Farm-to-School:
Sowing Seeds for a Sustainable Future

by

Matthew Hargis

A Capstone Presented in Partial Fulfillment

of the Requirements for the Degree

Master of Science in Sustainable Food Systems

Approved 11 August 2025 by

Dr. Kathleen Merrigan

Figure 1 - Group of Detroit students on a field trip to the district's Drew Farm *(Operations / Farm & Garden, n.d.)*

ARIZONA STATE UNIVERSITY

August 2025

ABSTRACT

Farm-to-School (FTS) programs have expanded rapidly since the 2010 Healthy, Hunger-Free Kids Act (HHFKA), now encompassing 74% of School Food Authorities nationwide. Despite widespread adoption, questions remain regarding the long-term efficacy of FTS programs in creating sustained behavioral changes among student participants and the broader impact on school communities. This study examines the effectiveness of FTS programs across multiple domains, including student outcomes, community impacts, and financial implications, through a comprehensive literature review and case study analysis of five top urban FTS programs across diverse geographic and cultural contexts. A deeper examination of the Detroit Public Schools Community District (DPSCD) FTS program through Sustainability SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis, informs strategic recommendations. FTS programs demonstrate measurable positive effects on student nutrition knowledge, fruit and vegetable consumption, and social-emotional learning outcomes. However, sustainability challenges persist, including insufficient staffing capacity (45% of programs), funding limitations (42%), and higher local procurement costs (38%). While FTS programs effectively achieve stated objectives, long-term sustainability requires comprehensive strategic frameworks addressing financial diversification, operational excellence, community partnerships, policy advocacy, and infrastructure development. Successfully implemented programs typically feature dedicated coordination positions, diversified funding portfolios, and strong integration with district wellness policies.

TABLE OF CONTENTS

INTRODUCTION

Since its popularization by the federal 2010 Healthy, Hunger-Free Kids Act (HHFKA), the FTS movement has been promoted and expanded as a vehicle for student wellness in the K-12 institutional setting. Despite this assumption, has FTS proven efficacious in creating positive and lasting behavioral changes in student participants? What potential impacts does FTS have in participating schools? Moreover, what are the financial implications of the practice? This project examines these questions through a comprehensive literature review of the available academic discourse. Specific areas of exploration include student achievement, student wellness, and food insecurity. Additionally, this paper will take an in-depth look at a specific FTS program in Detroit, Michigan, to examine these outcomes in action and to provide recommendations for strengthening its impact with Sustainability SWOT analysis.

FTS as a practice was formally implemented in the United States as far back as the 1890s, with the proliferation of school gardens as learning tools (Burt, 2016). American school gardening roots have ideological links to 18th-century philosopher John Amos Comenius, who postulated that school gardens enhanced students' appreciation of nature (Burt, 2016). Even the term "kindergarten," which means children's garden in German, was coined in 1840, and referred to the widespread European practice of using gardens to enhance students' intelligence by learning nature concepts (Burt, 2016). In these respects, school gardening still follows the same philosophical ideology as a

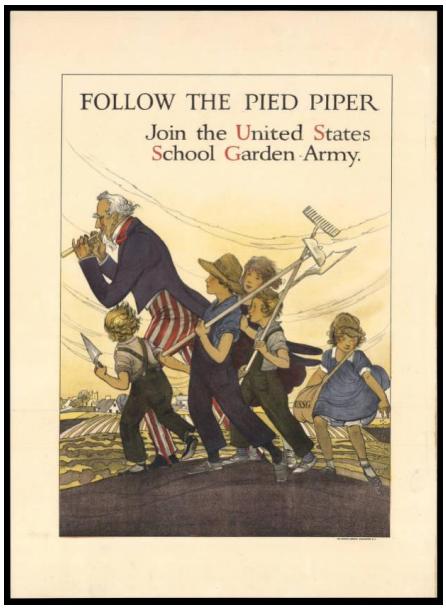

Figure 2 - School Garden Propaganda 1918-1919 (Barney, 1919)

learning tool to enhance student outcomes. In its modern evolution, FTS has expanded to three central tenets: local procurement, school gardens, and supportive education (What Is Farm-to-School, n.d.).

Local procurement focuses on providing locally produced fruits and vegetables for school meal operations. It spurs the local agricultural economy and provides students with fresher, more nutritious meal components at competitive prices. School gardens have long been the central focus of FTS. They engage students by showing them where food comes from, providing formative experiential learning opportunities that can fundamentally shape students' relationship to fruits and vegetables. Beyond learning how to grow food, school gardens can serve as an outdoor classroom where teachers can draw connections to core academic subject areas. Some school districts create school-based farms supporting educational opportunities and direct food production for school meals. Education is the last key focus area of modern FTS. Building on school gardens' academic connections, teachers can provide students with supportive nutrition education to create lasting good food habits. By supporting these central tenets of FTS, the theory is that students will develop healthy eating habits, create a better relationship to the natural world, and strengthen their core academic achievement, all while stimulating the local food economy and providing a vital income stream to local farms.

LITERATURE REVIEW

Introduction

FTS programs have emerged as a critical intervention to address multiple challenges facing American education and agriculture. This comprehensive literature review explores the current field of research on FTS programs, analyzing their

effectiveness across stated programmatic goals affecting student outcomes, broader community impact, and implementation challenges. This report synthesizes recent developments within the field of study, including the latest data from the 2023 USDA Farm-to-School Census (USDAFTSC), policy changes, and emerging research on program sustainability.

Theoretical Framework

FTS programs represent a complex, holistic intervention, operating along the intersection of education, public health, community development, and agriculture. Since the formalization of the USDA FTS Program by the 2010 HHFKA through permanent funding of the USDA FTS grant program (111th Congress, 2010), these initiatives have blossomed from isolated pilot projects to a coordinated national movement encompassing over 74% of School Food Authorities (SFAs) as of 2023 (*Farm-to-School Census Results Overview | USDA-FNS Farm-to-School Census*, n.d.). The growth in 13 years highlights the importance of FTS programs nationwide. Due to its intersectionality with diverse fields of study, FTS programs encompass multiple theoretical frameworks. The Social Ecological Model asserts that individual changes in behavior occur within broader environmental and policy contexts (Prescott et al., 2020). The model, widely used in public health, centers around the interconnectedness of a person's behavior and environment. The National Farm-to-School Network's (NSFN) Theory of Change framework emphasizes three interconnected pillars: local procurement, nutrition education, and school gardens working synergistically to produce positive outcomes across contexts and locales (National Farm-to-School Network Theory of Change, 2018). This framework harnesses resources to a unified goal to enact change.

Growth and Current State of FTS Programs

In the FTS context, the past decade exhibits a remarkable period of growth. According to the USDAFTSC, participation of SFAs increased from 43% in 2013 to 74% in 2023, with spending on local food growing from $350 million to $1.8 billion over the same period (*Farm-to-School Census Results Overview | USDA-FNS Farm-to-School Census*, n.d.). This decade of growth occurred despite significant challenges, including the COVID-19 pandemic, which disrupted supply chains and school operations but could not halt the overall trajectory of FTS.

The 2023 USDAFTSC highlighted that 63% of all SFAs served local food to students, with fluid milk comprising nearly half of all purchases at $955 million (*Farm-to-School Census Results Overview | USDA-FNS Farm-to-School Census*, n.d.). While local food spending has increased, the share of fluid milk has decreased from earlier USDAFTSC reports (U.S. Department of Agriculture, Food and Nutrition Service, 2019). This decline could be attributed to lower overall American milk consumption (Stewart & Kuchler, 2022), or an increase in the diversity of other local food purchases that is demonstrated in the USDAFTSC data (*Farm-to-School Census Results Overview | USDA-FNS Farm-to-School Census*, n.d.). These findings demonstrate a maturation of FTS programs from experimental initiatives to core components of school food systems nationwide.

Student Outcomes

Academic Achievement

Available academic discourse on FTS's impact on student academic achievement is relatively sparse, though it suggests a positive relationship. These outcomes warrant investigation as academic achievement is schools' primary goal

and function. School systems may be more willing to invest in FTS endeavors if data supports improving traditional academic outcomes.

One strategy that FTS programs use to boost academic achievement is integrating garden and nutrition education concepts into traditional standards-based curriculum, potentially improving test scores and student attendance (Ratcliffe et al., 2009; Prescott et al., 2020). By integrating curriculum, students have exposure to key core educational subject areas within the scope of school gardens. Curriculum integration provides students with hands-on learning opportunities that can help reinforce these key subject areas. Educational initiatives within FTS programming demonstrate improved student knowledge of nutrition, science, and agriculture, potentially affecting overall academic performance (Prescott et al., 2020). An important goal of future research is to quantify these potential academic gains. With the curriculum, a key core competency highlighted for academic potential from FTS engagement was scientific knowledge, increasing students' awareness of agriculture and growing cycles (Prescott et al., 2020). Agriculture and growth cycles include significant scientific concepts from botany and ecology to seasonality.

Additionally, by engaging in gardens, students can learn how to collect data and conduct basic scientific observation, skills that can translate to future academic success. The literature identifies on-farm field trips and school garden participation as the primary educational mode for FTS programming. These experiential learning opportunities can foster academic growth indirectly by promoting engagement and interest in academic subject areas (Prescott et al., 2020). An interesting observation made by the researchers was that students who participated in school gardening experiential learning developed increased interest in core subject areas. This point highlights the need for follow-up research. By concluding that students increase their

interest in traditional academics, schools would have more flexibility in expanding experiential learning opportunities like FTS.

While FTS engagement positively affects student academic performance, there is a lack of high-quality studies examining the direct effects of FTS on academics, particularly grades and test scores (Prescott et al., 2020). The implications from Prescott et al.'s study emphasize the need for further research. Existing research lacks long-term assessment or fails to utilize a robust study design necessary to establish a causal relationship between FTS and academic achievement (Prescott et al., 2020). The challenges in data collection and the complexity within the field of study make it understandable to see why studies have been unable to establish a causal relationship. However, it should be a goal of future research efforts.

Wellness

FTS programs aim to impact student wellness outcomes by improving dietary decision-making, increasing nutrition awareness, and fostering positive behavioral changes. FTS programs demonstrate an ability to increase fruit and vegetable consumption among student participants. Educational initiatives like participation in a school garden significantly improve student preference for fruits and vegetables (Rains et al., 2019; Joshi et al., 2008). While these studies suggest an improved preference for fresh fruits and vegetables, it may not translate into long-term dietary changes. Likewise, the introduction of salad bars in school cafeterias featuring local produce enhanced school meal participation and promoted healthier eating habits (Rains et al., 2019). This meal participation boost suggests that students are receptive to introducing local foods, possibly due to freshness, quality, or perceived taste. Programs integrating school gardening and nutrition education demonstrate

increased efficacy in promoting students' nutrition knowledge and preference for vegetables (Rains et al., 2019). This finding highlights how the NFSN's theory of change works in practice, with supporting nutrition education and school gardens working together to boost outcomes. More studies are needed to establish whether this increased preference translates to lasting dietary changes. It is also important to note the limitation of affecting dietary change when schools are only partially responsible for a student's overall diet. This constraint may be especially true in underserved communities where time, knowledge, and financial constraints hamper parents' ability to provide meals based only on their child's preferences.

Beyond dietary improvements, FTS programs have also been linked to other wellness behaviors like increased physical activity, improved social skills, and increases in self-esteem (Joshi et al., 2008). As more schools have adopted whole child principles, these impacts suggest a robust, holistic response to FTS interventions. Additionally, FTS participation has enhanced responsible behaviors and increased work ethic amongst students (Joshi et al., 2008). This finding suggests that the activities within FTS programs, such as gardening, food preparation, or understanding food systems, may instill a sense of accountability and care. These experiences teach children the value of effort and diligence, connecting their work directly to tangible outcomes like fresh food. Moss et al. found an increased food and health literacy in elementary school-aged children (Moss et al., 2013). The study consisted of pre- and post-surveys following educational classes and a farm tour. The results showed a better understanding of the importance of fiber, vitamins, and minerals. The children's improved food literacy led to improved health literacy in choosing healthier foods.

Despite research suggesting a positive impact on student wellness, FTS programs exhibit significant variability across different sites and states. This lack of standardized implementation can make it difficult to draw general, overall conclusions about the effectiveness of FTS policy (Giombi et al., 2020). Furthermore, there is a lack of long-term comprehensive studies, which makes conclusive determinations about FTS's impact on student wellness challenging, particularly when gauging sustained behavioral change (Prescott et al., 2020). These longitudinal studies are essential to determine whether FTS can affect positive lifelong change.

Additionally, after analyzing previously done literature reviews, there is insufficient data regarding the mental health outcomes of FTS programs. A systematic review of epidemiological studies by O'Neil et al. found a significant relationship between unhealthy dietary habits and worsened cognitive health in youth (O'Neil et al., 2014). The information found in further research of this topic could impact policy and the nation's mental health. A potential limitation of the available research is biased results due to respondents being embarrassed by not making healthy choices or not having access to healthy options, which can lead to inaccurate reporting. For example, social stigmas are linked to broader food insecurity through structural and individual elements (Earnshaw & Karpyn, 2020). Shaming and embarrassment behaviors are social limitations to data collection within the K-12 sector, as students may report what the social majority deems the accepted response.

Food Insecurity

One area in which FTS programming can aid food insecurity is that it is designed to improve dietary and health outcomes, particularly in food-insecure populations, by incorporating higher-quality foods and encouraging participation in

the National School Lunch Program (NSLP) (Rains et al., 2019). By boosting school lunch participation, FTS increases students' dietary quality and quantity of meal intake. As strict dietary guidelines regulate the NSLP, students who participate are ensured to have optimal dietary conditions for their age group. These programs increase access to local food for food-insecure families by distributing school garden produce or connecting with food bank distributions (Rains et al., 2019). As a result, FTS programs boost the nutrition of school meals and positively impact food availability within a community.

Integrating FTS programs and urban farming initiatives into core curricula can enhance students' awareness of food systems and their role in addressing broader food security issues (Hussin & Osman, 2024). Teaching students how to grow food increases self-sufficiency and can help alleviate household hunger. FTS programs have also contributed to community cohesion and coalescing support for local food systems, which can be essential for food security solutions (Garrity et al., 2024). Support for local food systems boosts food availability within a community, which should translate into reducing food insecurity due to availability and local cost savings.

Although FTS programs might enhance solutions to food security challenges, they can fall short due to limited programmatic accessibility, lack of program awareness, and cultural cohesion (Garrity et al., 2024). It is a key observation that FTS programs must actively engage in retrospective analysis to maintain accessibility and minimize cultural friction. It is paramount that practitioners maintain self-awareness of their programs and whether they are accessible to most participants. For instance, if an FTS program has many students with disabilities or learners of English as a second language, practitioners should implement strategies to ensure

equity. To maximize the positive effects of FTS programs, implementation barriers at the local, state, and federal levels and sourcing and distribution barriers for local produce must be addressed (Mishra et al., 2022). For instance, policymakers' role is to help reduce barriers that reduce the efficacy of FTS interventions.

While FTS programs show promise to address food insecurity in under-resourced communities, it is important to consider the broader context of food insecurity, which is strongly influenced by socioeconomic factors and household dynamics. For example, food insecurity is linked to school absenteeism and educational performance, highlighting how FTS can be part of a comprehensive strategy to reinforce school feeding programs and social safety nets (Tamiru et al., 2017; Djan et al., 2025). FTS programs can play a role in decreasing absenteeism by encouraging students to participate in school activities. Students may want to be in class if they see the school garden growing or if it is harvesting day. Karpyn et al. discussed the changing landscape of food deserts and food insecurity in their research, establishing that 5.6% of people still live in places with limited access to stores that have adequate healthy food products (Karpyn et al., 2019). FTS programs could play a role in increasing access to healthy foods in these communities. However, further research is necessary to determine how impactful FTS programs are in food deserts and areas of lower socioeconomic development. The lack of meaningful and healthy grocery experiences negatively affects the community, the students, and health. FTS programs can reach the youth and their families significantly, but specific studies are needed to establish this relationship.

Additional Impacts

Economic Development

Available literature suggests that FTS programming has a multifaceted impact on economic development outcomes, potentially providing direct and indirect benefits to local food businesses, schools, and communities. FTS programs can create vital and stable economic pathways for local farms and food businesses. Institutional buyers like schools provide a consistent economic demand for food products, which can promote improved financial scenarios for local producers (Duval et al., 2019). The relationship between local farms and schools is mutually beneficial. Schools purchasing directly from the farmer can lower costs by shortening the supply and distribution chain, thereby increasing the economic benefit to both parties. FTS programs can stimulate the local food economy by increasing demand for local products, potentially increasing crop production, and allowing flexibility for higher-value crop expansion (Duval et al., 2019). FTS can also be an outlet for products that may not be otherwise marketable, providing growers with a second-chance market and increasing profitability. For instance, crops that are blemished or smaller than desirable, but otherwise safe and nutritious, could fit perfectly within a school feeding pattern.

An assessment of FTS's economic impact suggests an economic multiplier within local economies. A study in Minneapolis concluded that for every $1 spent on FTS activity, $1.45 is returned to the local economy (Christensen et al., 2017). This economic multiplier is an important finding: FTS boosts economic activity and can help build support for funding. The Minneapolis example suggested that FTS activity increases demand from other sectors, enhancing the broader local economy. A note of caution when interpreting this study is that Minneapolis has a well-established and robust FTS program; perhaps these results are skewed to reflect local programmatic

success and could vary considerably at divergent scales and implementation successes.

While the literature suggests an economic benefit of FTS, assessment is incredibly complex due to disparate local definitions and a lack of comprehensive, reliable data. This complexity can make it challenging to draw sweeping conclusions about the scale and scope of economic impact (Duval et al., 2019). For example, one district may define local as statewide, while another may define local as within 250 miles. The lack of a standardized operational definition for local can challenge drawing conclusions. Also, schools within Michigan consider Kellogg's cereal products local, but in reality, those may only be manufactured and not grown within the state. It would seem contrary to the promise to boost the local agricultural economy by including manufactured food entities, and it may suggest that the USDAFTSC could include outsized inclusion of ambiguously local foods. Ultimately though, whether grown or manufactured in a given state, there is still a net positive to the local food economy.

Additionally, there is a potential for poor outcomes and adverse effects if food chain participant goals are not aligned with local program goals, thus suggesting a critical need for coordination and cooperation amongst stakeholders to ensure positive impact (Duval et al., 2019). For instance, what may benefit one or more stakeholders could be at the detriment of others; it is incumbent to have sufficient stakeholder engagement to ensure that a lack of cohesion does not jeopardize local goals.

Social Justice

FTS programs have emerged as a strategy to address social justice issues, promote educational equity, improve food access, and support local economies by

enhancing food literacy and awareness. FTS programs incorporating food literacy empower students with nutrition and sustainable agriculture concepts (*Harvesting Knowledge: Nurturing Communities With Farm-to-School Programs*, 2025). Food literacy concepts foster healthy eating habits and food systems competency (Mishra et al., 2022; Holland et al., 2014). Programs can address social justice by promoting equity and inclusivity within the school food landscape. For example, Oakland Unified School District's FTS program and its "California Thursdays", a themed local food day, has emerged as a model for promoting educational equity and social justice across diverse contexts (Serrano, 2017). Oakland schools demonstrate how a collaborative, adaptable, and strategically marketable approach to school food reform promotes educational equity and social justice. The program effectively addresses childhood obesity and hunger by empowering local stakeholders and reframing the perception of school meals (Serrano, 2017).

FTS programs disrupt neoliberal trends in education and mitigate social inequalities by fostering a sense of collective responsibility among teachers, students, and communities (Biseglia et al., 2021). By fostering collectivism, stakeholders would have greater consideration for lifting those in need. These changes also exist internationally, within British Columbia and Canada, FTS has links advancing food sovereignty goals, advocacy for institutional procurement of local food, and enhanced engagement with food justice issues (Powell et al., 2018). Demonstrated by Powell et al., FTS interventions are a tool to enhance food system equity by shortening the supply chain and raising community awareness of social food system inequities.

Despite the positive influence of FTS on social justice issues, particularly food justice, programs cannot affect structural inequities within the food system. These

programs have the potential to reshape school environments but cannot eliminate the root causes of food insecurity and inequity (Serrano, 2019; Biseglia et al., 2021). Schools face this issue as impacts are often limited to students within their school day. It is difficult for impacts to translate to the home and community level, particularly in economically disadvantaged communities.

Environmental Justice

FTS Programs have the potential to address environmental justice by improving access to nutritious food in underserved communities, fostering environmental education, and supporting sustainable agriculture. Beyond the benefits mentioned in the above section, local food procurement can reduce the carbon footprint of school food, contributing to the environmental sustainability of schools (Hussin & Osman, 2024). Local food decreases carbon in the school food system by decreasing food miles with diminished need for transportation and long-distance refrigeration. By supporting local food economies, schools can use their purchasing power to purchase foods aligned with environmental sustainability goals. Additionally, FTS fosters a generation of environmentally conscious individuals by incorporating educational components that teach students about nutrition, agriculture, and environmental sustainability (Taylor & Johnson, 2013; Goldman & Alkaher, 2024). School gardens, particularly in an urban setting, may be one source of students' formative experiences with the natural world. These experiences instill a sense of wonder and a corresponding duty to protect the environment.

Schools often serve as critical sites for environmental justice education, with students learning about the impact of environmental inequity and the importance of sustainability behaviors (Mercan & Selcuk, 2024; Goldman & Alkaher, 2024). This education fosters a sense of pride in the community and similarly to the “Not in my

Back Yard” protests, students who learn about these core issues in school are more inclined to fight for their communities. Integrating hands-on programming like school gardening and farm visits enhances students' understanding of food systems and their role in promoting environmental justice (Hussin & Osman, 2024; Goldman & Alkaher, 2024). Students learning about the environment may be more concerned about its well-being. School gardens can be fundamental ecology labs where students learn about the interconnectedness of nature and what humankind's role is within the ecological sphere.

FTS promotes collective action toward environmental justice goals by connecting schools, local farms, and families, strengthening community ties (Mishra et al., 2022; Mercan & Selcuk, 2024). The scale of environmental problems requires collective action, and fostering this sense can lead to tangible outcomes. These programs serve as platforms for policy change advocacy for food and environmental justice issues, like school funding equity and infrastructure improvement to support healthy environments (Sampson, 2012; Mercan & Selcuk, 2024). Schools are inherently places of community connection; they should lean into this responsibility to provide a place and space for advocacy. Grassroots activism and community engagement have emerged as critical for advancing environmental justice. FTS programs can play a role in mobilizing communities’ advocacy for equitable resource availability (Berkey, 2017). FTS programs are responsible for ensuring equitable access to program resources and a clean school and community environment. FTS programs should be explored as a tool for rejecting the effects of environmental racism by proliferating green space and reclaiming sites of legacy pollution for the collective benefit.

While FTS positively promotes environmental education, more comprehensive approaches integrating critical reflection and action are needed to empower students to address environmental issues effectively (Guevara-Herrero et al., 2024). Without this corresponding student empowerment, environmental sustainability action from future generations will be hampered. Students need to know how they can actively participate in proactive solutions to our environmental challenges in their daily lives.

Community Engagement

FTS has been recognized as a tool with the potential to increase community engagement and is a common throughline on how programs more broadly impact implementation goals. FTS programs are effective community builders by serving as a vehicle for stakeholder engagement; this approach strengthens community connections and encourages active participation at the school level (Duma, 1995). By bringing in community support and active parental engagement, FTS can create positive changes in larger contexts than the school level and drive change in food systems. The Farm to Fork Project in Canada is an exemplary model for how community-engaged scholarship enhances community involvement by increasing food pantry donations, raising awareness of food insecurity, and fostering collaboration between community partners and academic institutions (Korzun et al., 2014). Korzun et al. demonstrates how shared understanding between academic institutions and community stakeholders can improve community well-being. Data collected by Greer et al. found that students in urban areas perceived FTS programs as fostering community and developing trust (Greer et al., 2019). Overall, it is possible the community does not trust where their food comes from or if the producer has their best interest in mind. When people see how their food is grown, they develop a greater appreciation for it and perceive it to be higher quality than

the ultra-processed foods marketed to people of lower socioeconomic status (Leung et al., 2022). Community engagement gives the power back to the people by giving them the information necessary and the agency to make informed choices for themselves.

Challenges And Barriers

Cost Considerations

Despite the potential benefits of FTS programs, there are significant cost-related challenges to financially sustainable implementation. According to the 2023 USDAFTSC, 35% of programs report cost as a significant hurdle to program success 2023 (*Farm-to-School Census Results Overview | USDA-FNS Farm-to-School Census*, n.d.). Some examples of cost considerations of FTS programming include higher prices for locally procured foods, increased logistics costs for distribution, and infrastructure needs to operate a quality program (Haynes, 2009). This study highlights a significant challenge: local food systems may lack the necessary infrastructure to compete with the established corporate food system infrastructure. With proper investment, costs may come down, but establishing these systems has a substantial upfront cost that communities may be unable to bear. Unfortunately, the financial sustainability of FTS programs far too often relies on ephemeral federal, state, and private foundation funding (Becot et al., 2016). This funding gap becomes more pronounced in the second Trump Administration, with federal funding freezes and the cancellation of the Patrick Leahy Farm-to-School Grant Program. The unfortunate result could be the scaling down of programs and reduced programmatic output as states and local districts cannot replace lost federal funding. It is incumbent that FTS practitioners evaluate programs for cost effectiveness and adapt to the shifting grant funding landscape.

Community Buy-In

One additional barrier to FTS programs is community buy-in. Community involvement is necessary to create lasting change (Turin et al., 2023). The community must see the importance of these programs to continue to support their funding. Stakeholders involved need to see a return on investment for sustained success. Parents need to understand how these programs could help them and their children, with metrics to prove program efficacy and tangible benefits to their everyday lives. The other unfortunate reality is that the students' parents were unlikely to have benefited from these programs, as their proliferation is too new. There is an opportunity to break a negative cycle by contacting and educating parents.

Additionally, there must be a corresponding shift in the social and cultural narrative that healthy food is unattainable or inaccessible. When people feel disconnected from the initiative or goal of the program, it tends to prompt a backslide effect (Katre & Raddatz, 2023). Schools can change their culture and menu items for school meals, but without parental engagement and buy-in, school-level progress is unlikely to prompt greater societal outcomes.

Conclusion

Future Research

The available research suggests several research gaps regarding FTS programs and their impact. Notable gaps include a need for in-depth studies evaluating the points highlighted elsewhere in this review, more longitudinal studies, and better data collection methods that adequately capture the complexity of the topic.

Current evidence exhibits a lack of longitudinal studies that fail to adequately capture the long-term effects of FTS interventions (Roche et al., 2017). Without these deeper studies, establishing a causational relationship will not be easy, and the short-term nature of the available data can skew results. Research needs to follow a social ecological framework to benefit policy stakeholders and be as complex as the social context in which it is produced. Therefore, scholars should tailor future research to consider how FTS affects students' mental health and the social determinants of health.

Data collection in the school context also has inherent challenges, such as researchers gaining access to school-related data. School food service directors are torn between responsibilities and may not be able to fully engage with data requests (Roche et al., 2017). This data access problem highlights a need for better, less obtrusive data collection methods to ensure data quantity, quality, and fidelity. Many existing studies, including those of the USDAFTSC, rely on self-reported data, which may not accurately depict fruit and vegetable consumption amongst participants (Taylor & Johnson, 2013). Extrapolating this self-reported data to other goals of FTS programs and studies could reveal similar challenges in determining their efficacy. Future studies should use validated assessment methods, including direct observation, to provide more reliable data (Taylor & Johnson, 2013). Direct observation of student behaviors would limit self-reporting bias within the context of future research.

Beyond this, future research should examine the impact of FTS programs on various stakeholder groups. A more thorough understanding of these impacts can help better tailor programs to meet stakeholder needs and enhance program effectiveness (Joshi et al., 2008). Positive effects on more stakeholders may help FTS

programs tackle more pervasive or systemic challenges. Likewise, community engagement is a critical area for successful FTS implementation. Research should hone in on strategies to increase community involvement and support structures, which can lead to more impactful and sustainable programs (Benson, 2013). FTS can become more integrated within the fabric of the community served, with more effective community engagement strategies. These strategies could translate into greater systemic outcomes potential.

Future research should explore the role of Cooperative Extension services in supporting FTS programs. Extension services can play significant roles in community food system development and addressing public health issues (Benson, 2013). Cooperative Extension can also serve as an invaluable technical assistance provider, particularly to school-based farms and gardens. Additionally, partnering with local public health departments could bolster FTS programs and alleviate some of the strain on schools to provide supportive educational pieces.

Mapping analysis of FTS networks could help to identify leverage points for positive change within the system. Future research should focus on understanding these networks and relationships to enhance program implementation and boost positive outcomes (Conner et al., 2011). By examining the complex interactions within FTS implementation networks, researchers can better identify areas of opportunity in streamlining relationships and increasing outcome efficiency.

Policy Recommendations

Without supportive policies, FTS programs are hamstrung in their abilities to effect change as outlined throughout the literature review. Supportive legislative policy and funding opportunities are critical as funding and supply chain bottlenecks present outsized challenges. FTS programs thrive in states with policies supporting

local procurement, school gardens, and experiential education. However, the effectiveness of these policies can vary significantly, suggesting a need to tailor legislation to consider local contexts and challenges (Giombi et al., 2020). For instance, northern states with limited growing seasons could use funding opportunities supporting adaptive farming practices to extend and maximize the shorter growing season.

Additionally, state laws supportive of school gardens have an increased incidence of garden-grown produce in school meals (Turner et al., 2017). As a result, if states wish to see more school-grown or locally grown produce in school meals, there is an opportunity to incentivize its use. For instance, in Michigan, the 10 Cents a Meal for Michigan Kids and Farms program is a legislative initiative providing school districts and childcare centers with grants to purchase Michigan-grown produce for meal operations based on a potential funding amount of 10 cents per meal served annually (*Healthy Kids, Thriving Farms*, n.d.). In FY 2025, the program expanded to allow schools to access funds to offset increased processing and transportation costs for local food purchases. Furthermore, the state recognized a need to provide a mechanism for schools to claim school garden or school farm produce as part of this program and offer a standardized pricing guide for invoicing. As a result, policy within the FTS sphere should continue to adapt and evolve to match providers' implementation challenges. Michigan is a pioneer in this space as other states consider similar program opportunities to maximize the economic benefit of local meal procurement.

Sustainable procurement policies can reduce greenhouse gas emissions, support localized economies, and increase community food security. These policies should mobilize local supply chains and reduce the disparities between small

businesses and corporations (Carlsson, 2008). Sustainable food systems policies will benefit schools, local food businesses, and community stakeholders.

FTS programs, especially within the startup phase, are resource-intensive, requiring financial, logistical, and human capital investment. In the interest of following through on the promise that FTS can deliver to localities and in the future, policymakers should ensure these barriers are mitigated by providing reliable financial and technical assistance to providers (Palmer et al., 2025) (Carlsson, 2008). In the vein of advancing social justice, policies should be mindful of ensuring equitable access to available resources, particularly in underserved communities. Oregon's FTS grant program is a model for equitable access. It includes an opt-in feature allowing all districts to participate without a formal application process, reducing inequitable barriers for resource access (Giombi et al., 2020). The success of an FTS program may depend on the local context, including a community's existing cultural and social capital assets, which should be considered in crafting reasonable policy (Kashyap et al., 2024). Failure to consider these factors would counter philosophical policy parameters seeking to impact social justice positively.

States should consider thoughtful policies supporting the evaluation of FTS programs and their efficacy in meeting stated goals (Kashyap et al., 2024). These policies can help inform future legislative priorities and funding allocations, allowing state policymakers to stay ahead of current needs and priorities as programs and contexts evolve.

Conclusion

Overall, FTS programs address more complex problems than simply feeding students. The concept can address several aspects of social determinants of health while challenging detrimental social narratives and constructs. This review shows

that FTS programs can increase one's health and food literacy, promote green spaces and healthy foods, improve education, enhance economic stability, and boost civic engagement. These programs actively challenge the notion that healthy eating is expensive and that not everyone has the luxury of obtaining access to good food by empowering students through knowledge. Though FTS programs face obstacles in terms of cost, the overwhelming evidence found in the literature supports the ongoing need for FTS programs and continued research to fully understand their impact.

FARM-TO-SCHOOL CASE STUDIES

These case studies examine the FTS programs of five major U.S. school districts, analyzing their unique approaches, implementation strategies, challenges, and outcomes. These programs represent diverse models of integrating local food systems into K-12 education across different geographic regions and urban contexts.

The five school districts examined—Detroit Public Schools Community District (DPSCD), Minneapolis Public Schools (MPS), Chicago Public Schools (CPS), New York City Public Schools (NYCPS), and Houston Independent School District (HISD)—demonstrate the remarkable diversity and innovation within the national FTS movement. Collectively serving over 1.7 million students, these programs showcase different approaches to connecting children with local food systems while addressing nutrition, education, and community development goals.

These programs range significantly in scale, from MPS serving 35,500 students to NYCPS serving 1.1 million students. Despite these differences, all five districts have developed sophisticated approaches to local food procurement,

educational programming, and community engagement that serve as models for other school systems nationwide.

Detroit Public Schools Community District

DPSCD operates one of the most innovative FTS programs in the United States, serving approximately 47,000 students across 106 schools. The program was launched in 2012 with the Detroit School Garden Collaborative and has evolved into a comprehensive food system that includes both production and education components (Wong, 2022).

Figure 3: DPSCD Students on the Cover of Michigan Agriculture Magazine (DPSCD School Nutrition, 2022)

Key Program Features:

- **Drew Farm**: A 2-acre production farm at the Charles R. Drew Transition Center, featuring six greenhouses and 1.5 acres of outdoor growing space (*Operations / Farm & Garden*, n.d.)
- **School Gardens**: 82+ school gardens across the district, with plans to expand to all 106 schools (*Operations / Farm & Garden*, n.d.)
- **Local Procurement**: Recognized as a procurement leader, spending 10% of produce dollars on Michigan-grown products (Rosenthal, 2015) with $1 million spent in the past two fiscal years (*Farm-to-School Program Provides Michigan-Grown Fresh Produce to Students*, 2024)
- **Production Scale**: Drew Farm produces 20,000-30,000 pounds of fresh produce annually for school cafeterias (*Having a DPSCD Frank Conversation About Nutrition and Tasty Food*, n.d.)

The program's flagship innovation is Drew Farm, which serves as both a production facility and educational center. The farm produces a diverse array of crops including tomatoes, lettuce, spinach, sweet potatoes, herbs, and seasonal vegetables that are integrated directly into school menus (*Having a DPSCD Frank Conversation About Nutrition and Tasty Food*, n.d.). The farm also provides field trip opportunities for K-8 students, who participate in hands-on learning experiences about food production, preparation, and nutrition.

DPSCD's approach emphasizes scratch cooking and menu integration, with a Registered Dietitian and culinary team developing seasonal menus that showcase farm-fresh ingredients in cafeterias (*Having a DPSCD Frank Conversation About Nutrition and Tasty Food*, n.d.). The district's partnership with Michigan's 10 Cents a Meal program provides additional funding incentives for local procurement, helping to sustain the program financially (Wong, 2022). Drew Farm workers are involved from seed to plate, with processing and menu item creation duties, as well as delivery and distribution.

The district has faced significant supply chain disruptions, including food distributor strikes in 2024 that required emergency procurement from alternative vendors (Arias, 2024). These challenges have strengthened the program's focus on local resilience and diversified sourcing strategies.

Minneapolis Public Schools

MPS has developed one of the most systematic approaches to FTS programming, serving 35,500 students across 70 schools. The program began in 2013 and has evolved into a comprehensive model that integrates local procurement, culinary education, and community partnerships.

Key Program Features:

- **Minnesota Thursdays**: Monthly locally sourced meals served district-wide since 2014 (*Farm-to-School - Minneapolis Public School District*, n.d.)
- **Partner Network**: Contracts with local farms and farm cooperatives through annual RFP process (Northrup, 2016)
- **Local Production**: 145,000 pounds of local produce purchased annually (Cambro, 2019)

Figure 4: Minnesota Thursdays Promo Flyer (MPS True Food, 2023)

- **Culinary Innovation**: Central production facility enabling scratch cooking and menu development (*Culinary & Wellness Director Helps MPS Put Its Best Plate Forward*, 2025)

The program's signature innovation is "Minnesota Thursdays," a monthly celebration that features entirely locally sourced meals served across all schools (*Farm-to-School - Minneapolis Public School District*, n.d.). This initiative has become a model for other districts seeking to create regular, district-wide local food programming

MPS has invested heavily in infrastructure, including a central Nutrition Center that processes local produce and manufactures salad dressings, salsa, and other products in-house (*Culinary & Wellness Director Helps MPS Put Its Best Plate Forward*, 2025). This facility enables the district to work directly with local farmers while maintaining the efficiency required for large-scale meal service

The program includes comprehensive educational components, with resources and curricula that connect classroom learning to cafeteria experiences (*Food Education*, n.d.). The district has also pioneered innovations in reducing added sugars and improving nutritional quality, earning recognition from the USDA and other national organizations (Gingerella, 2024).

The program benefits from strong state support through Minnesota's Farm to Kids Strategic Plan, which provides policy framework and funding coordination (Oneadmin, 2024). The district's partnership with Big River Farms and other local organizations creates a sustainable network for farmer support and product aggregation (*How Farm-to-School Programs Feed Students While Supporting Emerging Farmers*, 2024).

Chicago Public Schools

CPS operates the largest FTS program among the five districts studied, serving 380,000 students across hundreds of schools. The program began in 2013 and has become a national model for policy innovation and large-scale implementation.

Key Program Features:

- **Good Food Purchasing Policy**: Fourth major school district to adopt comprehensive sustainable food procurement policy, first outside of California (Ruppenthal, 2017)

Figure 5: CPS Students trying Fish Tacos as part of the chef council initiative (Chi Pub Schools, 2024)

- **Chef Council**: Partnership with local chefs and culinary organizations for menu development (*CHEF COUNCIL — CPS Farm-to-School*, n.d.)
- **School Gardens**: Over 400 school gardens across the district (*CPS Farm-to-School | Chicago Public Schools*, n.d.)
- **Local Procurement**: $4.2 million in regional produce purchases over three years (*Major Chicago Area Institutions Commit to More Local Produce Purchasing*, 2013)

Chicago's most significant innovation is the adoption of the Good Food Purchasing Policy in 2017, making it the fourth school district nationwide to implement this comprehensive framework for sustainable food procurement (Ruppenthal, 2017). The policy addresses five core values: local economies, environmental sustainability, valued workforce, animal welfare, and nutrition.

The district's Chef Council, composed of Chicago-area chefs and culinary experts, provides ongoing menu development and educational programming (*CHEF COUNCIL — CPS Farm-to-School*, n.d.). This partnership has enabled the district to

introduce culturally relevant dishes and improve food quality while maintaining large-scale production efficiency.

CPS was the first major district to serve antibiotic-free chicken, demonstrating leadership in food quality standards (Bottemiller, 2011). The district has also pioneered the integration of local foods into various meal components, from salad bars to main entrees (*Major Chicago Area Institutions Commit to More Local Produce Purchasing*, 2013; Healthy Schools Campaign, 2011).

The district has faced significant supply chain challenges, including food quality issues and distribution disruptions during the COVID-19 pandemic (Peña, 2023). These experiences have strengthened the program's focus on local resilience and diversified sourcing strategies.

New York City Public Schools

NYCPS represents the largest school food service operation in the United States, serving 1.1 million students across over 1,700 schools. While FTS activities have existed in various forms for years, the district launched the comprehensive "Reimagining Farm-to-School NYC" program in 2023 (urbanagnews, 2024).

Figure 7: NYC Student and Hydroponic System (NYCPS Office of Nutrition Services, 2025)

Key Program Features:

- **Reimagining Farm-to-School NYC**: Comprehensive program launched in 2023 with federal and state grant support (Urbanagnews, 2024)

- **Local Food for Schools Grant**: $8.4 million grant for purchasing from local and regional producers (Fernsby, 2023)
- **Plant-Powered Fridays**: Weekly plant-based menu options featuring local ingredients (Gingerella, 2023)
- **Urban Agriculture Integration**: Partnership with Mayor's Office of Urban Agriculture (*Press Release - NYC Mayor's Office of Climate and Environmental Justice*, 2024)

The program's most distinctive feature is its integration with New York City's urban agriculture initiatives. The Mayor's Office of Urban Agriculture provides training and technical assistance to help local farmers navigate school procurement processes, creating pathways for small-scale and historically disadvantaged producers to access school contracts (*NYC's Urban Agriculture Office Sows Seeds of Change With 'School Food Eats,'* 2024).

NYC's program emphasizes cultural diversity and representation, with the Chef Council developing recipes that reflect the city's diverse student population (Gingerella, 2023). The program includes dishes like Caribbean spiced jerk chicken, kidney bean rajma, and jollof cauliflower, demonstrating how FTS can celebrate cultural identity while promoting healthy eating.

The sheer scale of NYC's operation presents unique challenges and opportunities. The district serves approximately 850,000 meals daily (Lin, 2023), requiring sophisticated logistics and coordination to integrate local foods effectively. The program's success depends on strong partnerships with state agencies and regional food system organizations.

Houston Independent School District

HISD's FTS program serves approximately 160,000 students and emphasizes food and agriculture literacy education. The program launched in 2020 and centers around the historic Mykawa Farm, a 6.5-acre site that serves as both a production facility and educational center (*Outreach & Education - Houston Independent School District*, n.d.).

Key Program Features:

Figure 8: Students at Mykawa Farm (Houston ISD, 2022)

- **Mykawa Farm**: 6.5-acre historic farm site with nearly 100-year-old school building (*Outreach & Education - Houston Independent School District*, n.d.)
- **Get Growing Houston**: Interdisciplinary food literacy program combining agriculture, nutrition, and culinary education (Glenn, 2024)
- **USDA Fresh Fruit and Vegetable Program**: Serves 93 schools and approximately 40,000 students (Communications, 2024)
- **Food and Agriculture Literacy Center**: Comprehensive educational programming (Communications, 2024a)

Mykawa Farm represents a unique approach to FTS programming, combining historical preservation with modern agricultural education. The farm is located on the site of a school built in 1919 and named for Shinpei Mykawa, a Japanese immigrant who introduced rice farming to Houston (*Outreach & Education - Houston Independent School District*, n.d.). This historical connection creates meaningful educational opportunities about agricultural heritage and cultural diversity.

HISD's program emphasizes developing more than a consumer relationship with food through hands-on learning experiences. The Get Growing Houston program integrates agriculture, nutrition, and culinary education in alignment with Texas Education Knowledge and Skills Standards (Glenn, 2024).

The program benefits from strong partnerships with USDA Natural Resources Conservation Service, Texas AgriLife Extension Services, and Prairie View A&M Cooperative Extension Services (Glenn, 2024). These partnerships provide technical expertise and resources for both production and educational activities.

DPSCD SUSTAINABILITY SWOT

Following the World Resources Institute (WRI) framework (Metzger et al., 2012), this Sustainability SWOT examines how environmental challenges and big trends create risks and opportunities for Detroit's FTS program, while identifying collaborative approaches to leverage strengths and address weaknesses.

Environmental Challenges and Big Trends

The Detroit FTS program operates within a complex web of environmental challenges that are interconnected with major societal trends. These challenges create both risks and opportunities for the program's long-term sustainability.

Primary Environmental Challenges

Climate change and greenhouse gas emissions represent the most significant environmental challenge facing the program. Rising temperatures, changing precipitation patterns, and extreme weather events directly impact growing seasons and food production capacity (*Climate Change Impacts on Agriculture and Food Supply | US EPA*, 2025). Detroit's urban environment experiences heat island effects

that intensify these challenges (Allnutt, 2024), while simultaneously creating opportunities for climate mitigation through urban agriculture and reduced food miles. Food miles have been identified as at least 20% of the climate related impact of food systems (Li et al., 2022).

Food system resilience emerges as a critical challenge requiring local solutions. The program addresses the vulnerability of industrial agriculture and long supply chains to climate and economic disruptions (*Climate Change and Agriculture*, 2019; Rudge, 2023). As school feeding programs serve as "one of the world's largest social safety nets," (*School Meals Programs: Expanding Access Through Innovative Financing to Accelerate Progress Towards the SDGs*, 2025) building resilience becomes essential for ensuring consistent access to nutritious food.

Urban food security reflects the growing challenge of feeding Detroit's urban population amid economic constraints and limited access to fresh, affordable produce (Ogden, 2025). With over 60,000 vacant lots in Detroit or 19 square miles (Huffman, 2022), the program operates within a landscape of both challenge and opportunity for urban food production.

Resource scarcity affects water availability, soil health, and land access for urban agriculture initiatives. Detroit's legacy of industrial contamination creates soil (Mintz, 2025) and water quality challenges (Wilson, 2024), while climate change threatens water resources essential for food production (Yilan & Marquise, 2024).

Ecosystem services preservation becomes crucial as the program contributes to biodiversity, carbon sequestration, and stormwater management in Detroit's urban environment (Newell et al., 2022). The program's 82 school gardens and Drew Farm provide critical habitat for pollinators and contribute to urban green infrastructure.

Connections to Big Trends

These environmental challenges intersect with four major trends shaping Detroit's future:

Demographic and social shifts include Detroit's ongoing population changes (Barrett, 2025), growing environmental awareness among youth (*Youth and the Environment*, n.d.), and community-driven food sovereignty movements (Directory, 2025). Urbanization trends show 66% of the global population will live in cities by 2050 (United Nations, n.d.), intensifying urban food security challenges.

Innovation and technology advances offer solutions through vertical farming, precision agriculture, and digital monitoring systems. Schools nationwide are integrating hydroponic systems and controlled environment agriculture to extend growing seasons and increase production efficiency (*Teaching Sustainability: How Hydroponics Fit Into School Curriculums*, 2024).

Global economic dynamics create both pressures and opportunities through rising food prices (Viglione, 2024), supply chain disruptions, and increasing investment in sustainable agriculture (Farmonaut, 2025). The circular economy movement supports waste reduction and resource efficiency initiatives (RTS - Recycle Track Systems, 2024) that align with the program's goals.

Political and regulatory priorities include federal FTS funding, state-level initiatives like Michigan's 10 Cents a Meal Program, and urban agriculture zoning reforms (Wooten, 2013). Climate action plans and sustainability commitments at municipal, state, and federal levels create supportive policy environments (Center for Climate and Energy Solutions, 2025).

Strengths: Collaborative Advantages for Environmental Action

The program demonstrates six key strengths that can be leveraged through partnerships to address environmental challenges more effectively.

Proven infrastructure includes the established Drew Farm and 82 school gardens producing 20,000-30,000 pounds of fresh food annually. This infrastructure provides a foundation for scaling climate-smart agriculture practices and demonstrating sustainable food production methods to students and community members.

Partnership network encompasses strong relationships with Keep Growing Detroit, MSU Extension, and other organizations that provide technical expertise, resources, and community connections. These partnerships enable collaborative approaches to environmental challenges that no single organization could address alone.

Educational integration through comprehensive curriculum programming, teacher training, and student engagement creates opportunities for climate education and environmental stewardship. The program's educational component multiplies its impact by developing environmentally conscious citizens and future leaders.

Community engagement with 50,000 students, families, and neighborhood residents creates a broad base of support for environmental initiatives. This engagement facilitates community-wide adoption of sustainable practices and builds social capital for environmental action.

Financial sustainability demonstrated through the program's reported farm economic feasibility provides evidence of cost-effectiveness that can attract

additional funding and support. This financial track record enables advocacy for expanded investment in sustainable agriculture and climate solutions.

Environmental benefits including carbon sequestration, biodiversity enhancement, and stormwater management contribute to Detroit's environmental resilience. These benefits position the program as a valuable component of the city's green infrastructure and climate adaptation strategies.

Weaknesses: Collaborative Approaches to Address Vulnerabilities

The analysis reveals six primary weaknesses that require collaborative solutions to address effectively.

Seasonal limitations from Michigan's climate restrict year-round production without season extension technology. Partnerships with technology providers, research institutions, and other climate-similar programs can facilitate adoption of greenhouses, hydroponics, and other systems that extend growing seasons.

Infrastructure gaps could include limited cold storage, processing facilities, and climate-controlled growing spaces that constrain program expansion. Collaborative approaches with food hubs, other institutions, and economic development agencies can address these infrastructure needs through shared facilities and coordinated investment.

Resource dependencies on external funding and volunteer labor create operational vulnerabilities that require diversified support systems. Partnerships with businesses, foundations, and government agencies can create more stable funding while developing local capacity for program sustainability.

Coordination challenges in integrating garden production with school food service operations require systematic approaches and technical assistance. Collaboration with other successful programs, food service experts, and operational consultants can improve integration and efficiency.

Technical capacity limitations in climate-smart agriculture and advanced growing systems require ongoing education and support. Partnerships with universities, extension services, and technology providers can build local expertise while keeping pace with agricultural innovations.

Data gaps in tracking environmental impacts and climate resilience metrics limit the program's ability to demonstrate and improve its environmental benefits. Collaborative approaches with research institutions and monitoring organizations can develop comprehensive measurement systems.

Opportunities: Collaborative Solutions for Environmental Challenges

The analysis identifies six major opportunities where the Detroit program can collaborate with others to create innovative solutions for environmental challenges.

Climate solutions position the FTS program as a climate action platform through carbon sequestration, reduced food miles, and comprehensive climate education. The program can collaborate with climate organizations, universities, and government agencies to quantify and amplify its environmental benefits while educating students about climate resilience.

Technology integration offers opportunities to leverage vertical farming, hydroponics, and precision agriculture for year-round production and increased efficiency. Partnerships with technology companies, research institutions, and other

school districts can accelerate adoption of innovative growing systems that extend seasons and optimize resource use.

Policy alignment creates opportunities to align with Detroit's Sustainability Action Agenda, federal climate initiatives, and state-level sustainable agriculture policies. The program can serve as a model for policy development while advocating for supportive regulations and funding mechanisms.

Community partnerships leverage Detroit's extensive network of gardens and farms, food hubs, and urban agriculture organizations. Collaborative approaches can share resources, knowledge, and infrastructure while building a more resilient local food system.

Innovation hub development positions the program as a national model for climate-resilient urban school food systems. Partnerships with research institutions, other school districts, and international organizations can facilitate knowledge sharing and replication of successful practices. These innovation hubs create collaborative, physical or virtual spaces designed to foster creativity, experimentation, and solution development around complex challenges (Davis et al., 2023).

Economic development opportunities include creating green jobs, supporting local food economy expansion, and attracting investment in sustainable agriculture infrastructure. Collaboration with economic development agencies, businesses, and workforce development programs can amplify the program's economic impact.

Threats: environmental challenges creating program risks

The Sustainability SWOT analysis reveals six primary threats that could undermine the program's long-term viability and impact.

Climate disruption poses the most immediate threat through extreme weather events including floods, droughts, and heat waves that can destroy crops and disrupt school operations. Michigan's changing climate patterns threaten the predictability of growing seasons essential for educational programming and food production planning.

Food system vulnerability stems from the program's partial dependence on industrial agriculture and long supply chains that remain vulnerable to climate and economic shocks. While the program reduces this vulnerability through local production, it cannot completely eliminate exposure to broader food system disruptions.

Resource constraints include limited water access, soil contamination from Detroit's industrial legacy, and competition for land use in urban areas. These constraints could limit program expansion and increase operational costs as remediation and infrastructure investments become necessary.

Policy instability threatens funding sustainability through potential federal budget cuts, changing political priorities, and regulatory uncertainty. The program's reliance on federal grants and state funding creates vulnerability to policy changes that could reduce resource availability.

Social inequality perpetuates food apartheid and limits access to healthy foods in communities of color, potentially undermining the program's equity goals. These systemic challenges require collaborative solutions that extend beyond the program's direct control.

Economic pressures include rising costs of organic, local food compared to conventional alternatives, increasing operational expenses, and limited budgets for

infrastructure improvements. These pressures could force difficult trade-offs between program quality and accessibility.

Priority Actions for Collaborative Implementation

Based on the Sustainability SWOT analysis, three priority areas emerge for immediate collaborative action:

Near-Term 1-2 years

Climate resilience planning through partnerships with climate organizations and research institutions to develop comprehensive climate adaptation strategies, including infrastructure improvements and emergency response protocols for extreme weather events.

Technology integration via collaborations with agtech companies and other school districts to pilot vertical farming systems, hydroponic gardens, and precision agriculture tools that extend growing seasons and increase production efficiency.

Medium-Term (3-5 years)

Policy advocacy through alliances with FTS networks, environmental organizations, and policy makers to advance supportive legislation for sustainable school food systems and climate-smart agriculture funding.

Community ecosystem development by strengthening partnerships with Detroit's urban agriculture network, food hubs, and community organizations to create integrated local food systems that support multiple institutions and neighborhoods.

Long-Term (5+ years)

Innovation hub establishment through partnerships with universities, international organizations, and other cities to develop Detroit's FTS program as a globally recognized model for climate-resilient urban food systems.

Economic integration via collaboration with workforce development programs, green businesses, and economic development agencies to create sustainable career pathways and economic opportunities in Detroit's food system.

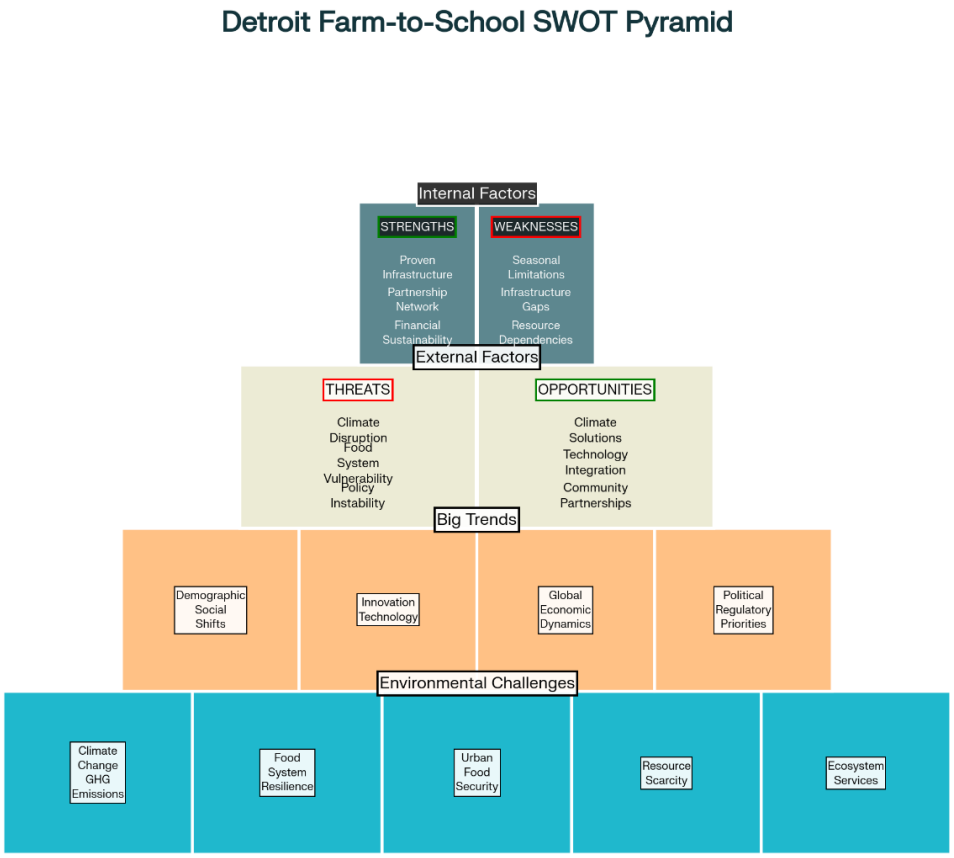

Figure 9: Detroit Farm-to-School Sustainability SWOT Pyramid

Conclusion

The Sustainability SWOT analysis reveals that Detroit's FTS program operates at the intersection of significant environmental challenges and transformative opportunities. The program's established infrastructure, strong partnerships, and

demonstrated impact provide a foundation for collaborative climate action, while its weaknesses highlight areas where partnerships can strengthen resilience and sustainability.

The analysis emphasizes that environmental challenges cannot be addressed in isolation but require coordinated responses that leverage the program's strengths while addressing vulnerabilities through collaboration. By positioning itself as a climate solution, embracing technological innovation, and strengthening community partnerships, the program can serve as a model for sustainable urban food systems that simultaneously address environmental challenges and promote social equity.

The collaborative approach inherent in the Sustainability SWOT framework aligns with the program's existing partnership model while pushing for expanded engagement with diverse stakeholders. This approach recognizes that creating resilient, sustainable food systems requires collective action that extends beyond individual institutions to encompass entire communities and regions working together toward common environmental and social goals.

RECOMMENDATIONS FOR SUSTAINING FTS WITHIN DPSCD

While DPSCD has a mature and robust FTS program, sustaining the program throughout the regulatory uncertainty of the second Trump Administration and beyond requires strategic operational focus. As demonstrated in the Sustainability SWOT analysis, DPSCD’s program lies at the crossroads of significant environmental problems and big trends, which further complicate the program's longevity. Recommendations for DPSCD’s FTS program fall within eight distinct categories: financial sustainability, operational excellence, community/workforce development, curriculum integration, policy/advocacy, infrastructure/capacity building, managing

implementation challenges, and monitoring/evaluation/continuous improvement. Drawing on the available literature and internal program evaluations, a roadmap emerges on best positioning the program for success.

Financial Sustainability

In the case of DPSCD, the program functions as an extension of the Division of School Nutrition (DSN). This self-operated SFA benefits from historical profitability and service to stakeholders, rather than shareholders (Hargis, 2022). However, revenues have shrunk in recent years due to rising food and labor costs. This financial dependence on the SFA's success places the DPSCD Farm and Garden Program at risk. While the program has secured more than $2.5 million in grants over the past decade (Hargis, 2022), the ephemeral nature of grant funding cannot mitigate the financial risk to the program. The program does include significant labor costs with dedicated program staff and farm operations team (Hargis, 2022), which is challenging to mitigate through limited program revenues from the Michigan 10 Cents a Meal Program. Without a strategy to secure the program's future, it could fall victim to the SFA's financial instability.

The lowest hanging fruit for the program to tap into new revenue is to maximize 10 Cents a Meal funding from the state. DPSCD's annual award from this state grant is over $300,000 (Hargis, 2022). With newly allowable reimbursement for up to 25% of the award for processing and transportation costs, DPSCD can recapture some of its revenue lost to post-harvest labor. The Michigan Department of Education also provides produce pricing guides for school farm and garden harvest for reimbursement purposes. DPSCD's Drew Farm should consider tailoring crop plans to items with higher monetary returns.

Furthermore, the district should dial in processes to minimize food waste and maximize usable food deliveries into the district. This implementation includes accurate harvest data and tracking methods to optimize product utilization. DPSCD should also focus on increasing raw production to strengthen reimbursement potential. While Drew Farm produces a staggering 20,000-30,000 lbs annually, this number could improve through enhanced farm plans or by increasing the acreage of farmed land. The program should be vigilant to keep labor costs efficient, while not sacrificing crop quality and productivity. An internal evaluation in 2019 showed that the farm was vastly profitable, meaning crop values exceeded production costs (Michigan State University Center for Regional Food Systems et al., 2021). The program should continue to monitor its profitability moving forward to demonstrate financial viability to internal and external stakeholders and to identify potential areas of targeted corrective action. To justify continued production, the district should evaluate loss leader crops for intrinsic values like cultural significance or student popularity.

DPSCD should pursue season extension methods like greenhouses, hydroponics, and heating options where financially expedient (Hargis, 2022). Season extension promotes year-round operations and allows the district to produce crops in a way that is less aligned with the agricultural calendar of the state and more aligned with school year calendars. Minimizing summer-heavy yields has the benefit of minimizing processing and cold storage needs, reducing post-harvest cost burdens.

While grants alone do not remove financial risks to the program, they should continue as a supplemental program asset, particularly to fund infrastructure needs. Diversifying funding streams is of primary importance moving forward. The program could look to different district departments to supplement school garden operations

as a fee-for-service. For instance, DSN operates a catering business as a supplemental income stream (Hargis, 2022). The district often utilizes this service internally. The primary consideration is that the catering program cannot operate at a loss and must demonstrate modest profitability. This existing model could be an avenue to create a new income stream for the program that was once wholly subsidized by DSN.

Operational Excellence

Suppose the program remains reliant on DSN profitability for survival. Another method of ensuring sustainability is to enhance the school feeding operations to such a degree that profitability is maintained. The DPSCD Farm and Garden Program can realize methods that increase school meal participation within the district and improve health outcomes. The program can serve as a bridge to remove highly processed heat and serve feeding models in favor of scratch-cooked options (Buzayan et al., 2024). While DPSCD has made steps toward this goal, the FTS program can play an integral part in this process by leveraging relationships and providing the backbone for a seasonal menu cycle. The Chef Ann Foundation (CAF), as part of DPSCD's PLANTS grant award, currently provides technical assistance towards this goal. CAF has created an assessment and is working towards a roadmap for increasing scratch-cooked menus within the district. Through its application and subsequent award, the FTS program was instrumental in this process, highlighting a pathway for enhancing the child nutrition program. By using more Drew Farm produce, the district gains familiarity with using local products. This utilization can help reduce the shock and culture shift required to procure more products from local farms and enhance community economic benefits. The program should explore

training and professional development for kitchen staff to minimize the processing burden on farm staff.

Additional opportunities exist to engage culinary arts students to drive menu changes within the district as an added learning exercise. Drawing from the case studies of other FTS programs, DPSCD should examine the feasibility of implementing a good food purchasing policy and chef council as demonstrated by CPS. The good food purchasing policy, rather than being a standalone measure, could be more expeditiously incorporated into the existing district wellness policy. Purchasing high-quality ingredients should translate into school meal gains and students' acceptance of healthier food options.

Food safety concerns will increase as the district scales up local food purchasing. As a result, strict food safety standards, Hazard Analysis of Critical Control Points (HACCP) plans, and potentially Good Agricultural Practices (GAP) standards must be enforced both internally and externally to ensure student well-being.

Community and Workforce Development

DPSCD has excellent partnerships with key local food systems organizations (Buzayan et al., 2024), but strengthening these partnerships is paramount for ensuring sustainability. Engagement with grassroots organizations can keep the program accountable to local stakeholders' needs while ensuring that growth focuses on equity. Fostering these relationships can also translate to increased volunteerism, reducing the program's labor burden. Keeping the program deeply rooted in community engagement builds widespread support that helps ensure district decision-makers look beyond the financial aspect of programming. By becoming an

integral part of Detroit's community food systems ecosystem, allies will stand in solidarity, resisting funding shortfalls. Partnerships can also serve as opportunities for data collection, research, and evaluation to further research gaps identified within the available literature on FTS. Successful partnerships are also critical to establishing innovation hubs that can push the program to create wider sustainability outcomes within the community.

Additionally, DPSCD hires high school students annually to work the farm (Michigan State University Center for Regional Food Systems et al., 2021). This workforce development opportunity provides a crucial first employment experience for students to get involved in urban agriculture, thriving across the city. This experience provides equity and ensures that the future of Detroit agriculture reflects the city's population. Partnerships are in place with the horticulture program within DPSCD to bridge summer hiring to year-round learning (Hargis, 2022). Workforce development can also extend to culinary arts training for high school students, to create a steady stream of capable kitchen staff. It is also worth exploring workforce development grants to support these activities.

Curriculum Integration

As evidenced in the available literature, curriculum integration enhances FTS programs and is a mechanism to boost student outcomes (Prescott, 2020; Ratcliffe et al., 2009). DPSCD has a dedicated K-12 curriculum developed as part of a FY22 USDA FTS grant (Hargis, 2022). This curriculum focuses on tangible garden activities and aligns with common core science standards. This curriculum should be trialed and expanded into active school garden sites. During the pilot phase, careful data collection should occur to determine the efficacy of the curriculum in enhancing

academic and ancillary student outcomes. If data suggests value to the district, DPSCD should adopt garden lesson modules as part of its standard curriculum offerings. The benefit is multi-fold, with students receiving real-world lessons that tangibly impact science achievement and the wellness outcomes associated with school garden participation. This form of curriculum integration also allows teachers and principals to buy into the program, fostering greater school participation rates. Active participation and stakeholder acceptance are critical to sustaining the program.

Policy and Advocacy

Opportunities exist to institutionalize FTS activities within DPSCD school board policies, particularly within the wellness policy. The currently adopted wellness policy merely mentions FTS as a supportive activity. The district should consider adding substantive Specific, Measurable, Achievable, Realistic, and Timely (SMART) goals to the wellness policy, particularly concerning FTS and local procurement (Hargis, 2022). Integrating FTS within the district to adopt policy insulates the program from budgetary concerns, staff disinterest, or other operational challenges. Goals of the program would no longer be optional, but rather a core component of the district's cultural ethos. Procurement policies that formalize local geographic preference should also be adopted, extending to small and historically underserved producers to promote food system equity. Due to the district's significant food procurement needs, there is an opportunity to shape the local market through leveraging in favor of equity and sustainability goals. Given the politically challenging climate for equity and sustainability initiatives, it is also incumbent to support advocacy measures to protect and advance these goals at the state and federal levels. Policymakers must hear about the negative consequences of cutting programs like the Patrick Leahy

Grant Program, FoodCorps, or SNAP Education. Use strong data to make compelling arguments and qualitative narratives from stakeholders directly.

Infrastructure and Capacity Building

DPSCD has gardens at 82 of 106 schools, or 77% of the district. Expansion to every school is realistic and strategically important for scale, equity, and FTS integration district wide. Garden installations can be costly, and there are currently no dedicated staff for this service (Hargis, 2022). Instead of additional salary liability, DPSCD should leverage community partnerships and engage in school-level community building to meet this need. DPSCD's garden model also includes raised wooden beds to avoid legacy pollution concerns (Hargis, 2022). The useful life of these gardens is too short to be sustainable, given the scale of the program. Alternative materials and models, like metal raised beds, should be explored to extend the longevity of installed gardens. An adopt a garden model could build additional community support, while limiting the impact of DSN's financial obligations (Hargis, 2022).

DPSCD's FTS program uses significant compost as a consumable resource for school garden soils and Drew Farm (Hargis, 2022). Establishing a district composting operation could minimize compost purchases, provide a possible revenue source, and close the loop on cafeteria wastes. The program should explore cost needs, space, and local regulations to implement a composting operation. If practical, state and federal grants could be available to limit start-up costs.

Agricultural expansion of Drew Farm or to other sites is financially viable, but infrastructure needs are a critical area of exploration. Additional greenhouse space, hydroponics, heating, or potentially lighting could augment the growing season and

maximize harvests per square foot of space year-round. These infrastructure costs can be significant and would likely require outside funding or grant support. The district should strategically leverage grant opportunities for these larger up-front expansion projects.

Addressing Implementation Challenges

There can be a steep adoption curve for incorporating fresh local produce and scratch-cooked meals at scale across the district (Buzayan et al., 2024). To ease this transition, DSN should provide intensive skills-building to kitchen staff before widespread implementation with regular follow-up support from the district's available chefs.

A recent internal program evaluation of teacher participants cites time, training, and material or resource gaps as primary barriers to school garden implementation (Dombrowski & Bode, 2024). As a result, targeted funding should address these concerns and incentivize classroom participation in school gardens. The district should continue gathering stakeholder input to ensure that resource use efficiently addresses participation barriers.

The program should pursue an aggressive communications strategy to inform and increase stakeholder awareness of the initiative, building upon community support. This strategy could include newsletters, social media, websites, internal intranet hubs, and participation at community events. Consistent communication is vital to building a base of support amongst stakeholder audiences.

Monitoring, Evaluation, and Continuous Improvement

The district should be data-driven in its pursuit of excellence in implementation. The FTS program should test school meal participation rates against direct interventions to best focus resources. Likewise, data collection efforts within the district should focus on available research gaps to provide unbiased evaluations of program impact and efficacy. Outcomes monitoring should include key district priority areas, like chronic absenteeism and student achievement. Food service reports should also continuously monitor local versus non-local spending and processed versus non-processed spending as transparent progress metrics. Drew Farm and agricultural production should include continuous monitoring for economic profitability and to identify financial choke points or process inefficiencies. The district can continually refine program deliverables to stakeholder needs and implementation realities by collecting key data annually with supporting analysis.

REFERENCES

Allnutt, B. (2024, January 20). *Analysis: Detroit among most impacted cities in the country for the urban heat island effect*. Planet Detroit. https://planetdetroit.org/2023/07/heat-domes-raise-michigan-temps-drive-powerful-storms-heres-how/

Arias, P. (2024, January 11). US Foods driver strike impacting Detroit schools, superintendent says. *Fox Business*. https://www.foxbusiness.com/lifestyle/us-foods-driver-strike-impacting-detroit-schools-superintendent-says

Barney MW. (1919). Follow the Pied Piper. Join the United States School Garden Army.
Washington, DC: The Graphic Company.

Barrett, M. (2025, May 15). *New data confirms: Detroit is a growing city*. BridgeDetroit. https://www.bridgedetroit.com/new-data-confirms-detroit-is-a-growing-city/

Becot, F., Kolodinsky, J., Roche, E., Zipparo, A. E., Berlin, L., Buckwalter, E., & McLaughlin, J. (2017). Do Farm-to-School Programs Create Local Economic Impacts? *Choices. The Magazine of Food, Farm, and Resources Issues*, *32*(1), 1–8. https://doi.org/10.22004/AG.ECON.253380

Benson, M. C. (2013). *Exploring Food System Change through a Mixed Methods Analysis of Cooperative Extension's Role in the Farm-to-School Movement*. https://vtechworks.lib.vt.edu/handle/10919/22077

Berkey, R. E. (2017). *Environmental Justice and Farm Labor*. https://www.taylorfrancis.com/books/mono/10.4324/9781315645995/environmental-justice-farm-labor-rebecca-berkey

Bisceglia, A., Hauver, J., Berle, D., & Thompson, J. J. (2021). How the collaborative work of Farm-to-School can disrupt neoliberalism in public schools. *Agriculture and Human Values*, *38*(1), 59–71. https://doi.org/10.1007/S10460-020-10128-3

Bottemiller, H. (2011, November 2). *Chicago schools make big antibiotic-free poultry purchase | Food Safety News*. Food Safety News. https://www.foodsafetynews.com/2011/11/chicago-schools-make-big-antibiotic-free-poultry-purchase/

Burt, K. G. (2016). A complete history of the social, health, and political context of the school gardening movement in the United States: 1840–2014. *Journal of Hunger & Environmental Nutrition*, *11*(3), 297–316.

Buzayan, Y., Elston, J., & McCrea, A. (2024). *Detroit Public Schools Community District Assessment Report: Partnerships for Local Agriculture & Nutrition Transformation in Schools (PLANTS)* [Report]. Chef Ann Foundation.

Cambro. (2019, October 29). *Minnesota School district uses Farm-to-School to introduce students to new produce*. The CAMBRO Blog. https://blog.cambro.com/2019/10/29/minnesota-school-district-uses-farm-to-school-to-introduce-students-to-new-produce/

Carlsson, L., & Williams, P. L. (2008). New approaches to the health promoting school: Participation in sustainable food systems. *Journal of Hunger & Environmental Nutrition*, *3*(4), 400–417.

Center for Climate and Energy Solutions. (2025, March 10). *U.S. State Climate Action Plans - Center for Climate and Energy Solutions*. https://www.c2es.org/document/climate-action-plans/

Chaves, V. M., Rocha, C., Gomes, S. M., Jacob, M. C. M., & da Costa, J. B. A. (2023). Integrating Family Farming into School Feeding: A Systematic Review of Challenges and Potential Solutions. *Sustainability*, *15*(4), 2863. https://doi.org/10.3390/su15042863

CHEF COUNCIL — CPS Farm-to-School. (n.d.). CPS Farm-to-School. https://cpsfarmtoschool.com/chef-council

Chi Pub Schools. (2024, October 30). *Fusing our schools menus with community flavors, chefs from @josephinesoutherncooking kicked off our District's chef council residency at Evers ES*. Instagram.

Christensen, L. O., Jablonski, B. B. R., Stephens, L., & Joshi, A. (2017). *Economic Impacts of Farm-to-School: Case Studies and Assessment Tools*. National Farm-to-School Network.

Communications, H. (2024a, April 30). *Food and Agriculture Literacy Center at Mykawa Farm Archives - News blog*. News Blog. https://blogs.houstonisd.org/news/tag/food-and-agriculture-literacy-center-at-mykawa-farm/

Communications, H. (2024, October 11). *HISD kicks off another year of USDA Fresh Fruit and Vegetable Program*. News Blog. https://blogs.houstonisd.org/news/2024/10/11/hisd-kicks-off-another-year-of-usda-fresh-fruit-and-vegetable-program/

Conner, D. S., King, B., Koliba, C., Kolodinsky, J., & Trubek, A. (2011). Mapping Farm-to-School Networks Implications for Research and Practice. *Journal of Hunger & Environmental Nutrition*, *6*(2), 133–152. https://doi.org/10.1080/19320248.2011.576206

CPS Farm-to-School | Chicago Public Schools. (n.d.). https://www.cps.edu/services-and-supports/school-meals-and-nutrition/cps-farm-to-school/

Culinary & Wellness Director helps MPS put its best plate forward. (2025, February 27). Post Details. https://www.mpschools.org/about-mps/wearemps/post-

details/~board/wearemps/post/culinary-wellness-director-helps-mps-put-its-best-plate-forward

Climate change and agriculture. (2019, March 20). Union of Concerned Scientists. https://www.ucs.org/resources/climate-change-and-agriculture

Climate change impacts on agriculture and food supply | US EPA. (2025, March 25). US EPA. https://www.epa.gov/climateimpacts/climate-change-impacts-agriculture-and-food-supply

Davis, C., Safran, B., Schaff, R., & Yayboke, L. (2023, February 28). *Building innovation ecosystems: Accelerating tech hub growth*. McKinsey & Company. https://www.mckinsey.com/industries/public-sector/our-insights/building-innovation-ecosystems-accelerating-tech-hub-growth

Directory, S. (2025, July 29). *Community Food Sovereignty Movements → Scenario*. Prism → Sustainability Directory. https://prism.sustainability-directory.com/scenario/community-food-sovereignty-movements/

Djan, M. A., Yeboah, E., Sarfo, I., Allotey, M. K., Okrah, A., Mettle-Nunoo, D. N. A., Aikins, B. E., Antwi, A. V., Anaba, C. I., & Kwang, C. (2025). Understanding the Nexus Between Food Insecurity and School Readiness: A Comprehensive Analysis in Ghana. *European Journal of Development Studies*, *5*(1), 8–20. https://doi.org/10.24018/ejdevelop.2025.5.1.397

Dombrowski, R., & Bode, B. (2024). *DETROIT PUBLIC COMMUNITY SCHOOL DISTRICT SCHOOL GARDEN COLLABORATIVE PROJECT AND SCHOOL CLIMATE EVALUATION FINAL REPORT*.

DPSCD School Nutrition. (2022, March 10). *Throwback Thursday to that time DPSCD's school garden program made the cover of Michigan's Agriculture Magazine!* Instagram.

Duma, M. A. N. (1995). *Community Involvement in Farm Schools in the Pietermaritzburg Area*. https://uir.unisa.ac.za/handle/10500/16722

Duval, D., Bickel, A. K., & Frisvold, G. B. (2019). Farm-to-school programs' local foods activity in Southern Arizona: Local foods toolkit applications and lessons. *Journal of Agriculture, Food Systems, and Community Development*, *8*(Suppl. 3), 53–72. https://doi.org/10.5304/jafscd.2019.08C.001

Earnshaw, V. A., & Karpyn, A. (2020). Understanding stigma and food inequity: a conceptual framework to inform research, intervention, and policy. *Translational behavioral medicine*, *10*(6), 1350–1357. https://doi.org/10.1093/tbm/ibaa087

Farmonaut. (2025, June 30). *Agriculture Investments 2025: Sustainable Growth Guide*. Farmonaut®. https://farmonaut.com/blogs/agriculture-investments-2025-sustainable-growth-guide

Farm-to-School Census Results Overview | USDA-FNS Farm-to-School Census. (n.d.). Retrieved July 3, 2025, from https://farmtoschoolcensus.fns.usda.gov/census-results

Farm-to-School program provides Michigan-Grown fresh produce to students. (2024, October 11). https://www.michigan.gov/mde/news-and-information/press-releases/2024/10/11/farm-to-school-program-provides-michigan-grown-fresh-produce-to-students

Farm-to-School - Minneapolis Public School District. (n.d.). https://www.mpschools.org/departments/cws/true-food/farm-to-school

Fernsby, C. (2023, June 3). New York City announces $8.4m grant to purchase school food from local farmers. *POST Online Media*. https://www.poandpo.com/politics/new-york-city-announces-84m-grant-to-purchase-school-food-from-local-farmers/

Food education. (n.d.). https://sites.google.com/mpls.k12.mn.us/foodeducation/home?authuser=0

Garrity, K. J., Krzyzanowski Guerra, K., Hart, H. C., Al-Muhanna, K., Kunkler, E. C., Braun, A., Poppe, K. I., Johnson, K., Lazor, E., Liu, Y., & Garner, J. A. (2024). Local Food System Approaches to Address Food and Nutrition Security among Low-Income Populations: A Systematic Review. *Advances in Nutrition*. https://doi.org/10.1016/j.advnut.2023.100156

Gingerella, B. (2023, June 7). *NYC Public Schools launches plan to expand nutrition education for students*. https://www.foodservicedirector.com/k-12-schools/nyc-public-schools-launches-plan-to-expand-nutrition-education-for-students

Gingerella, B. (2024, December 3). *How Minneapolis Public Schools successfully reduced added sugars at breakfast*. https://www.foodservicedirector.com/k-12-schools/how-minneapolis-public-schools-successfully-reduced-added-sugars-at-breakfast

Giombi, K. C., Joshi, A., Rains, C., & Wiecha, J. (2020). Farm-to-school grant funding increases children's access to local fruits and vegetables in Oregon. *Journal of Agriculture, Food Systems, and Community Development*, *9*(3), 139–148. https://doi.org/10.5304/jafscd.2020.093.010

Glenn, M. (2024, January 19). *Going Beyond the Plate with Farm-to-School*. https://www.farmtoschool.org/news-and-articles/going-beyond-the-plate-with-farm-to-school

Goldman, D., & Alkaher, I. (2024). Cultivating Environmental Citizenship: Agriculture Teachers' Perspectives Regarding the Role of Farm-Schools in Environmental and Sustainability Education. *Sustainability*, *16*(16), 6965. https://doi.org/10.3390/su16166965

Greer AE, Davis S, Sandolo C, Gaudet N, Castrogivanni B. Formative Research to Create a Farm-to-School Program for High School Students in a Lower Income, Diverse, Urban Community. J Sch Health. 2018 Jun;88(6):453-461. doi: 10.1111/josh. 12627. PMID: 29749005.

Guevara-Herrero, I., Bravo-Torija, B., & Pérez-Martín, J. M. (2024). Educational Practice in Education for Environmental Justice: A Systematic Review of the Literature. *Sustainability*. https://doi.org/10.3390/su16072805

Hargis, M. (2022). *Strategic Plan Initiatives: Farm-to-School Program* [Report]. DPSCD.

Harvesting Knowledge: Nurturing Communities with Farm-to-School Programs. (2025, March 31). UC Agriculture and Natural Resources. https://ucanr.edu/blog/drec/article/harvesting-knowledge-nurturing-communities-farm-school-programs

Haynes, M. (2010). *Farm-to-School in Central Minnesota - Applied Economic Analysis*. https://conservancy.umn.edu/handle/11299/195481

Having a DPSCD Frank Conversation about Nutrition and Tasty Food. (n.d.). Detroitk12.org. https://www.detroitk12.org/site/default.aspx?PageType=3&DomainID=4&ModuleInstanceID=4585&ViewID=6446EE88-D30C-497E-9316-3F8874B3E108&RenderLoc=0&FlexDataID=84378&PageID=1

Healthy Kids, Thriving Farms. (n.d.). Ten Cents a Meal for Michigan's Kids & Farms. https://www.tencentsmichigan.org/about

Healthy Schools Campaign. (2011, February 25). *Raising the (Salad) Bar for School Lunch | Healthy Schools Campaign*. Healthy Schools Campaign | Helping Children Learn and Thrive. https://healthyschoolscampaign.org/blog/fresher-choices-making-their-way-into-school-lunch-6688/

Holland, J. H., Moore, J. J., & Holmes, K. P. (2015). *Farm-to-School: Evidence-based Pedagogical Recommendations for Teachers to Utilize Local Food Systems to Enhance Learning*. https://www.ijac.org.uk/images/frontImages/gallery/Vol._4_No._1/1._1-12.pdf

Houston ISD. (2022, October 26). *@HISDNutrition welcomed @AttucksPatriots and @YoungPREP_HISD to the Food and Agriculture Literacy Center at Mykawa Farm for a fall Harvest Festival*. X.

How Farm-to-School programs feed students while supporting emerging farmers. (2024, September 30). The Food Group. https://www.thefoodgroupmn.org/how-farm-to-school-programs-feed-students-while-supporting-emerging-farmers/

Huffman, B. (2022, September 28). *Detroit has plenty of land. Do residents have equal access?* BridgeDetroit. https://www.bridgedetroit.com/detroit-has-plenty-of-land-do-residents-have-equal-access/

Hussin, N. ‘Izzati M., & Osman, K. (2024). Addressing The Crisis of Food Insecurity Through Urban Farming Among Students in School: A Systematic Literature Review (SLR). *International Journal of Academic Research in Progressive Education and Development*, *13*(3). https://doi.org/10.6007/ijarped/v13-i3/21470

Joshi, A., Azuma, A. M., & Feenstra, G. (2008). Do Farm-to-School Programs Make a Difference? Findings and Future Research Needs. *Journal of Hunger & Environmental Nutrition*, *3*(2/3), 229–246.

Karpyn, A. E., Riser, D., Tracy, T., Wang, R., & Shen, Y. E. (2019). The changing landscape of food deserts. *UNSCN nutrition*, *44*, 46–53.

Kashyap, P., Jablonski, B. B. R., & Bauman, A. (2024). Exploring the relationships among stocks of community wealth, state Farm-to-School policies, and the intensity of Farm-to-School activities. *Food Policy*, *122*, 102570.

Katre, A., & Raddatz, B. (2023). Low-Income Families' Direct Participation in Food-Systems Innovation to Promote Healthy Food Behaviors. *Nutrients*, *15*(5), 1271. https://doi.org/10.3390/nu15051271

Korzun, M., Alexander, C., Cluskey-Belanger, L.-J., Fudger, D., Needham, L., Vsetula, K., Williamson, D., & Gillis, D. (2014). The Farm to Fork project: Community-engaged scholarship from community partners’ perspective. *Gateways: International Journal of Community Research and Engagement*, *7*(1), 101–115. https://doi.org/10.5130/IJCRE.V7I1.3397

Li, M., Jia, N., Lenzen, M., Malik, A., Wei, L., Jin, Y., & Raubenheimer, D. (2022). Global food-miles account for nearly 20% of total food-systems emissions. *Nature Food*, *3*(6), 445–453. https://doi.org/10.1038/s43016-022-00531-w

Lin, S. B. (2023, March 15). School cafeteria heroes, still on the frontlines feeding the city's most vulnerable students, honored. *amNewYork*. https://www.amny.com/education/school-cafeteria-heroes-honored-at-annual-mayoral-ceremony/

Leung, C. W., Fulay, A. P., Parnarouskis, L., Martinez-Steele, E., Gearhardt, A. N., & Wolfson, J. A. (2022). Food insecurity and ultra-processed food consumption: the modifying role of participation in the Supplemental Nutrition Assistance Program (SNAP). *The American journal of clinical nutrition*, *116*(1), 197–205. https://doi.org/10.1093/ajcn/nqac049

Michigan State University Center for Regional Food Systems, Michigan State University Product Center, & University of Michigan School of Social Work Program Evaluation Group. (2021). *An Evaluation of the Economic and Non-Economic value of Drew Farm* [Report].

Mishra, S.K., Khanal, A. R., & Collins, W. J. (2022). Farm-to-School programmes, benefits, health outcomes and barriers: A structured literature review. *Health Education*, *81*(7), 781–792. https://doi.org/10.1177/00178969221119290

Mintz, R. (2025, February 6). Study finds contaminants in Detroit soil and street dust. *Michigan Public*. https://www.michiganpublic.org/environment-climate-change/2025-02-06/study-finds-contaminants-in-detroit-soil-and-street-dust

Mercan, G., & Varol SelÇuk, Z. (2024). Integrating environmental justice and education: A comprehensive review. *Eurasian Journal of Forest Science*. https://doi.org/10.31195/ejejfs.1502265

Metzger, E., Putt Del Pino, S., Prowitt, S., Goodward, J., Perera, A., & WRI.ORG. (2012). *SSWOT: A Sustainability SWOT User's guide*. http://pdf.wri.org/sustainability_swot_user_guide.pdf

Moss, A., Smith, S., Null, D., Long Roth, S., & Tragoudas, U. (2013). Farm-to-School and Nutrition Education: Positively Affecting Elementary School-Aged Children's Nutrition Knowledge and Consumption Behavior. *Childhood obesity (Print)*, *9*(1), 51–56. https://doi.org/10.1089/chi.2012.0056

MPS True Food. (2023, October 31). *Celebrate the beginning of Native American Heritage Month by enjoying #MNThursday at your school Thursday November 2.* Instagram.

National Farm-to-School Network Theory of Change. (2018, January 1). Retrieved July 1, 2025, from https://www.farmtoschool.org/resources-main/national-farm-to-school-network-theory-of-change

Newell, J. P., Foster, A., Borgman, M., & Meerow, S. (2022). Ecosystem services of urban agriculture and prospects for scaling up production: A study of Detroit. *Cities*, *125*, 103664. https://doi.org/10.1016/j.cities.2022.103664

Northrup, A. (2016). *Farm-to-School toolkit*. Minneapolis Public Schools. https://resources.finalsite.net/images/v1704745825/mplsk12mnus/pqonig1sx1tv1dssvt5u/MPSFarmtoSchoolToolkit2016.pdf

NYCPS Office of Nutrition Services. (2025, March 25). *Sustainability is Always in Season! In February, PS135 held its first lettuce giveaway*. Instagram.

NYC's Urban Agriculture Office Sows Seeds Of Change With 'School Food Eats.' (2024, November 8). Harlem World Magazine. https://www.harlemworldmagazine.com/nycs-urban-agriculture-office-sows-seeds-of-change-with-school-food-eats/

Ogden, A. (2025, April 4). *Is Detroit Still a Food Desert? A Closer Look at the City's Grocery Landscape*. The Michigan Chronicle. https://michiganchronicle.com/is-detroit-still-a-food-desert-a-closer-look-at-the-citys-grocery-landscape/

O'Neil, A., Quirk, S. E., Housden, S., Brennan, S. L., Williams, L. J., Pasco, J. A., Berk, M., & Jacka, F. N. (2014). Relationship between diet and mental health in children and adolescents: a systematic review. *American journal of public health*, *104*(10), e31–e42. https://doi.org/10.2105/AJPH.2014.302110

Oneadmin. (2024, October 15). *MDA Unveils State's First Farm to Kids Strategic Plan*. American Ag Network. https://www.americanagnetwork.com/2024/10/15/mda-unveils-states-first-farm-to-kids-strategic-plan/

Operations / Farm & garden. (n.d.). https://www.detroitk12.org/Page/7168

Outreach & Education - Houston Independent School District. (n.d.). https://www.houstonisd.org/our-families-students/nutrition-services/outreach-education

Palmer, A. L., Warsaw, P., McKim, A. J., McKendree, R. B., Nettleton, M., Marzolino, T., & Brasier, H. (2025). Experiences from a land-based learning project focused on local food interventions. *Journal of Agriculture, Food Systems, and Community Development*, *14*(1), 473–486. https://doi.org/10.5304/jafscd.2024.141.013

Peña, M. (2023, November 9). 'Stale' chicken nuggets? Hard tortillas? Food shortages reach Chicago lunchrooms. *Chalkbeat*. https://www.chalkbeat.org/chicago/2021/10/20/22737352/chicago-public-schools-lunch-food-shortage-supply-chain/

Powell, L. J., & Wittman, H. (2018). Farm-to-School in British Columbia: mobilizing food literacy for food sovereignty. *Agriculture and Human Values*, *35*(1), 193–206. https://doi.org/10.1007/S10460-017-9815-7

Prescott, M. P., Cleary, R., Bonanno, A., Costanigro, M., Jablonski, B. B. R., & Long, A. B. (2020). Farm-to-School Activities and Student Outcomes: A Systematic Review. *Advances in Nutrition*, *11*(2), 357–374.

Press Release - NYC Mayor's Office of Climate and Environmental Justice. (2024, July 11). NYC Mayor's Office of Climate and Environmental Justice. https://climate.cityofnewyork.us/moua-first-school-year-farm-to-school/

Rains, C. B., Giombi, K., & Joshi, A. (2019). Farm-to-school education grants reach low-income children and encourage them to learn about fruits and vegetables. *Translational Behavioral Medicine*, *9*(5), 910–921. https://doi.org/10.1093/TBM/IBZ092

Ratcliffe, M. M., Merrigan, K. A., Rogers, B. L., & Goldberg, J. P. (2009). The effects of school garden experiences on middle school-aged students' knowledge, attitudes, and behaviors associated with vegetable consumption. *Health Promotion Practice*, *10*(5), 903-911.

Roche, E., Conner, D., & Kolodinsky, J. (2015). Increasing local procurement in farm-to-school programs: An exploratory investigation. *Journal of Agriculture, Food Systems, and Community Development*, *5*(2), 81–90. http://dx.doi.org/10.5304/jafscd.2015.052.019

Rosenthal, A. (2015, March 3). *Exploring regional produce procurement in Detroit Public Schools | Agricultural Marketing Service*. Agricultural Marketing Service. https://www.ams.usda.gov/reports/exploring-regional-produce-procurement-detroit-public-schools

RTS - Recycle Track Systems. (2024, September 10). *What is Circular Economy & How Does It Work? : Complete Guide - RTS - Recycle Track Systems*. Recycle Track Systems. https://www.rts.com/resources/guides/circular-economy/

Rudge, S. (2023, December 12). *Resilience in the U.S. Food Supply Chain: Challenges and Innovations | FoodChain Magazine*. FoodChain Magazine. https://foodchainmagazine.com/resilience-in-the-u-s-food-supply-chain-challenges-and-innovations/

Ruppenthal, A. (2017, October 2). *Chicago Considers Good Food Procurement Policy*. WTTW News. https://news.wttw.com/2017/10/02/chicago-considers-good-food-procurement-policy

S.3307 - 111th Congress (2009-2010): Healthy, Hunger-Free Kids Act of 2010. (2010, December 13). https://www.congress.gov/bill/111th-congress/senate-bill/3307

Sampson, N. (2012). Environmental Justice at School: Understanding Research, Policy, and Practice to Improve Our Children's Health. *Journal of School Health*, *82*(5), 246–252. https://doi.org/10.1111/J.1746-1561.2012.00694.X

School Meals Programs: Expanding access through innovative financing to accelerate progress towards the SDGs. (2025, June 26). GCNF. https://gcnf.org/school-meals-programs-expanding-access-through-innovative-financing-to-accelerate-progress/

Serrano, C. (2017). *Scaling a "Bite-Sized Implementation Strategy": Promoting Educational Equity and Social Justice through a Farm-to-School Food Program*. https://escholarship.org/content/qt8q265969/qt8q265969.pdf?t=p04u9q

Stewart, H., & Kuchler, F. (2022, June 21). *Fluid milk consumption continues downward trend, proving difficult to reverse*. Economic Research Service. https://www.ers.usda.gov/amber-waves/2022/june/fluid-milk-consumption-continues-downward-trend-proving-difficult-to-reverse

Tamiru, D., Tamiru, D., Belachew, T., & Belachew, T. (2017). The association of food insecurity and school absenteeism: systematic review. *Agricultural and Food Science*, *6*(1), 5. https://doi.org/10.1186/S40066-016-0083-3

Taylor, J. C., & Johnson, R. K. (2013). Farm-to-School as a strategy to increase children's fruit and vegetable consumption in the United States: Research and recommendations. *Nutrition Bulletin*, *38*(1), 70–79. https://doi.org/10.1111/NBU.12009

Teaching Sustainability: How Hydroponics Fit into School Curriculums. (2024, May 17). Freight Farms. https://www.freightfarms.com/blog/hydroponics-school-curriculum

Turin, T. C., Kazi, M., Rumana, N., Lasker, M. A. A., & Chowdhury, N. (2023, June 23). *Conceptualising community engagement as an infinite game implemented through finite games of 'research', 'community organising' and 'knowledge mobilisation.'* https://pmc.ncbi.nlm.nih.gov/articles/PMC10485326/

Turner, L., Leider, J., Piekarz, E., Schermbeck, R. M., Merlo, C., Brener, N., & Chriqui, J. F. (2017). Facilitating Fresh: State Laws Supporting School Gardens Are Associated With Use of Garden-Grown Produce in School Nutrition Services Programs. *Journal of Nutrition Education and Behavior*, *49*(6), 481–489.

United Nations. (n.d.). *68% of the world population projected to live in urban areas by 2050, says UN | United Nations*. https://www.un.org/uk/desa/68-world-population-projected-live-urban-areas-2050-says-un

urbanagnews. (2024, January 11). *Adams administration secures funding to reimagine Farm-to-School programming in New York City schools*. Urban Ag News. https://urbanagnews.com/blog/news/adams-administration-secures-funding-to-reimagine-farm-to-school-programming-in-new-york-city-schools/

U.S. Department of Agriculture, Food and Nutrition Service. (2019). *2019 Farm-to-School Census Report (Summary)* [Report]. https://fns-prod.azureedge.us/sites/default/files/resource-files/2019-Farm-to-School-Census-Summary.pdf

Viglione, G. (2024, September 12). *Experts: What is causing food prices to spike around the world?* Carbon Brief. https://www.carbonbrief.org/experts-what-is-causing-food-prices-to-spike-around-the-world/

What is Farm-to-School. (n.d.). https://www.farmtoschool.org/about/what-is-farm-to-school

Wilson, G. (2024, January 20). *Detroit's toxic river: After decades, some progress—but a long cleanup journey remains*. Planet Detroit. https://planetdetroit.org/2021/09/detroits-toxic-river-after-decades-some-progress-but-a-long-cleanup-journey-remains/

Wong, M. (2022, June 28). *Growing Food for Detroit's Students: A Spotlight on Drew Farm*. MI Farm-to-School. http://blog.mifarmtoschool.msu.edu/2022/06/growing-food-for-detroits-students.html

Wooten, R. (2013, May 29). *Detroit's new urban agriculture is a good start: Part 2*. MSU Extension. https://www.canr.msu.edu/news/detroits_new_urban_agriculture_is_a_good_start_part_2

Youth and the environment. (n.d.). https://www.genevaenvironmentnetwork.org/resources/updates/youth-and-the-environment/