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More than procurement: Examination of a farm-to-early-care and education pilot

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Abstract

Although there is a wealth of research on farm-to-school programs (FTS), less has been published about farm to early care and education programs (ECE). This paper examines the results of participating in a farm-to-ECE procurement pilot program on provider practices across the three core elements of farm to ECE: (1) purchasing, (2) gardening, and (3) nutrition and education activities. In order to address the geographic and funding constraints of an existing procurement pilot, Michigan offered an expansion of this model so that ECE sites could take part in a learning collaborative. They did this by examining the effectiveness of evidence-based practices in obtaining locally grown foods from a variety of sources among ECE sites, for statewide replication. Participation included self-assessment of learning environments using a nationally available, validated instrument to determine pre- to post-test changes in farm-to-ECE practices and what, if any, changes in practices might have occurred for those partici-

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Author Note

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Author Roles

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pating in the procurement pilot, with the goal of sharing what was learned statewide. Key findings include improvements of statistical significance from pre-test to post-test and changes in best practices among participants using Go NAPSACC, with the top three most improved practices involving garden-based practices. The role of self-assessment, funding, and limitations are discussed, along with implications for practice and further research.

Keywords
farm-to-ECE programs, early care and education, nutrition, procurement

Introduction

The integration of food, nutrition, and agriculture education, increased purchasing through local sources, and on-site gardening began in a handful of schools in the late 1990s as part of farm-to-school initiatives. This has expanded to over 75% of schools reporting serving local food and over 67,000 schools in all 50 states participating in farm to school in 2019 (U.S. Department of Agriculture [USDA], 2021).

Extant research supports benefits associated with farm-to-school (FTS) and health, education, and economic outcomes (National Farm to School Network [NFSN], 2020) and research suggests students participating in FTS are more likely to try new foods, increase consumption of fruit and vegetables, and be physically active (Joshi et al., 2008; Moss et al., 2013; Yoder et al., 2014). FTS activities may also have a positive effect on social skills, as well as school engagement and academic achievement (NFSN, 2020). However, less has been research published regarding farm to early care and education (ECE), for a variety of reasons. Among the barriers of cost, limited staff to develop and implement activities and prepare food, lack of access or knowledge of local foods, and issues with family engagement (Riemer Bopp et al., 2022d), its relatively late emergence in the early care and education setting compared with FTS results in a lack of empirical offerings. This paper aims to contribute to the body of farm-to-ECE literature in sharing the results of an evaluation of a procurement pilot for early care and education sites, determining if and how practices in supporting farm-to-ECE changed through participation in an expanded pilot program.

Background

It is important to understand the nuances of farm-to-ECE with the framework offered by FTS. This is true not only in terms of the application across sites, differences in nutritional needs, and funding availability for a younger population, but also in how the pandemic affected the ECE sector and the overlap that is created with farm-to-ECE.

Farm to Early Care and Education

Farm-to-ECE consists of the same strategies as farm to school, including specific activities to (1) increase access to nutritious, locally produced foods; (2) encourage gardening; and (3) engage in education about food, nutrition, and agriculture in early care and education settings. These three aspects are considered the "core elements" of farm-to-ECE (NFSN, 2020). Farm-to-ECE can be used across early care and education settings to help children learn where food comes from and about nutrition, which is one reason why it is appealing. Options in ECE vary, but farm-to-ECE can take place in every type of early care and education setting, including child-care centers and family child-care homes, as well as Head Start programs and preschools housed in kindergarten to twelfth grade (K-12) school districts. This is one aspect that sets farm-to-ECE apart from FTS.

Whereas in FTS, replication may be accomplished from school to school more easily, the various types of early care and education settings suggest a more nuanced approach across the three core elements identified above. Differences in enrollment, in addition to variances across states in early learning standards, invite variability in programs and implementation for farm-to-ECE. While K-12 students have minimum requirements for nutrition education each year as part of the Richard B. Russell National School Lunch and H.R. 3800 Nutrition Education Acts (Beckwith et al., n.d.), no such federal mandates exist for ECE sites. Another notable difference is the smaller purchasing volume of ECE sites compared to their K-12 counterparts (Bloom et al., 2022). Despite these challenges, there are sites committed to farm-to-ECE, with

top motivations indicated in the 2021 National Farm to Early Care and Education Provider Survey as "providing fresher or higher-quality food to children" and to "provide children with experiential learning" (Riemer Bopp et al., 2022d).

Childhood Health and Well-Being Trends

About 12 million children not enrolled in public school are in child-care (Child Care Aware of America, 2019), spending an average of 25 hours per week in care outside of the home (National Center for Education Statistics, 2016). As a result, ECE programs are in a unique position to provide high quality food as part of the learning environment for the young children in their care (Benjamin-Neelon, 2018). National data indicate that almost 25% of preschool children are overweight or obese (Ogden et al., 2016), and the state in which the pilot took place was ranked 23rd out of 50 states for obese and overweight children (Robert Wood Johnson Foundation, 2020). Although childhood obesity rates have been declining, obesity rates among preschool-aged children in the U.S. began to increase again starting in 2014 (Sanyaolu et al., 2019). Beginning in 2008, the percentage of 2- to 4-year-old children identified as obese in the state participating in the pilot Special Supplemental Nutrition Program for Women, Infants, and Children (WIC program) declined, but recently the percentages started to trend upward again, with noted increases in BMI across age groups during the pandemic (Korioth, 2021).

The Child and Adult Care Food Program (CACFP) is one mechanism for funding nutritious foods in early care and education settings. Research suggests that participating in CACFP is associated with an increased compliance with nutrition recommendations (Andreyeva et al., 2018; Andreyeva & Henderson, 2018), particularly in home-based child-care settings (Erinosho et al., 2018). It has also been shown to increase family engagement opportunities and address food security issues (Stephens et al., 2021). Additionally, CACFP can be used to purchase local fruits and vegetables, addressing a common cost barrier to serving healthy foods (Lee et al., 2022), while simultaneously increasing the nutrient density of the foods served. The 2021 National Farm to ECE Provider Survey found a statistically significant association of between sites purchasing and serving local foods and receipt of CACFP funding (Riemer Bopp et al., 2022b). However, ECE providers also shared perceived barriers of knowing how to order local items and using CACFP to purchase local foods (Riemer Bopp et al., 2022b), suggesting a further need for farm-to-ECE outreach and support.

Benefits of Farm to Early Care and Education

Although the research in FTS spans decades, peer-reviewed research in farm-to-ECE is only beginning to emerge. The available studies are promising in suggesting participation in farm-to-ECE has positive impacts, such as young children showing increased willingness to try new fruits and vegetables (Dannefer et al, 2018; Sharma et al., 2015) and increasing fruit and vegetable consumption (Carroll et al., 2011; Meinen et al., 2012; Nanney et al., 2007; Williams et al., 2014). These positive impacts can extend to families due to the implementation of farm-to-ECE, with families increasing the availability of and serving more local foods at home (Nanney et al., 2007).

Early care and education providers have long recognized the incredible importance of the first years of a child's life. Equally vital is that children develop a willingness to try new foods as they develop preferences at an early age (Shedd et al., 2018). This can set the stage for healthy eating for the rest of their lives. Although birth to age 5 is considered an optimal time for development (National Research Council & Institute of Medicine Committee on Integrating the Science of Early Childhood Development, 2000), the period of early childhood faces significant challenges. Childhood obesity poses a risk not only for health, but also for social-emotional issues, which affect learning outcomes (Hemmingson, 2018). For children who are not in high quality early care and education settings, including those with access to nutritious food, delays in cognitive, social, and emotional development can further impact school readiness (Denham et al., 2012; Halfon et al., 2012).

Impact of the Pandemic on Farm-to-ECE

At its core, farm-to-ECE brings together two seemingly disparate yet intertwined systems with

common goals (Centers for Disease Control and Prevention [CDC], 2023). Both ECE and food systems, particularly those working within them, were deeply affected by the COVID-19 pandemic. Both sectors employ "frontline workers," a subcategory of essential workers unable to fulfill their work responsibilities from home but more likely to be paid less and come from "socioeconomically disadvantaged backgrounds" (Blau et al., 2020, p. 3).

The Effect of the Pandemic on Early Care and Education

The COVID-19 pandemic disproportionately affected child care, which was considered one of the hardest-hit employment sectors during the pandemic (Banghart et al., 2022). Data from October 2022 indicated that 102,400 jobs in the early care and education sector had been lost since February 2022 (Center for the Study of Child Care Employment, 2022). A national survey of ECE providers in 2021 discovered that despite the pandemic and its effect on child care, providers were committed to implementing farm-to-ECE activities (Riemer Bopp et al., 2022a). However, the same survey found that participation was more likely to occur for white enrollees than their Black counterparts at levels of statistical significance (Riemer Bopp et al., 2022c).

An understanding of who is participating in farm-to-ECE and how they are participating is essential, as it is underscored by data reporting the pandemic did not affect local food purchasing significantly. Providers were also able to leverage funding sources such as CACFP to increase eligibility for meals and to help families access meals during school closures, although only 2% of those indicating farm-to-ECE participation reported additional grants or local food incentive funding in addition to using CACFP (Riemer Bopp et al., 2022a).

National waivers for programs such as the National School Lunch Program, School Breakfast Program, Summer Food Service Program, and the Seamless Summer Option offered congregate feeding and flexibilities for meal pick-up but were mostly aimed at K-12 children (Policy Equity Group & National Farm to School Network, 2021). Waivers in place for CACFP programs offered needed flexibility and increased access to healthy meals for children (Food Research and Action Center, 2022), but may not have addressed staffing or other financial issues for program administration (Policy Equity Group & National Farm to School Network, 2021).

The Effect of the Pandemic on the Food System

During the first year of the pandemic, over 800 meat-packaging, food-processing, and farm facilities in the U.S. were affected by COVID-19 cases (Aday & Aday, 2020). Consumer behavior and purchasing choices were affected by decreased staff in grocery stores and other food retail outlets, with reduced staff in these locations and supply-chain issues affecting the availability of products (Aday & Aday, 2020). With grocery or retail stores indicated as the first choice for local food procurement among respondents in the 2021 National Farm to ECE Provider Survey (Riemer Bopp et al., 2022b), limitations on purchases could be problematic for home-based child care providers using these options as their sole source of food purchasing.

However, as with their ECE counterparts, there are examples of farmers and food producers who worked to ensure access to local product during the pandemic. One model is the farmers and food producers who facilitated the selection and delivery of products to early care and education settings online or through "virtual farm stands," as successfully demonstrated in Iowa (Hoffman et al., 2017). Similarly, other core elements of farm-to-ECE were implemented through alternate means, including support for gardening and nutrition and agricultural education through virtual learning and virtual farm visits (CDC, 2023). At the height of the pandemic, providers who closed temporarily were able to participate virtually in professional development about farm-to-ECE and, once able to open again, to implement gardening and outdoor learning activities with young children that enabled physical distancing (NFSN, 2022). Providing food from an onsite garden during the pandemic was listed among the top four strategies reported by providers participating in the 2021 National Farm to ECE Provider Survey and was used for taste testing, nutrition education, and to supplement food purchasing (Riemer Bopp et al., 2022a). In

other words, ECE sites worked with farmers and food producers to implement all three core elements of farm-to-ECE during the pandemic.

Study Context

The Farm to Early Care and Education Implementation Grant (FIG) Procurement Pilot was funded as part of Michigan's funding opportunity through the Association for State Public Health Nutritionists (ASPHN) year 3 award. The FIG Procurement Pilot was an expansion of a pilot program established three years prior, in 2018, as a subset of grant funding from the W.K. Kellogg Foundation (Shedd, 2022). The initial farm-to-ECE pilots were created to help ECE staff in three communities in Michigan identified as high need based on social determinants of health access to obtain locally grown foods. This included sourcing directly from farmers for use in meals, snacks, and as part of their educational activities, but also accessing from farmers markets, food hubs, and distributors.

The pilots were designed to develop sourcing solutions at the local level as part of a collective local food solution based on the needs and goals of communities. Additionally, participant feedback was intended to drive and develop a shared learning collaborative, as participating sites met regularly for discussions about farm implementation strategies and training and technical assistance opportunities to address the other two core elements of gardening and nutrition and agriculture education.

The FIG Procurement Pilots were intended to expand on the existing procurement pilot by offering participation opportunities for additional early care and education sites beyond the three priority communities, including rural and underserved communities beyond the initial three priority communities. By expanding the geographic boundaries, ECE sites across the state were eligible for the funding opportunity, and also were able to take part in a learning collaborative and have access to the same support for training and technical assistance. Ultimately, what was learned would answer the questions of if and how participation in a procurement pilot could elicit changes in implementation of farm-to-ECE, with the goal of using what was learned to help inform and support statewide farm-to-ECE efforts.

Methods

The FIG Procurement Pilot mirrored the same process for participation as the original pilot. Prior to sharing information about the opportunity, the project was approved by the Michigan State University Institutional Review Board (IRB). A request for applications (RFA) was distributed through the state's Farm to Early Care and Education (ECE) Network two times (in November 2021 and February 2022), sharing the application and criteria for participation. FIG Procurement Pilot applicants were encouraged to consider all three core elements of farm-to-ECE in their applications, as well as how their proposals would address continued implementation of farm-to-ECE in their programs beyond the funding of the procurement pilot. The email announcement and RFA offered examples of how funding might be used, including but not limited to purchasing of gardening supplies such as materials for raised beds, seeds, soils, and equipment for classroom gardens, purchase of specific kitchen equipment for classroom tasting demonstrations, purchase of a community supported agriculture (CSA) membership to increase local sourcing options, and encouraging other ideas that would increase and sustain local buying capacity. Specific expectations for participation, including completion of self-assessments and participation in the learning collaborative, were also shared with the RFA announcement. Additional expectations included participating in the virtual learning collaborative to share challenges and best practices, receiving training and technical assistance regarding local food procurement, gardening, and nutrition education (with professional development credit in the provider registry system available), and having access to additional free farm-to-ECE resources either through Go NAPSACC or the monthly farm-to-ECE Procurement Pilot newsletter.

Each site completed a farm-to-ECE Go NAPSACC self-assessment and an action plan in Go NAPSACC to support its application upon award notification. This enabled the identification of baseline data regarding best practices in farm-to-ECE, as well as the creation of a guide for the implementation of farm-to-ECE practices for the provider during the pilot. Participants had access to

the online Go NAPSACC platform to view their self-assessment data in real time and could see the number of best practices met, as well as their action plan. They also had access to the online training and resources in the platform and could update their progress toward identified goals in their action plan at any time.

Each month a newsletter was sent to Procurement Pilot participants sharing specific resources for purchasing local food, gardening in early care and education settings both inside classrooms and outdoors, nutrition and agriculture education, family engagement strategies, racial equity in early care and education, and grant or funding opportunities for farm-to-ECE. An additional section enabled sites to share about implementation of farm-to-ECE at their site, encouraging "show and tell" between and among sites using an additional delivery mechanism.

Participation

Early care and education sites providing for children age five and under were eligible for participation, but participation could not be limited to only after-school care. Participation in CACFP was not a requirement, but sites received regular information regarding the program and additional technical assistance about CACFP if desired.

Participants in the FIG cohort could apply for and receive up to US$500 in subgrants. Most applicants applied for the full amount of funding, although there were a few that did not. The first expansion application was distributed in November 2021 with 20 sites applying and 20 sites funded. The second expansion application was distributed in February 2022, with 45 sites applying and 11 funded. Across both application distributions, a total of 65 sites applied for up to US$500 in funding per site, with both cohorts concluding support in October 2022. In total, the FIG cohort allocated US$14,479 in farm-to-ECE funding to 31 sites for an average award of US$467.06. Funding impacted 1,214 children across 17 counties.

Data Collection

Upon receipt of funding, participants needed to complete a farm-to-ECE pre-assessment in Go NAPSACC (Ward et al., 2017) and create an action plan in Go NAPSACC supportive of their application. Go NAPSACC is a national, validated, strengths-based tool with evidence of positive health changes for early care and education settings and the children enrolled in them, including reduced obesity and improved nutrition environments (Ward et al., 2008), improved provider and family nutrition knowledge (Alkon et al., 2014), and ECE physical activity best practices (Bonis et al., 2014).

A Go NAPSACC farm-to-ECE post-assessment was also expected to be completed at the conclusion of the grant period, or approximately 6 months after the pre-assessment, to enable pre- and post-test comparison. Participants were emailed a link to complete a procurement pilot grant survey in Qualtrics consisting of 12 multiple choice, yes or no, and short response questions (Appendix). The goal of the survey was to learn more about the sites receiving funding, the farm-to-ECE activities in which they participated, challenges and successes in implementation of those activities, and resources used and the degree of helpfulness of those resources in supporting their implementation.

Participants were emailed at the conclusion of the procurement pilot period (mid-August 2022) to complete the post–farm-to-ECE self-assessment in Go NAPSACC, allowing at least 6 months between pre- and post-assessment. They were provided a link to an end-of-grant survey in Qualtrics. The survey was sent to all the procurement pilot participants, including those funded as part of the original pilot, with a reminder email sent approximately one week after the original email.

Analysis

Demographic data about the FIG cohort was gleaned from information participants provided as part of their Go NAPSACC profiles using the online Go NAPSACC software (Ward et al., 2017). Additional analysis of Go NAPSACC data was conducted to determine what changed from pre- to post-scores in farm-to-ECE practices and what, if any, best practices might have occurred. Data from the FIG cohort list was gleaned from the Go NAPSACC farm-to-ECE self-assessment summary report (Ward et al., 2017) available in digital format on demand upon the end of the grant period. Per

instructions from GO NAPSACC's farm-to-ECE analysis tool provided by the University of North Carolina (E. Clarke, personal communication, February 2, 2022), in spring 2022, the data set was cleaned and entered into an analysis tool provided by the University of North Carolina for this purpose. The analysis tool (an Excel spreadsheet prepopulated with formulas) enabled the user to import a specified set of Go NAPSACC data and perform paired sample t-tests and calculate the change in score (comparing pre-test to post-test), determining if the outcome was of statistical significance (*p*-value).

Although the survey had questions that would enable the extraction of data specific to the FIG cohort, many providers did not answer this question (date of procurement pilot participation) or indicated "unsure." As a result, it is difficult to filter or discern between the two funding sources with confidence, and the survey data were analyzed looking at both funding sources combined and reported in aggregate form. Additionally, content analysis of the open-ended responses using inductive coding was conducted to look for broad themes (Holton, 2007).

Results

Information on the type of provider participating in the procurement pilot, as well as practices around foodservice, help to frame the results. After a limited review of demographic information about the providers is shared, analysis of the Go NAPSACC is offered, noting a key takeaway of participants demonstrating improvements in total score and best practices at levels of statistical significance, with the top three improved practices involving gardening. Content analysis of the survey offers support for some of the quantitative results.

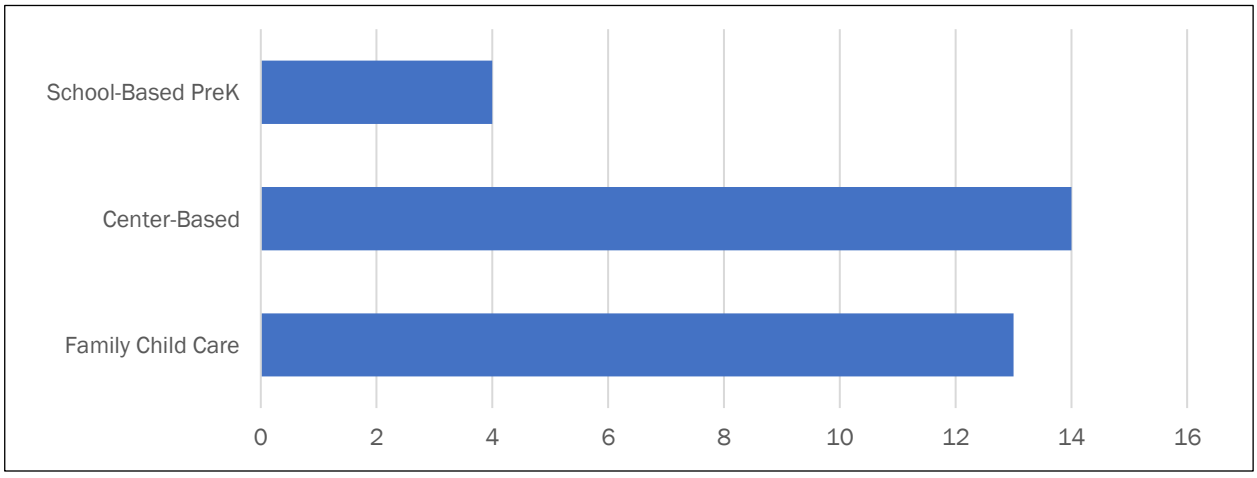
Demographic information provided from the Go NAPSACC website indicates that participants were from a mix of center-based, family child-care, and school-based prekindergarten sites (Figure 1). All but three indicated that they provided full-day care and provided food to the children in their care.

Of the 31 sites, 26 sites (83.8%) indicated that food was prepared by the kitchen and five indicated that food was sent with families to be prepared in their own homes. Go NAPSACC also enabled sites to indicate their participation in CACFP; 22 sites (71.0%) in the FIG cohort indicated participation. Based on Go NAPSACC data, 29 of 31 (93.5%) sites served breakfast and lunch. Both sites not offering breakfast and lunch did not participate in CACFP. An additional examination of meal participation shows 30 of 31 sites (96.8%) offered snacks, and nine (29.0%) offered dinner.

Farm-to-ECE Best Practices

A total of 22 sites (out of 31 total FIG-funded procurement pilot sites) completed both pre- and post–self-assessments for analysis. Paired sample t-tests indicated that sites completing pre- and post-assessment improved from pre- to post-test by a

Figure 1. Child-Care Setting Types of Study Participants



mean of 13.9 (p <.001) and improved the percentage of best practices from pre- to post-assessment by a mean of 14.9 (p <.001). At post-assessment, 40.9% of programs had post–self-assessments scores meeting greater than 50% of best practices.

Among 19 farm-to-ECE practices in the self-assessment, 18 saw a change across the period of data collection (Table 1). The top three practices with greatest change were garden-based practices, including "Children do a variety of activities to help plan, plant, care for, harvest, and learn from the garden" (n=22, Δ=1.23) followed by "During the growing season, structured gardening time is provided to preschool children 2 times per week or more" (n=22, Δ=1.09) and "Over the course of the year, 7 or more different fruits or vegetables grow in the program's garden" (n=22, Δ=1.00). These results are consistent with a review of procurement pilot applications, as every funded applicant indicated an intent to purchase gardening materials such as raised beds and gardening tools or plants and seeds using the procurement pilot stipend. Learning collaborative professional development requests were most frequently about gardening, and 399 providers completed an online on-demand professional development workshop about gardening during the procurement pilot enrollment period.

However, one practice remained static: "The program communicates about local foods included in meals or snacks through menus, farm information, recipes, signs, marketing materials, and other strategies" (n=22, Δ=0.00). The only practice with a decrease or negative change was "Teachers talk with children informally about where foods come from or how they grow each time they see an opportunity" (n=22, Δ=-0.09). These results suggest an opportunity to extend the role of gardening to aspects of family engagement and informal learning opportunities.

Table 1. Change in Go NAPSACC Best Practices Among Participants

Best Practice	Pre-test n	Pre-test Mean	Post-test n	Post-test Mean	% Meeting Best Practice (post)	Change (Mean)
A variety of local fruits, vegetables, herbs, grains, dairy products, and/or protein foods are offered over the course of the year	31	2.9	22**	3.0	45	0.14
Over the course of the year, local foods are offered as part of meals or snacks 1 time per week or more	31	2.6	22	2.9	45	0.23
During the growing season, local fruits and/or vegetables are offered as part of meals or snacks 3 times per week or more	31	2.7	22	3.0	55	0.23
The program communicates about local foods included in meals or snacks through menus, farm information, recipes, signs, marketing materials, and/or other strategies	31	2.1	22	2.1	9	0.00
The program has a garden that helps children learn how food grows and produces enough fruits and/or vegetables to be part of preschoolers' meals or snacks	31	2.3	22	3.2	36	.82
Over the course of the year, 7 or more different fruits and/or vegetables grow in the program's garden	31	1.9	22	3.0	32	1.00
The program's garden grows a variety of herbs, fruits, and/or vegetables to reflect the diverse food traditions of enrolled children	31	2.0	22	2.8	23	0.73
During the growing season, structured gardening time is provided to preschool children 2 times per week or more	28*	2.1	22	3.1	55	1.09
Children do a variety of activities to help plan, plant, care for, harvest, and learn from the garden	15*	2.4	22	3.7	77	1.23
Teachers offer planned education on food and where it comes from 1 time per week or more	31	2.2	22	3.0	41	0.91

continued

Table 1 continued

During the growing season, structured gardening time is provided to preschool children 2 times per week or more	28*	2.1	22	3.1	55	1.09
Children do a variety of activities to help plan, plant, care for, harvest, and learn from the garden	15*	2.4	22	3.7	77	1.23
Teachers offer planned education on food and where it comes from 1 time per week or more	31	2.2	22	3.0	41	0.91
During the growing season, preschool children do cooking or taste test activities with fresh fruits or vegetables 1 time per week or more	31	2.4	22	3.0	36	0.86
Preschool children have the opportunity to meet a farmer 1 time per year or more and families are invited to attend	31	1.7	11*	1.8	9	0.18
The materials used to help preschool children learn about food and where it comes from include a variety of posters, pictures, books, and props	31	3.2	22	3.7	73	0.45
Teachers talk with children informally about where foods come from or how they grow each time they see an opportunity	31	3.0	22	3.0	36	-0.09
All staff participate in Farm-to-ECE professional development related to their jobs 1 time per year or more	31	2.2	22	2.7	45	0.41
Professional development on Farm-to-ECE covers a variety of topics about buying and using local foods and educating children and their families about local foods	31	1.8	22	2.6	41	0.73
The program connects families to local foods in a variety of ways, including offering information, tastings, and opportunities to get involved with gardening and food education activities	31	1.8	22	2.4	27	0.50
Input from families is used in menu planning so that menus regularly include meals and/or snacks that reflect the cultural, ethnic, and/or religious food traditions of enrolled children	31	2.5	22	2.8	32	0.32
There is a written policy on Farm-to-ECE that includes a variety of topics related to the local foods that the program serves and other efforts to educate children and families and connect them to local foods	31	1.2	17	1.9	23	0.73

* This question was not completed by all participants for the self-assessment.
** Not all participants completed a post-assessment.

Survey Data

Participants were asked to complete a short, end-of-grant survey to gather additional data about their experiences in the procurement pilot, their implementation of early care and education activities, and helpfulness of the resources provided as part of the pilot. The survey data were examined to determine if and how respondents participated across all three core elements of farm-to-ECE (procurement, gardening, and nutrition and agriculture education activities). Of the 44 survey respondents, 28 (63.6%) providers purchased local foods, 35 (79.5%) engaged in gardening activities, and 27 (61.4%) implemented nutrition and agriculture education activities. As participants were not limited to a single response, results indicate overlap in activities among providers and that engagement in the elements is not mutually exclusive. This suggestion of overlap is consistent with the 2021 National Farm-to-ECE Provider Survey indicating that gardening was a top strategy among providers and used for multiple purposes, including the introduction of new foods (tasting), nutrition education, and supplementing food purchasing (Riemer Bopp et al., 2022a). The suggestion of overlap between and among the three core elements of farm-to-ECE is offered with caution, however, noting that shared language is essential (Thomas & McDonaugh, 2013). Based on the survey results for the procurement pilot, it is unclear if implementation of farm-to-ECE activities occurred in isolation, meaning gardening was a stand-alone activity,

or if gardening occurred as a procurement strategy and as part of nutrition education as well.

Of the 44 respondents, 31 (70.5%) indicated participation in CACFP. Participants were also asked about participation in another possible funding source, a state program providing 10 cents per meal in match for schools and centers serving state-grown fruits, vegetables, and legumes. For this option there were 43 responses available, with 9 indicating participation (20.9%) and 34 (79.1%) not participating. It is important to acknowledge that while CACFP participation is a requirement for the state program participation, at the time of the procurement pilot the state program was available for centers only.

In addition to examining meals served as indicated in Go NAPSACC profiles, the survey asked about the serving of meals and additional foods offered. For example, rather than simply asking about "snacks," the survey questioned specifically if morning or afternoon snacks were offered, as well as about the offering of other foods. Again, the inability to separate FIG-funded-only participants results in sharing data of the entire procurement pilot data. The survey data also revealed how participants served meals and snacks throughout the day (Figure 2), with most serving both breakfast and snacks.

Helpfulness of Resources

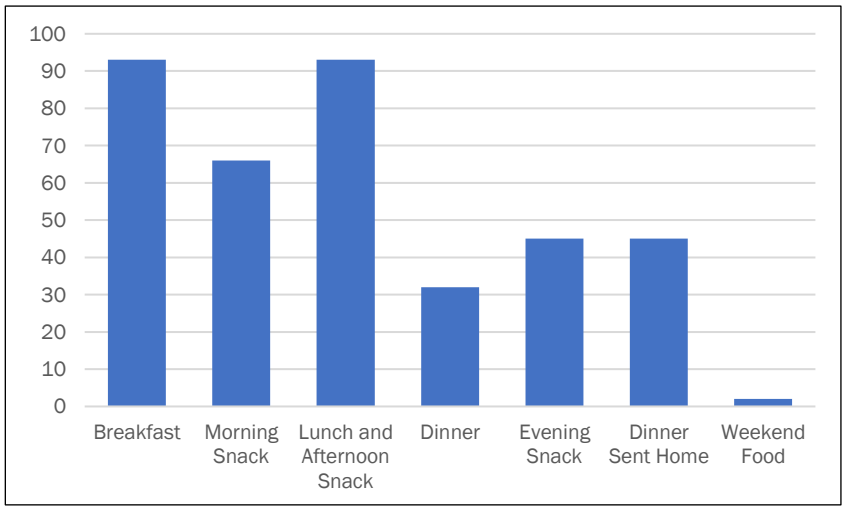
Providers were less likely to engage in virtual learning collaborative meetings due to schedule conflicts but utilized other "on-demand" resources provided electronically, including online professional development opportunities and Go NAPSACC and its corresponding resources. When asked about the "helpfulness" of resources offered during the procurement pilot, 39 participants responded to this section of questions. Combining responses of "extremely helpful" and "helpful," the Go NAPSACC resources, including provider information, menus, and family resources, were identified as the most helpful tools by 37 of 39 participants. The monthly newsletter created by project staff was distributed via email, approximately one page or less in length, and included information and hyperlinks for purchasing of local foods, gardening, nutrition education, family engagement, racial equity, and grant and funding opportunities. The newsletter was tied with the Go NAPSACC Action Plan for second-most-helpful (35 respondents indicating "extremely helpful" or "helpful"), followed by the Go NAPSACC self-assessment (34 respondents).

Open-Ended Responses

A final question of the survey was an open-ended inquiry regarding anything else providers wanted to share. Of 29 respondents, four broad themes emerged from the inductive analysis of the comments: 'appreciation and acknowledgement for the opportunity,' 'gardening,' 'experience,' and comments about what was accomplished. A provider's response could include more than one theme. This is evidenced in comments from providers such as:

> Thank you for offering us this opportunity. We have gardened for years, but this has allowed us to expand on what we do! The impact on our children is seen daily when they choose to go to the garden to tend to it, observe, or sneak a taste of a fresh green bean!

Figure 2. Percentage of Providers Offering Snacks and Meals



Another provider indicated that the program provided not only the opportunity for a garden for their site, but also hands-on learning and tasting experiences:

> I can't thank you enough for this opportunity to develop and grow a garden with the kids. We created drawings, started the plants from seeds, had circle time to discuss how the plants were growing, discuss how to keep the rabbits out, how to plant the trees, how the flowers turn into fruit, and so many more discussions and hands on experience these children had with growing their own food. They have picked green peppers, tomatoes, and couple beans straight from the garden and ate them right there. We also grew some nasturtium and they got to eat the flowers and taste the spicyness [*sic*] of the flower petals. This has been an amazing experience this summer.

Finally, one of the takeaways heard during the learning collaboration sessions and in one-on-one coaching was the desire to continue the procurement pilot and the use of resources beyond the established funding period. This included use of Go NAPSACC, but also additional resources, particularly funding, in large part due to ease of application and "low burden" paperwork, as noted by one provider's comment:

> The simplicity of [the] application and low reporting requirements made it much easier to ask for what we truly needed and not spend excessive amounts of time with paperwork. I hope this opportunity continues for providers across Michigan regardless of their stage in F2ECE implementation.

The procurement pilot offered a modest stipend and most applicants indicated their intent to purchase gardening materials, whether raised beds, tools, or plants and seeds. After six months, 18 of 19 practices assessed by Go NAPSACC showed improvement, with garden-based practices key among the top three. Given the hands-on experiential learning aspect of gardening, coupled with the opportunity to supplement the food supply, the results support recent research of a national survey as well (Riemer Bopp et al., 2022a).

Discussion

The objective of this evaluation was to determine what, if any, practices among the early care and education providers participating in the learning cohort were most effective in implementing farm-to-ECE with the goal to share statewide in Michigan. It was expected that challenges would also be shared, as what presents as a barrier for one site could be an opportunity for another. Key findings include improvements of statistical significance from pre-test to post-test and changes in best practices among participants, with garden-based practices noted as the top three most improved practices. Additionally, participants shared the value of the self-assessment tool, Go NAPSACC, its resources, and the action plan among the most helpful resources in the learning collaborative for implementing farm-to-ECE at their sites. As the pilot took place during the pandemic, this online tool was particularly helpful in identifying and building upon the existing strengths of a site, while also identifying areas of opportunity for continued focus and expansion of farm-to-ECE activities to support long-term and sustainable change. This project offered a small stipend for participants; thus, the role of funding is discussed, noting how reliance on grants both supports and creates challenges for farm-to-ECE initiatives. The feedback on the helpfulness of the resources coupled with the results from the self-assessment and survey data also offer insights for both statewide replication and implications for additional research.

Use of Go NAPSACC

One key finding is that participation in a farm-to-ECE learning cohort consisting of regular, albeit minimal, support resulted in positive changes in provider practices and the early learning environment. This was true whether the participant was in the cohort that began in November (with approximately 11 months of support) or February (with approximately 9 months of support). While it is notable that 18 of 19 possible farm-to-ECE practices saw changes from pre- to post-assessment in the Go NAPSACC self-assessment, the role of the

garden was among all three top practices with greatest change. Garden-based education offers experiential education, with physical distancing, if necessary, while simultaneously enabling ECE sites additional procurement options. This can be particularly helpful to introduce new fruits or vegetables to young children as part of tasting demonstrations or to supplement existing procurement options and address cost considerations. Challenges with gardening in early care and education exist and should be acknowledged, including but not limited to startup costs, maintenance, variability in growing seasons, and provider knowledge and skill (Dannefer et al., 2017; Riemer Bopp et al., 2022d).

This result also lends further support not only to the overlapping of the three core elements of farm-to-ECE, but perhaps offers a partial explanation, though certainly not cause, for positive changes as measured by the self-assessment across all practices. Moreover, it speaks to the availability of a garden for outdoor play and physical activity, supporting of learning opportunities and social emotional development, and increased access to nutritious food (Kos & Jerman, 2012; Nedovic & Morrissey, 2013; Perry & Branum, 2009). Also relevantly, some states are linking farm-to-ECE in their Quality Rating Improvement Systems and noting specific farm-to-ECE language in their standards that can be documented with Go NAPSACC (NFSN, 2022). Example states include Pennsylvania, Colorado, and Nebraska (NFSN, 2022). In considering implications for replication, Go NAPSACC offers the possibility for shared language, with a strengths-based approach to enable providers to share between and among themselves at a site, as well as with other providers, offering a definition of farm-to-ECE as well as strategies for implementation within their own setting.

As such, a major aspect of the procurement pilot was the use of Go NAPSACC to access data in real time to both providers and procurement technical assistance staff to determine strengths and continue to build on those skills and knowledge areas. An additional benefit was the ability to develop an action plan with specific goals to address and reassess their practices to affect positive, long-term change. Collectively, this enables ongoing quality improvement for program sustainability with policy, systems, and environmental changes taking place and remaining over time. Additionally, there are free, online, on-demand professional development workshops embedded in Go NAPSACC that are linked to the professional development registry system in Michigan. This is of further benefit to providers, offering free trainings for which they receive professional development credit as well.

Role of Funding

Given the importance of early care and education sites as a food source for young children, juxtaposed with the increasing cost of food for ECE sites, the use of funding sources to purchase locally produced, nutrient-dense foods to maintain high-quality learning environments is especially important. Among participants in the procurement pilot, about two-thirds leveraged CACFP funds. This is especially notable when comparing the Go NAPSACC best practices regarding purchasing and serving of local foods and is consistent with literature suggesting that CACFP participation addresses a common barrier to serving healthy foods (Lee et al., 2022). The 2021 National Farm to ECE Provider Survey identified cost as the most significant barrier to implementation of farm-to-ECE (Riemer Bopp et al., 2022d), resulting in a need to identify additional sources of funding. CACFP is one way to address this barrier, as it can positively affect purchasing power and encourage the purchase of local foods.

It is important to recognize, however, that one of the perceived benefits of the procurement pilot was the ease of a streamlined application and reduced administrative burden despite the modest amount of funding. This contrasts with perceptions of increased administrative burden and "altruistic" motivations for participation noted in recent research (Andreyeva et al., 2022). Further, the procurement pilots are one example of an attempt to initiate sustainability in farm-to-ECE within a state, with small investments at sites to establish on-site gardens and purchase smaller kitchen equipment like blenders, measuring cups, spoons, and child-safe knives for tasting demonstrations. The use of the funding also speaks to the overlap of the three

core elements of farm-to-ECE and the ways in which gardening can be used as a core element of farm-to-ECE while also supporting the other two core elements of procurement and nutrition education. However, isolated, one-time grants such as this are a Band-Aid approach, and long-term, sustainable funding is necessary for policy, systems, and environmental changes that address health and learning outcomes for young children. The use of Go NAPSACC to identify strengths within the ECE setting, set goals for improvement, and utilize existing resources were all identified as valuable aspects of the pilot and support existing research about flexible support using virtual or online technology (Ward et al., 2017).

Although the official pandemic orders have been lifted, the ECE sector has not fully recovered. Survey data suggest that four of five child care centers are experiencing staffing issues, and one in every three survey respondents from rural or small town sites considered closing programs as a result of the pandemic (National Association for the Education of Young Children [NAEYC], 2021). The NAEYC survey indicated that over half of minority-owned programs faced the possibility of permanent closure. It is important to acknowledge that there is "no farm to ECE without the ECE" (S. Bhat, personal communication, March 12, 2021). The pandemic offered insight into the fragmented, fragile, and inequitable child care system (Jessen-Howard et al., 2020). Despite these challenges, there are enthusiastic participants in farm-to-ECE willing to help answer the questions of if and how participation in a learning collaborative procurement pilot affects farm-to-ECE practices.

This study has important limitations worth noting. The first is the inability to separate the FIG-funded procurement pilot cohorts from the original procurement pilot cohort. While there were questions in place to aid in filtering the two groups, including the date of award and funding amount, these two questions were frequently left blank or the responses did not distinguish between the cohorts (e.g., the date of the award was not consistent with the cohort award amount). As a result, the researchers chose not to separate the survey data by cohort to enable analysis. Another potential limitation is differing dates or time periods within the cohort. For replication purposes, it is unknown if a 9-month cohort or an 11-month cohort is preferable to elicit change in provider practices in implementing farm-to-ECE activities. Despite the limitations, the study offers several areas of opportunity, including further examination of how funding opportunities are used by early care and education providers.

Implications for Research and Practice

Understanding the awareness of and knowledge about the three core elements of farm-to-ECE among providers is an important addition to both research and practice. Extant research has focused mostly on provider practices and less on provider knowledge (e.g., the practices in which they are engaging compose farm-to-ECE and how they support overall early care and education) and change in knowledge of purchasing foods, garden-based learning opportunities, and nutrition education. Based on common barriers identified in implementing farm-to-ECE (Riemer Bopp et al., 2022d), an understanding of both knowledge and practices would further inform farm-to-ECE efforts, particularly professional development and policy efforts. Additional research that includes observation to confirm providers' Go NAPSACC self-assessments is recommended for future studies as well.

Similarly, additional research to understand what, if any, knowledge and behavior changes occur for children and families as a result of participation in farm-to-ECE procurement pilots such as this one is essential. This would build on existing research of children's knowledge of where food comes from (Kos & Jerman, 2012) or curriculum efficacy (Izumi et al., 2015; Namenek Brouwer & Benjamin Neelon, 2013; Sharma et al., 2015), noting a gap in the literature in the overlap among the three core elements of farm-to-ECE and how they inform one another and children's knowledge about food and nutrition.

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References

Aday, S., & Aday, M. S. (2020). Impact of COVID-19 on the food supply chain. *Food Quality and Safety*, *4*(4), 167–180. https://doi.org/10.1093/fqsafe/fyaa024

Alkon, A., Crowley, A. A., Neelon, S. E., Hill, S., Pan, Y., Nguyen, V., Rose, R., Savage, E., Forestieri, N., Shipman, L., & Kotch, J. B. (2014). Nutrition and physical activity randomized control trial in child care centers improves knowledge, policies, and children's body mass index. *BMC Public Health*, *14*, 215–227. https://doi.org/10.1186/1471-2458-14-215

Andreyeva, T., & Hendeson, K. E. (2018), Center-reported adherence to nutrition standards of the Child and Adult Care Food Program. *Childhood Obesity*, *14*(6), 421–428. https://doi.org/10.1089/chi.2018.0076

Andreyeva, T., Kenney, E. L., O'Connell, M., Sun, X., & Henderson, K. E. (2018). Predictors of nutrition quality in early child education settings in Connecticut. *Journal of Nutrition Education and Behavior*, *50*(3), 458–467. https://doi.org/10.1016/j.jneb.2017.12.016

Andreyeva, T., Sun, X, Cannon, M., & Kenney, E. L. (2022). The Child and Adult Care Food Program: Barriers to participation and financial implication of underuse. *Journal of Nutrition Education and Behavior*, *54*(4), 327–224. https://doi.org/10.1016/j.jneb.2021.10.001

Banghart, P., King, C., & Daily, S. (2022, September). *State guidebook for measuring progress toward equitably supporting children care stabilization*. Child Trends. https://cms.childtrends.org/wp-content/uploads/2022/09/PritzkerStateGuidebook_ChildTrends_September2022-.pdf

Beckwith, S., Goesch, H., MacKinnon, G., Anderson, D., & Stang, J. (n.d.) *Nutrition education in America's schools: A policy brief.* https://asphn.org/wp-content/uploads/2017/10/2016-Nutrition-Education-in-Americas-Schools.pdf

Benjamin-Neelon S. E. (2018). Position of the Academy of Nutrition and Dietetics: Benchmarks for nutrition in child care. *Journal of the Academy of Nutrition and Dietetics*, *118*(7), 1291–1300. https://doi.org/10.1016/j.jand.2018.05.001

Blau, F. D., Meyerhofer, P. A., & Koebe, J. (2020). *Essential and frontline workers in the COVID-19 crisis.* Econofact. https://econofact.org/wp-content/uploads/2022/03/Apr30-2020-Essential-and-Frontline-Workers-in-the-COVID.pdf

Bloom, D., Boys, K., Shisler, R. C., Dunning, R., Hundley, C., & Yates, D. (2022). Exploring models of local food procurement in farm to early care and education programs. *Journal of Human Sciences and Extension*, *10*(1), Article 3. https://doi.org/10.54718/CONI3088

Bonis, M., Loftin, M., Ward, D., Tseng, T. S., Clesi, A., & Sothern, M. (2014). Improving physical activity in daycare interventions. *Child Obesity*, *10*(4), 334–341. https://doi.org/10.1089/chi.2014.0040

Carroll, J. D., Demment, M. M., Stiles, S. B., Devine, C. M., Dollahite, J. S., Sobal, J., & Olson, C. M. (2011). Overcoming barriers to vegetable consumption by preschool children: A childcare center buying club. *Journal of Hunger and Environmental Nutrition*, *6*(2), 154–165. https://doi.org/10.1080/19320248.2011.576207

Centers for Disease Control and Prevention [CDC]. (2023). *Advancing farm to ECE.* https://www.cdc.gov/obesity/strategies/farm-to-ece.html

Center for the Study of Child Care Employment. (2022). *Child care sector jobs: BLS analysis*. Institute for Research on Labor and Employment, University of California, Berkeley. https://cscce.berkeley.edu/publications/brief/child-care-sector-jobs-bls-analysis/

Child Care Aware of America. (2019). *The US and the high price of child care: An examination of a broken system.* https://www.childcareaware.org/our-issues/research/the-us-and-the-high-price-of-child-care-2019/

Dannefer, R., Power, L., Berger R, Sacks, R., Roberts, C., Bikoff, R., & Solomon, E. (2018). Process evaluation of a farm-to-preschool program in New York City. *Journal of Hunger and Environmental Nutrition*, *13*(3), 396–414. https://doi.org/10.1080/19320248.2017.1364192

Denham, S. A., Kalb, S., Way, E., Warren-Khot, H., Rhoades, B. L., & Bassett, H. H. (2013). Social and emotional information processing in preschoolers: Indicator of early school success? *Early Child Development and Care*, *183*(5), 667–88. https://doi.org/10.1080/03004430.2012.682728

Erinosho, T., Vaughn, A., Hales, D., Mazzucca, S., Gizlice., & Ward, D. (2018). Participation in the Child and Adult Care Food Program is associated with healthier nutrition environments at family child care homes in Mississippi. *Journal of Nutrition Education and Behavior*, *50*(5), 441–450. https://doi.org/10.1016/j.jneb.2017.11.004

Food Research and Action Center. (2022). *Current summary of USDA's child nutrition waivers in response to COVID-19*. https://frac.org/research/resource-library/nationwide-waivers

Halfon, N., Houtrow, A., Larson, K., & Newacheck, P. W. (2012). The changing landscape of disability in childhood. *Future Child*, *22*(1), 13–42. https://doi.org/10.1353/foc.2012.0004

Hemmingson, E. (2018). Early childhood obesity risk factors: Socioeconomic adversity, family dysfunction, offspring distress, and junk food self-medication. *Current Obesity Reports*, *7,* 204–208. https://doi.org/10.1007/s13679-018-0310-2

Hoffman, J. A., Schmidt, E. M., Wirth, C., Johnson, S., Sobell, S. A., Pelissier, K., Harris, D. M., & Izumi, B. T. (2017). Farm to preschool: The state of the research literature and a snapshot of national practice. *Journal of Hunger & Environmental Nutrition*, *12*(4), 443–465. https://doi.org/10.1080/19320248.2016.1227747

Holton, J. A. (2007). The coding process and its challenges. In A. Bryant, & K. Charmaz (Eds.), *The Sage handbook of grounded theory* (pp. 265–289). Sage. https://doi.org/10.4135/9781848607941

Izumi, B. T., Eckhardt, C. L., Hallman, J. A., Herro, K., & Barberis, D. A. (2015). Harvest for Healthy Kids pilot study: Associations between exposure to a farm-to-preschool intervention and willingness to try and liking of target fruits and vegetables among low-income children in Head Start. *Journal of the American Academy Nutrition and Dietetics*, *115*(12), 2003–2013. https://doi.org/10.1016/j.jand.2015.07.020

Jessen-Howard, S., Malik, R., & Falgout, M. K., (2020, August 4). *Costly and unavailable: America lacks sufficient child care supply for infants and toddlers*. Center for American Progress. https://www.americanprogress.org/issues/early-childhood/reports/2020/08/04/488642/costly-unavailable-america-lacks-sufficient-child-care-supply-infants-toddlers/

Joshi, A., Zuma, 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. https://doi.org/10.1080/19320240802244025

Korioth, T. (2021, September 16). *Study: BMI rates nearly doubled for children, adolescents during pandemic.* American Academy of Pediatrics. https://publications.aap.org/aapnews/news/15635

Kos, M., & Jerman, J. (2012). Preschool children learning about the origin of food, on local farms and in the preschool garden. *Nutrition & Food Science*, *42*(5), 324–331. https://doi.org/10.1108/00346651211266836

Lee, D. L., Homel Vitale, E., Marshall, S. K. D., Hecht, C., Beck, L. T., & Ritchie, L. D. (2022). Child and Adult Care Food Program participation benefits, barriers and facilitators for independent child care centers in California. *Nutrients*, *14*(21), 4449–4470. https://doi.org/10.3390/nu14214449

Meinen, A., Friese, B., Wright, W., & Carrel, A. (2012). Youth gardens increase healthy behaviors in young children. *Journal of Hunger and Environmental Nutrition*, *7*(2–3), 192–204. https://doi.org/10.1080/19320248.2012.704662

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. *Child Obesity*, *9*(1), 51–56. https://doi.org/10.1089/chi.2012.0056

Namenek Brouwer, R.J., Benjamin Neelon, S.E. (2013). Watch Me Grow: A garden-based pilot intervention to increase vegetable and fruit intake in preschoolers. *BMC Public Health*, *13*, Article 363. https://doi.org/10.1186/1471-2458-13-363

Nanney, M. S., Johnson, S., Elliot, M., & Haire-Joshu, D. (2007). Frequency of eating homegrown produce is associated with higher intake among parents and their preschool-aged children in rural Missouri. *Journal of the American Dietetic Association*, *107*(4), 577–584. https://doi.org/10.1016/j.jada.2007.01.009

National Association for the Education of Young Children [NAEYC]. (2021). *Progress and peril: Child care at a crossroads.* National Association for the Education of Young Children. https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/blog/naeyc_july_2021_survey_progressperil_final.pdf

National Center for Education Statistics. (2016). *National Household Education Surveys Program (NHES).* U.S. Department of Education. https://nces.ed.gov/nhes/tables/ECPP_HoursPerWeek_Care.asp

National Farm to School Network [NFSN]. (2020, May). *Benefits of farm to school* [Fact sheet]. https://www.farmtoschool.org/resources-main/benefits-of-farm-to-school

NFSN. (2022, July). *Aligning farm to early care and education quality rating and improvement systems (QRIS).* https://www.farmtoschool.org/resources-main/aligning-farm-to-early-care-and-education-with-qris-fact-sheet

National Research Council & Institute of Medicine Committee on Integrating the Science of Early Childhood Development. (2000). *From neurons to neighborhoods: The science of early childhood development* (J. P Shonkoff & D. A. Phillips, Eds.). National Academy Press.

Nedovic, S., & Morrissey, A. (2013). Calm active and focused: Children's responses to an organic outdoor learning environment. *Learning Environments Research*, *16,* 281–295. https://doi.org/10.1007/s10984-013-9127-9

Ogden, C. L., Carroll, M. D., Lawman, H. G., Fryar, C. D., Kruscon-Moran, D., Kit, B. K., & Flegal, K. M. (2016). Trends in obesity prevalence among children and adolescents in the United States, 1988-1994 through 2013-2014. *Journal of the American Medical Association, 315*(21), 2292–2299. https://doi.org/10.1001/jama.2016.6361

Perry, J. P., & Branum, L. (2009). "Sometimes I pounce on twigs because I'm a meat eater": Supporting physically active play and outdoor learning. *American Journal of Play*, *2*(2), 195–211. https://www.museumofplay.org/app/uploads/2022/01/2-2-article-pounce-on-twigs-because-im-a-meat-eater.pdf

Policy Equity Group & National Farm to School Network. (2021, July). *Lessons from the COVID-19 Experience: Innovations and strategies for farm to early care and education implementation in states and communities.* Policy Equity Group. https://policyequity.com/wp-content/uploads/2021/07/Farm-to-ECE-Covid-July-2021.pdf

Riemer Bopp, S., Shedd, M. K., & Stephens, L. (2022a). *Farm to early care and education continues to foster bright futures for children and communities: 2021 National Farm to Early Care and Education Survey: COVID-19 and farm to ECE* [Survey brief]. National Farm to School Network. https://www.farmtoschool.org/resources-main/2021-national-farm-to-early-care-and-education-survey

Riemer Bopp, S., Shedd, M. K., & Stephens, L. (2022b). *Farm to early care and education continues to foster bright futures for children and communities: 2021 National Farm to Early Care and Education Survey: Local purchasing* [Survey brief]. National Farm to School Network. https://www.farmtoschool.org/resources-main/2021-national-farm-to-early-care-and-education-survey

Riemer Bopp, S., Shedd, M. K., & Stephens, L. (2022c). *Farm to early care and education continues to foster bright futures for children and communities: 2021 National Farm to Early Care and Education Survey: Farm to ECE reach* [Survey brief]. National Farm to School Network. https://www.farmtoschool.org/resources-main/2021-national-farm-to-early-care-and-education-survey

Riemer Bopp, S., Shedd, M. K., & Stephens, L. (2022d). *Farm to early care and education continues to foster bright futures for children and communities: 2021 National Farm to Early Care and Education Survey: Farm to ECE: Why farm to ECE* [Survey brief]. National Farm to School Network. https://www.farmtoschool.org/resources-main/2021-national-farm-to-early-care-and-education-survey

Robert Wood Johnson Foundation. (2020). *State of childhood obesity: Michigan*. https://stateofchildhoodobesity.org/state-data/?state=mi

Sanyaolu, A., Okorie, C., Qi, X., Locke, J., & Rehman, S. (2019). Childhood and adolescent obesity in the United States: A public health concern. *Global Pediatric Health*, *6*, 1–11. https://doi.org/10.1177/2333794X19891305

Sharma, S. V., Hedberg, A. M., Skala, K. A., Chuang, R. J., & Lewis, T. (2015). Feasibility and acceptability of a gardening-based nutrition education program in preschoolers from low-income, minority populations. *Journal of Early Childhood Research*, *13*(1), 93–110. https://doi.org/10.1177/1476718X14538598

Shedd, M. K. (2022). *From seed to harvest: Summary of Michigan procurement pilot*. Michigan State University Center for Regional Food Systems. https://www.canr.msu.edu/resources/from-seed-to-harvest-summary-of-michigan-procurement-pilot

Shedd, M. K., Stephens, L., Matts, C., & Laney, J. (2018). Results from the 2018 National Farm to Early Care and Education Survey. *National Farm to School Network and MSU Center for Regional Food Systems.* http://www.farmtoschool.org/resources-main/2018-national-farm-to-early-care-and-education-survey

Stephens, L., Rains, C., & Benjamin-Neelon, S. E. (2021). Connecting families to food resources amid the COVID-19 pandemic: A cross-sectional survey of early care and education providers in two U.S. states. *Nutrients, 13*(9), 3137–3148. https://doi.org/10.3390/nu13093137

Thomas, J., & McDonaugh, D. (2013). Shared language: Towards more effective communication. *The Australasian Medical Journal, 6*(1), 46–54. https://pubmed.ncbi.nlm.nih.gov/23422948/

Ward, D. S., Benjamin, S. E., Ammerman, A. S., Ball, S. C., Neelon, B. H., & Bangdiwala, S. I. (2008). Nutrition and physical activity in child care: Results from an environmental intervention. *American Journal of Preventive Medicine, 35*(4), 352–356. https://doi.org/10.1016/j.amepre.2008.06.030

Ward, D. S., Vaughn, A. E., Mazzucca, S., & Burney, R. (2017). Translating a child care based intervention for online delivery: Development and randomized pilot study of Go NAPSACC. *BMC Public Health, 17*, Article 891. https://doi.org/10.1186/s12889-017-4898-z

Williams, P. A, Cates, S. C., Blitstein, J. L., Hersey, J., Gabor, V., Ball, M., Kosa, K., Wilson, H., Olson, S., & Singh, A. (2014). Nutrition-education program improves preschoolers' at-home diet: A group randomized trial. *Journal of Academy of Nutrition and Diet*etics, *114*(7), 1001–1008. https://doi.org/10.1016/j.jand.2014.01.015

U.S. Department of Agriculture, Food and Nutrition Services [USDA FNS]. (2021). *Farm to school census results overview.* https://farmtoschoolcensus.fns.usda.gov/census-results-overview

Yoder, A. B., Liebart, J. L., McCarty, D. J., Schoeller, D., Vargas, C., & LaRowe, T. (2014). Farm to elementary school programming increases access to fruits and vegetables and increases their consumption among those with low intake. *Journal of Nutrition Education and Behavior, 46*(5), 321–349. https://doi.org/10.1016/j.jneb.2014.04.297

Appendix. Michigan Farm to Early Care and Education Procurement Pilot Grant End Survey

Michigan Farm to ECE Procurement Project--Grant Ending Survey

Start of Block: Default Question Block

Q1 Please help us learn more about the Michigan Farm to ECE Procurement Pilot, beginning with learning about the different types of ECE settings in the project by sharing your ECE setting type:

- ○ Center Based (1)
- ○ Family Child Care (2)
- ○ Other (3) _____

Q2 Number of children currently enrolled at your site:

_____

Q3 Please indicate meals and snacks you serve each day (check all that you serve):

- ☐ Breakfast (1)
- ☐ Morning snack (2)
- ☐ Lunch (3)
- ☐ Afternoon snack (4)
- ☐ Dinner (5)
- ☐ Other (6) _____

Q4 Do you participate in the Child and Adult Care Food Program (CACFP)?

- ○ No (1)
- ○ Yes (2)

Q5 Do you participate in 10 Cents a Meal?

- ○ No (1)
- ○ Yes (2)

End of Block: Default Question Block

Start of Block: Block 1

Q6 Amount of funding you received as part of the Michigan Farm to ECE Procurement Pilot:

_____

Page 2 of 5

Q7 Amount of funding you spent:

_____

Q8 As there were multiple cohorts in the pilot, please indicate the length of time of your grant (please select):

- ○ September 1, 2021-August 30, 2022 (1)
- ○ November 1, 2021-October 31, 2022 (2)
- ○ March 1, 2022-October 31, 2022 (3)
- ○ Unsure (4)

End of Block: Block 1

Start of Block: Block 2

Q9 Please indicate the farm to ECE activities you focused on with your funding (check all that apply):

- ☐ Purchasing (procurement) (1)
- ☐ Gardening (2)
- ☐ Nutrition and agriculture education (3)

Q10 Please share any successes with farm to ECE and/or the procurement pilot:

_____

Page 3 of 5

Q11 Please share any challenges with farm to ECE and/or the procurement pilot:

_____

Q12 Please rate how helpful you've found the following resources:

	Extremely helpful (1)	Helpful (2)	Neither helpful or unhelpful (3)	Unhelpful (4)	Don't Use (5)	Didn't know about it (6)
MI Farm to ECE Procurement Pilot Monthly Newsletter (1)	○	○	○	○	○	○
Go NAPSACC self assessment (2)	○	○	○	○	○	○
Go NAPSACC action plan (3)	○	○	○	○	○	○
Go NAPSACC resources (materials and handouts) (4)	○	○	○	○	○	○
Go NAPSACC trainings/workshops (5)	○	○	○	○	○	○
MI Farm to ECE Network website (6)	○	○	○	○	○	○
MI Farm to ECE Network meetings (7)	○	○	○	○	○	○
MI Farm to ECE Network listserv (8)	○	○	○	○	○	○

Q13 Anything else you would like us to know about your experience in the procurement pilot:

_____