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RESULTS

Key Ingredients for School Food Systems: An Evaluation of the Orfalea Foundation's School Food Initiative

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Keywords: School food, evaluation, foundation, rubric, mixed methods

Key Points

- In 2007, the Orfalea Foundation launched a nine-year strategic effort aimed at empowering public school districts in California's Santa Barbara County. The purpose was to implement food-service operations that offered nourishing meals and to create a culture that prioritized the health and wellness of children and families.
- The initiative, which involved 84 schools and more than 50,000 students, assessed the capacity of the county's school food services, including existing skill levels and equipment needs. Striving to tailor programming to specific needs, the foundation emphasized stakeholder involvement throughout the process.
- The foundation took a number of steps to understand the value and impact of the initiative, including working with Evaluation Specialists, an outside evaluator. This article shares best practices and lessons learned with organizations interested in learning from and replicating the initiative's efforts, and with policymakers and school districts interested in improving school food.

Introduction

In 2007, the Orfalea Foundation launched the School Food Initiative to improve the quality of school food and promote food literacy in the public schools of California's Santa Barbara County. The goal was to use school food and food-related systems as mechanisms to create a community of healthy children and families across the county and an environment that helps them make educated food choices throughout their lives.

Santa Barbara County, located on the central coast of California, has a racially and socioeconomically diverse population of 425,000. The county is approximately 70 percent White/European American, two percent African American, one percent Native American, and five percent Asian American and Pacific Islander. About 43 percent are Hispanic or Latino, primarily of Mexican background. Approximately 32 percent of the county's 140,000 households have children under age 18; these children make up approximately 22 percent of the county's population. The median income for a family is $54,000 and the county's per capita income is $23,000. About nine percent of families and 14 percent of the total population live below the poverty line, including 16 percent of children (U.S. Census Bureau, 2010).

The county's 100-plus public schools serve 65,000 students, from transitional kindergarten through 12th grade, across 20 districts; 60.8 percent of them are eligible to receive free or reduced-price school meals as part of the National School Lunch Program. Among California's 58 counties, Santa Barbara is ranked 14th worst in meeting residents' daily food needs; 13.5 percent of its residents are food insecure and children make up 23.3 percent of that group. Infants and toddlers in food-insecure households are 30 percent more likely to have a history of hospitalization, 90 percent more likely to be reported in fair or poor health,

nearly twice as likely to have iron deficiency anemia, and two-thirds more likely to be at risk for developmental delays (Pringle, 2013).

The Orfalea Foundation contributed $14.3 million in its efforts to improve the quality of food in the county's public schools between 2007 and 2015. The foundation initially conducted site-specific assessments in schools across the county to observe the capacity of food service and assess existing skill levels and equipment needs associated with improving school food. Striving to meet each school where it was and to tailor programming to specific needs, the foundation engaged with willing schools and districts, emphasizing stakeholder involvement throughout the process. Eighty-four schools, with a total of 50,561 students, had some level of interaction with the School Food Initiative over its nine years of programming.

The initiative was a strategic, multipronged effort aimed at empowering the school districts to implement and sustain food-service operations that offered nourishing, cooked-from-scratch meals, and to create a culture that prioritized the health and wellness of children and families. This effort entailed:

1. *Culinary Boot Camp.* Over five years, the initiative hosted 13-week intensive culinary trainings for 350 public school food-service personnel. Working alongside chef instructors and their peers, attendees practiced the skills required to integrate more scratch-cooking techniques into school kitchens.

2. *Technical support.* Following Culinary Boot Camp, it became clear that food-service workers needed ongoing support to adapt the training to the daily realities of school campuses. Four full-time chef instructors were assigned to designated school districts to offer hands-on support with adapting recipes, time management, procurement and processing of local produce, and maximizing the use of equipment. Developing the curriculum, preparing for and facilitating the training, and providing ongoing technical support represented the foundation's most significant investment – a total of $1.5 million.

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3. *Kitchen equipment and infrastructure.* Over the past 50 years, schools stopped cooking from scratch and switched to highly processed, heat-and-serve food. In making this switch, schools lost both skilled workers and the cooking and dishwashing equipment necessary for preparing healthy meals. The School Food Initiative invited districts to apply for grants to purchase this equipment and to fund kitchen and cafeteria renovations; the funding ranged from $10,000 for reusable dishware to $1.1 million to help renovate a school district's central kitchen. These strategic investments increased scratch-cooking capacity, expanded procurement of locally grown produce that could be processed in-house, and increased student and adult participation in school meals. Grant agreements included stipulations designed to ensure that the investments drove initiative goals and were achievable for food-service operations. Most of these stipulations were targeted at menu changes such as removing flavored-milk options, reducing or eliminating processed cheese, increasing the variety of entree options, and maximizing the use of local, seasonal produce.

It is important to note that the initiative was launched just before an increase in national and regional attention to school food issues, and it significantly benefited from the resulting progressive policy reforms on the federal and state levels. This fortunate timing made it possible for the initiative to overcome some challenges and accelerate positive changes.

4. *Programming to promote food literacy at all grade levels.* The initiative supported a variety of school-based food-literacy programs in classrooms, cafeterias, and school gardens, including Junior Chef (involving 13,700 students), Chefs in the Garden (6,250 students), and Food Play (21,000 students), as well as Salad Bar Ambassadors and Food Clubs. Food Play was discontinued after post-program surveys revealed the "one off" aspect of the intervention did little to instill ongoing healthy eating behaviors. To better integrate the 36 installed school gardens with other food-literacy efforts, the Junior Chef program was wrapped into Chefs in the Garden, an interactive program based on five core lessons adaptable from kindergarten to sixth grade. Salad Bar Ambassadors – older elementary school students – helped younger students optimize salad bar selections and try new fruits and vegetables by "eating the rainbow." The Food Club was an effort to facilitate feedback between high school students and the food-service director on breakfast and lunch offerings and to integrate more opportunities to learn about where school food comes from. These programs were designed to connect students to the food they eat and the environment they live in, encouraging them to make healthy choices for their bodies and their world.

5. *Wellness committees.* The U.S. Department of Agriculture requires any school district receiving federal funding for meals to create a wellness policy that addresses food-related policies, nutrition education, and physical activity. In Santa Barbara County, districts complied with these regulations generally by downloading boilerplate policy templates, and teachers and students remained largely unaware that such policies existed. Initiative staff not only recognized the wellness policy as an opportunity to integrate and embody a culture of health and wellness on school campuses, but also saw it as instrumental in sustaining the work. Chef instructors helped existing wellness committees create individualized wellness policies and produce a user-friendly, one-sheet version for teachers and parents. In school districts without an active wellness committee, the instructors played a key role in forming committees that included administrators, parents, teachers, students, and program partners. Chef instructors also supported parent-led organizations in organizing healthy fundraisers, health fairs, and other educational opportunities.

The School Food Initiative was supported by an evolving staffing structure that started with one full-time manager and a consulting team and grew to a full-time director, a food-literacy manager, four chef instructors, and a number of independent subcontractors to provide subject-matter and programmatic expertise. The foundation also employed staff that supported the initiative in marketing and communications, public policy and advocacy, and program evaluation.

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progressive policy reforms on the federal and state levels. This fortunate timing made it possible for the initiative to overcome some challenges and accelerate positive changes.

The significant investment in the initiative has drawn to a close, and the foundation has taken a number of steps to understand its value and impact to share best practices and lessons learned with other funders and school communities. One of these steps was working with an outside evaluator, Evaluation Specialists (ES). This article is for organizations interested in learning from and replicating these efforts, and for policymakers and school districts interested in improving school food.

Mixed-Methods Evaluation Design

The evaluation attempted to answer the following questions, which were identified through discussion between ES and foundation staff:

- Which elements of the School Food Initiative were most valuable?
- How did the initiative influence each of the intended outcomes?
- How do school characteristics influence the relationship between the initiative and the intended outcomes?
- What were the barriers to and facilitators of successful initiative-related change?
- What do schools and districts believe they need to sustain these efforts?

Working with foundation staff, ES selected a mixed-methods retrospective evaluation approach and used data collected by the foundation prior to ES engagement as well data collected specifically for the evaluation. Four methods were chosen for this triangulation design, which is commonly used to "obtain different but complementary data on the same topic" (Creswell, 2011, p. 77).

Stakeholder Interviews

Using a semi-structured interview guide, ES conducted in-person or telephone interviews with 46 individuals engaged in the initiative. The guide was developed by ES to answer the overarching evaluation questions; the foundation reviewed it for context and clarity, and provided feedback that was incorporated into the final guide. ES identified sampling criteria and the foundation identified individuals who met that criteria.

Sixty-one individuals were invited to participate in in-depth, one-on-one interviews in the spring of 2015; 46 agreed. Chef instructors, district- and school-level leaders, and school food personnel – district food-service directors and school-level food-service staff – were among the interviewees. Conforming to the intentional sampling plan, the interviewees represented various regions of the county: those with low and high proportions of students eligible for free or reduced-price lunch; those serving various grade levels, with both large and small numbers of students; and schools with varying levels of engagement with the School Food Initiative. ES did not interview staff at schools that declined to participate in the initiative.

Before the interviews, ES electronically provided interviewees with an information sheet that discussed consent and asked each if there were any questions about the process or purpose of the study. Each interview was recorded and transcribed. The lead evaluator created a codebook to capture responses directly related to the overarching evaluations, and coded each transcript against these initial codes via line-by-line coding. Then, in an inductive thematic coding process, additional codes were created as they emerged from the data via line-by-line coding by three evaluators, and the codebook was iteratively refined based on input from the full analysis team. To validate findings, one evaluator compared final themes against the notes and observations that were recorded during data collection.

Trends were assessed across all participants collectively, and across each respondent group independently, to enable evaluators to draw between-group comparisons. Major themes were

identified, as well as subthemes within the major themes and other minor themes. These subthemes and other minor themes were identified by examining data for additional patterns while also considering contradictions and negative evidence. Analyses were conducted with Dedoose.[2]

Survey of Cafeteria Managers

Evaluation Specialists designed and conducted a countywide online survey of cafeteria workers, using a method known to provide reliable estimates of short- and long-term change. This method, the "counterfactual self-estimation of program participants," was developed by Mueller, Gaus, and Rech (Mueller, 2014) and positions evaluators to retroactively collect baseline perceptions better than would a traditional retrospective pretest.

The survey instrument was designed by ES to directly align to the overarching evaluation questions. The foundation reviewed it for context and clarity, and provided feedback that was incorporated into the initial draft instrument. To pilot test the instrument, select cafeteria managers were invited to take the survey and participate in a follow-up phone call with ES evaluators. Feedback collected from these phone calls was incorporated into the survey instrument to ensure content validity. The instrument was then finalized and launched electronically via SurveyMonkey.

All cafeteria managers who led school food efforts in the county's public schools and who had some interaction with the School Food Initiative were invited to participate. Eighty-four schools, led by 67 cafeteria managers, fit those criteria. District supervisors were made aware of the survey and asked to encourage participation. ES invited cafeteria managers to take the survey and offered gift cards worth $25 to $30 (depending on the timing of the survey completion) in exchange for their participation. Forty-five cafeteria managers (67 percent) responded to the survey.

Evaluation Specialists analyzed this data using Generalized Estimating Equations[3] (GEE), a regression procedure that applies the generalized linear model to multilevel data. (See Table 1.) GEE's flexibility made it well suited to these analyses: they can be adapted to a variety of data types, including ordinal, linear, and binary distributions. GEE also avoids incorrect results due to misspecification of the covariance matrix; specifically, it is robust to violations of covariance matrix assumptions. The data analyst may also choose from a variety of assumptions, allowing the selection of the best-fitting matrix.

Analysis of Change in School- and District-Level Data

Foundation staff collected data on school food offerings from schools and districts throughout the School Food Initiative program cycle. ES compiled and analyzed these data, then assessed change using GEE as the statistical approach. (See Table 2.)

Development and Application of Evaluation Rubric

With Orfalea Foundation staff, ES designed and applied an evaluation rubric to guide the synthesis and interpretation of findings from the three data sources. This rubric was designed to provide definitions of initiative success using a four-point scale ranging from "not successful" to "highly successful," and initiative impact on a four-point scale ranging from "not impactful" to "highly impactful."

School Food Initiative Results

Most Valuable Elements

The School Food Initiative was composed of five programmatic activities. The evaluation indicates that all five contributed to improving school food systems, and that four activities were more successful than anticipated: Culinary Boot Camp, the kitchen equipment and infrastructure grants, on-site technical assistance, and the support offered to schools and districts to improve school culture. (See Figure 1.)

[2] A copy of the instrument can be found on the Orfalea Foundation website: http://www.orfaleafoundation.org.

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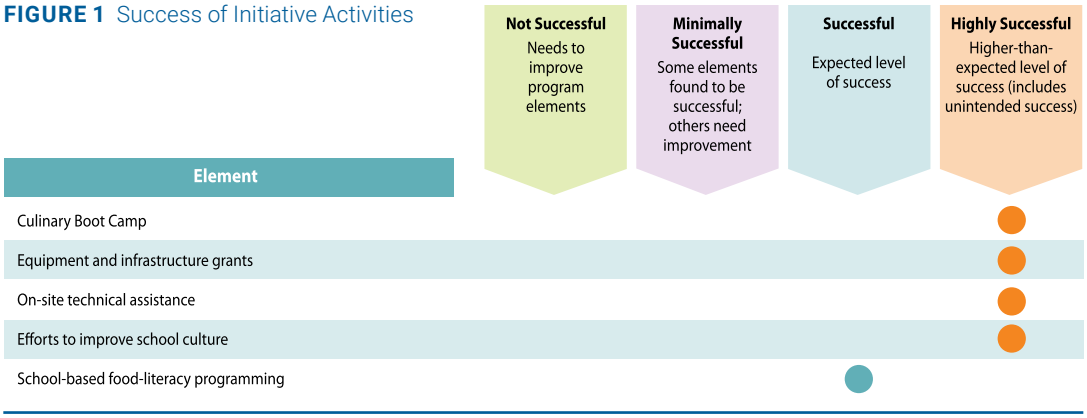
FIGURE 1 Success of Initiative Activities



- Culinary Boot Camp was highly successful in improving the professionalism and culinary skills of food-service personnel and helping them understand the school food system and their role in it. They learned important professional content, including food-safety requirements, knife skills, recipe conversions, baking techniques, organization skills, and practices for enhancing team relationships. Food-service personnel also learned about their role in children's health and in school food reform efforts. Culinary Boot Camp and on-site technical assistance helped them understand federal and state regulations and expectations for school meals. Implementation practices ensured that expectations were similar within schools and across district lines.

- Grants for kitchen equipment and infrastructure were highly successful in funding specialized equipment and resources necessary for scratch cooking and its delivery. Study participants reported that the alignment of these grants with lessons learned at Culinary Boot Camp was instrumental in helping them adopt more scratch-cooking practices. Participants described these two initiative efforts as synergistic: the training increased intentionality and developed expertise, while the funding provided the materials necessary to apply that training to their work environment.

- On-site, targeted technical assistance by chef instructors was highly successful in improving systems thinking, compliance, and work-flow efficiency among food-service personnel, and helped them to balance department budgets. Chef instructors provided on-demand and ongoing assistance via phone, email, and in person. Support took a variety of forms, such as assisting with menu preparation and recipe development, side-by-side cooking, identifying ways to cut costs, eliciting student opinions, helping establish relationships with local vendors, advising on public relations and marketing efforts, and suggesting new practices (e.g., how to serve or plate food).

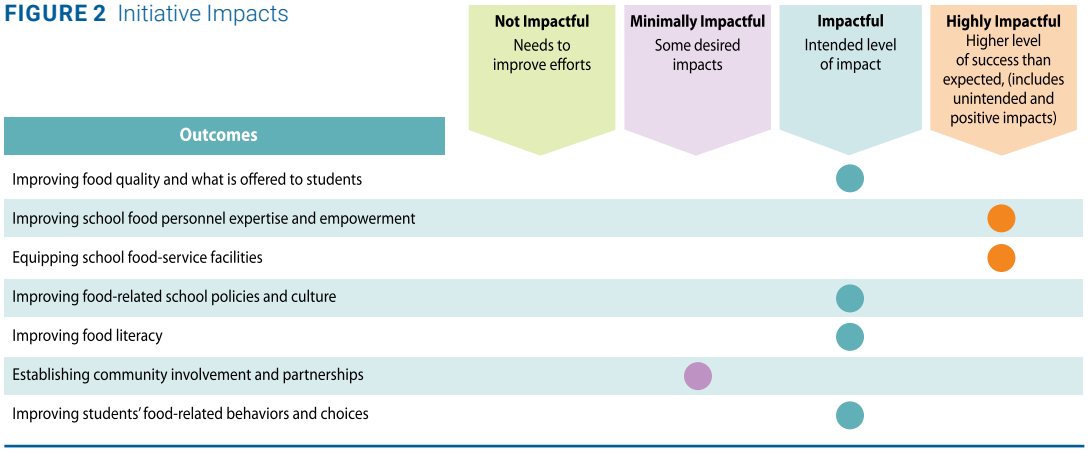
- Efforts to assist districts in establishing or improving wellness committees were highly successful in shifting school culture and creating wellness policies. Many of the policies crafted by these committees were aligned with federal and state guidelines, and were then adopted by the individual schools.

- Support of school-based food-literacy programs was successful in engaging students and staff. School gardens were specifically instrumental in helping students make the connection between where food comes from and the meals they are offered at school.

Influence on Intended Outcomes

The initiative impacted all seven intended outcomes and two unanticipated outcomes. It

FIGURE 2 Initiative Impacts



drove substantial improvements in the expertise and empowerment of school food personnel and in food-service facilities. (See Figure 2.) It also accelerated improvements in food-related school policies, the quality of school food, food literacy, students' food-related behaviors, and, to a lesser degree, community involvement in school food systems.

Although the initiative did not intend to influence other outcomes, findings indicate that teacher participation in school food and food literacy among families also improved. Overall and by a statistically significant margin, food-service personnel rated related outcomes as superior as a result of the initiative compared to what they would have been in its absence.

1. School food quality and what was offered to students was positively impacted. Schools provided healthier breakfasts and lunches by:
   - adding more fresh fruits and vegetables to menus;
   - offering salad bars more frequently;
   - serving more whole-muscle meats;
   - sourcing more organic and local goods;
   - using healthier, scratch-based recipes;
   - reducing use of processed ingredients;
   - offering flavored milk less frequently; and
   - surpassing federal and state guidelines for sugar, salt, and fat in meals.

These changes reflect overall improvements in the food offered to students as a result of the School Food Initiative and the new standards implemented in 2010 through the federal Healthy Hunger-Free Kids Act. In addition, more adults and more paid meals were served at lunch, indicating a perception of improved food quality. (See Figure 3.[4])

2. Expertise and empowerment among school food personnel were impacted more positively than expected, which was seen as a particularly important outcome. As a result of the initiative, personnel were more likely to report:
   - feeling more professional and empowered;
   - understanding the importance of customer service in their work and seeing students as customers;
   - modeling principles of healthy eating and making positive changes in their personal food choices;
   - understanding and applying culinary business practices, including how to balance a budget;

[4] These differences, and all differences presented in graphics throughout this article, are statistically significant at the standard criterion of $p < 0.05$.

FIGURE 3 Initiative Impacts on Food Quality as Perceived by Cafeteria Managers

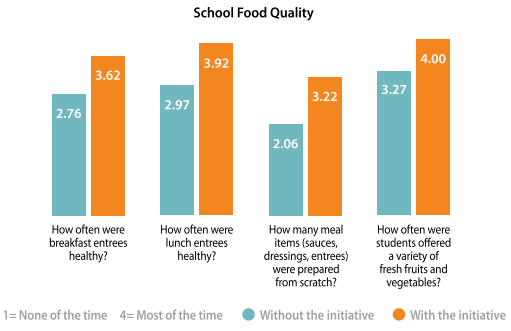


FIGURE 4 Initiative Impacts on Expertise and Empowerment as Perceived by Cafeteria Managers

FIGURE 5 Initiative Impacts on School Food Facilities as Perceived by Cafeteria Managers

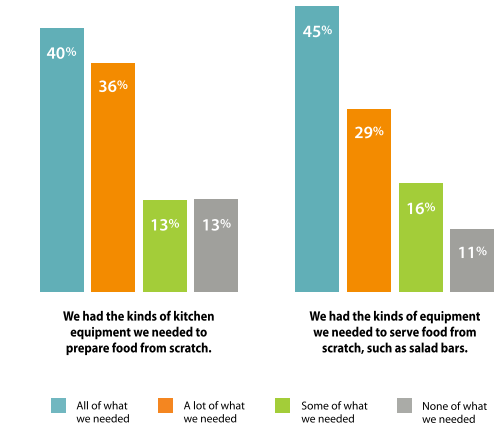
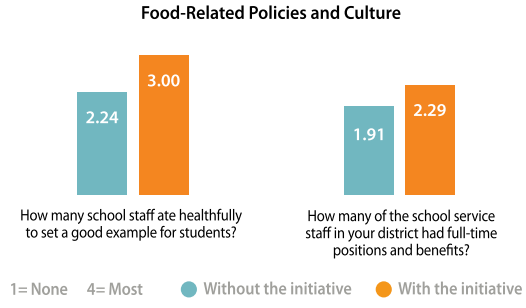


FIGURE 6 Initiative Impacts on School Policies and Culture as Perceived by Cafeteria Managers



- improved cooking and nutrition knowledge;
- increased self-confidence and a desire to institute change;
- greater mastery of knife skills; and
- being perceived more favorably by other school staff.

While school-level data were not collected to substantiate it, school food personnel reported that they were able to balance their department budgets, and in some cases create a surplus, by shifting to healthier food and being trained in business operations. (See Figure 4.)

3. School food-service facilities were positively impacted, even more than expected. By providing grants for kitchen equipment and full kitchen redesigns, the initiative positioned schools to prepare and deliver scratch-cooked foods in ways they otherwise could not have done and made cooking from scratch feasible and more efficient. (See Figure 5.)

4. Food-related school policies and culture were positively impacted. (See Figure 6.) The initiative supported the creation or expansion of school wellness committees to promote a culture of wellness and healthy eating and as a way to develop

FIGURE 7 Initiative Impacts on Food Literacy as Perceived by Cafeteria Managers

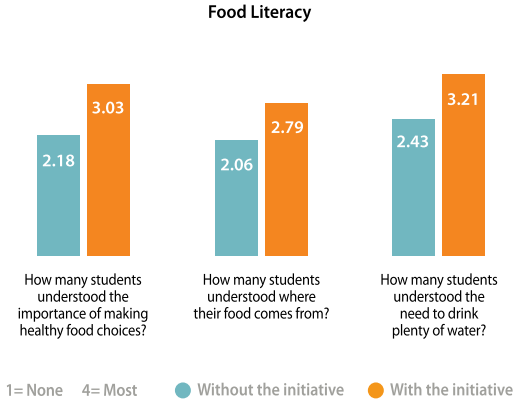


FIGURE 8 Initiative Impacts on Community Involvement as Perceived by Cafeteria Managers

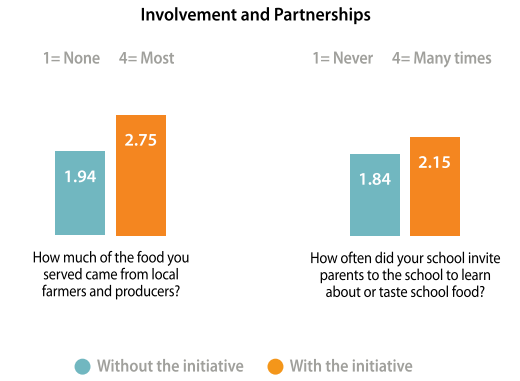
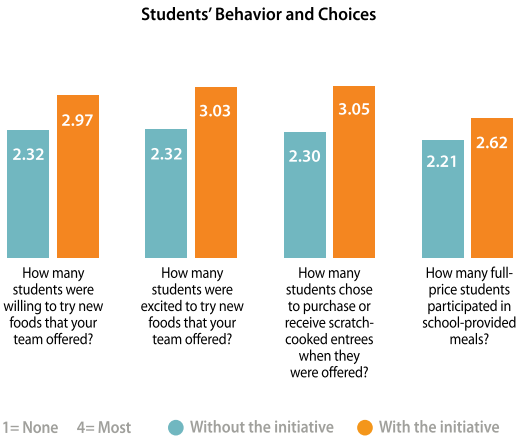


FIGURE 9 Initiative Impacts on Student Behavior as Perceived by Cafeteria Managers



and implement policies aligned with best practices on food service, including more user-friendly cafeterias, nutrition programs such as the multistate Breakfast in the Classroom, and scheduling recess before lunch. These efforts promoted culture shifts that:

- supported wellness and healthy eating,
- raised the professionalism of food-service personnel,
- engaged school staff in school food and related efforts,
- led to plating meals for students in a thoughtful manner, and
- led to serving healthier foods at parent-teacher campus gatherings and school staff meetings.

5. Food literacy among students and staff was positively impacted. (See Figure 7.) Students were exposed to new foods as a result of the initiative, which improved their understanding of nutrition and food systems and the importance of adequate hydration. While little overt nutrition education occurred in the classroom or during school meal times, study participants reported that they believed their encouragement of students to taste new foods led to improvements in food literacy. Student involvement in food-literacy programming, particularly the school gardens, also led to improved understanding. This improvement was most common in schools serving younger students. School staff also increased their food literacy in these areas.

6. Community involvement and partnerships supporting school food, health, and wellness were positively impacted, though less than expected. (See Figure 8.) The initiative helped forge relationships among school districts, schools, and local partners such as farmers, and helped schools identify creative ways to engage parents. The initiative had less success than originally anticipated in encouraging community involvement

FIGURE 10 Relationship Between Student Need and Initiative Success as Perceived by Cafeteria Managers

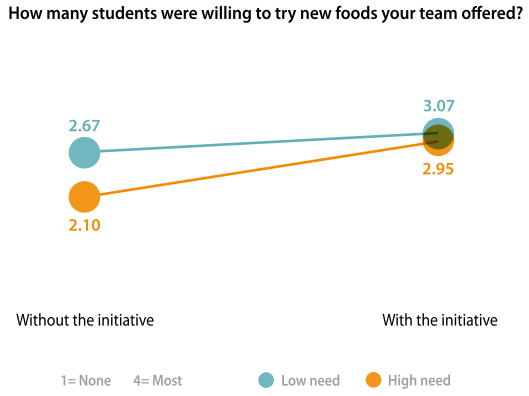
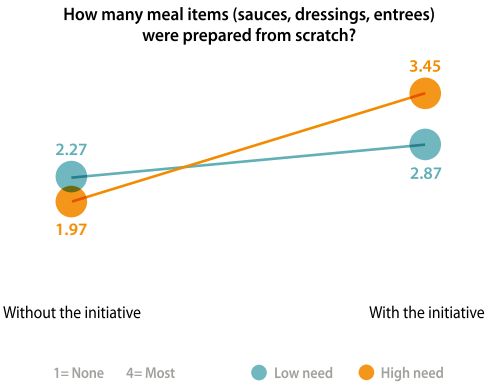


FIGURE 11 Relationship Between School Engagement and Initiative Success as Perceived by Cafeteria Managers



and creating partnerships, though it did not dedicate as much effort and resources to this goal as others.

7. Students' food-related behaviors and choices were positively impacted. (See Figure 9.) Students are making healthier choices by selecting made-from-scratch entrees more often than unhealthy a la carte or vending options. Many study participants noted that students were choosing to try new foods, using the salad bar as a way to do so, and incorporating these healthier foods into their diets. Study participants familiar with high school environments reported that some students chose to eat healthier options on campus rather than going off-campus to eat at local fast food restaurants.

In addition to the seven intended outcomes, study participants identified two positive impacts to which the initiative contributed:

- *School staff.* Teachers and administrators ate more food prepared at school following improvements in the quality of the meals, and were more likely to discuss healthy habits with students.

- *Food literacy among families.* Initiative activities engaged families in creative ways; parents were exposed to healthy food concepts and new food products through their children and through initiative activities.

School Characteristics and Relationship Between Initiative and Intended Outcomes

The School Food Initiative most influenced schools with high proportions of students in need and those highly engaged in the initiative. Highly engaged schools – those that were consistently engaged in initiative programming – showed greater need for support to improve food-related practices before participating in the initiative and benefitted as much or more than less-engaged schools (those that were only initially engaged and then did not continue engagement, or schools engaged only in one aspect of the programming). The same finding occurred for schools with high proportions of high-need students (i.e., above-average eligibility for free or reduced-priced lunch). (See Figure 10.) Cafeteria managers at schools with fewer high-need students reported that they believed students would be more willing to try new foods than those in higher-need schools regardless of participation in the initiative. Managers at both types of schools, however, agreed about students' willingness to try new foods in the presence of the initiative, suggesting that it was able to close the initial gap in outcomes.

Another pattern occurred was seen in schools with greater proportions of high-need students

TABLE 1 Survey Results From GEE Analysis

Counter-Factual (Imagined Pre-Test)		Factual (Post-Test)		Wald Chi-Square					Survey Question
M	SD	M	SD	Index (Time Point)	Interaction (Foundation Engagement)	Interaction (Need)	Interaction (Size)	Interaction (Level)	
School food personnel expertise and sense of empowerment									
2.89	0.84	3.45	0.65	27.46*	19.93*	5.01*	3.08	0.14	School staff treated me with respect.
2.62	0.95	3.12	0.83	21.44*	0.042	3.63	4.39*	21.62*	School staff treated me like I was highly skilled in my job.
2.54	0.99	3.18	0.83	16.54*	1.17	9.11*	1.63	4.69	School staff appreciated me and my role in improving children's health.
2.68	1.01	3.73	0.61	28.24*	4.34*	7.95*	0.19	1.22	How often were you encouraged to share ideas about improving the food or how food was prepared or distributed?
3.14	0.75	3.86	0.35	22.00*	3.18	4.65*	0.03	0.21	How often did you feel confident in your job?
3.24	0.79	3.84	0.37	14.14*	5.33*	1.74	0.16	0.01	How often did you feel a sense of self-respect in your job?
2.97	0.79	3.78	0.42	23.81*	5.78*	2.86	0.74	0.48	How often did you feel highly skilled in your job?
2.51	0.98	3.76	0.76	26.25*	3.18	2.94	0.09	1.06	How often did you use the skills you learned in Culinary Boot Camp in your job?
2.41	1.09	3.22	0.97	26.45*	5.12*	10.66*	3.47	1.25	How often did you feel you knew about culinary business operations (such as budgeting, management)?
2.86	1.08	3.89	0.32	19.58*	1.33	0.01	0.26	2.92	How often did you think about the importance of plating the food when serving meals to students?
2.57	0.87	3.24	0.85	25.97*	31.42*	3.76*	0.77	0.34	School and district leadership made me feel like I could make decisions related to my job.
Food-related school policies and culture									
1.91	0.73	2.29	0.96	36.42*	3.35	22.58*	0	0.13	How many of the food-service staff in your district had full-time positions and benefits?
2.97	0.93	3.51	0.8	5.07*	0.13	1.37	0.73	1.15	How often did you eat healthfully to be an example to students?
2.24	0.69	3	0.72	23.14*	0.24	12.37*	0.29	2.55	How many school staff ate healthfully to be a good example for students?
3.11	0.81	3.76	0.44	20.01*	0.264	5.7*	1.23	2.04	How often did you make a conscious effort to eat healthfully?
School food quality and what is served to students									
2.76	0.89	3.62	0.83	19.07*	1.64	3.3	0.14	0.33	How often were breakfast entrees healthy?
2.97	0.76	3.92	0.28	28.7*	2.98	1.89	0.06	0.42	How often were lunch entrees healthy?
2.06	0.86	3.22	0.89	30.89*	19.7*	6.51*	1.05	0.74	How many meal items (sauces, dressings, entrees) were prepared from scratch?
3.27	0.87	4	0	T=22.84*1	N/A	N/A	N/A	N/A	How often were students offered a variety of fresh fruits and vegetables?

TABLE 1 Survey Results From GEE Analysis (continued)

Counter-Factual (Imagined Pre-Test)		Factual (Post-Test)		Wald Chi-Square					Survey Question
M	SD	M	SD	Index (Time Point)	Interaction (Foundation Engagement)	Interaction (Need)	Interaction (Size)	Interaction (Level)	
School food quality and what is served to students									
3.13	0.92	3.96	0.19	19.16*	0.45	1.62	1.41	4.64	How often did scratch-baked items meet federal and state guidelines for sugar, salt, and fat?
2.58	0.51	2.79	0.48	7.01*	1.72	0.27	1.24	0.34	How much food offered at school was thrown away?
1.94	0.84	2.35	0.68	8.86*	8.65*	4.19*	0	0.17	How many school staff members purchased meals or meal items from the cafeteria?
Students' food-related behaviors and choices									
3.22	0.67	3.27	0.96	13.93*	0.03	5.46*	0.83	2.81	How many students chose to purchase or receive a la carte options?
2.3	0.85	3.05	0.91	12.7*	0.12	0	0.27	2.2	How many students chose to purchase or receive scratch-cooked entrees when they were offered?
2.32	0.71	2.97	0.76	12.11*	0.01	4.42*	1.59	0.04	How many students were willing to try new foods your team offered?
2.22	1	2.81	0.99	7.82*	0.59	1.35	0.82	6.12*	How many students chose to drink water instead of sugar-sweetened beverages?
2.21	0.64	2.62	0.83	6.09*	22.71*	0.21	0.15	1.04	How many full-price students participated in school-provided meals?
2.06	0.61	2.13	0.51	0.85	0.11	1.32	0.06	0.62	How many students bringing food from home brought healthy meals?
2.32	0.71	3.03	0.79	15.99*	0.01	2.61	0.63	0.11	How many students were excited to try new foods that your team offered?
Students' food literacy									
2.18	0.76	3.03	0.78	18.52*	2.4	7.48*	0.19	2.08	How many students understood the importance of making healthy food choices?
2.06	0.68	2.79	0.78	16.85*	2.81	0.92	1.64	0.14	How many students understood where their food comes from?
2.43	0.95	3.21	0.81	21.73*	0.24	2.21	0.58	0.08	How many students understood the need to drink plenty of water?
Community involvement and partnerships around school food									
1.94	0.84	2.75	0.87	19.02*	0.14	1.07	1.71	2.06	How much of the food you served at school came from local farmers and producers?
1.84	1.02	2.15	1.13	22.55*	14.42	0.73	1.29	3.45	How often did your school invite parents to the school to learn about or taste school food?

Responses were reported on a four-point scale, from low to high.
* = <0.05
[1] All schools rated this a 4 ("most of the time") regardless of school need, school size, school type, and engagement level. There are, therefore, no relationships between these variables and these outcomes.

TABLE 2 Results of Foundation-Collected Data From GEE Analysis

School-Level Output Variables Grouped by Outcome Domains (n = 47)							
	Timepoint						
	Baseline		Post		Overall Change		
Output	Mean/%	SD	Mean/%	SD	$X^2(2)$	p	d[a]
Students' food literacy							
Food-related school policies and culture							
Do the kitchen and cafeteria compost kitchen waste and food scraps? (percentage answering yes)	19.4		15.6			0.66	-0.15
Are disposable utensils, trays, and other dinnerware used in the cafeteria? (percentage answering yes)	66.7		80.4			0.18	0.32
School food quality and what is served to students							
How many times per month							
… are whole grains served?	11.47	15.66	19.02	3.56	10.12	**0.0**	0.43
… are vegetarian entrees offered at lunch?	9.4	6.79	7.69	5.14	1.77	0.18	-0.27
… are scratch-made sauces offered?	3.06	2.57	4.59	4.52	3.62	**0.06**	0.4
… are scratch-made dressings offered?	3.39	5.97	1.57	1.49	4.06	**0.04**	-0.3
… is dessert offered at lunch?	1.51	4.55	0.4	1.45	2.49	0.11	-0.23
How many times per week							
… is a salad bar offered?	4.12	1.73	4.47	1.39	1.07	0.3	0.24
… is processed cheese served at lunch?	3.27	3.3	5.08	15.15	0.56	0.45	0.12
… is pizza served at lunch?	2.03	1.53	2.38	2.58	0.46	0.5	0.16
… is flavored milk offered at lunch?	0.09	0.44	0.0	0.0	2.36	0.13	-0.2
How many							
… lunch entrees are offered to high school students each day?	1.09	2.41	1.32	3.78	0.06	0.8	0.17
… lunch entrees are offered to elementary school students each day?	1.36	1.08	1.36	0.66	0.0	1.0	0.0
… lunch entrees are offered to middle school or junior high school students each day?	1.5	2.65	1.58	2.3	0.02	0.9	0.11
Are a la carte food and beverages offered at lunch? (percentage answering yes)	20.7		14.3			0.48	-1.07
School food-personnel expertise and sense of empowerment							
How many food-service workers							
… demonstrate mastery of knife skills after Culinary Boot Camp?	2.13	2.12	3.74	2.11	10.07	**0.02**	0.64
… express desire to institute achievable improvements?	2.21	2.49	3.42	1.99	5.26	**0.02**	0.39
… request to do more scratch cooking after Culinary Boot Camp?	1.94	2.14	3.64	2.1	10.58	**0.0**	0.67
… report making changes in personal behavior after Culinary Boot Camp?	2.0	2.05	3.45	2.01	9.65	**0.0**	0.54
How many days per week do food-service workers wear chef coats?	0.98	1.62	1.26	2.12	0.49	0.49	0.17
How many times per month are Culinary Boot Camp materials being referenced?	7.59	8.26	7.71	7.51	0.0	0.95	0.02
What percentage of fresh produce is processed in-house each week?	52.39		43.98			0.22	0.0
School food-service facilities							
Does the kitchen have a working white board? (percentage answering yes)	29.60		58.70			**0.02**	0.52
Students' food-related behaviors and choices							
Community involvement and partnerships around school food							
Teacher participation in school food							
How many adults are served at lunch each day?	4.61	3.85	5.75	5.25	1.25	0.26	0.21
Family food literacy and practices							

TABLE 2 Results of Foundation-Collected Data From GEE Analysis (continued)

District-Level Output Variables Grouped by Outcome Domains (n = 9)							
	Timepoint						
	Baseline		Post		Overall Change		
Output		SD	Mean/%	SD	$X^2(2)$	p	d[(a)]
Students' food literacy							
Food-related school policies and culture							
Is the food-service department profitable? (percentage answering yes)	85.7		87.5			0.92	0.03
School food quality and what is served to students							
How many times per month							
… are scratch-made sauces offered?	6.19	7.19	27.11	40.1	2.1	0.15	**0.51**
… are scratch-made dressings offered?	2.0	2.71	3.89	6.21	0.56	0.46	**0.51**
… are canned fruits served?	2.5	3.16	0.89	0.33	2.45	0.12	**-0.51**
… are vegetarian entrees offered at lunch?	20.81	43.34	11.44	9.02	0.4	0.53	-0.25
… is dessert offered at lunch?	4.3	8.79	3.78	6.46	0.02	0.9	-0.18
… are Culinary Boot Camp recipes used on the lunch menu?	12.33	13.58	10.22	7.19	0.13	0.72	-0.32
How many times per week							
… is processed cheese served at lunch?	8.43	6.92	10.67	24.25	0.06	0.81	0.08
… is a salad bar offered?	3.88	1.81	5.22	1.09	3.56	**0.06**	**0.73**
… is flavored milk offered at lunch?	1.71	2.36	0.67	1.66	1.09	0.3	**-0.66**
How many entrees are offered at lunch to elementary school students?	2.38	3.16	2.89	4.22	0.08	0.78	0.41
What percentage of meats served per week are whole muscle versus processed?	5.0	7.46	9.67	5.74	1.88	0.17	**0.65**
School food-personnel expertise and sense of empowerment							
What is the average food cost per lunch?	$1.20	0.18	$1.36	0.38	0.98	0.32	0.39
What percentage of fresh produce is processed in-house each week?	50.0		71.78		1.2	0.27	0.01
School food-service facilities							
Students' food-related behaviors and choices							
How many							
… free and reduced-price meals are served at lunch each day?	1,536.86	1,624.97	1,943.71	2,448.15	0.13	0.71	0.33
… paid meals are served at lunch each day?	663.88	695.25	845.50	860.36	0.22	0.64	**0.81**
Community involvement and partnerships around school food							
Teacher participation in school food							
How many adults are served at lunch each day?	17.29	20.25	57.0	81.29	1.57	0.21	**0.5**
Family food literacy and practices							

[(a)] Cohen's d: is an effect size reflecting the magnitude of change. Interpretation: 0.20=small effect, 0.50=medium effect, 0.80=large effect.

[1] Pringle, 2013.

and in schools with greater engagement. Using preparation of meal items from scratch as an example, cafeteria managers in higher-need schools presumed that some outcomes would have been worse without the initiative. (See Figure 11.) However, they then reported that the initiative helped to not only close this gap, but to surpass lower-need schools. This pattern also occurred when comparing schools with greater versus lesser engagement. Specifically, cafeteria managers in more highly engaged schools presumed things would have been worse without the initiative, but saw outcomes as better with it. These findings suggest that school context may be important to consider in program planning, and that schools may benefit from tailored programming.

Barriers to Initiative-Related Change

- *Initial resistance to change.* Students, school food personnel, and other key stakeholders (e.g., parents, teachers, and administrators) often initially resisted efforts related to healthier school food and eating. The foundation occasionally met leaders who did not share its vision, supported the status quo, or actively impeded reform. This perspective was unpredictable and could change the course of the work swiftly, directly impacting the foundation's ability to meet predetermined outcomes. Initiative staff therefore found that working with stakeholders already invested in the work was instrumental to making progress, and that other stakeholders gradually gained interest after observing success.

- *Rigidity of federal and state guidelines and related policies.* Initiative staff perceived regulations as overly restrictive, often stifling creativity in food-service departments and thereby limiting scratch cooking. There was some tension between the realities faced by school food personnel and the ideals of the initiative.

- *Cafeteria infrastructure.* Schools needed more volunteers and improved infrastructure to handle the increased demand that resulted from improved school food.

- *Employment practices.* Low pay, few benefits, inflexible schedules, and low status among other school staff did not reflect the importance of the work of school food personnel in influencing student health.

- *Lack of resources dedicated to program evaluation.* At the onset of the initiative, the Orfalea Foundation did not have the staff to prioritize program evaluation. Metrics of success were identified three years into the initiative and data collection started at that time. Data collection was also a shared responsibility among the five chef instructors, which made it challenging to standardize the process.

Facilitators of Initiative-Related Change

The initiative was multipronged and aligned to personal and community beliefs. This approach to addressing a systemic problem helped everyone stay focused on the ultimate goal – improving children's lives by improving school food.

- *Support and involvement from key stakeholders.* One of the primary contributors to the success of any large-scale systems-reform initiative is leadership. Support from district leaders facilitated changes in school food systems and led to sustained investment. The initiative owes some of its success to their experience, passion, and integrity. Initiative staff invited these stakeholders to participate in the programming early in the process and kept them abreast of shifts and progress.

- *Personal belief systems.* Alignment between study participants' personal belief systems and the values of the initiative helped participants persist and spur change at the school and district levels.

- *Incremental change.* Being encouraged and willing to make changes slowly, rather than expecting immediate and monumental change, facilitated success. One district, for example, piloted the healthier cooking practices at two schools, learned that it was able to do so while still balancing department

budgets, and then rolled the practices out to other schools.

- *Aligned community attention.* Communitywide interest in and nationwide attention to healthier living assisted with efforts to effect change at the school and district levels.

- *Shared skills and beliefs about the importance of healthy food.* Training school food personnel together during Culinary Boot Camp led them to hold similar views of the value of healthier cooking and share a comparable level of expertise in scratch cooking.

Sustaining Initiative Efforts

Many study participants expressed optimism about sustaining the initiative's efforts. The new way of working is widely seen as the "new normal" and practices for cooking healthier foods are now systematized and part of the routine. Study participants reported feeling that these practices were no longer daunting or seen as cumbersome; rather, they were ingrained in school culture and community expectations. Participants also reported that since they are personally tied to the work and believe in its value, they are confident that neither they nor other staff instrumental to the work will allow progress to unwind.

Schools and districts also said that sustaining the initiative's benefits would be more likely with further support from funders or initiative partners in several areas:

- *Ongoing professional development.* Staff training, particularly for new school food personnel but also for teachers, was an expressed priority in order to respond to inevitable staff turnover. Resources for future training can offer substantial returns; training builds concrete skills while spreading the vision of school food reform.

- *School gardens.* Study participants recognized the value of the school gardens in developing food literacy among students, and they argued that additional personnel and funding are needed to continue these efforts.

- *Wellness committees.* Additional support would help the committees continue to implement food-related policies, retain focus on efforts to improve school food and healthy school environments, and raise funds.

- *Policy and standards.* Districts would benefit from improved compensation and working conditions for school food personnel, and from state and federal standards for school meals that are better aligned with the realities of the school environment and the benefits of scratch cooking.

Many study participants expressed optimism about sustaining the initiative's efforts. The new way of working is widely seen as the "new normal" and practices for cooking healthier foods are now systematized and part of the routine.

Limitations

This study has three primary limitations. First, it relied on recall and perception to answer questions about success and impact. The mixed-methods retrospective design of the evaluation, however, allows for triangulation of results, thereby establishing validity of the findings. Second, considerable turnover among School Food Initiative staff in its early years limited institutional knowledge of initial practices; in addition, resources for evaluation were not dedicated at inception of the effort, depriving the evaluators of reliable baseline data. Third, initiative staff intentionally chose to focus on Santa Barbara County's public schools, rather than all

The school districts that at first hesitated to embrace healthier, scratch-cooked meals are now their greatest champions, and some required very little financial investment to facilitate that level of buy-in. Foundations often target investment to schools with the highest percentage of low-income, underserved students, but this should not be the only criteria. The level of advocacy from leadership, parent engagement, and the existing culture of health and wellness should also be assessed to determine the best entry point for initiative involvement.

schools (e.g., charter and private), thereby limiting the generalizability of the findings.

Conclusion

The School Food Initiative has accelerated and supported change in personnel professionalism, improved the quality of school meals, and increased students' exposure to and acceptance of healthy foods. School food personnel were better trained in and equipped for healthy-cooking techniques, and school culture and policies were more aligned to the goal of improving student health. Further, the initiative's impacts seem to be as relevant to high-need students as they are to those from families with higher socioeconomic status, although they may have had greater influence on high-need students, young students, and those in schools that were more heavily engaged with the initiative. These findings indicate that future similar efforts have a strong likelihood of positive impact within a variety of contexts and settings, particularly those serving higher-need students. Study participants expressed a commitment to supporting healthy-eating efforts and sustaining positive changes for the good of students and school food personnel.

Several promising practices were identified throughout the course of program implementation and as a result of this evaluation. Promising practices from program implementation draw upon lessons learned as initiative staff reflected on their work. Promising practices that surfaced from the evaluation were taken from trends related to the initiative elements that were most and least successful; the impacts that did and did not manifest as a result of this work; the barriers and facilitators to implementation; and the requests for additional support. These may inform the efforts of other organizations to conduct or fund similar work, preemptively overcome barriers to implementation, and sustain change.

Promising Practices Identified by the Foundation

- *Systematically reflect.* When bringing on new staff or leadership of the program or initiative, take the opportunity to re-examine your theory of change. This will build buy-in and support for your direction as well as provide the opportunity to make revisions and ensure that you are staying on track. Periodically re-examining your theory of change will also prevent discrepancies and gaps when conducting your summative evaluation.

- *Be transparent.* When evaluating a specific grantee's performance (i.e., change in behavior and values), it is important to share the metrics by which they will be assessed. Even more valuable is to create a shared theory of change and evaluation

framework that the grantee can then incorporate into its organizational culture or align with its strategic plan. This creates a culture of continuous improvement that benefits both the funder and grantee, and builds a pathway to sustainability.

- *Be more strategic about how, when, and why you invest.* The school districts that at first hesitated to embrace healthier, scratch-cooked meals are now their greatest champions, and some required very little financial investment to facilitate that level of buy-in. Foundations often target investment to schools with the highest percentage of low-income, underserved students, but this should not be the only criteria. The level of advocacy from leadership, parent engagement, and the existing culture of health and wellness should also be assessed to determine the best entry point for initiative involvement. It is worth the effort to build engagement slowly, because the returns over the long term are that much greater.

- *Invest in evaluation.* Foundations should allocate sufficient resources, staffing capacity, and expertise to evaluation. This investment will support the integrity and rigor of the data collection and analysis processes, therefore improving the credibility of the evaluation findings. Furthermore, investment in evaluation provides the opportunity to share findings and recommendations with other foundations and communities, thereby leveraging the impact of investments and minimizing duplication of efforts.

Promising Practices Identified by the Evaluation

- *Remain up-to-date on the school food climate and related regulations.* School food quality is a trending issue nationally, which can mean frequent shifts in regulations and expectations. Improving school food requires understanding school politics and processes. Understand the realities that school food personnel face, and operate within them.

Consider a multipronged approach to supporting school-food personnel: they are critical to improving school food.

- *Create an overarching vision and strategic plan.* A thoughtful and connected plan helps everyone stay focused on the ultimate goal of improving children's lives by improving school food. Such a plan also helps stakeholders weather challenges related to change, guides storytelling and marketing activities, and includes a sustainability framework.

- *Recognize the importance and contribution of school food personnel in improving children's health and well-being.* Include this as a topic in trainings. Work to improve the employment policies and professionalism of this crucial workforce.

- *Consider a multipronged approach to supporting school-food personnel: they are critical to improving school food.* Provide them with training, funding for tools, follow-up support, and a peer-support mechanism. When equipped with the necessary skills, equipment, infrastructure, and peer-accountability system, they can make improvements stick.

- *Get stakeholders on board early and hold them accountable for change.* Engaging parents, administrators, teachers, students, coaches, and school food personnel before launching an initiative to improve school food increases the likelihood of success. Doing so prior to rollout can create buy-in and make implementation easier. Explore ways to expand outreach to families and communities to sustain changes made within school walls.

- *Engage first with the willing.* Before beginning a school food initiative, identify readiness in stakeholders and in the community.

There can be ups and downs even in a program with many successes, so develop and foster a sense of tenacity in your stakeholders. Some food-service departments saw a dip in revenue in the initial implementation of scratch-cooking techniques, but later became profitable as a result of perseverance and creativity. In the end, participation in their meals programs increased.

Initiate activities first with those who demonstrate an inclination toward food-related efforts. Consider implementing activities with younger students first; when students are provided scratch-cooked school meals from a young age, they can grow up in food-literate school environments and expect healthy meals.

- *Consider context.* Consider individual schools as part of program planning, perhaps tailoring initiative activities to various subgroups. There is some indication that this work is particularly effective with schools that are highly engaged and schools with higher-need students.

- *Embrace change and start small.* Help stakeholders embrace change rather than fear it. The work of improving school food is often perceived as daunting, but with a coalition of supporters can be easier than anticipated and get easier with time. Recognize that incremental change is part of the plan and thus worthwhile.

- *Engage policymakers and advocates.* Policy-level issues affect on-the-ground conditions for school food initiatives. Be prepared to discuss policy-level issues with key stakeholders who can support or impede change. Discuss the value of school food personnel – in particular, ways to demonstrate their value through better compensation, ongoing professional development, and greater respect. Highlight the unintended consequences of school food regulations in discussions with activists and policymakers.

- *Develop and sustain persistence.* There can be ups and downs even in a program with many successes, so develop and foster a sense of tenacity in your stakeholders. Some food-service departments saw a dip in revenue in the initial implementation of scratch-cooking techniques, but later became profitable as a result of perseverance and creativity. In the end, participation in their meals programs increased.

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