Rethinking School Lunch Oakland: School Meal and Farm to School Program Reform

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ABSTRACT

The National School Lunch Program is the second largest federal food assistance program. It is a unique setting to determine how we can environmentally improve our food system, which is driving both a rise in environmental degradation and diet-related illnesses, because it serves a large population of grade school students, whose future eating habits are shaped by dietary patterns formed in adolescence. Farm to school programs, which increase access to fresh, healthy foods in school meal programs through local food purchasing and strengthen students' connections to local food systems, are now established at over half of U.S. schools. My thesis explores how current work to implement comprehensive school meal reform in Oakland Unified School District is responsive to school site level needs to support healthy eating and environmental literacy. I qualitatively analyzed 87 interviews from 16 different elementary schools across three academic years (before and after the COVID-19 pandemic and garden and kitchen facility renovations) from conversations with teachers, principals, parents, and administration. In the academic years 2016-18, interviewees expressed negative perception of school meal taste and appearance and a desire for more scratch-cooked, culturally relevant meals. They highlighted a general disconnect between farm to school and school meal programming. In academic year 2023-24, participants expressed positive perceptions of the salad bars, which are now in every elementary school, but still expressed desire for more nutritious and scratch-cooked meals. The new garden and kitchen facilities renovations have improved farm to school programming at elementary schools.

Keywords

National School Lunch Program (NSLP), school meal program, Oakland Unified School District (OUSD), food security, garden education

INTRODUCTION

The current food system is responsible for driving both environmental degradation and increases in levels of diet-related disease (Stern 2022). Globally, food systems contribute to nearly a third of global greenhouse gas emissions (Vermeulen et al., 2012) and in the U.S., more individuals are sick than healthy, with diet-related illnesses playing a major role in their health (Fleischhacker et al., 2020). As climate change-induced disasters such as extreme droughts, flooding, and extreme temperatures increase pressure on food production, distribution, and accessibility to fresh produce, it is imperative to transform the current food system into one that is both more resilient to environmental changes and can take an active role in accelerating the green transition. Systemic changes that strengthen the resilience of farmers and their crops, including replacing current monoculture farming practices with diversified agroecosystems and maintaining local crop genetic diversity, will help the food system and all of its actors adapt to and thrive in a climate changed environment (Altieri et al., 2015). Food safety net programs comprise a substantial portion of the overall food system and offer the unique opportunity to promote sustainable dietary patterns as they serve a large population that can establish healthy, environmentally-friendly habits (Stern 2022). In California in early 2023, 4.2 million households participated in one or more of the three largest nutrition programs — CalFresh (also known as Supplemental Nutrition Assistance Program, or SNAP), the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC), and school meals, which refer to both the National School Lunch Program (NSLP) and the School Breakfast Program (SBP) (Public Policy Institute of California).

Environmental improvements in the NSLP, which supports grade school children and is the country's second largest food and nutrition assistance program after SNAP, can uniquely improve both environmental and health outcomes in participants. The NSLP alone served just over 28 million children per day in the academic year (AY) 2022-23 (FRAC). Addressing environmental problems in food safety net programs through measures such as increasing local procurement and incorporating seasonal produce into school foods can both reduce environmental threats and support healthy eating habits in participants. These changes in eating habits can have long-lasting effects — research shows that dietary patterns established in childhood can shape the eating habits present in adulthood. Consequently, childhood is often

perceived as a critical time period to develop healthy eating behaviors (Malachowska and Jezewska-Zychowicz 2021).

Oakland Unified School District (OUSD) is a large urban school district located in California's Bay Area in the country's second most racially diverse city (OUSD). In academic year (AY) 2022-23, there were 49,032 students enrolled across 106 schools. The largest enrollment by ethnicity in the district are Latino (49.5%), African American (19.8%), Asian (10.3%), White (9.3%), multi-ethnic (6.1%), and unreported (3.2%) (OUSD Dashboard). Nutrition Services serves 9,312 breakfasts, 8,200 lunches, and 8,500 supper snacks every school day free of charge (OUSD). The district is able to serve these meals for free through California's Universal Meals Program implemented in AY 2022-23, which mandates that local educational agencies provide a nutritiously adequate breakfast and lunch for all children every school day (California Department of Education). OUSD has a dedicated center for district-wide school food programming that connects nutrition, education, and community programs called "The Center," which is comprised of the Central Kitchen, Instructional Farm, and Education Center (OUSD). The Center is the hub for facilitating and supporting the Environment, Food and Garden (EFG) programming that serves as the framework for OUSD students to deepen their connection to place, food, and community. The term "EFG programming," which is more commonly used in the district, will be used interchangeably with "farm to school programming" in this paper. In alignment with Nutrition Services and the school food production also hosted at the Center, the Education and Community Programs Team at the Center develop programs that connect the environment, food system, and gardens on site and on OUSD school sites (The Center).

The purpose of my research is to explore how current work to implement comprehensive school meal reform in OUSD is responsive to individual school site level needs to support healthy eating and environmental literacy. To structure my research, I studied three connected subquestions surrounding what the programming and/or facilities needs are at the site level to support healthy eating, how responsive EFG programming and kitchen facilities are to the needs of school site stakeholders, and what challenges remain to implementing comprehensive school meal reform at the site level.

HISTORY AND CONTEXT OF OAKLAND'S FOOD ACCESS

Food access in Oakland is shaped by a multiplicity of factors that have roots in past racist policies which have evolved and persist today. Areas with high rates of indicators such as poverty or unemployment often experience high rates of food insecurity. Race and housing are also strong indicators of food insecurity. In Alameda County, white people are less likely to experience hunger. Neighborhoods that have high home ownership rates and low rental burden also tend to experience less food insecurity (Alameda County Community Food Bank 2021). All of these indicators are closely related to the development in Oakland and the targeted, systemic racism that has created inequalities in the city that persist today.

Postwar urban development and disinvestment in West Oakland

The postwar urban development that occurred in Oakland in the 1950s and 1960s shaped the city's neighborhoods, transportation routes, and resources. In doing so, the development both shaped jobs and capital in the area and redistributed pressing social inequalities and the public resources with which to address them, which have had lasting impacts on the city today. Discussions about urban decline and development in the city were implicitly racialized. At the time, many civic leaders and business owners framed urban blight not as a "symptom of the racial segregation of housing and labor markets or the unequal distribution of political and economic power, but in the deterioration of aging housing stock, overcrowding, and declining property values" (Self 2003). Working-class African Americans bore the brunt of the redevelopment of postwar cities like Oakland, as the city and federal government collaborated to reengineer and "revitalize" urban spaces. Many of the predominantly Black homeowners in the city's oldest neighborhood, West Oakland, lost their homes following the Housing Act of 1949, a federal government initiative to condemn property and acquire it through eminent domain for redevelopment (Self 2003).

Changes to Bay Area transportation through the construction of three major interstate highways and one rapid transit rail line (Bay Area Rapid Transit - BART) across West Oakland perpetuated the city's racial inequities. Although the newly constructed transportation network dispersed capital investment, it mainly served downtown Oakland, San Francisco, suburban

commuters, and Oakland's port and notably left out West Oakland. Because of the construction, residents in that neighborhood suffered destruction to their homes and commercial districts and unlike earlier transportation eras such as Southern Pacific rail yards, this new transportation network created few jobs for residents. The three highways isolated neighborhoods from downtown and the construction of the BART line destroyed culturally significant and vital African American commercial property along Seventh Street, which used to have jazz clubs, grocery stores, and restaurants (Self 2003).

Home Owners' Loan Corporation grades and redlining

In the 1930s, the federal agency "Home Owners' Loan Corporation" (HOLC) began to assess perceived risk of mortgage loans for residential properties. The term "redlining" originates from this grading system, where areas with the lowest grade are colored in bright red. The HOLC grading system is explicitly racist, as areas with presence of non-white residents, especially Black residents, resulted in a lower HOLC grade (Alameda County Community Food Bank 2021). In comparing Figures 1, 2, and 3 of HOLC grading, food insecurity, and racial demographics in Oakland, it is clear that there is a correlation between the three factors. Areas that scored lower in the HOLC grading system are correlated with areas that have a greater proportion of Black, Indigenous, and people of color, and these areas experience higher rates of food insecurity.

Figure 1. HOLC map of Oakland. Source: Alameda County Community Food Bank.

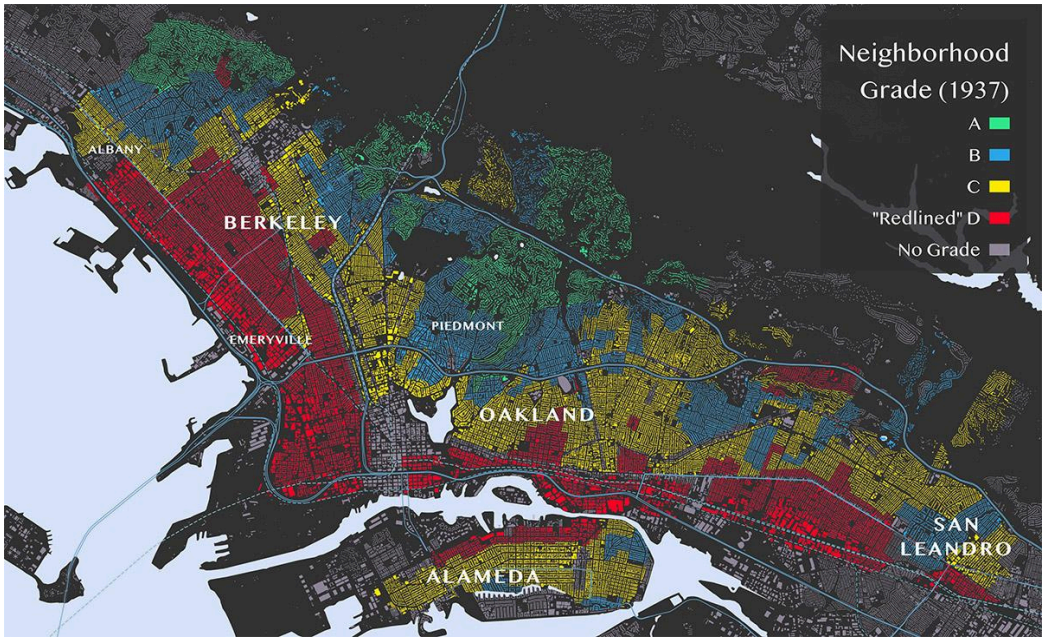


Figure 2. Food insecurity rates in Oakland in 2019. Source: Alameda County Community Food Bank.

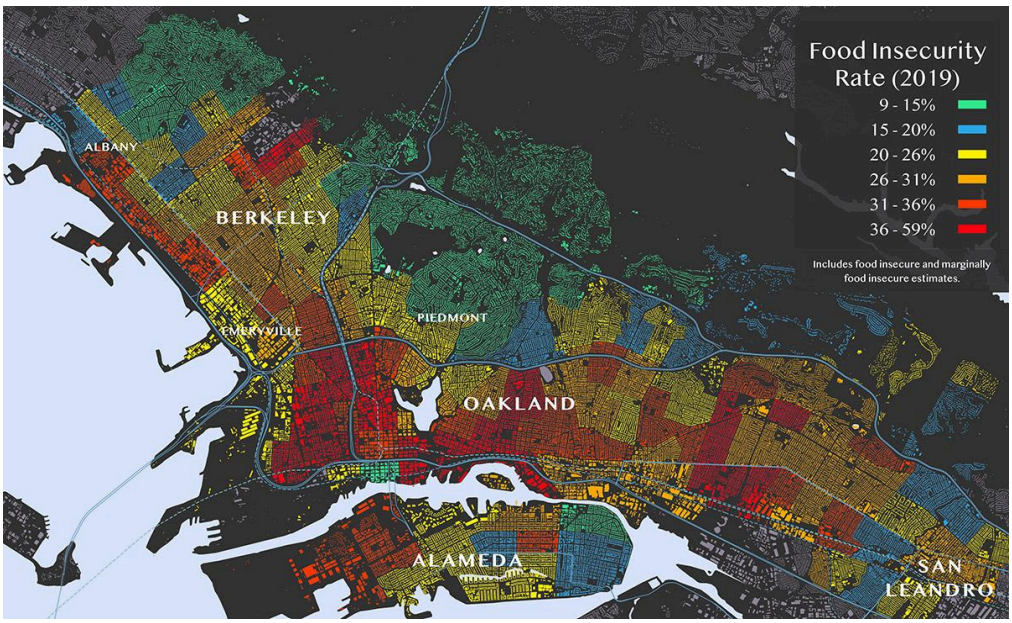
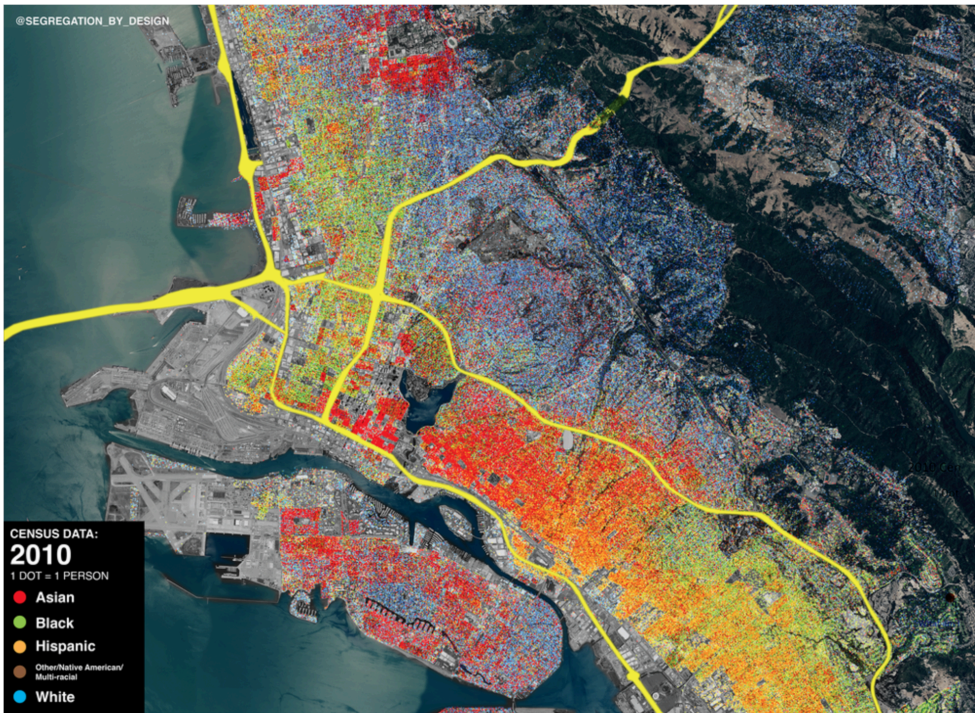


Figure 3. Racial demographics in Oakland in 2010. Source: Susaneck, Adam Paul. "Segregation by Design." TU Delft Centre for the Just City, 2024. https://www.segregationbydesign.com/



Banks used the HOLC maps to offer mortgages on properties and they were less likely to offer mortgages on properties in redlined neighborhoods. These areas were also less likely to qualify for federally insured, low-interest mortgage loans. Along with racial covenants, which limited the sales of properties to white buyers, redlining facilitated the creation of racially homogenous neighborhoods with concentrated inequities, such as food insecurity (Alameda County Community Food Bank 2021).

Lack of food resources in Oakland

The dual histories of redlining and white flight have perpetuated patterns of divestment throughout West Oakland, which has manifested in lack of basic needs for residents. For example, West Oakland residents have extremely limited access to grocery stores and are disproportionately surrounded by fast food joints and liquor stores (Irwin). In 2022, West Oakland's second grocery store, Community Foods Market, closed after only 3 years due to a

lack of sales. This left Mandela Grocery, a smaller grocery cooperative, as the only full-service grocery store in the area (Tsai 2021).

Although not conventionally regarded as food resources, schools in areas like West Oakland are uniquely situated and able to address some of the food insecurity issues present in the area. Consuming both school breakfast and lunch could provide at least 58 percent of daily caloric intake for students (Cullen and Chen 2017). School meal programs, as one of the largest social safety nets, can address food insecurity, serve as the foundation for achieving improved educational outcomes, and strengthen public health. Well-designed and properly financed school meal programs can protect young children from food system limitations such as those present in West Oakland. In addition to improving nutrition and educational outcomes, school meal programs can also leverage power through procurement to improve the food system by buying locally and sustainably. In doing so, school meal programs can help shift food demand towards local producers and shorter supply chains (Sustainable Financing Initiative).

The power of school meal programs is well-demonstrated in OUSD and West Oakland. Staff interviewed for a report conducted in 1996 at Lowell Middle School in West Oakland expressed that the meals students receive at school may be the only food they get during the day (Noguera, 1996). (Lowell Middle School closed in 2006). This continues to be the case today.

Federal farm to school policy and its impact on OUSD

In 1964, the United States established the NSLP under the National School Lunch Act to "safeguard the health and well-being of the Nation's children and to encourage the domestic consumption of nutritious agricultural commodities and other foods." Today, it is now the second largest food and nutrition assistance program in the U.S., in terms of both the number of children served and federal dollars spent. As of 2008, the U.S. Department of Agriculture (USDA) Economic Research Service found that 94 percent of schools in the country participated in the program (ERS).

The program started out of broader national concerns about malnutrition due to poverty, but today, the prevalence of underweight children is rare. National attention has now shifted to rising rates of obesity in children, and especially for children living in poverty (ERS). Critics of NSLP today argue that there are substantial opportunities for school meal program reform to

more effectively address students' physical, social, and emotional needs. A review conducted in December 2023 found that federally funded meal programs are not reaching and feeding all students in need and meeting their nutritional needs, free and reduced-price meals are still associated with segregation and stigma, and that lunch-shaming is still prevalent and alienating for students, among other issues (Gagliano et al, 2023).

Throughout the years, OUSD has undergone many different reform efforts to improve their meal program's nutrition, sustainability, accessibility, and consumption amongst students. When the Healthy, Hunger-Free Kids Act, a landmark legislation that made significant changes to school food policy, through improving quality and nutrition standards of meal programs across the country, passed in 2010 (Lyson 2016), OUSD received a $100,000 farm to school grant (Serrano 2017). Through this grant, OUSD started the state's first California Thursdays (CT) program, which ignited the farm to school movement in California. CT is a collaboration between the Center for Ecoliteracy and OUSD to "increase students' access to local, fresh, and healthy school meals procured entirely from California" (Serrano 2017). Food service teams serve scratch-cooked meals with ingredients entirely sourced from California growers and producers (Center for Ecoliteracy 2016).

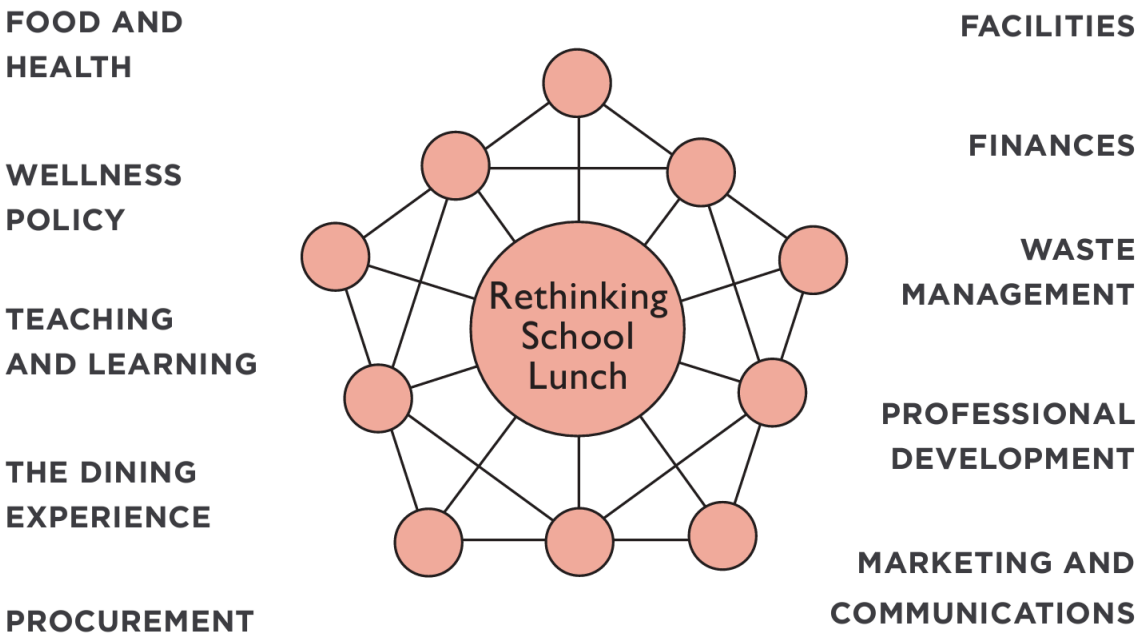
OUSD school meal program and the Center

An article written in 2018 highlighted that although "OUSD prioritized addressing student health disparities, school meal improvements were not originally part of OUSD's first strategic plan to implement a community school district." School meal program reform in OUSD had to be financially self-sustaining in addition to improving food outcomes for students, but the fiscal crisis in the district in 2003, where the district had to take out a $100 million loan and the state took control of the district, presented as an obstacle to reform plans (O'Neill 2018).

A collaboration between OUSD, Center for Ecoliteracy — an organization that builds partnerships and the capacity of K–12 schools to support healthy, sustainable school communities and food systems change in schools — and various philanthropic foundations kickstarted school meal reform in the district through Rethinking School Lunch Oakland (RSLO), a comprehensive school meal reform plan. This plan uses the Rethinking School Lunch planning framework, which is a whole-systems approach that focuses on ten connected aspects

of school food operations, including facilities, finances, food and health, wellness policy, teaching and learning, the dining experience, procurement, waste management, professional development, and marketing and communications (Figure 4).

Figure 4. Rethinking school lunch framework. Source: Center for Ecoliteracy.



Together, the groups highlighted inadequate kitchen facilities as a factor that severely impacted OUSD's ability to serve high-quality school meals (O'Neill 2018). As a previous Nutrition Services Director observed, the district was unable to enact meaningful improvements to their school meal program without "drastic change in [their] facilities" (OUSD Feasibility Study 2011).

To address this issue and to implement RSLO, OUSD repurposed a property into the Center, which is comprised of the Central Kitchen, Instructional Farm, and Educational Center. Facilities personnel and a kitchen design specialist chose 2850 West Street, the former Marcus Foster School, as the site because it would not displace any students at the time. Although the School Board publicly approved the Facilities Master Plan and the Nutrition Services (NS) Master Plan, there is no public documentation that OUSD contacted neighbors surrounding the

site, which generated city-wide conflict. When community engagement finally began, the project design for the site was already 90 percent complete and three respected elders in the community "opposed the project as an industrial use in a residential neighborhood," likening the project and its development process to how the city redeveloped neighborhoods for transportation networks in the 1950s and 1960s (O'Neill 2018).

METHODS

Research approach

This research uses hypothesis-generating research design, as opposed to hypothesis-testing research design. Hypothesis-testing research design typically starts with conducting a literature review and identifying a research problem or gap. Researchers then develop a research hypothesis and operationalize the variables by choosing variables to measure independent and dependent variables before establishing a random sampling technique and determining an appropriate sample size (Auerbach and Silverstein 2003).

In contrast, hypothesis-generating research design is better suited for researching issues that have unclear or open causes. Hypothesis-generating research design starts with research issues that are then molded into research concerns that are explored through narrative interviewing. As an alternative to random sampling, which is realistically unachievable and theoretically impossible in studies of cultural diversity, hypothesis-generating research design relies on convenience and snowball sampling to find research participants (Auerbach and Silverstein 2003).

This research uses a hypothesis-generating research design because I intended to explore school meal program needs at the school site level and the open question of how new kitchen and garden facilities are meeting current needs and what challenges remain to meeting these needs, as opposed to focusing on a specific problem or research gap in OUSD's school meal program. I used purposive sampling in order to organize interviews.

Study site

The research conducted for this thesis is located in Oakland Unified School District (OUSD) in Oakland, California and focuses on the school meal and farm to school programming in OUSD's elementary schools. The district has 40 elementary schools for transitional kindergarten to fifth grade and three schools for kindergarten to eighth grade (OUSD Fast Facts). Figures 4 and 5 show the locations of each elementary school in the district and each school's attendance areas. For the purposes of this research, I use "elementary schools" to describe both schools that encompass transitional kindergarten to fifth grade and schools that encompass kindergarten to eighth grade.

Figure 5. Map of OUSD elementary schools. Source: Oakland Unified School District Web Map Center (ousd.maps.arcgis.com).

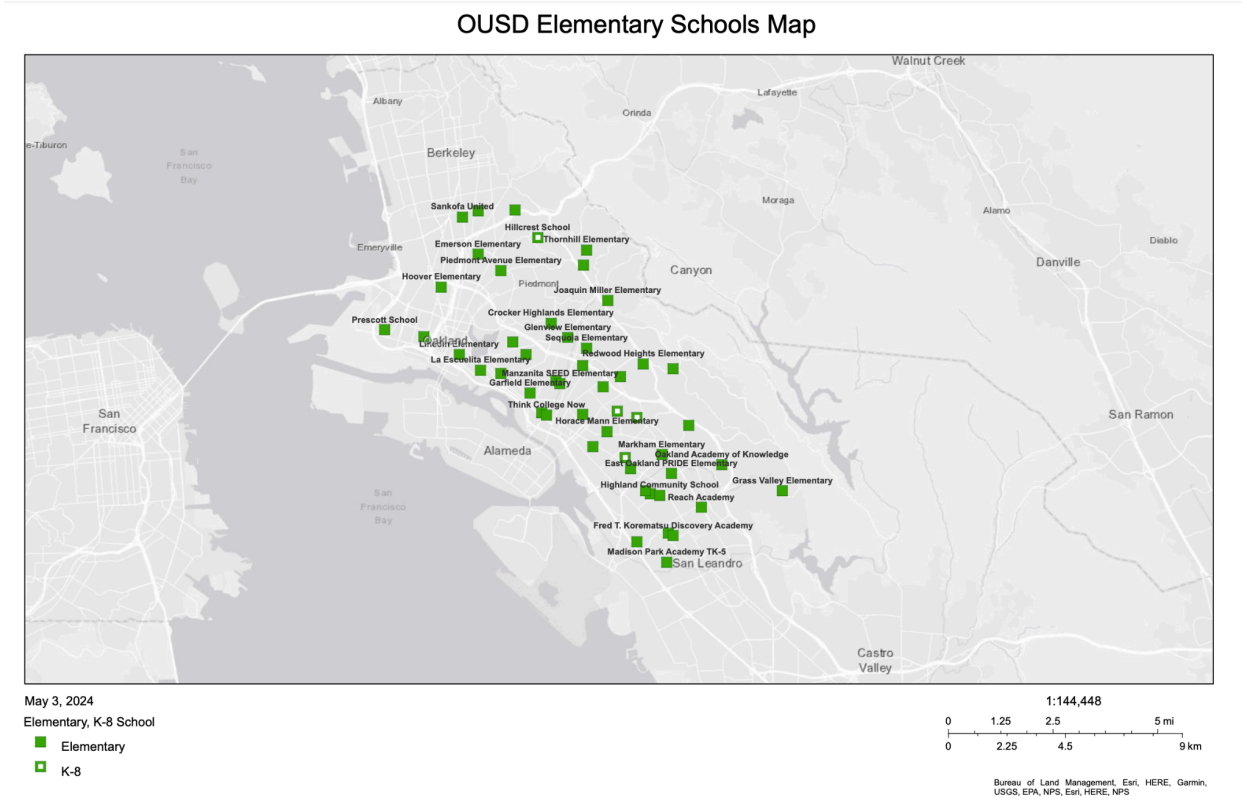
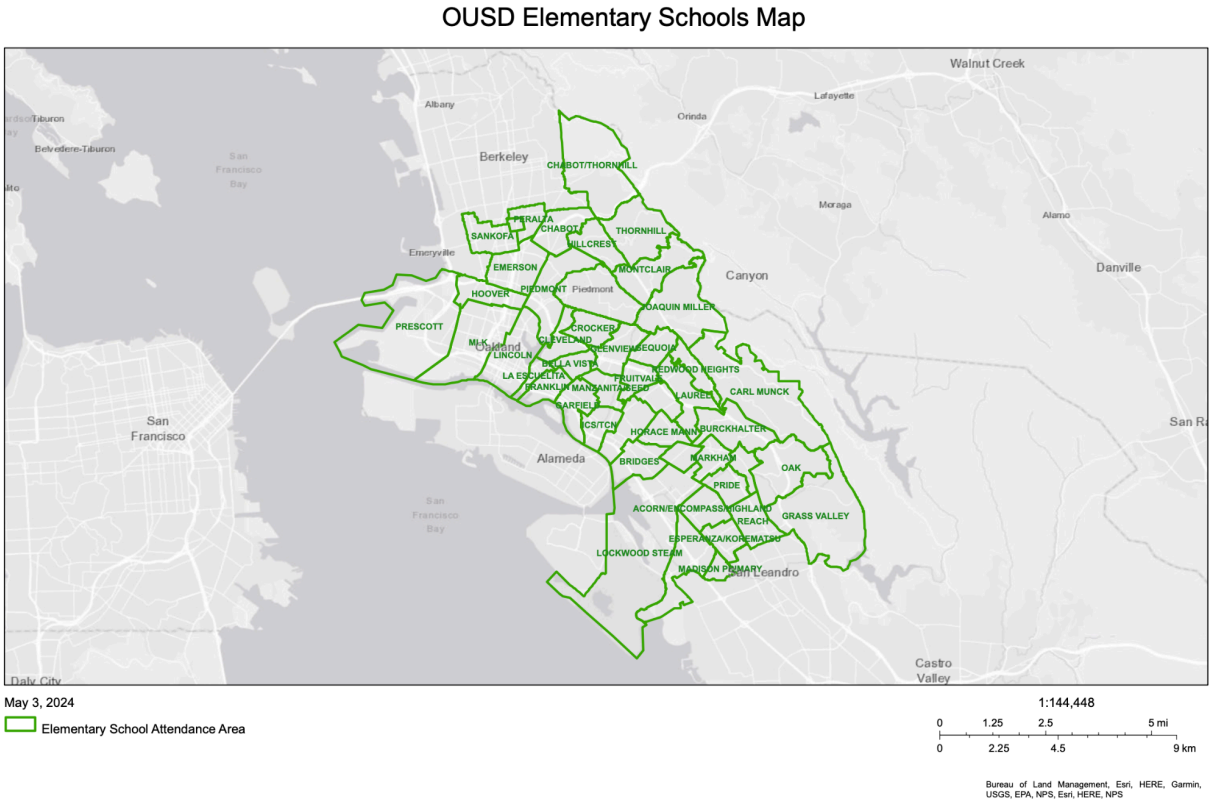


Figure 6. Map of OUSD elementary school attendance areas. Source: Oakland Unified School District Web Map Center (ousd.maps.arcgis.com).



Dataset

I had access to a dataset of past interviews conducted in OUSD in AY 2016-18 for secondary analysis and participated in primary data collection in spring 2024 through in-person and online interviews and site visits. In total, I analyzed 87 interviews collected across three different academic years (AY 2016-17, AY 2017-18, and AY 2023-24) and 16 different elementary schools. My research also contains data from the Center, which was visited in June 2022 and March 2024.

Data collection

I had access to interviews conducted in AY 2016-17 and AY 2017-18 as part of an ongoing study (O'Neill 2020). I conducted secondary analysis of transcripts from interviews and

focus groups with 82 participants across 16 total elementary schools. Most interviews and focus groups were approximately an hour in length. I also participated in primary data collection. In March 2024, I conducted field visits to 3 elementary schools and to the Center, after emailing staff members to request interviews. I conducted four interviews, three were in-person and all were hour-long conversations.

All interviews were conducted with a set of guiding questions intended to center the conversation around the school meal program, but are carefully worded as to not be leading questions. The questions I asked to school site staff and Center staff are located in the appendix and are loosely based on my subquestions. The questions cover the ways in which the school meal program supports community and school priorities, stakeholder perspectives on the school meal program, and how garden and kitchen facilities support current stakeholder needs. The questions I asked to staff at the Center expand on those themes and focus more on how the Center can support site-level programming needs.

Data analysis

For the interviews I conducted, I transcribed interviews using the online manual transcription tool "oTranscribe." I then imported all interview transcripts (including prior transcripts) into MAXQDA, a qualitative data analysis computer software, to analyze and draw themes from the interviews.

In MAXQDA, I imported a coding scheme adapted from the coding scheme that the research team I was a part of developed to support writing an internal report for OUSD. This coding scheme is rooted in the main themes of a draft logic model and theory of change developed in order to ensure that the research focus remains on the school meal program needs. In spring 2023, I expanded on their original coding scheme when I inductively coded the interviews from AY 16-17 and AY 17-18 for a report.

The original coding scheme had eight different themes related to expected outcomes of the school meal program: fiscally self-sustained school meal program, school meal program serving delicious high-quality meals, well-nourished students who are ready to learn, equitable access to nutritious and culturally relevant foods, reduced environmental footprint of the school meal program, improved understanding of food and environment, ongoing data collection and

evaluation, and communications with parents/local community. Table 1 has explanations on the focus of each group of codes. Each outcome has a variety of codes and subcomes associated with it; the codes, their explanations, and the outcome(s) the code is associated with is in the appendix.

Table 1. Outcomes from the draft logic model for the coding scheme.

Outcome	Explanation or Placement in Theory of Change
Fiscally self-sustained school meal program (color code blue)	This group of codes focus on statements about the fiscal health of the NS program, or past deficits, or what is needed to improve the fiscal health of the program. These codes may also discuss student participation in the meal program (which is distinguishable from consumption of food). The rationale is that without fiscal sustainability, lasting improvements to the meal program are impossible.
School meal program serving delicious high-quality meals (color code green)	This group of codes focus on statements about the nutritional content of the food, whether the menu is appealing to students and the presentation of the meal appeals to students. The rationale here is that students will not eat school food that does not appeal to them, but that it is possible to equally prioritize health and wellness with menu offerings that are appealing.
Well-nourished students who are ready to learn (color code purple)	This group of codes focus on statements about student consumption of health food, though this may include statements about students being well nourished through school meals, learning about the importance of nourishment and food or it may be about students needing to be well nourished to learn–more generally
Equitable access to nutritious and culturally relevant foods (color code red)	This group of codes focus on students having equitable access to nutritious food that is culturally relevant and sensitive to food preferences based on the diversity of the student body.
Reduced environmental footprint of the school meal program (color code orange)	This group of codes focus on statements regarding the sustainability, carbon footprint, and wastefulness of the way in which the school meal program operates
Improved understanding of food and environment (color code pink)	This group of codes focus on students, staff, families and community members having an improved understanding of where food comes from, how it's grown and prepared, environmental literacy, and its connection to Oakland history

Ongoing Data Collection and Evaluation (color code turquoise)	This group of codes focus on the continued efforts to collect data on school meal program effectiveness and participation rates in order to inform an evaluation of the district's practices.
Communications with parents/local community (color code brown)	This group of codes focus on how communications with parents and the local community improves participation in and function of school meal or EFG programming.

For this research, I adapted the original coding scheme from the research team's work on an internal report to OUSD to include a greater focus on EFG programming, including new codes on the usage of garden spaces and kitchen facilities and importance of different menu changes. I also expanded some code subsets to include both negative and positive value codes. For example, I expanded the code group "school meal taste and quality" to include both "negative perception of school meal taste" and "negative perception of school meal appearance," as well as "positive perception of school meal taste" and "positive perception of school meal appearance."

Coding process

My interview coding process is loosely based on Auerbach and Silverstein's chapters on the mechanics of coding in their book *Qualitative Data: An Introduction to Coding and Analysis.* They outline three phases of the coding process: (1) use research concern and theoretical framework as the blueprint for making coding decisions (2) organize relevant text into repeating ideas, which can then be grouped into general themes (3) group themes into general concepts, which can be used to construct a theoretical narrative that can answer research questions (Auerbach and Silverstein 2003).

I used both deductive and inductive coding approaches to code the interviews. Deductive coding involves using codes that are chosen prior to the start of analysis, whereas inductive coding involves using codes that emerge from data. Analysis is often cyclical and transitions between deductive coding and inductive coding as analysis progresses. I started my analysis of the interviews with the adapted coding scheme, which I added into MAXQDA. As I processed interviews and expanded the coding scheme to include new codes, I re-coded prior interviews

with the newly added codes. Thus, all interviews included in the analysis have been coded with the same coding scheme.

Analysis of themes in MAXQDA

To analyze the coded phrases in MAXQDA, I use the "Coded Segments" overview for each code. This function allowed me to view every phrase assigned to the code and the interviewee that spoke the phrase. Through using this function, I was able to quickly compare different participant perspectives related to the theme. I then synthesized perspectives related to each code in a separate document to organize my analysis.

RESULTS

Findings from interviews conducted in AY 2016-18

School meal programming and perceptions

One of the most commonly discussed topics in the interviews was the negative perception of school meal taste and appearance, which is captured as a priority through the theory of change desired outcomes "improved school meal taste, quality, and nutrition," "increased school meal participation and satisfaction," and "overall improved student and parent perception of the school meal program." Parents from multiple different schools noted that their children would not eat school meals because they disliked the taste or appearance of the meals, and consequently were unable to focus in school and came home with headaches or feeling ill from hunger. For kids who did eat school meals, parents mentioned that their kids became ill with stomach aches or headaches. According to the parents, this may be because the foods offered in the school meal program are unfamiliar to students, including the idea that some foods such as dairy can be hard to digest for students based on their cultural background, or because the foods were not prepared or served correctly. Parents and teachers at multiple schools complained of frozen or expired milk, unripe or overripe fruit, food at incorrect temperatures, and other instances of improper food handling that led to kids feeling unwell. At some schools where healthier options such as whole wheat pasta and pizza were offered, parents observed that their children perceived these

options as less tasty and less appetizing, and so did not eat them. In general, parents viewed the inclusion of healthier foods positively but generally had negative perceptions of their taste, as compared to more unhealthy options. Parents and staff across different school sites expressed the desire for more usage of spices and culturally relevant seasonings to address the issue of bland and unappetizing meals. The desire for more scratch-cooked, fresh meals was also expressed frequently in parent and teacher interviews, with some parents and teachers observing that meals that were scratch-cooked in the district seemed healthier than the ones that arrived on-site pre-packaged.

School dining environment

The desired long-term outcome of improved dining environments conducive to enjoyable and efficient dining experiences is a priority that is reflected in both parent and teacher interview transcripts. Both parents and teachers felt that students were given an insufficient amount of time to eat, and were consequently rushed to finish their food or unable to finish their food before leaving the cafeteria. Many teachers discussed the issue of serving breakfast to students who arrived to school late and missed class to eat breakfast, as the majority of schools did not allow students to eat breakfast in classrooms due to concerns about possible disruption and pest infestations. At one school where students could eat breakfast in the classroom together before starting instruction, staff noted that eating breakfast in the classroom was a successful change to the school's meal program, and that this change both addressed hunger issues and built a sense of community amongst students.

Teachers and school administration expressed a desire to improve the noise and activity level in the cafeteria, noting that the environment felt too loud and chaotic. Teachers, school administration, and some parents also conveyed a desire for improved waste management in the form of reduced plastic packaging, both for environmental reasons and to improve perception of school meals, and reduced usage of plastic utensils.

Alignment of EFG and school meal programming

Ensuring the alignment of all education and community programs, one of the priorities in the theory of change, was also expressed as a priority for teachers, particularly those involved

with garden education and EFG programming. However, multiple teachers observed that there seemed to be a disconnect between the lessons on healthy eating and environmentalism from garden programming and the food and plastic packaging in the school cafeteria. They expressed the perception that cafeteria food is unhealthy and does not foster healthy eating habits, which seems to be in opposition to the ethos of garden education. Additionally, they observed that kids are willing to try new foods from the garden but are less willing to try new foods in the cafeteria, demonstrating the importance of student buy-in and ownership when connecting garden education with increased vegetable consumption in the cafeteria.

Stakeholder buy-in to school meal program reform

Community buy-in, a long-term outcome in the theory of change, was considered by parents and teachers a crucial element to implementing effective school meal program reform. However, multiple parent focus group interviews expressed concern over whether their opinions voiced in the interviews would lead to meaningful and timely improvements to the school meal program, demonstrating the importance of building trust between the school administration and parent community, and increasing community buy-in. The lack of staff buy-in was a recurring theme in parent and teacher interviews as well. Some parents perceived a lack of staff buy-in in cafeteria workers, which in turn negatively influenced the quality and presentation of school food. Teachers emphasized the need to increase engagement with cafeteria staff, both through fostering respect for their work and empowering them with nutrition knowledge to support them in making nutritious and tasty school meals.

Parents and teachers expressed a desire for improved communication between parents and school administration about the school meal program. In particular, parents expressed the need for accurately updated menus available in more languages and an accessible way to provide feedback on the school meal program.

The interviews are unclear on the extent of taste testing or the incorporation of student opinions into the school menu. Very few interview transcripts mentioned the use of taste testing, although a few participants expressed the desire to survey households to gain a better perspective on the foods students eat at home or to incorporate parent feedback on school meals into school meal menu planning.

Topics that are unaddressed by the theory of change

Parents and staff from each school site generally shared the same perspectives on school meal program quality and satisfaction at their respective sites, however, sites differed in terms of quality and participant satisfaction. There seemed to be inconsistent quality and nutrition of school meals across school sites, with participants from some school sites perceiving school meals to be healthy and fresh and other participants from other school sites perceiving the opposite to be true. Additionally, there was inconsistent quality and variety of offerings between breakfast and lunch within school sites. For example, parents from one school viewed the school lunch offerings more favorably than school breakfast offerings, while staff at another school observed that breakfast was more well-liked than lunch. Some parent focus groups expressed negative perceptions about both school breakfast and lunch. For school sites where multiple groups of parents and teachers were interviewed, their perspectives on school meal quality, taste, and nutrition were generally consistent with each other.

Although the theory of change includes the intended outcome "improved school meal taste, quality, and nutrition," it does not account for consistency of taste, quality, and nutrition across school sites. Interviewees with students at schools with on-site cooking kitchens more frequently described school meals as healthy and tasty than interviewees with students at schools without on-site cooking kitchens.

Teachers also voiced concern over the inconsistency in access to EFG programming, an unaddressed nuance to the desired outcome of "increased food education opportunities in classrooms, cafeterias, and gardens" in the theory of change. At most school sites during this time period, garden education opportunities were an opt-in option for teachers, so students generally only accessed the garden if their teachers had time to fit it into their lesson plan and made garden education a priority. Participants from many different school sites also cited lack of staff and funding as a significant obstacle to providing more EFG programming.

The theory of change also does not capture the non-food related benefits of garden education, such as increased teamwork skills and collaboration among students, which can positively affect school spaces outside of the garden. Both teachers and parents noted that garden

education is beneficial for kids who have difficulty focusing in a traditional classroom setting and increases respect among students as they recognize different strengths in each other.

Findings from interviews conducted in AY 2023-24

School meal program programming and perceptions

Similar to prior interviews, the negative perception of school meal taste and appearance was a commonly discussed topic among interviewees. Staff at the three school sites noted the high amounts of school food waste occurring in cafeterias, even at the school site where a participant expressed the view that the school food quality had improved. Participants expressed the desire for more healthy, scratch-cooked meals that are culturally relevant, but were unsure of how to implement those improvements at scale. They viewed the school breakfasts as particularly unhealthy.

All elementary schools in the district now offer a produce bar, also referred to as a "salad bar," everyday, which supports local procurement with farmers. Participants viewed this change as highly positive and noted how this option expanded students' access to fresh fruits and vegetables. Some participants expressed a desire for more alignment between FoodCorp curriculum, especially around culturally relevant foods, and the foods offered from the kitchen and in the salad bar. District staff noted the success of promoting and educating the school community about the newly established produce bars, but noted that they have not been able to make as much progress with other aspects of the school meal program. Three participants expressed a desire for more communication with students and parents and formalized feedback about EFG programming and/or the school meal program. For example, one staff member sent home recipes related to students' FoodCorp curriculum, but did not know if families had utilized the recipes.

Garden and kitchen facilities

All the sites that were visited in spring 2024 had school gardens that were growing varying amounts of herbs, flowers, and/or produce. Two schools had small gardens that were inconveniently located on school grounds, in terms of location on campus and student access to

the space. At one school garden in particular, a staff member expressed frustrations with how cramped and shaded the garden space was, leading to less student engagement with the garden and fewer garden education opportunities. Additionally, at the beginning of the school year, the garden had soil that was too old to use, which delayed planting and growing. The lack of communication about the new garden space currently being constructed in another location on the campus exacerbated the issue.

All the sites that were visited in spring 2024 also had new combination ovens, which can be used to cook foods in a variety of methods, including steaming, baking, roasting, and oven frying. One participant noted that the food served is fresher than the food previously served in packages because foods now arrive on site frozen and then are prepared using the combination ovens. They noted an improvement in student reaction to the food offered in the cafeteria as a result of this. Kitchen staff view the new combination ovens as a positive change in kitchen facilities. Using the combination ovens ensures that the food is cooked consistently and thoroughly, and gives staff more time to devote to other tasks, such as cutting fruits and vegetables to make them more accessible and appealing to students. District staff communicated that the new expanded kitchen facilities at the Center's central kitchen were helpful for producing the high volume of meals distributed throughout the district. However, participants expressed that the quality of equipment in the new kitchen facilities may be too high-end for maximum operation success, due to operation needs and lack of adequate staff training. Participants pointed to a lack of adequate long-term planning for creating this issue.

Strategic planning

A consistent theme in interviews is how the lack of strategic planning and cohesion of farm to school programming across staff has made it difficult for comprehensive school meal reform in the form of alignment of EFG programming and the school meal program. For example, with respect to the recent kitchen upgrades, staff interviewed are unclear how strategic the renovations are in terms of long term plans to have all school kitchens function similarly so that all school sites can receive and produce similar foods from the central kitchen. High leadership turnover in Nutrition Services and at schools and the COVID-19 pandemic, as well as the district's labor shortage (existing in part because of high costs of living in the Bay Area

combined with the lack of funding to pay higher wages), has exacerbated the issue. Participants expressed strong desire for more funding, especially long term funding, and staff to enact the desired farm to school programming.

Participants noted that the primary reason for why it is difficult to have and follow a multi-year plan is due to their perception that the district never developed the right infrastructure to implement comprehensive school meal reform. Additionally, participants expressed the view that farm to school programming needs to be a priority for district leadership, which it currently is not due to the myriad of other pressing issues that the district is addressing. Even if district leadership identified food programming as a priority, participants acknowledged that it would be difficult to act on due to all the other district priorities.

However, participants note that the EFG team has been able to make significant progress on many aspects of the original Rethinking School Lunch Oakland plan despite the barriers. For example, school field trips to the Center, which are once a year for select grades on a first-come, first-serve basis and which are highlighted positively by teaching staff for student engagement, are a manifestation of the district's vision for fully aligned EFG and school meal programming. On field trips to the Center, students do garden activities and participate in environmental and/or garden lessons that are connected with the other curriculum that they are learning that year, as well as cook and eat a meal together.

DISCUSSION

The overarching objective of my research is to determine how current work to implement comprehensive school meal reform is responsive to individual school site level needs surrounding healthy eating and environmentally literacy. To do this, I first assessed the programming and facility needs at the school site level, and then determined the ways in which EFG programming and the new kitchen and garden facilities meet the needs of students, staff, and parents. Lastly, I identified challenges that remain to implementing comprehensive school meal reform at the school site level. Participants most frequently identified a need for improved taste, nutrition, and appearance of school meals, which is tied to their perception that packaged foods are less fresh and unhealthier than unpackaged meals. They also expressed desire for more EFG programming through increased student garden access, FoodCorp lessons, and better

planned garden spaces. The kitchen equipment upgrades, cafeteria renovations, and new garden spaces have addressed some of participants' concerns. Notably, the school sites I visited in AY 2023-24 all had new combination ovens, which standardized food preparation and allowed kitchen staff to serve more food unpackaged. Improving communication with and feedback about EFG and school meal programming between staff and parents and amongst staff would improve cohesiveness and relevancy of the programming. At the district level, the lack of staff and funding capacity to conduct long term strategic planning has impacted how school sites provide EFG programming to students.

Needs at school site level to support healthy eating and environmental literacy

A dominant theme in interviews conducted in AYs 2016-18 is the negative perception of school meal taste, appearance, and nutrition. The negative perceptions are in part facilitated by plastic packaging and the improper way school foods were prepared and stored for consumption. Previous research conducted on the impact of kitchen infrastructure on OUSD's school meal program echoed this, finding that "OUSD's continued inability to offer freshly prepared, unpackaged food at most sites appeared to impact student response and consumption of school food." Even if school meals are high-quality, students may be unwilling to eat them if the foods are packaged and look similar to processed food or microwave meals (O'Neill et al., 2020).

The process of acquiring and accessing garden spaces seemed fraught with obstacles related to construction delays and lack of strategic planning. At one particular school site, interviewees from all years noted the delays in construction of the garden space and expressed how inaccessible the school garden was to students after it was built due to location and size. The lack of access to the garden space is a significant barrier to achieving a successful garden program (Diaz et al., 2018).

How responsive programming and kitchen facilities are to the needs of stakeholders

Issues with stigma about applying to the NSLP have improved with the passage of California's Universal Meals Program. Participants who were interviewed prior to the passage of the Universal Meals Program expressed hesitation about completing paperwork to apply for free and reduced-price meals and sharing their income information with the district, but now, all

students have access to free meals. Universal free meals may also decrease stigma surrounding access to school foods in the cafeteria, boost student achievement and attendance, and can even have a protective effect on suspension rates (Domina et al., 2024).

Participants interviewed in AY 2016-18 expressed desire for more garden access and classes. Two out of the three school sites visited in AY 2023-24 had a newly constructed garden space or were undergoing construction to build a new garden. For students who have access to gardens, staff highlighted how these spaces can be calming for students and engage students who learn better outside of traditional classrooms. A systematic review that researched the health and well-being impacts of school gardens on youth found that gardens improved participants' well-being (Only et al., 2016) and a review of longitudinal school garden intervention studies found that school gardens can improve academic performance (Berezowitz et al., 2015).

Parents and staff at one school site expressed concerns about how the level of noise and chaos in the dining environment impacted students' dining experience. This school site recently received cafeteria renovations to place sound dampening material in the walls. A staff member interviewed in AY 2023-24 noted that these renovations improved the sound levels in the cafeteria and students' dining experience.

Participants also expressed strong desire for more on-site scratch cooking and less packaged foods in the school meal program. All three school sites visited in AY 2023-24 had new combination ovens in their kitchen facilities, which allow these sites to do more involved cooking with the frozen foods that the Center distributes to sites and to serve more foods without plastic packaging. Serving school meals in packaging may deter students from consuming school foods (O'Neill et al., 2020), so foods prepared in combination ovens and served without packaging may increase student consumption of meals. The combination ovens may also make schools more willing to prepare and serve leafy greens (George et al., 2015).

Challenges that remain to implementing comprehensive school meal reform

Communication and feedback on EFG and school meal programming

There is still a lack of formalized methods for communication of and gathering feedback for EFG programming. Parents and staff interviewed in AY 2016-18 expressed desire for more

communication about EFG programming and garden education, with some parents saying that they received no communication about garden education. In comparing interviews between school administration and parents, I noticed that staff typically assumed parents had few to no issues with the meal program, while parents expressed desire for meal program improvement and were unsure how to communicate their feedback. Parent buy-in and involvement with farm to school programming is critical for its success — research on successful farm to school implementation suggests that "increased awareness of, motivation for, and/or support of farm to school" by stakeholders such as parents is important for implementation (Lee et al., 2019).

Gathering and incorporating feedback from students is also an important aspect of EFG and school meal programming that is missing from current programming. Administration staff, parents, and teachers from all academic years in the dataset highlighted the need for more student feedback, such as through taste tests. It is clear from the high levels of food waste that a majority of participants highlighted in their interviews that there is still room for improvement in the school meal program. Palatability of foods is a key factor related to food consumption, so serving foods that are informed by taste tests may increase consumption and decrease waste of school foods. A 2021 systematic review of strategies to improve school meal consumption found that a majority of studies found a positive association between taste tests and school meal consumption (Cohen et al., 2021).

Lastly, participants highlighted the need for the inclusion of more culturally relevant foods into the programming and a bridge between what students were eating at home and at school. Some EFG lessons taught by FoodCorp members are incorporating culturally relevant material through teaching cooking lessons of different non-European foods and some school sites are making their menu offerings more culturally relevant by providing culturally familiar sauces and dips for students to add to foods. However, participants express that the curriculum and foods themselves can be made more culturally relevant, which could be achieved through gathering and incorporating student and parent feedback into EFG and school meal programming.

Successful incorporation of EFG programming into curriculum and the cafeteria

Participants observe that students are excited to try new foods from the school garden that they pick or have grown, but are less motivated to try new foods offered through the school meal program. This indicates a need for more incorporation of EFG programming into school curriculum and the meal program, such as through including foods from FoodCorp lessons into the meal program. Some staff interviewed highlighted the role of long term, strategic planning in successfully aligning EFG programming with menu changes.

Siloing of roles related to EFG also contributes to the lack of cohesion of current EFG programming. Multiple staff who were responsible for different aspects of EFG programming were unaware of the work conducted by or responsibilities of other staff also involved in EFG programming on the site, which resulted in lack of implementation of some aspects of EFG programming, or were unaware of relevant EFG updates, which delayed or otherwise negatively impacted their own work.

Strategic planning is also needed to ensure that the garden spaces are set up for success. A FoodCorp member interviewed in AY 2023-24 expressed frustration that the garden on site was small (which made it difficult for them to teach garden classes), in a mostly shaded area (which made it difficult to grow plants), and only contained old soil in the beginning of the school year (which delayed the planting process).

Dialogue about the importance of and usage of local procurement practices seems to be largely missing from the AY 2023-24 interviews. In the five interviews conducted, only one participant mentioned briefly the success of local procurement in the salad bars now established at every elementary school site. Local procurement practices are a useful and accessible indicator of farm to school success and can also serve as an indicator of improved child nutrition due to the connection between availability and accessibility of fruits and vegetables and their consumption (Roche et al., 2015). Increasing emphasis on local procurement practices may support school food consumption. A systematic review found that local procurement, in combination with other farm to school programming such as school gardens, cooking classes, and nutrition education, resulted in more students trying and consuming vegetable servings than the control group (Prescott et al., 2020).

District-level challenges

Although there are school-level improvements to be made to EFG and school meal programming that would address some stakeholder needs surrounding healthy eating and environmental literacy, some district-level issues still need to be addressed. Multiple participants across all years point to the district's persistent state of underfunding and understaffing, which are obstacles to drafting and implementing the strategic long term planning that would help schools' EFG programming to be more cohesive and responsive to stakeholder needs. The consistency of this theme across study years is important, reflecting the persistence of this challenge. At the site-level, some of the ways this continues to manifest is through delayed school garden construction and limited access to FoodCorp members' EFG programming.

Limitations and future directions

The sample size of the interviews conducted in AY 2023-24 is one major limitation of this research. The five interviews I conducted are not representative of elementary schools in the district or staff citywide. I cannot apply my analysis of the interviews conducted in AY 2023-24 to elementary schools in OUSD, generally. In the future, I would pursue research that would allow me to expand my dataset by surveying or interviewing staff that were representative of staff across different positions at more elementary schools in the district, as well as by interviewing parents and food service staff, who are key stakeholder groups that are missing from my AY 2023-24 dataset to allow for more accurate comparisons between themes from AY 2016-17, 2017-18, and 2023-24.

In the future, a study could be conducted on the facilities and programming needs of all the elementary schools in OUSD to gain a more comprehensive view of how the district can support schools's EFG and school meal programming. It would be useful to compare the programming and facility needs between elementary schools that did and did not receive kitchen and/or garden upgrades. This would help researchers determine what specific changes implement the most effective change at the school site level.

Broader implications

This research explores how current work to implement comprehensive school meal reform in the district is responsive to school site level needs to support healthy eating and environmental literacy through EFG and school meal programming. It details previously undocumented impacts of the new garden and kitchen facility changes at four key sites in OUSD, as well as assesses how the COVID-19 pandemic changed food access and programming at specific elementary school sites. The new kitchen upgrades involving combination ovens allow schools to serve fewer plastic-packaged school foods, which may improve stakeholder perceptions of school food taste and nutrition. However, there is a need for strategic, long term planning in order to improve cohesion between school meal and EFG programming, as well as within staff. As the district transitions out of the tumultuous COVID-19 pandemic and increases their EFG and school meal programming, this research can be used as a guide to determine how best to implement comprehensive school meal reform.

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APPENDIX

Guiding questions asked to school staff and Center staff:

School staff

1. Can you describe your role at this school?
2. Can you describe what the dominant priorities are for this school, as well as the community's dominant priorities?
    a. How do the school's and community's priorities overlap, if at all?
3. How do you see the school food program interacting with school priorities, if at all?
4. What do you observe to be the perspective of families in terms of the role of the school meal program?
5. What kinds of food programs are in place at this school?
6. Could you tell me more about how your work interacts with the school food program and vice versa?
7. What changes have you observed in the recent years with respect to the school meal program at this school?
8. What do the newer kitchen facilities offer and how are they operating?
9. How do the facility changes meet or not meet the needs you identified earlier?
    a. What do you think are obstacles to meeting student and family needs?
10. How does your work interact with the Center?

Center staff

1. How would you describe the school district community and who are the stakeholders?
2. What is the role of the Center in the district?
3. What are the priorities of the Center?
4. How does the Center support site-level priorities related to school meal programming?
5. In what ways do the priorities of the Center intersect with the priorities of the school district stakeholders you outlined previously?
6. How does the Center influence site-level school meal programming?
7. How has the district reformed the school meal program at the site level in terms of gardens, nutrition education, and other wellness programming for students?
8. How are the new kitchen facilities and school meal programming at the sites meeting the needs of each school's stakeholders?
9. What challenges are there to school meal program reform at the site level?
10. What projects related to school meal programming are currently underway at the site level?

Table 2. Coding scheme.

Code	Memo (explanation)	Outcome(s) Code is Associated with
Infrastructure	The participant references some aspect of operations infrastructure–whether it be about a building, delivery/transportation, or equipment	Fiscally sustainable program Quality meals
Facilities	The participant references facilities as important to improving the quality of the school meal program	Quality meals
Transportation/Delivery	The participant references the need for improved transportation and delivery modes for the meal program or ingredients	Reduced environmental footprint
Partners	The participant references external partner organizations	Fiscally sustainable program
Garden and nutrition education partners	The participant references partner organizations as helpful/necessary to delivering garden and nutrition education	Improved understanding of food and environment
Philanthropic funders	The participant references grant funding as critical to NS programming and operations and to improve usage of campus green space	Fiscally sustainable program
Strategic Planning	The participant references strategic planning as needed or as critical to improving school meal program	Fiscally sustainable program Preparedness for disruptions
Menu development	The participant references past changes in the menu that have changed the quality or nutrition of school meals	Quality meals
Improved quality of meals	The participant references changes to the menu that have improved the quality or nutrition of school meals	Quality meals

Desire for change in menu	The participant references a desire for change in the school meal menu (including desire for more variety in school menu offerings) to improve quality, nutrition, or satisfaction of school meals	Quality meals
Positive change in menu	The participant references a change in the menu that has been positively received by students or other stakeholders such as parents and teachers	Quality meals
Negative change in menu	The participant references a change in the menu that has been negatively received by students or other stakeholders such as parents and teachers	Quality meals
Meal preparation	The participant references the ways in which meal preparation varies and how it impacts school meal quality and eating experience or ease of eating for students	Quality meals
School meal taste and quality	The participant references whether school meal quality has improved or emphasizes the need for improvement	Quality meals
Desire to improve school meal nutrition	The participant references the need for more fresh produce, a decrease in processed ingredients, or other menu changes to improve school meal nutrition	Quality meals Reduced environmental footprint
[general negative] Negative perception of school meal taste	The participant references negative feelings toward the taste of school meals or the desire for improved taste of school meals.	Quality meals
[general negative] Negative perception of school meal appearance	The participant references negative perception of school meal appearance	Quality meals
[general positive] Positive perception of school meal taste	The participant references positive feelings toward the taste of school meals or references the improvements in school meal taste	Quality meals

[general positive] Positive perception of school meal appearance	The participant references positive perception of school meal appearance	Quality meals
Kitchen facilities/EFG facilities	The participant references the function of the kitchen facilities or a recent change in kitchen facilities	Quality meals
Desire for change in kitchen facilities/EFG facilities	The participant references a desire for some change in the current kitchen facilities	Quality meals
Positive perception of kitchen facilities/EFG facilities	The participant believes the current kitchen facilities are adequately meeting site needs	Quality meals
Dining Experience and School Environment	How school environments affect student nutrition and health outcomes and program participation	Improved dining environments conducive to enjoyable and efficient dining experiences
Sanitation	The participant references the sanitation state of food preparation and eating spaces	Improved dining environments conducive to enjoyable and efficient dining experiences
Teasing and stigma	The participant references teasing and stigma around school meals	Increased positive messaging
Positive school meal staff interactions	The participant references the school meal staff having positive interactions with students, teachers, or school administration.	Increased staff buy-in, engagement, and accountability
Negative school meal staff interactions	The participant references the school meal staff having negative interactions with students, teachers, or school administration.	Increased staff buy-in, engagement, and accountability
Improved academic performance	The participant references a relationship between improved academic performance and student consumption of school meals or usage of school garden/other campus green spaces	Nourished and ready to learn
Feeling of health	The participant references how school meals or gardens have impacted their overall health	Nourished and ready to learn
Improved feeling of health	The participant references	Nourished and ready to learn

	improvements in their overall health due to participation in the school meal program	
Decline in health	The participant references a decline in overall health due to consumption of school meals	Nourished and ready to learn
Changed habits	The participant references changed eating habits, shopping behaviors at home in relation to school meal participation and education.	Access to food Nourished and ready to learn
Student feedback	The participant references the importance of feedback to provide quality EFG programming to students.	Access to food Preparedness for disruptions
Meal participation	The participant references meal participation	Access to food Quality meals
High meal participation	The participant references high participation in school meal program or EFG programming	Nourished and ready to learn
Low meal participation	The participant references low participation in school meal program or EFG programming	Nourished and ready to learn
Increased food security	The participant references students having increased food security through the availability and nourishment of school meals. This may also refer to increased food security during unexpected school closures, summer holiday, or other events that disrupt regular school meal programming.	Access to food Nourished and ready to learn
Increased number of breakfast, lunch, dinner meals served	The participant references an increase in the amount of breakfast, lunch, and/or dinner meals served at the school.	Access to food
Increased access to free meals due to partners	The participant references the increased access of free meals through partnerships	Access to food
Increased access to free meals due to EFG programming or garden/farm space	The participant references the increased access of free meals through EFG programming such as FoodCorps activities or the	Access to food

	garden/farm	
Increased access to nourishing foods	The participant references an increased access to nourishing foods due to participation in the school meal program.	Access to food
Lack of familiarity with food	The participant references a lack of familiarity with school food due to cultural differences	Access to food
Importance of culturally relevant food that is made correctly	The participant references the importance of culturally relevant school meals that are made correctly, according to participant's point of view	Access to food Nourished and ready to learn Quality meals
Importance of menu options that incorporate different dietary restrictions	The participant references the importance of providing menu options for different dietary restrictions, including those that are common across racial/ethnic groups such as lactose intolerance	Quality meals Access to food
Not enough food	The participant references there not being enough food served at schools (quantity)	Access to food
Waste management	The participant references school efforts in managing and minimizing waste through food and meal preparation	Reduced environmental footprint
Decreased packaging, plastic waste/plastic-free meals	The participant references the decreased packaging of meals	Reduced environmental footprint Quality meals
Desire for improved packaging waste management	The participant references a desire for improved packaging waste management for the school meal program	Reduced environmental footprint
Desire for improved food waste management	The participant references a desire for improved food waste management for the school meal program	Reduced environmental footprint
Procurement from local/California food producers and distributors	The participant references the importance of and effort to procure school foods from local sources	Reduced environmental footprint Quality meals
Change in EFG programming	The participant references a change in EFG programming in	Improved understanding of food and environment

	the recent years	
Increased food education opportunities	The participant references having access to an increased amount of food education experiences in school	Improved understanding of food and environment
Positive impact of Environment, Food, and Garden (EFG) education	The participant references participating in EFG programs as helping with their food education and environmental literacy	Improved understanding of food and environment
Desire for more EFG education	The participant expresses the desire for more EFG programming	Improved understanding of food and environment
Increased student awareness of the impact of food choices	The participant references an increase in understanding how food choices impact their bodies and planet	Improved understanding of food and environment Reduced environmental footprint
Incorporation of school or Center garden into curriculum	The participant references the incorporation of the school or Center garden into the school curriculum or meal programming	Improved understanding of food and environment Reduced environmental footprint
Ongoing data collection and evaluation	The participant references the importance of ongoing data collection and evaluation on program effectiveness and participation rates	Ongoing data collection and evaluation Fiscally sustainable program
Desire for access to EFG programming data	The participant references the desire to view data on EFG programming, such as meal participation rates or nutrition information	Ongoing data collection and evaluation Increased community stakeholder buy-in of The Center and NS programming
Professional development	The participant references the importance of increased opportunities for professional development and training for school staff	Fiscally sustainable program Preparedness for disruptions
Increased OUSD community buy-in	The participant references the importance of having stakeholder (parent/student/teacher/staff or other OUSD community member) support and connection to the school meal program (defined broadly to include food programming and	Increased staff buy-in, engagement, and accountability

	EFG programming)	
Parent/community involvement with school meal programming	The participant references the involvement of parents/local community members in school meal or EFG programming	Increased community stakeholder buy-in of The Center and NS programming
Weak parent/community involvement with school meal programming	The participant references weak parent/community participation with school meal programming, which could be due to lack of time or compensation, or other reasons	Increased community stakeholder buy-in of The Center and NS programming
Marketing/Communications	The participant references the importance of marketing/communications in achieving one or more of the desired outcomes in the theory of change, such as the importance of marketing and positive messaging around OUSD meals to increase participation	Increased community stakeholder buy-in of The Center and NS programming Increased positive messaging around OUSD meals
Communication with parents/families or Oakland community	The participant references communication with parents and families and/or neighbors or Oakland stakeholders related to school meal and EFG programming	Increased food education opportunities in classrooms, cafeterias, and gardens Increased positive messaging around OUSD meals
Weak communication with parents/families or Oakland community	The participant references weak communication with parents and families and/or neighbors or Oakland stakeholders related to school meal and EFG programming	Increased community stakeholder buy-in of The Center and NS programming Increased positive messaging around OUSD meals
Communication with OUSD staff, teachers, or admin	The participant references communications with OUSD internal staff, teachers, and admin related to school meal and EFG programming	Increased buy-in, engagement, and accountability among frontline staff Strong staff culture within NS
Weak communication with OUSD staff, teachers, or admin	The participant references weak communications with OUSD internal staff, teachers, and admin related to school meal and EFG programming	Increased buy-in, engagement, and accountability among frontline staff Strong staff culture within NS
Demonstrated lack of	The participant references not	Increased food education

knowledge of programming	knowing about a programmatic change in the school meal program or Environment, Food, & Garden programming, such as lack of knowledge of CA Thursdays or the Center or new kitchen facilities	opportunities in classrooms, cafeterias, and gardens Increased student awareness of the impact of food choices on their health and the environment