



Summary of Research on FRESHFARM FoodPrints
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Schools play an important role in promoting children's health through the coordination of public health and public education policy initiatives. Farm-to-School programs, which aim to provide comprehensive food education, offer examples of educational programming intended to produce positive health outcomes. Observational research at two FoodPrints schools during the 2015-16 school year was conducted by George Mason University researchers to evaluate the FRESHFARM FoodPrints program implementation and program outcomes. Below are highlights of the evaluation findings.

1. Management and delivery of lessons: What is being taught?

- *FoodPrints' educators encouraged students to work collaboratively and engaged students by involving them in every step of the process.* Classes offered child-centered, active learning opportunities. We observed classroom teachers encourage students to reflect on and connect the material at hand with the subject content in math and science covered in the classroom
- *Lessons were focused on real world application of core subject matter concepts in math, science and language arts.* Students practiced making predictions, evaluated the real world evidence before them, and were encouraged to draw conclusions based on evidence.
- *Lessons promoted a critical consumer literacy as a health strategy.* Students learned strategies to be more scrutinizing consumers of the food offered as part of an industrial food diet. Lessons focused on how to read consumer labels for nutritional facts and how to identify deceptive advertising.

2. Program outcomes: What is being learned?

A. Developing Knowledge of Dietary Health

- Food Prints' educators recognized that children's knowledge of dietary health existed on a continuum with some children having little to no knowledge about nutritional health and others having significant knowledge. Students often had bits and pieces that needed channeling into a more coherent whole. *There was ample demonstration by students of understanding the subject content presented and connections being made. There were noted*

instances of students referring back to specific material previously covered in the FoodPrints classroom, which also can be taken as evidence that students are developing nutritional knowledge.

- *We recorded many instances of guided learning whereby students were asked to recall material already covered.* The end of year review lessons at Watkins, during which time all of the monthly lessons were revisited and reviewed, provided opportunity to observe lessons learned.
- *FoodPrints' lessons were often linked to content being covered by classroom teachers.* For example, a FoodPrints' lesson for a fifth grade class helped to anchor themes around Western expansion, which was part of their social studies unit.
- *Students also demonstrated knowledge gained in peer-to-peer learning* whereby students serve as peer mentors to fellow students. When a student is able to communicate ideas to peers, she has integrated the content and it has become a part of her existing knowledge store.

B. Enriching Science, Social Studies, Language Arts and Math curriculum

Students had regular opportunity to apply math and science concepts in a real world setting. Math and science concepts were woven through garden and cooking lessons. Students were regularly encouraged to make predictions and hone their observational skills using all five senses in the course of the lesson. Students were regularly called upon to provide definitions of concepts in science.

Examples include:

- A 5th grade lesson helped to anchor themes around Western expansion, which was part of their social studies unit. Students had a high level of student engagement as they took turns recalling and sharing existing knowledge relevant to the FoodPrints lesson.
- In several lessons, students practiced ratios and measurement and applied measurement concepts to the task at hand. Specifically, students had opportunity to reinforce their understanding of ratios in an accessible, experiential and hands-on format by making salad dressing: The classroom teacher held a 1/3 measuring cup in front of her and asks the table, "If we need 2/3, how many of these do we fill up?" After a look of confusion, a student nervously says "two?" (2/11/16, SWW)

The data shared in this report strongly suggest that children are being engaged in academic content in multiple formats and that knowledge is being gained in the process.

C. Appreciation and Consumption of Nutritious Food

A core aim of the FoodPrints Program is to introduce nutritious foods to children in a school setting and promote their interest in eating nutritious food as a regular part of their diet. *The recorded observations suggest a deep level of student interest in trying new foods that promote body health.*

Appreciation of the foods prepared and tried was readily expressed openly by the vast majority of students and is perhaps the most persuasive piece of evidence in support of program impact.

Across the recorded observations there is ample evidence of children trying food and liking the food they tried, along with excitement and anticipation for the food to be tried. During the thirty-three observations, we recorded few instances of students refusing to try the food prepared. Examples of student excitement include:

- “Smells so good, so fresh,” offers a boy as the girl beside him pulls arugula from the stem. (5/26/16, Watkins Elementary)
- “I love snap peas. They’re my favorite,” offers a kindergartener... “Look, peas!” screeches another boy. This is followed by an exuberant “purple carrots!” from a small girl sitting beside him. (6/9/16, SWW)
- The class is given the okay to taste the dish. Immediately, they express their opinions: “It’s good!” “That’s ginger! Did we mince the ginger?” “I can’t believe we made this delicious dinner!” “I’ve never had anything without meat that tastes so good...” (3/25/16, SWW)
- “I’m scared,” I overhear a boy remark but he does try it and gives an excited two thumbs up. Like other classes, I see mostly two thumbs up. Two boys don’t eat it. “This is good,” a boy offers, “This is the first time I have eaten salad.” Several kids take seconds and others begin the process of cleaning up. (5/5/16, Watkins)

Requests for second helpings and even “thirds” were common at both schools, suggesting genuine enthusiasm to eat the food prepared in the FoodPrints’ classroom. Liking the vegetables and meals prepared was a source of pride and opportunity for boasting to fellow students. Teachers reinforced the idea that taste buds develop and change, and that, although students do not like something now, they may like it in the future. At one school, students could say “yes please,” and “no, please” explaining negative responses or outright rejection of the food were not appropriate. At another, students are reminded before each tasting that they are not allowed to, “Yuck my yum.” Students themselves enforced this system of evaluation.

D. First Bite Taken Together: Eating as a collective ritual

There are several mechanisms that help us to understand why students are so willing to consume the nutritious food they prepared in the FoodPrints classroom. Some research has demonstrated that students eat nutritious food when they have opportunity to prepare it themselves. As one grandparent who volunteered at Watkins reasoned, if you give “children agency” over the food, they are more likely to eat those foods. Other research suggests greater knowledge about where food comes from drives young people’s interest in eating unfamiliar and nutritious food. Evidence of these mechanisms were recorded in each observation, but equally meaningful for program success was the shared activity of taking the first bite together- a collective act serving to promote social cohesion and shared focus.

3. Impact Beyond School

A central objective of the FoodPrints program is to cultivate eating practices that promote dietary health among children and extend beyond the classroom to their homes and communities. To answer this question, we administered 16-question surveys to a sample of 500 parents with a child who participated in the FoodPrints program at Watkins and School Without Walls during the 2015-2016 academic year. Twenty percent of those parents surveyed returned the survey.

Findings from the parent surveys suggests FoodPrints has had a positive impact on:

- **Children’s knowledge of nutritious foods and their willingness to eat these food at home** (60% of Watkins parents and 61% of School Without Walls parents responded that the FoodPrints program has had a high impact on their child’s willingness to eat nutritious food).
- **Children’s interest in cooking nutritious food at home** (60% of Watkins parents and 55% of School Without Walls parents reported high impact, while 30% of Watkins parents and 23% of parents from School Without Walls reported some impact).
- **Children’s nutrition and cooking knowledge** (72% of Watkins parents and 58% of School Without Walls parents reported high impact).

Interestingly, a common discrepancy between Watkins and School Without Walls reporting on “minimal impact” suggests cumulative impact of the program over time. Almost 20% of School Without Walls parents reported minimal impact on children’s nutrition and cooking knowledge and 16% reported minimal impact on children’s knowledge of and willingness to eat healthy foods – while less than 1% of parents at Watkins reported minimal impact on each factor – lends support for the claim that impact has been greater for students who have participated in FoodPrints for a longer period of time. The program is well established at Watkins – along with a full kitchen and cooking lab, an established vegetable and herb garden, and more staff – but is new to School Without Walls, with a small garden and a smaller staff.

FOODPRINTS IMPACT	MINIMAL IMPACT	SOME IMPACT	HIGH IMPACT
On child’s willingness to eat nutritious food	SWW 16% Watkins <1%	SWW 19.4% Watkins 27%	SWW 61.2% Watkins 66.6%
On child’s interest cooking nutritious food at home	SWW 22.5% Watkins 8.5%	SWW 22.5% Watkins 30%	SWW 54.8% Watkins 60%
On child’s knowledge about nutritious food and cooking	SWW 19.4% Watkins < 1%	SWW 22.5% Watkins 23.6%	SWW 58% Watkins 72%

The following written responses from parents further describe the impact of FoodPrints’ beyond school:

- “We love FoodPrints. It has made [my son] very interested in seasonal produce. We even created container gardens for him and his sister as a result. They are both very keen to grown their own food and eat it.”
- “My sons started with FoodPrints at Peabody and continued at Watkins. From the first year to now we’ve incorporated recipes they bring home into our regular meal planning and even I’ve learned to love new veggies and started a small veggie garden at home.”

- “We love FoodPrints. Just the fact that our children are exposed to new food at school is wonderful.”
- “The educational materials collected and recorded in the journals are an important component.”

For a subset of students and their families, FoodPrints program’s impact has been substantial. One parent in particular recognized the impact as cumulative:

“Circling the answers didn’t seem to do justice for what a great program you all run. With 3rd and 1st graders at Watkins and a pre-K4 student at Peabody, we have had a lot of exposure to FoodPrints over the year. What has interested me is the longitudinal impact of the program. The curriculum builds on itself with each grade and the level of knowledge grows as well. I especially see that with my third grader. The language and respect you all have introduced around food has become an important and essential tool in our household. Nutrition and food choice is extremely important to us, and FoodPrints reinforces that approach in the school setting. It is common to hear ‘Don’t yuck my yums’ or for one of our kids to give a thumbs up/down/middle for a particular meal.”

We can conclude that given the curricular scaffolding of the FoodPrints program, which builds each year with reinforcement and content reviews, the greatest impact is likely to be realized longitudinally.

4. Conclusion

This evaluation suggests that the FoodPrints program is an important change agent, helping to positively frame children’s relationship to food, shape schools’ capacity for nutrition education, and support the broader academic mission of DCPS in its integration of subject standards into its food and garden curriculum. **Evidence from this evaluation suggests that FRESHFARM’s FoodPrints program is a feasible and sustainable program model for contemporary nutrition education and is able to successfully integrate subject standards into its curriculum.**

There is ample evidence of program goals being realized. Lessons focused on nutritional health aimed to concretize concepts that might otherwise be beyond the reach of elementary school children and provided information of practical importance that may improve students’ dietary health in the long-term. Information was communicated clearly and through different channels. Different strategies for learning were adopted, including auditory, visual, and tactile/kinetic and lessons included review, reinforcement, and checks for understanding. Classroom teachers played an important role in helping to cement and direct information, linking new information presented with information covered as part of the previous class curriculum.

Recorded observations suggest that the FoodPrints program sought to value and recognize diverse foodways and distinct cultural histories as well as promote a critical consumer literacy. It sought to empower students with important nutritional and social knowledge to demand a better food system.