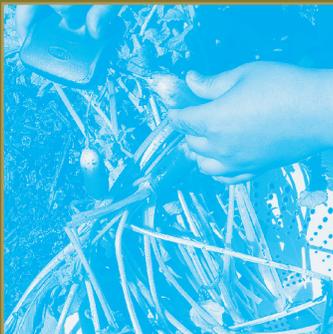
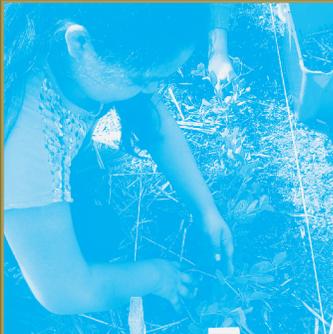


The Impact of **School Gardens** On K-12 Students





Background

As of 2015, United States K-12 students still ranked in the 50th percentile on math and science scores internationally.¹ Many school districts struggle with not only academic success but student behavior as well. Tacoma schools have incorporated social emotional learning into their action plans to nurture the whole child and build more sustainable school systems.² In addition to these issues, the past three decades there has been a decline in U.S. children's nutritional status. Obese children are more likely to be obese throughout their adult years. They are more likely to experience weight-related health complications at an earlier age.³ Research indicates that programs like school gardens offer solutions to these issues.

Academic Impact

Improved Science, Math, & Reading Scores and Outcomes

- In 16 school-based garden interventions, academic test scores improved or showed no change, regardless of the academic area assessed.³
- Students with school garden programs in their science curriculum scored significantly higher on science achievement tests than students who were taught by strictly traditional classroom methods.⁴
- In multiple studies measuring direct academic outcomes of garden-based learning, positive effects were found in 93% of the studies involving science outcomes, 80% of studies with mathematics, and 72% of studies in language arts.⁵

Social-Emotional Impacts

Supporting social-emotional growth

- Blair (2009) reviewed qualitative studies of elementary school gardening projects found the following themes:⁶
 - Students were delighted and motivated by the joys of gardening.
 - Students' attitudes about school improved as well as pride in their garden and its produce.
 - Parent involvement with the school increased.

- Community-building increased, including teamwork, student bonding, a broader range of student/adult interaction, and community outreach.
- Youth participating in a year-long garden program increased their overall life skills and improved teamwork skills and self-understanding.⁷

Nutrition Impact

Increased Fruit & Vegetable Preference

Groups with nutrition and gardening education had a greater increase in willingness to taste and taste rating scores of various vegetables increased when compared to students without nutrition and gardening education.^{3,8,9}

Increased Fruit & Vegetable Consumption

Students participating in nutrition education combined with gardening increased daily intake of fruits and vegetables from 1.9 to 4.5 servings and were more willing to choose vegetables in the school lunch.⁸ Groups that participated in gardening education were more likely to choose vegetables than other groups.^{3,9}

Increased Intake of Vitamin A, C, & Fiber

Students participating in nutrition education combined with garden experiences significantly increased their Vitamin A, Vitamin C, and fiber intake.⁸



Physical Activity Impacts

Increased Physical Activity¹⁰

- Children at schools with gardens report a reduction in usual sedentary behaviors.
- School gardens lead to increased moderate physical activity during the school day.
- Children move more and sit less during outdoor garden lessons versus indoor lessons.

Attitudes Towards Nature

Appreciation and Respect for Nature

- Participation in active gardening during childhood was the most important influence in explaining adult attitudes about the social and intrinsic value of trees as well as their likelihood of taking a garden class.¹¹
- Children participating in a school garden program had significantly higher environmental attitudes than children without a school garden program.¹²

Recommendations

Schools would benefit from:

- Creating or strengthening policy that supports gardens on school campuses
- Training teachers and staff to use gardens to support academics and social-emotional learning
- Adopting Farm-to-School educational activities to promote eating local food in schools
- Collaborating with community partners to build and sustain gardens
- Implementing gardening and garden-enhanced nutrition programs



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