accomplish curricular goals. Environmental education is interspersed throughout the science curriculum in the Next Generation Science Standards, introduced in April 2013. Integrating authentic environmental projects into the curriculum can meet these standards and has the potential to have a long-lasting effect on children’s levels of environmental awareness. Students from kindergarten through high school are expected to learn about the world in which they live and to gather, describe, and apply information about their world (Next Generation Science Standards, 2013).

Environmental education is often relegated to a lower priority than other subjects in schools due to less emphasis on the subject in mandatory standardized testing. Teachers often feel pressured to spend a majority of the school day teaching reading and mathematics because accountability measures focus more intensely on these subjects. Many teachers, familiar with project-based learning, understand that engaging children in project work is an effective method of integrating the curriculum using topics from science and social studies to successfully teach students to read and do mathematics.

**PROJECT-BASED LEARNING**

The idea of project-based learning is not new nor is it limited to a particular topic. Environment-based education engages children in project work using environmental themes. Researchers have found that project work has many benefits in classrooms across all grade levels (Duvall & Zint, 2007; Geier, Blumenfeld, Marx, Krajcik, Soloway, E., & Clay-Chambers, 2008; Mitchell, Foulger, Wetzel, & Rathkey, 2009; National Research Council, 2000; Sloane, 2004). Students who engage in project work are able to approach learning from their interests. The authenticity of projects requires children to make decisions that have real consequences. Students may select a topic of interest for project work, or a project may be generated from a particular set of standards (Sloane, 2004). Pam Wetherington, a former fourth-grade teacher, recalls her project-based teaching, “At the beginning of my second year of teaching in 2009, the project ‘Disney’s Planet Challenge’ was presented to me. I knew if I could get [my students] excited about serving others, they would begin to develop the understandings of (1) recognizing that their communities would greatly benefit from their ideas and contributions, and (2) the importance and impact of making a difference in the lives of others.” Disney’s Planet Challenge (DPC) is a competition that combines project work with environmental education to motivate students to use their creativity to get involved in improving the Earth (Disney, 2009). Often, the guidelines provided by activities such as this can lead teachers to project work.

Project-based learning gives teachers the opportunity to engage in curriculum development based on the interests of their students. Teachers are most often familiar with curriculum that is pre-determined in the form of textbooks or units developed by others. Through project work, teachers are able to use student interests around a particular topic to develop a unique curriculum
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