children & nature NETWORK

GREEN SCHOOLYARDS CAN IMPROVE ACADEMIC OUTCOMES

THE ISSUE

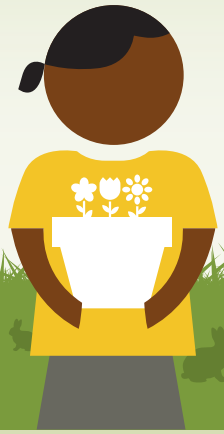
Only 1/3 of U.S. 8th graders perform at or above standards for science and math.[1]

SCHOOLS ACROSS THE NATION ARE SEEKING WAYS TO IMPROVE ACADEMIC OUTCOMES FOR ALL STUDENTS

Green schoolyards promote academic achievement through hands-on, experiential learning and by enhancing the cognitive and emotional processes important for learning.

ENHANCING LEARNING

Green schoolyards provide **experiential learning across many subjects.**[2,3]



33 of 40 school garden studies (83%) found

IMPROVED OUTCOMES in science, math & language arts.[2]

GREEN SCHOOLYARDS CAN

- Help students focus attention and regulate behavior[5,6]
- Enhance attitudes and engagement with school[7,8]
- Support creativity, critical thinking and problem solving[9]

ROOM WITH A VIEW

Seeing nature and greenery from school buildings can foster positive academic outcomes.[10,11]

HIGH SCHOOLERS WITH VIEWS OF TREES HAD:[12]

- **HIGHER** standardized test scores
- **HIGHER** graduation rates
- **HIGHER** % of students planning to attend a 4-yr college

SUPPORTING RESEARCH

[1] www.nationsreportcard.gov [2] Williams & Dixon (2013). Impact of garden-based learning on academic outcomes in schools: Synthesis of research between 1990 and 2010. *Rev Educ Res*, 83(2), 211–235. [3] Wells et al. (2015). The effects of school gardens on children's science knowledge: A randomized controlled trial of low-income elementary schools. *Int Journal Sci Educ*, 37(17), 2858–2878. [4] Berezowitz et al. (2015). School gardens enhance academic performance and dietary outcomes in children. *J School Health*, 85(8), 508-518. [5] Berto et al. (2015). How does psychological restoration work in children? An exploratory study. *J Child Adolesc Behav* 3(3). [6] Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1–13. [7] Maynard et al. (2013). Child-initiated learning, the outdoor environment and the 'underachieving child.' *Early Years*, 33(3), 212 - 225. [8] Rios & Brewer (2014). Outdoor education and science achievement. *Appl Environ Educ Commun*, 13(4), 234–240. [9] Kellert (2005). *Building for life: Designing and understanding the human-nature connection*. Washington, DC: Island Press. [10] Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. [11] Wu et al. (2014). Linking student performance in Massachusetts elementary schools with the "greenness" of school surroundings using remote sensing. *PLoS ONE 9(10): e108548: 1-9*. [12] Matsuoka (2010). Student performance and high school landscapes: Examining the links. *Landscape Urban Plan*, 97(4), 273–282.

ADDITIONAL RESEARCH USED FOR THIS INFOGRAPHIC AVAILABLE AT childrenandnature.org/gsybibliographies

C&NN recognizes that not all studies support causal statements.