Chapter 2
The Green Schooling of America: Emerging Research on Student Learning

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ABSTRACT

The potential of green schools to improve student learning shows real promise. The continued focus on green school buildings, coupled with attention to healthy diets and healthy living habits, can only help students perform at their best. This chapter details the emerging knowledge base connecting the green schools movement and student learning. The authors share the early indicators, promising potential, and limitations of research related to green schools, and the links to student learning, teacher grades, state assessments, and children’s overall health and well-being.

INTRODUCTION: OVERVIEW OF THE GREEN SCHOOLS MOVEMENT

Born in the United States of a unique marriage between those who prioritize educational budgetary limitations, environmental educators, architects, engineers and those who raise the specter of the many environmental hazards facing children, “green schools” have emerged as a major emphasis in school board policy and “boots on the ground” decisions by educators. The green schools movement is impacting both formal and informal learning environments that young people experience in school. By advancing new school construction, retrofitting current buildings, changing cleaning and maintenance practices, evolving lunchroom practices and modifying teacher-led curricular emphases, the green schools movement is saving money and showing initial impact in improving educational outcomes. This chapter details the emerging knowledge base connecting the green schools movement and student learning. As with the study of any change effort (and with almost all educational research), absolute results are not available. We will share the early indicators, promising potential and limitations of research.
related to green schools and the links to student learning, teacher grades, state assessments and children’s overall health and well-being.

GREEN SCHOOLS IN THE UNITED STATES

There is an adage that green saves green (meaning conservation saves money) and, in the long run, cost savings for new and retrofitted green buildings exceeded expenditures. Much of the savings was in the form of electricity use, as “green schools use an average of 33% less energy than conventionally designed schools” (Kats, 2006, p. 4). According to the Center for Green Schools (2013), “If all new U.S. school construction and renovation went green today, the total energy savings alone would be $20 billion over the next 10 years.” Cost and energy savings are powerful arguments for the implementation of green schools by cash-strapped school districts nationwide.

However, green schools also have the potential for profound impact on student health and learning. As the green schools movement grows, researchers have the opportunity to investigate benefits that go beyond cost savings and to the heart of the purpose of schools. This chapter focuses on multiple factors within green schools that may positively impact and improve student learning and academic achievement.

In the fall of 2013, about 50 million students were enrolled in approximately 99,000 public elementary and secondary schools in the United States. About 2,000 new U.S. school buildings are opened each year and about 1,600 old ones are closed (National Center for Education Statistics, 2012; 2013). In addition, renovations of current buildings were ongoing in all school districts. These new construction and retrofitting projects provided opportunities to create buildings and infrastructure that not only left a smaller footprint in resource and energy use, but also provided a new kind of learning lab in which a focus on the health and well-being of children and the adults who teach them facilitated learning.

From our literature review, there were broadly three kinds of green schools: 1) brand new buildings designed with the national Leadership in Energy and Environmental Design (LEED) standards for environmental soundness; 2) retrofitted, repaired or rebuilt buildings that integrated many green standard criteria; and 3) schools that remained structurally the same but whose leaders incorporated a green mindset and practices. For purposes of this chapter, we used the Green Schools Initiative (2013) definition for a green school: one in which the leaders sought to “integrate efforts to reduce schools’ ecological footprints, make school environments healthier, and get the whole community thinking about solutions to the problems we face.”

Under this definition, green schools adopted a list of common objectives, including:

- “Strive to be toxics free
- Use resources sustainably
- Create a green and healthy space
- Teach with a green mindset” (Green Schools Initiative, 2013)

RESEARCH ON IMPACT OF GREEN SCHOOLS ON STUDENT LEARNING

Research results indicated that both newly built and retrofitted green schools had higher student achievement than non-green schools. However, the affirmation of the causation did not necessarily mean that significant causation was determined.

STUDENT LEARNING

Most research on the impact of green schools on student learning was indirect. There was no substantive body of knowledge linking green schools as a whole school unit to higher test scores...