

# 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.<sup>1</sup>

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.**<sup>2,3</sup>



33 of 40 school garden studies (83%) found

**IMPROVED OUTCOMES** in science, math & language arts.<sup>2</sup>

BETTER GRADES



HIGHER TEST SCORES



ENHANCED KNOWLEDGE



ACROSS SEVERAL SUBJECTS

2, 3, 4

**GREEN SCHOOLYARDS CAN** Help students focus attention and regulate behavior<sup>5,6</sup> Enhance attitudes and engagement with school<sup>7,8</sup> Support creativity, critical thinking and problem solving<sup>9</sup>



## ROOM WITH A VIEW

Seeing nature and greenery from school buildings can foster positive academic outcomes.<sup>10,11</sup>

HIGH SCHOOLERS WITH **VIEWS OF TREES** HAD:<sup>12</sup>



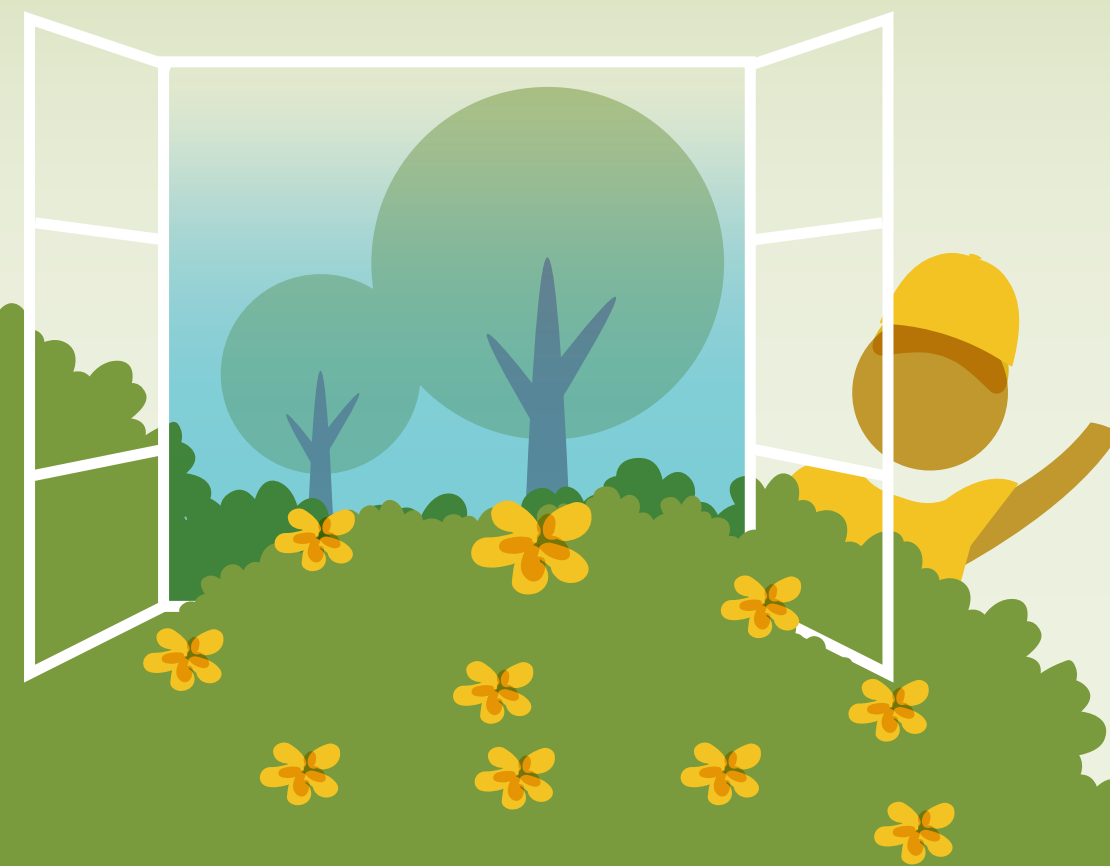
**HIGHER** standardized test scores



**HIGHER** graduation rates



**HIGHER** % of students planning to attend a 4-yr college



**SUPPORTING RESEARCH**

<sup>1</sup>www.nationsreportcard.gov <sup>2</sup>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. <sup>3</sup>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. <sup>4</sup>Berezowitz et al. (2015). School gardens enhance academic performance and dietary outcomes in children. *J School Health*, 85(8), 508-518. <sup>5</sup>Berto et al. (2015). How does psychological restoration work in children? An exploratory study. *J Child Adolesc Behav* 3(3). <sup>6</sup>Chawla et al. (2014). Green schoolyards as havens from stress and resources for resilience in childhood and adolescence. *Health Place*, 28, 1-13. <sup>7</sup>Maynard et al. (2013). Child-initiated learning, the outdoor environment and the 'underachieving child.' *Early Years*, 33(3), 212 - 225. <sup>8</sup>Rios & Brewer (2014). Outdoor education and science achievement. *Appl Environ Educ Commun*, 13(4), 234-240. <sup>9</sup>Kellert (2005). *Building for life: Designing and understanding the human-nature connection*. Washington, DC: Island Press. <sup>10</sup>Li & Sullivan (2016). Impact of views to school landscapes on recovery from stress and mental fatigue. *Landscape Urban Plan*, 148, 149-158. <sup>11</sup>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. <sup>12</sup>Matsuoka (2010). Student performance and high school landscapes: Examining the links. *Landscape Urban Plan*, 97(4), 273-282.