The Impacts of **Farm to School Programming** on Students and Communities

WASHINGTON STATE UNIVERSITY

Background

Daily fresh fruit and vegetable intake is essential for the health and growth of children. The Healthy, Hunger-Free Kids Act was implemented in 2010. This act opened the door to educate and encourage students to eat the fruits and vegetables that are now required on their school lunch trays. It also provides funding for Farm-to-School (FTS) efforts across the nation. FTS programs promote and serve locally produced food in school cafeterias and provide viable markets for local producers. Many FTS programs work to increase fresh fruit and vegetable intake with impressive results. [1]

Public Health Impacts

FTS activities aim to provide children and their families equitable access to healthy, local food and food education. Such access and knowledge can empower children to maintain and improve their health and well-being.

- Local foods incorporated into the school food environment, along with experiential nutrition and agricultural education helps build healthy cultural attitudes about food.
- Access to healthy, local foods can potentially play a role in helping to prevent chronic diseases. [3]
- Families may be encouraged to grow, safely prepare and cook healthy foods on their own.
- Improvement of school meals can have a direct impact on a child's health; for many, school meals may be their only meals consumed throughout the day.
- FTS activities can strengthen the school nutrition program's efforts to address child and family food insecurity by increasing interest in school meal programs.

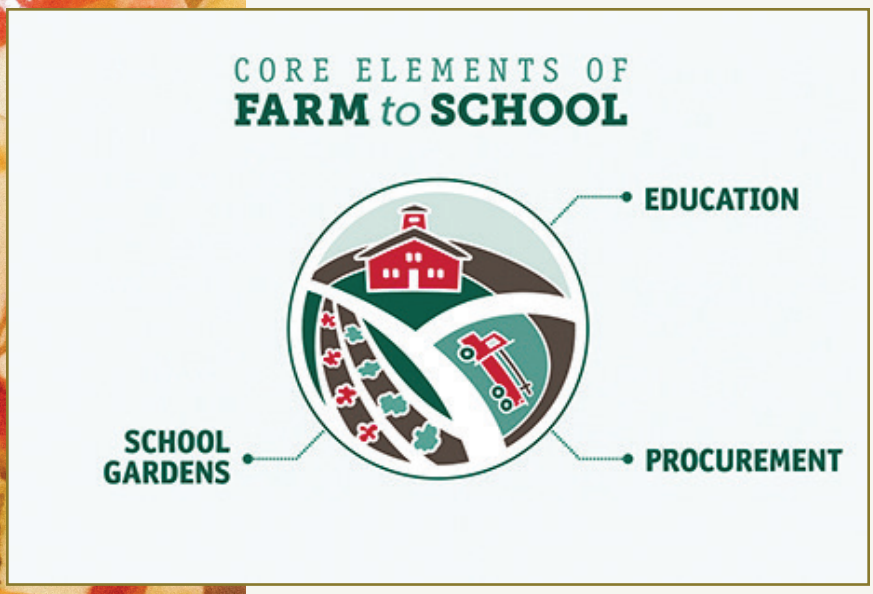
FTS programs improve healthy food choices for children.

- FTS programs increase child interest and willingness to try and eat new vegetables. [4, 5]
- Elementary students participating in FTS programs increase their daily intake of fruits and vegetables. [6]
- Students from low income schools showed better recall of healthy food choices after a visit from a mobile farmers market. [7]

Educational Impacts

In an evaluation framework publication for FTS, educational research was reviewed, and the following outcomes were found. [8] FTS programs:

- Enhance schools' curricular, physical and social learning environments; [9-11]
- Increase students' knowledge of specific content areas and promote academic and cognitive skills such as inquiry, critical thinking, ordering and communication; [12]
- Support student social and emotional development such as motivation, improve students' attitudes toward school and learning, [8, 9, 13, 14] increase student engagement and reduce absenteeism; [10]
- Potentially increase test scores and general achievement; [13, 15, 16, 17, 18, 19-22]
- Increase achievement in science, math, botany, ecology, nutrition or food systems content areas; [11, 14, 17 20, 23-28]
- Improve student and teacher knowledge and attitudes about foods; [13, 29-38]
- Garden learning environments and outdoor green spaces could provide temporary reduction in behavioral disorder symptoms. [39-42]



Social Capitol Impacts

"Community connectedness" allows a society to function effectively, builds trust, unity and reduces social isolation and stress. [43] The social capital created from FTS Programs helps:

- Build communal skills, self-confidence, esteem and work ethic of youth; [6, 17, 26-28, 42]
- Serve as an entry point to encourage parent engagement with schools through visits to district school farms and school gardens. [38]
- Foster relationships and develop trust among food growers, processors and buyers. These relationships encourage economic development, create community pride, increase fruit and vegetable consumption and support farmer and processor development of professional, social and economic skills. [44]
- "Support of local farmers" is a primary benefit of FTS Programs which helps provide economic viability for farmers, aids the local economy, enhances public relations, and improves food quality and family meal preparation. [44]

Community Economic Development Impacts

In a 2016, Washington State Department of Agriculture (WSDA) Farm to School Survey, school districts cited, "School meal programs supporting the local economy," as the top benefit of engagement in FTS Activities. $17,440,300 has been invested in local food in Washington with an average school district spending 9% their budget on local products. School spending on local food, stimulates over $1 billion in local economic activity. [45]

The state of Oregon provides an example of how to maximize FTS economic benefits. A research review and economic analysis of the Oregon House Bill (HB) 2800 (funding for FTS purchasing and nutrition education) found that FTS funds would: [43]

- Create and maintain jobs for residents.
- Increase student participation in school meal programs.
- Improve household security.
- Strengthen connections within the state's food economy.

Additional support from the following agencies make FTS efforts easier to enact:

- National—The United States Department of Agriculture (USDA) Food and Nutrition Services (FNS)
- Washington State—The Washington State Department of Agriculture (WSDA) FTS Program
- Pierce County—FTS Work Group, part of the Puyallup Watershed Initiative (PWI)

Recommendations

Schools and their communities benefit when they optimize support for FTS, district school farms, and school gardens. To increase capacity for this:

1. Hire a coordinator to facilitate procurement from local farmers.
2. Encourage and support local farms in Pierce County to meet school district buying practices such as Good Agricultural Practices (GAP) Training.
3. Create opportunities for School District Nutrition Services Directors to engage with local farmers.
4. Provide parent education about FTS to increase participation in school lunch programs.
5. Provide education to students in the classroom and lunchroom to encourage fresh, healthy, local food choices for lunch.
6. Seek funding to subsidize the purchase of local food.
7. Develop clear policy for use of school garden produce in school cafeterias.

References

1 United States, USDA, Food & Nutrition Services. (n.d.). School Gardens: Using Gardens to Grow Healthy Habits in Cafeterias, Classrooms and Communities.

2 Photo: Farmtoschool.org. Web address <http://www.farmtoschool.org/images/NFSN-CoreElements-Graphic-withText-greenbg.jpg>

3 Henderson, T., Rader, M., Sorte, B., Ratcliffe, M. M., Lawrence, A., Lucky, J., and Harris, C. (2011) Health Impact Assessment: Farm to School and School Garden Policy, HB2800, Upstream Public Health and the Health Impact Project.

4 Jones, S. J., Childers, C., Weaver, A. T., & Ball, J. (2015). SC Farm-to-School Programs Encourages Children to Consume Vegetables. Journal of Hunger & Environmental Nutrition, 10 (4), 511-525. Retrieved April 1, 2016.

5 Radar, Mel; Henderson, Tia; Lund, Darin; Lawrence, Amanda; Michael, Yvonne; Sorte, Bruce; et al. HB 2800: Oregon Farm to School and School Garden Policy, Health Impact Assessment (May 2011). Portland, Oregon: Author.

6 [Bontrager A. Liebhart J. McCarty D. Meinen A. Farm to Elementary School Programming Increases Access to Fruits and Vegetables and Increases Their Consumption Among Those With Low Intake. Journal of Nutrition Education and Behavior. (2014) 46:5 241-347.

7 Ellsworth, D., Ernst, J., & Snelling, A. (2015). A mobile farmers' market brings nutrition education to low-income students. Health Education, 115(2), 171-177. Retrieved March 22, 2016.

8 Joshi, A., Henderson, T., Ratcliffe, M.M., Feenstra, G. (2014). Evaluation for Transformation: A Cross-Sectoral Evaluation Framework for Farm to School, National Farm to School Network2014; 35-36.

9 Joshi, A., Ratcliffe, M.M. Causal pathways linking farm to school to childhood obesity prevention. Child Obes. 2012;8(4):305–14.

10 Ratcliffe, M.M. A sample theory-based logic model to improve program development, implementation, and sustainability of Farm to School programs. Child Obes. 2012;8(4):315–22.

11 Lieberman, G.A., Hoody, L. Closing the Achievement Gap: Using the Environment as an Integrating Context for Learning. San Diego, CA; 1998.

12 Kolb, D.A. Experiential Learning Experience As a Source of Learning and Development. New Jersey: Prentice Hall; 1984.

13 Ratcliffe, M.M., Merrigan, K.A., Rogers, B.L., Goldberg, J.P. The effects of school garden experiences on middle school-aged students' knowledge, attitudes, and behaviors associated with vegetable consumption. 2011;12(1):36–43.

14 Ratcliffe, M.M. Garden-based education in school settings: The effects on children's vegetable consumption, vegetable preferences and ecoliteracy. Tufts University; 2007.

15 Henderson, T., Rader, M., Sorte, B., Ratcliffe, M.M., Lawrence, A., Lucky, J., et al. Health Impact Assessment: Farm to School and School Garden Policy, HB 2800. Portland, Oregon: Upstream Public Health; 2011.

16 Ratcliffe, M.M. A sample theory-based logic model to improve program development, implementation, and sustainability of Farm to School programs. Child Obes. 2012;8(4):315–22

17 Blair, D. The Child in the Garden: An Evaluative review of the Benefits of School Gardens. J Environ Educ. 2009;40(2):15-38.

18 DeMarco, L., Relf, D., McDaniel, A. Extension Master Gardeners valued by teachers in school gardening programs. J Ext. 1998;36(5):250-5.

19 Klemmer, C.D., Waliczek, T.M., Zajicek, J.M. Growing minds: The effect of a school gardening program on the science achievement of elementary students. HortTechnology. 2005;15(3):448–52.

20 Smith, L.L., Motsenbocker, C.E. Impact of Hands-on Science through School Gardening in Louisiana Public Elementary Schools. HortTechnology. 2005;15(3):439-43.

21 Robison, S., Paxton-Aiken, A., Marques, B., Jackson, E. Farm to school education project: Innovative partnership to support student achievement of core knowledge and competencies and provide service-learning opportunity through farm to school. J Acad Nutr Diet. 2013;113(Supplement):pA50.

22 Subramaniam, A. Garden-based Learning in Basic Education: A Historical Review. Monograph. 2002;Summer.

23 Joshi, A., Azuma, A.M. Year One Evaluation Report: Fresh from the Farm Program Implementation at Lozano Bilingual and International Center School. Los Angeles, CA: A Report of the Center for Food & Justice to Seven Generations Ahead; 2006.

24 Dirks, A.E., Orvis, K. An Evaluation of the Junior Master Gardener Program in Third Grade Classrooms. HortTechnology. 2005;15(3):443-7.

25 Waliczek, T.M., Bradley, J.C., Zajicek, J.M. The effect of school gardens on children's interpersonal relationships and attitudes toward school. HortTechnology. 2011 Sep;11(3):466-8.

26 Williamson, R., Smoak, E. Creating a down-to-earty approach to teaching science, math and technology. J Ext. 1999;37-3.

27 Canaris, I. Growing foods for growing minds: Integrating gardening and nutrition education into the total curriculum. Child Environ. 1995;12(2):264-70.

28 Morris, J.L., Zidenberg-Cherr, S. Garden-enhanced nutrition curriculum improves fourth-grade school children's knowledge of nutrition and preferences for some vegetables. J Am Dietitic Assoc. 2002;102(1):91–3.

29 Joshi, A., Ratcliffe, M.M. Causal pathways linking Farm to School to Childhood Obesity Prevention. Child Obes. 2012;8(4):305–15.

30 Lineberger, S.E., Zajicek, J.M. School gardens: Can a hands-on teaching tool affect students' attitudes and behaviors regarding fruit and vegetables?Hort-Technology. 2000;10(3):593-7.

31 Somerset, S., Markwell, K. Impact of a school-based food garden on attitudes and identification skills regarding vegetables and fruit: a 12-month intervention trial. Public Health Nutr. 2009 Feb;12(2):214–21.

32 Harmon, A.H. Food System Knowledge, Attitudes and Experiences [PhD.]. Pennsylvania State University; 1999.

33 Morris, J.L., Neustadter, A., Zidenberg-Cherr S. First-grade gardeners more likely to taste vegetables. Calif Agric. 2001;55(1):53–46.

34 Tuuri, G., Zanovec, M., Silverman, L., Geaghan, J., Solmon, M., Holston, D., et al. "Smart Bodies" school wellness program increased children's knowledge of healthy nutrition practices and self-efficacy to consume fruit and vegetables. Appetite. 2009;52(2):445–51.

35 Joshi, A., Azuma, A. Bearing Fruit: Farm to School Program Evaluation Resources and Recommendation. National Farm to School Program; 2009.

36 Izumi, B.T., Alaimo, K., Hamm, M.W. Farm-to-School Programs: Perspectives of School Food Service Professionals. J Nutr Educ Behav. 2010;42(2):83–91.

37 Joshi, A., Azuma, A.M., Feenstra, G. Do Farm-to-School Programs Make a Difference? Findings and Future Research Needs. J Hunger Environ Nutr. 2008;3.

38 Faber Taylor, A., Kuo, F.E., Sullivan, W.C. Coping with ADD: The surprising connection to green play settings. Environ Behav. 2001;33(1):54-7.

39 Faber Taylor, A., Kuo, F.E. Children with Attention Deficits Concentrate Better After Walk in the Park. J Atten Disord. 2009;12(5):402-9.

40 Kuo, F.E., Faber Taylor, A. A potential natural treatment for Attention-Deficit/Hyperactivity Disorder: Evidence from a national study. Am J Public Health. 2004;94(9):1580-6.

41 Morgan, P.J., Warren, J.M., Lubans, D.R., Saunders, K.L., Quick, G.I., Collins, C.E. The impact of nutrition education with and without a school garden on knowledge, vegetable intake and preferences and quality of school life among primary-school students. Public Health Nutr. 2010 May 5;13(11):1931-40.

42 Henderson, T., Rader, M., Sorte, B., Ratcliffe, M. M., Lawrence, A., Lucky, J., and Harris, C. (2011) Health Impact Assessment: Farm to School and School Garden Policy, HB2800, Upstream Public Health and the Health Impact Project.

43 Joshi, A., Henderson, T., Ratcliffe, M.M., Feenstra, G. (2014). Evaluation for Transformation: A Cross-Sectoral Evaluation Framework for Farm to School, National Farm to School Network2014; 35-36.

44 The Farm to School Census, https://farmtoschool-census.fns.usda.gov/find-your-school-district/washington.

Linda Mathews
WSU Pierce County SNAP-Ed

253-798-7154
lmathews@wsu.edu

Daniel Muir
Farm to School Pierce County Team Coordinator

FarmToSchoolPC@gmail.com

This material was funded by USDA's Supplemental Nutrition Assistance Program (SNAP).

This institution is an equal opportunity provider.