

Nourishing the Future: Staff Skill Development to Integrate Scratch Cooking in School Cafeterias

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University of Pittsburgh, 2024

Despite policy changes and guidelines within the school food environment, many U.S. youth continue to have poor diet quality. This dissertation aimed to implement a Plan-Do-Study-Act (PDSA) cycle to address the problem of the school lunch menu offerings, primarily consisting of pre-cooked and ready-to-eat foods. The intervention involved a single training session for five food service staff members from two elementary schools on preparing scratch meals. The goal was to provide two scratch meals per week for the first two weeks of a five-week rotational cycle on the lunch menu. Three inquiry questions guided the study: 1) *How did integrating more scratch meals in the school lunch menu impact student meal participation?* 2) *How did participating in a brief training impact food service staff's confidence and skills in preparing scratch meals?* And 3) *Post-implementation, what were staff perceptions of the initial training and implementation process to integrate more scratch meals on the menu?* The study utilized pre- and post-school lunch meal sales data, surveys, and a focus group with food service staff. Meal sales data were analyzed for changes in student participation, while surveys assessed staff confidence. Focus group transcripts underwent qualitative analysis. Results showed mixed effects on meal sales, with some recipes maintaining sales while others decreased. Surveys indicated increased staff confidence in their scratch cooking skills post-training. However, staff described barriers such as time constraints and labor shortages in the focus group. Overall, preliminary support was found for integrating scratch meals into the menu without affecting student meal participation. Further research is needed to explore student and parent acceptance of new menu items. Comprehensive training and

support mechanisms are vital for successful integration, considering barriers like union issues and financial constraints.

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Preface

Undertaking the journey of completing a dissertation is a monumental task, one that demands not only academic rigor but also unwavering support and guidance. As I reflect on the culmination of my academic journey, I am filled with profound gratitude for the individuals who have played pivotal roles in this endeavor.

Foremost among them is my husband, Douglas Artze. Throughout this challenging journey, he has been my rock, providing unwavering support and encouragement. His steadfast belief in me, coupled with his willingness to shoulder the responsibilities of our family, especially with our two precious baby girls, has been nothing short of remarkable. Douglas, your love, patience, and unwavering support have been the bedrock upon which I have built my academic pursuits.

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1.0 Naming & Framing the Problem of Practice

1.1 Broader problem area

Extensive research spanning decades consistently demonstrates that adopting a healthy dietary pattern contributes to maintaining good health and reducing the risk of chronic diseases across all stages of life, from infancy through older adulthood, highlighting the profound connection between food choices and overall well-being (U.S. Department of Agriculture, 2020). Children who consume nutritionally healthier diets have a lower risk of chronic diseases. The food environment within schools plays a pivotal role in shaping children's dietary habits and weight status, thus making it an ideal target to improve children's nutritional intake (Story, 2006).

The Healthy, Hunger-Free Kids Act of 2010 has established Healthy Guidelines and Regulations (Food and Nutrition Service, n.d.-a) to improve the quality of school food and to provide balanced and nutritious options in school meal programs (Healthy, Hunger Free Kids Act, 2010). Under the Healthy, Hunger-Free Kids Act, school meals are subject to strict nutritional guidelines to ensure they meet the health needs of students. For example, a typical meal offered to elementary school students might consist of baked chicken breast with a side of brown rice and steamed broccoli. This meal would fall within the specified sodium range of 1110-1280 milligrams, with the chicken seasoned modestly to meet flavor preferences while staying within the limit. Additionally, the meal would be portioned to contain between 750-850 calories, ensuring it provides adequate energy without excessive intake. The saturated fat content would be carefully monitored, with the chicken prepared without added fats and oils, ensuring it contributes less than 10% of the total calorie content. Furthermore, the meal would contain zero trans fat, aligning with

the Act's guidelines to promote heart health. To encourage the consumption of fruits and vegetables, the meal would include at least half a cup of either fruit or vegetables, with options available for students to take up to one cup of each if desired. This balanced and nutritious meal exemplifies the standards set forth by the Healthy, Hunger-Free Kids Act, providing students with wholesome options that support their overall health and well-being.

In addition to setting guidelines for meals served as part of school meal programs, the Healthy, Hunger-Free Kids Act of 2010 also addressed competitive foods, which are those sold outside of the federally regulated school meal programs (Competitive Foods, n.d.). Competitive foods, also known as a la carte or snack foods, are food items sold in the cafeteria that compete for students' dollars with federally-regulated breakfast and lunch programs. Competitive foods include items sold in vending machines, school stores, and a la carte lines. These foods may compete with the nutritious options provided through school meal programs. Under the Act, competitive foods must adhere to nutritional standards that align with those set for meals served as part of school meal programs. This means they must meet criteria for calorie limits, sodium levels, saturated fat content, and trans fat content, among other requirements.

Research underscores the positive impact of school meal programs on children's overall diets. For instance, Kinderknecht et al. (2020) demonstrated that school meal participants had better overall diet quality compared to non-participants. Additionally, students who opt for school lunches are more likely to incorporate items such as milk, fresh fruits, and assorted vegetables into their meals, in contrast to those who bring their lunches from home or elsewhere (Fox & Gearan, 2019). Moreover, studies indicate that eating breakfast and lunch at school increases the intake of whole grains, greens, beans, and whole fruit (Fox et al., 2019). These improvements stem from

changes to menu and nutrition standards for school meals, including the implementation of *Smart Snacks in School* competitive foods standards.

Despite the strides made with these guidelines, opportunities for further enhancement in students' diet quality persist. Previous improvement approaches include changes to lunch menus, such as removing breaded and processed foods and training staff on scratch cooking methods (Behrens et al., 2018). Poor diet, consisting of high amounts of ultra-processed foods, results in an excessive intake of added sugars (Yu & Zou, 2023). Some school districts are concerned about the cost associated with scratch cooking and, as a result, rely on processed foods to ensure compliance with nutrition standards (Poppendieck, 2010). However, a previous study found that meals with the highest scratch-cooking scores exhibited notably lower food expenses but higher labor costs, resulting in total costs that did not significantly differ from those of non-scratch meals (Woodward-Lopez et al., 2014).

Within the Anonymous School District (“the District”), challenges persist in making changes to the school cafeteria menu. As Food Service Director in the District and a scholar practitioner, I have observed key barriers to such changes, namely potential kitchen staff resistance to change and lack of confidence and skills in preparing scratch meals. There are also broader concerns within the District, including potential union issues with staff time and pay and the financial feasibility of any menu changes. Finally, even if changes are made to the school menu, it is possible that child food preferences for the original menu items may prevent acceptability and sustainability of the changes. Nonetheless, efforts to promote healthier dietary habits among children through improvements in school meal programs remain essential.

There is an opportunity to go above and beyond current guidelines to maximize nutrition quality in school lunch programs. By reducing the prevalence of pre-cooked, ready-to-eat options

and replacing them with scratch-made, fresh meals, schools can further enhance the quality and taste of school meals. It is crucial to address the problem of practice at the District, where the school lunch menu offerings consist primarily of pre-cooked and ready-to-eat foods. Given that students spend approximately 51% of their time attending school, the school food environment significantly influences their dietary choices and is an ideal environment within which to make these changes.

1.2 Organizational System

The District is located in Allegheny County, Pennsylvania and contains eleven municipalities. Per the U.S. Census, the total population of the District was almost 14,000 people in 2019 (U.S Census Bureau, 2022). The average household income in the District is \$93,339 with a poverty rate of 5.5% (U.S Census Bureau, 2022), in comparison to the state of Pennsylvania which has a median household income of \$73,170 with a poverty rate of 11.8% (U.S Census Bureau, n.d.). There is very little racial/ethnic diversity at the District, where most of the population is White (U.S. Census Bureau, 2022). Overall, the area has many local grocery stores, restaurants, farmers markets, and parks for the residents to choose healthy food options and remain active.

The District contains four different schools: two elementary, one middle, and one high school. The District embodies a small-town atmosphere, and the community is home to third- and fourth-generation families who have attended the schools. As of November 2023, the District school lunch participation rate was 59%, and the percentage of students eligible for Free and Reduced meals was only 22%. This is significantly lower than the statewide average of 50% of school students eligible for free lunch in Pennsylvania (“Average Percent,” n.d.).

The District's administrative team and school board recognizes that good health and nutrition affect a student's ability to learn. The school board is committed to providing a school environment that promotes student wellness, proper nutrition, nutrition education, and regular physical activity as part of the total learning experience. Students from kindergarten to twelfth grade learn and participate in dietary and lifestyle activities that are intended to improve student achievement. The District has a Student Wellness Program created under the *School Wellness Policy*, created to support nutrition and physical activity environments district-wide. The Wellness Program's mission is to contribute to the physical, emotional, and social growth of all children ("Wellness Committee," n.d.). This policy includes: 1) goals for nutrition promotion and education, and activities that increase physical activity and wellness; 2) consistency with the federal regulations for school meals and *Smart Snacks in School* nutrition standards; 3) policy for food and beverage marketing and availability; 4) completion of a district-wide wellness assessment every 3 years to measure compliance with the *School Wellness Policy*; and 5) publicly available information about the wellness policy.

The District provides a school food environment aligned with the Wellness Policy, *Smart Snacks* Standards, and nutritional guidelines. As part of the school breakfast and lunch programs, milk and fresh fruits and vegetables are offered daily alongside the main entrees. Main entrees often include items like Tyson chicken nuggets, frozen precooked beef, frozen precooked chicken, prepackaged peanut butter & jelly sandwiches, donuts, and breakfast bars. Therefore, there are opportunities to improve the freshness, quality, and taste of the foods via scratch meals. Students also have access to competitive foods within the school food environment, including within the elementary schools. While competitive foods must meet *Smart Snacks* standards, some of the

competitive foods remain ultra-processed, low-nutrient dense, and may packed with fillers and preservatives.

The Food Service Department should be running on a break-even budget. This includes revenues received from the federal and state reimbursements from the National School Lunch Program, the National School Breakfast Program, and a la carte/competitive foods, as well as food cost, labor cost, equipment, and supplies expenditures. During the past several years, the food cost at the organization has fluctuated between 30-40% of the total expenditure. The labor costs continue to increase every year, accounting for 50-60% of the total expenditure. The way the District currently balances the deficit of preparing meals is by increasingly serving ready-to-eat foods, effectively decreasing food quality and labor costs.

I am currently a Registered Dietitian Nutritionist and the Director of Food and Nutrition Services at the District. My responsibilities include creating the breakfast and lunch menus for all four schools within the school nutrition standards and regulations. I also manage and train eighteen staff members and manage the financial aspect of the District's Food Service Department. Although the Director of Finance and Operation sets a flexible budget for my department, I need to make sure that the food service department breaks even by the end of the school year. As a Dietitian, I am motivated to maximize the quality and freshness of the foods within the school food environment to positively impact students' health and future success.

1.3 Stakeholders

The stakeholders involved in my problem of practice are the Cafeteria Leads (kitchen leads), students, parents, and the Director of Finance. Each stakeholder is influenced by their own

interests as they relate to the problem. Over my time in the EdD program, I conducted empathy interviews and observations which have informed my understanding of stakeholder views on the problem of practice. In the subsequent sections, I will describe how each stakeholder group views and is impacted by the problem of pre-cooked and ready-to-eat foods at the District.

1.3.1 Cafeteria Leads

The Cafeteria Leads are the managers of the cafeteria, and they cook the school meals. There are four cafeteria leads at the District. Each building has one cafeteria lead. All cafeteria leads have a high-school diploma and no previous experience in food service. Among the cafeteria leads, there are champion cafeteria leads. The champion cafeteria leads are considered the ones that go above and beyond their job descriptions. There are two cafeteria lead champions that want to provide more scratch meals, have many ideas to improve the department, and create recipes at home in their own time to bring into the schools. At the beginning of the year the Food Service Director trains the Cafeteria Leads on how to cook any new recipes utilizing ready-to-eat foods. All the Food Service Department staff is ServSafe Certified every five years to ensure food safety. Staff is directly related to the problem in many ways. The District staff operates under a strict union; any changes in the employee job duty list that the staff does not agree with can be challenged. Some cafeteria workers are apprehensive and would feel uncomfortable about changing the menu to include more from-scratch recipes due to lack of confidence, labor, and time issues..

1.3.2 Students

Students in the District are another key stakeholder because their food purchasing decisions affect the problem of practice in many ways. Students are used to consuming ready-to-eat foods during the day at breakfast and lunch. They also have access to competitive foods via vending machines, school stores, and coffee shops. Replacing typical, ready-to-eat entrees with those made from scratch may not be well received by students and could decrease school lunch sales.

1.3.3 Parents

Parents are another key stakeholder because parents and the home food environment influence the students' decision to purchase a school meal. Parents have the authority to add funds into the student meal account. Currently, the average school lunch participation (lunch meals sold) is 56%, while the other 44% of students either buy a la carte items or pack their lunch. This implies that the majority of parents in the District support school meals; however, it is unclear whether there is a desire to make additional improvements. After speaking with several parents about the quality of the school food, some shared that they pack a lunch for their children because the school entrees are unhealthy and highly processed.

1.3.4 Director of Finance.

The Director of Finance at the District is another key stakeholder because he is concerned with the budget. Providing students with pre-cooked and ready-to-eat foods is less labor-intensive, resulting in a decrease in labor cost. Any changes or improvements to the school menu must result

in similar spending and revenue. The Director of Finance may also be hesitant to spend money at the beginning of the year to train staff on scratch cooking because the increase in labor costs may outweigh the revenue per meal under the new scratch menu.

1.4 Statement of the Problem of Practice

The problem of practice I seek to address is that the school lunch menu offerings at the District consist primarily of pre-cooked and ready-to-eat foods. It begs the question, why is the foodservice department not providing healthier, freshly-cooked meals? I have explored this question and identified some root causes of the problem, namely that: 1) precooked and frozen foods are more cost-effective due to the decrease in labor; 2) the administration does not want to take the risk of spending more on labor; 3) students may prefer a pre-cooked entree than a freshly cooked one; 4) recipe consistency and flavor may vary across different District kitchens and cooks; 5) staff training for recipe standardization will be needed, causing an increase in labor; 6) staff may provide pushback from the union due to the increase in job duties; 7) scheduled serving hours do not leave enough time to complete breakfast and lunch with different meal options while including the freshly cooked entrees; and 8) employees may fear change and the unknown. While these reasons are valid and pervasive within the organizational system, it is imperative that we address the problem. Integrating more scratch meals into the District menu will go above and beyond the current school food nutrition guidelines and provide students with fresher, higher quality meals. This improvement is feasible given my role as the Food Service director at the school district..

1.5 Review of Supporting Knowledge

The following section is a review of supporting scholarship related to the problem of practice. The review was guided by the following two questions: 1) What is the relationship between the nutrient quality of school food and students' health and wellbeing? 2) What are the key principals for establishing and maintaining a school breakfast and lunch menu that centers on whole foods?

The first section will present the literature regarding nutrition and students' wellbeing, the relationship between ultra-processed foods and increased risk of chronic diseases, and connections to school food environments high in pre-cooked and ready-to-eat foods. The second section will discuss the key principles for establishing and maintaining a healthy school food environment and supports the change idea of a lunch menu that centers on whole foods.

1.5.1 School Food Guidelines and Policies

In the United States, there are dietary guidelines with the purpose to provide science-based advice on what should be consumed in order to promote health and decrease the risks of developing chronic diseases. The Dietary Guidelines for Americans are updated every five (5) years based on emerging evidence and research (U.S. Department of Agriculture, 2020). The 2020-2025 US Dietary Guidelines for Americans (US DGA) indicate that dietary patterns established in childhood often persist into adulthood. Approximately 40% of U.S. children and adolescents are overweight or obese, with obesity rates escalating throughout childhood and adolescence, leading to immediate health risks. The primary aim of the US DGA is to prevent or manage obesity by promoting a diet rich in nutrient-dense foods and beverages while limiting calorie intake from

sources that do not align with a healthy diet. For students to be healthy, they must be balanced physically, mentally, and emotionally (Chafouleas, 2020). A student's physical wellbeing is directly correlated to their nutrition. Adequate nutrition is essential for students to maintain good health and have the necessary energy and focus to perform well in school (Marx et al., 2019; McCabe et al., 2021).

The United States Department of Agriculture (USDA) has nutrition standards grounded in these Dietary Guidelines for all foods served to children in school. These standards were created by the Healthy, Hunger-Free Kids Act (2010) and promote schools to serve healthier foods to children. The purpose of these standards was to increase the availability of fruits, vegetables, whole grains, fat-free and low-fat milk while reducing sodium, saturated fat, and trans-fat consumption. These standards meet the nutrition needs of children by following the recommendations of the Dietary Guidelines for Americans (Nutrition Standards in the National School Lunch and School Breakfast Programs; Final Rule, 2012). The Smart Snacks Guidelines, outlined in the Healthy, Hunger-Free Kids Act (2010) also impacted the school food environment and set guidelines for competitive foods served in schools. Some of the guidelines included removing regular (i.e., non-diet) soda from schools and replacing it with lower calorie, smaller sized drinks, along with other restrictions. Cumulatively, these guidelines made sweeping improvements to the school food environment; however, there is still room for improvement.

While U.S. children's diets have improved since the Healthy, Hunger-Free Kids Act (2010), the majority of children in the U.S. still have poor diets. In a study that examined trends in diet quality in U.S. youth (2-19 years) from 1999 to 2016, over half of youth still had poor quality diets in 2016 (Liu et al., 2020). A recent study noted that 56% of U.S. children consume a "low quality" diet while less than 1% of children consume an "ideal quality diet" (U.S. Department of

Health and Human Services, 2020). School food is a large part of children’s overall diet (Clark & Fox, 2009), so schools play an essential role in promoting students’ healthy dietary behaviors.

1.5.2 Key Principles for Establishing and Maintaining a School Lunch Menu that Centers on Whole Foods

Centering a whole foods school lunch program requires first creating a manageable whole foods menu, but it also requires establishing a larger healthy school food environment. Some key principles to establish and maintain a healthy school environment are described in detail below, including staff training and education, food availability, financial considerations, and stakeholder perspectives

1.5.3 Prioritize Staff Training and Stakeholder Education

One key principle to maintain and sustain a school breakfast and lunch menu that centers on whole foods is the prioritization staff training and stakeholder education more broadly. Centering a whole foods school lunch program requires training cafeteria staff to prepare whole foods meals. Staff needs to be trained on the new recipes that utilize whole ingredients and supported as they develop confidence in and commitments to preparing whole, fresh foods (Blevins, 2013).

Acknowledging the importance of supporting cafeteria staff, The Montana Cook Fresh Workshop Pilot created and studied an intervention intended to support school nutrition employees’ confidence, knowledge, attitude, and intention to use whole, fresh foods for school meals (Stephens et al., 2016). Fifty-three employees in 4 locations around the state of Montana

participated in four workshops with hands-on classes and trainings in the use of whole, fresh foods. This study showed that staff were satisfied with the workshops and felt more comfortable cooking foods that promote healthy food choices and look appealing. The authors concluded that the staff would be more likely to create and sustain a whole-foods program.

In addition to staff training, a whole foods school lunch program requires offering nutrition education for students, faculty, and staff. As students grow, parents make the nutritional decisions for them; but when the students attend school, students start making their own food selection decisions. Teachers, peers, and social media become very important and influence students' decisions. In a review of multiple school-based nutrition education programs, Pérez-Rodrigo and Aranceta (2001) conclude that nutrition education is key for helping children to learn healthy eating habits over time. School nutrition education increases the consumption of vegetables and fruits in students (Anderson et al., 2007). In programs where school nutrition education was provided in all grades, there was a pattern of significant improvement in students' dietary behaviors.

1.5.4 Limit the Availability of Pre-cooked and Ready-to-eat Foods

Another important key principle for sustaining a school breakfast and lunch menu specializing in whole foods is to limit the availability of pre-cooked and ready-to-eat foods as much as possible. According to a study conducted in a Brazilian high school, when ultra-processed foods were more easily accessible, students were more likely to consume them (Leite et al., 2021). In the United States, one study demonstrated the feasibility of making changes to school lunch menus, including the replacement of breaded and processed foods with scratch made entrees

(Behrens et al., 2018). This highlights the importance and feasibility of limiting pre-cooked and ready-to-eat foods within school environments.

1.5.5 Be Financially Strategic

Centering a whole foods school lunch program requires ensuring even food cost/expenditure. There is a correlation between an increase in labor cost at first while the staff is being trained, but this training increases productivity and efficiency, causing an offset in the cost (Nda & Fard, 2013). Overall, while school nutrition programs play an important role in promoting the health and well-being of students, maintaining financial viability can be a significant challenge.

The total federal and state reimbursement provided by the state per meal does not exceed the cost of producing those meals. This reimbursement includes National School Lunch Program federal reimbursements, which vary depending on the level of student participation. For schools with less than 60% (severe need) of lunches served to students that qualify for free or reduced price meals, federal reimbursements range from \$0.40 for paid students to \$3.85 to \$4.25 for free or reduced-price students, in addition to the Federal Performance-Based Reimbursement of \$0.08 per meal (Food and Nutrition Service, 2023). State reimbursement rates also contribute, providing \$0.10 of the regular rate and an additional \$0.04 cents for Lunch if breakfast participation is >20%. (Pennsylvania Department of Education, n.d.). Concerns continue to be expressed about the financial impact of rising food costs and decreased revenue. Many school foodservice staff have reported that the cost of providing healthier foods can be a significant obstacle, as they struggle to balance the need to provide nutritious options while also maintaining financial viability (Yon et al., 2016). However, there is evidence that implementing robust nutrition standards for snack and a la carte foods and beverages in schools typically did not result in an overall revenue decline for

districts. Instead, in many cases, revenues from school food services actually rose as a result of increased participation in school meal programs (The Pew Charitable Trusts, 2012).

1.5.6 Consider Stakeholders Perspectives

Centering a whole foods school lunch program requires collecting and responding to feedback from students, parents, and teachers. Students (and parents) are customers of the food service program. Soliciting student and parent feedback and support regarding the items sold is essential. Involving students perception in the selection and menu planning can increase the participation in school meals. Schools that have taste testing for students to provide feedback in the menu planning may increase school meals participation (Newman et al., 2013). Listening to students' and parents' perceptions of a school nutrition program is instrumental for the redesign of a from-scratch menu cycle program. By involving parents in the menu planning process, it is more likely that parents support and encourage their children to participate in school meals (Meier et al., 2020). Providing voice to the students in planning the school breakfast menu through taste tests, preference surveys, and comment boxes can increase the school meal participation (Bailey-Davis et al., 2013).

1.5.7 Summary

Establishing and maintaining a school nutrition program that centers on whole foods **is imperative for the students' health and wellbeing**. The purpose of national nutrition standards is to promote healthier eating habits and increase the availability of nutritious options, like fruit, vegetables, dairy, and whole grains in school meals; however, more work can be done to maximize

quality and freshness within the school food environment. Modifying the school food environment should be implemented carefully and while considering input and collaboration with key stakeholders. For example, for any changes to the current food preparation process, this must involve training cafeteria staff (cafeteria leads) to handle and prepare scratch cooked meals. Cafeteria staff must be equipped with the necessary skills and knowledge to prepare healthy and delicious whole foods meals, but they should also understand why this is being done and feel heard in the process. Involving students and parents in the menu planning process, and incorporating taste testing, will increase students' participation in school meals. Creating a survey could help tailor the program, focusing on the students health and preferences that will consequently increase meal sales. By increasing school meal participation, the program will generate more revenue from meal sales, which helps offset costs related to food, labor, and training.

2.0 Theory of Improvement and Implementation Plan

2.1 Theory of Improvement

A theory of improvement outlines a plan or prediction for how to solve a problem and what the outcome will be (Perry et al., 2020). It involves critical thinking to turn the problem into a practical solution. The driver diagram is a useful tool that helps to organize the improvement process and turn the problem into a solution. **Appendix A** features the driver diagram for the theory of improvement to decrease the availability of pre-cooked and ready-to-eat foods to students at the District.

My theory of improvement hypothesizes that change can be implemented in order to prepare meals from scratch in school cafeterias in a way that is financially and physically feasible. This will be achieved by providing fresher, higher quality foods and reducing the use of pre-cooked and ready-to-eat foods in school meals. The primary drivers of this improvement process include staff engagement and empowerment, the school food environment, and the school Food Service budget. Secondary drivers, or areas where change is necessary to achieve the desired outcome, include staff knowledge and skills, adherence to Federal Nutritional Guidelines, participation in the National School Lunch Program, student meal sales, expenditure/revenue, and labor cost/food cost. To achieve the desired outcome, change ideas have been generated. These include staff cooking training, changing the menu to include scratch meals, increasing student familiarity with the scratch meals, and increasing advertisement of these meals.

2.1.1 Aim Statement

I aim to decrease by 50% the availability of pre-cooked and ready-to-eat foods to the students in the District by 2024-2025 school year.

2.1.2 Primary Drivers

The first primary drivers are the *staff engagement and empowerment*. The District staff is under a strict union; any changes on the job duty list for each employee can be retaliated by the union. Staff is resistant to change. Speaking with the union and staff in advance before all the changes occur will decrease the push back of the staff and the union intervention. Including staff in the planning and implementation of the change ideas will allow them to provide their input and decide what they feel comfortable with, ultimately increasing staff engagement, empowerment, and buy-in. This will be essential to achieving the overall aim.

The second primary driver is the *school food environment*. If students are fed pre-cooked and ready-to-eat foods during the day, their low nutrient-dense foods consumption overall will increase. In addition to the school menu, pre-cooked and ready-to-eat foods are offered during the day in vending machines, school stores, and coffee shops. It is important to introduce change across all aspects of the school food environment in order to create systems-level change and help to achieve the aim of decreasing availability of pre-cooked and ready-to-eat foods in the District.

The third primary driver is the *school food service budget*. The biggest challenge the school nutrition program battles is maintaining the financial aspect in a “break even.” Maintaining the food cost, labor cost, and indirect cost under the schools’ revenues should be the goal. The total federal reimbursement provided by the state per meal should not exceed the cost of producing

those meals. The school food service budget is an important consideration and primary driver when attempting to introduce change into this organizational system.

2.1.3 Secondary Drivers

The primary driver of staff engagement and empowerment is inextricably linked to the secondary driver of *staff confidence and autonomy*, as the staff plays a critical role in implementing changes to improve food quality in schools. It is imperative to recognize the significance of *staff confidence and autonomy*, as they are the most important people who can make this change happen. The staff is responsible for cooking meals for students, serving them in the lunch line, and encouraging them to try new recipes. Therefore, providing the staff with additional training and resources in new cooking skills and techniques will help the District achieve its goal of cooking from scratch. This approach will encourage students to consume more healthful foods by incorporating new flavors and fresh ingredients. Staff engagement and empowerment is crucial for successfully producing fewer pre-cooked and ready-to-eat foods and more scratch meals. Without staff acceptance, this goal may not be achievable.

The school food environment primary driver is affected by the following secondary drivers: *Federal Nutritional Guidelines*, the *National School Lunch Program (NSLP)*, and competitive foods. The District sponsors the National School Lunch Program and needs to follow the Federal Nutritional Guidelines provided by the US Department of Agriculture. The focus is encouraging students to consume more fruits, vegetables, whole grains, low-fat milk, and to limit competitive food (i.e., any food item that is not part of the reimburseable meal) availability. For example, under the Federal Nutritional Guidelines, students have the option to select flavored or plain milk, but 90% of students at the District select flavored milk; one half pint of vanilla flavored milk contains

14 grams of added sugar per serving. We must increase availability and selection of healthy foods and limit availability of competitive foods in order to improve the school nutrition environment and help us achieve our overall aim.

The school food service budget is affected by the secondary drivers of *student meal sales, revenue/expenditures, and labor/food costs*. Pre-cooked and ready-to-eat foods are often easier to cook because they come frozen and pre-prepared, limiting both labor and food costs. Any change introduced into the system will need to strike the delicate balance of labor/food costs, falling within the allowable expenditures while also being something the students will buy and eat. All of these factors inform the school food service budget which is a primary driver to achieving our overall aim.

2.1.4 Change Ideas

I have identified four change ideas (i.e., interventions) that I believe will directly impact the drivers in order to help us to achieve our aim and create systems level change at the District. First, I will hold a 1-day workshop to train the kitchen staff on new, scratch recipes. This change idea directly impacts the secondary driver of staff confidence and autonomy and the primary driver of staff engagement and empowerment. While the staff is being trained, it could also provide evidence to the director if the staff have the time to cook the foods before serving them. A one day workshop could be created to train staff on how to cook these recipes.

The second change idea is to change the menu to include more scratch meals, directly impacting the secondary driver of the NSLP and the primary driver of the school food environment. The menu will be updated to include two scratch meals per week during the initial two weeks of a five-week rotation. These scratch meals will be carefully designed to be low in sodium, saturated

fat, and trans-fat, as they will be made using fresh ingredients. Students will have the option of choosing from two scratch meal offerings each week during Week 1 and Week 2 of the rotation, which spans a total of five weeks and features healthy meals prepared from scratch. This increase in the availability of scratch meals twice a week is intended to enhance the school food environment and contribute to our broader goal of reducing the presence of pre-cooked and ready-to-eat foods in the District. The third change idea that affects the secondary driver of competitive foods and ultimately affects the primary driver of the School Food Environment is ordering competitive foods that are healthier options per the NOVA classification (Monteiro, Cannon, Lawrence et al., 2019).

The fourth change idea is to increase advertisement on scratch meals to increase student familiarity and meal sales, to improve the school food service budget driver. Flyers will be distributed to the classrooms, and by email to each household to increase familiarity. A Nutrition Education Newsletter will be sent home with the students every other week that will share with families about the main ingredients in the scratch meals and their health benefits.

2.2 Systems Measures

2.2.1 Process Measures

Process measurement is a pivotal tool for evaluating the effectiveness of interventions and assessing the success of change initiatives (Perry et al., 2020). The following outlines the process measures associated with each proposed change idea: first, for the Staff Cooking Training, pre-post surveys of participating staff will gauge improvements in confidence levels and culinary

knowledge. Second, to replace competitive foods with healthier options, the NOVA classification will be used to rank foods (Monteiro, Cannon, Lawrence et al., 2019), and ordering invoices will be verified to ensure compliance with the new selections. Third, the integration of scratch-made meals into the school menu will be monitored through regular reviews of monthly menus. Lastly, to promote non-processed foods, flyers and posters will be distributed and displayed throughout the school premises.

2.2.2 Driver Measures

Driver measurement is designed to assess the impact of changes to the primary and secondary drivers on the overall picture of the aim (Perry et al., 2020). The first primary driver of this intervention is staff engagement and empowerment, and the secondary driver is staff confidence and autonomy. Both of these drivers could be evaluated through a comprehensive survey. The survey could include both a pre-intervention and a post-intervention component, allowing for a comparison of the staff's level of acceptance and knowledge before and after the change.

The second primary driver of this intervention is the school environment, and the secondary drivers are the competitive foods and National School Lunch Program (NSLP). The impact on the overall success of the intervention could be evaluated through a comparison of the amount of scratch meals provided before and after the menu change. This comparison may provide a clear and objective picture of the impact of the change on the school environment, and could allow us to determine if the shift towards more scratch cooking has had the desired effect.

The third primary driver of this intervention is the school food service budget, which is closely tied to the secondary driver of student meal revenue and expenditure costs. To assess the

impact of this driver, a comprehensive evaluation of pre- and post-change meals sold, expenditures, and revenues may be needed. This evaluation would provide valuable insights into the financial impact of the intervention and would allow us to determine if the changes made to the menu and cooking methods have had a positive impact on the school food service budget

2.2.3 Outcome Measures

The outcome measures play a crucial role in determining the success of the aim statement in achieving its goals. These measures allow for a comprehensive evaluation of the impact of the intervention, providing a big-picture view of the changes that have taken place (Perry et al., 2020). The lagging outcome measures refer to the changes that are not immediately visible and take a considerable amount of time to manifest. In the context of this dissertation in practice, the lagging outcome measure would be the complete elimination of pre-cooked and ready-to-eat foods. This change would not be immediately apparent, as it would take time for the shift away from pre-cooked and ready-to-eat to take place within the school environment.

The leading measures refer to the changes that are immediately apparent and can be easily monitored (Perry et al., 2020). In this case, the leading outcome measure would be the availability of pre-cooked and ready-to-eat foods before and after the change was implemented. To assess this outcome, a pre-change list of pre-cooked and ready-to-eat entrees would be taken and compared to a post-change list of pre-cooked and ready-to-eat entrees available. The meals would be scored and classified using the NOVA Food Classification System, which was designed by the Center for Epidemiological Studies in Health and Nutrition at the School of Public Health (Monteiro et al., 2016a). This leading outcome measure would provide a quick and easily observable indicator of

the impact of the intervention, allowing you to determine the success of the effort to reduce the consumption of pre-cooked and ready-to-eat foods.

2.2.4 Balance Measures

The balance measures are used to assess the overall impact of the change and determine if it has indeed brought about an improvement in the system as a whole (Perry et al., 2020). After implementing changes, it is important to evaluate the improvement cycle to ensure that a balance has been achieved across all the measurements. This involves reviewing the outcome measures, driver measures, and process measures to determine whether the changes have had a positive impact and are contributing to the overall success of the intervention. However, it is important to recognize that the changes made may also unbalance the system and bring negative effects. For example, after food service staff is trained in cooking from scratch, they may realize that it takes them too much time to cook those meals, causing them to feel overwhelmed and prefer to revert to pre-packaged or processed ingredients. Another possible outcome is that the staff may feel uncomfortable cooking raw foods, even if they were trained in the process. Additionally, it is possible that the students may not like the new recipes, leading to a decrease in meal sales and putting a strain on financial resources. Therefore, it is crucial to monitor the changes closely and identify any potential issues or challenges that may arise, so they can be addressed promptly and ensure the success of the intervention.

Another potential negative outcome of the change towards scratch cooking could be the financial strain on the school district, particularly in terms of the costs associated with training staff and preparing scratch meals. This transition may come with many challenges, including resistance from the administration due to financial concerns and changes to the food service staff's

schedules to accommodate the increased time and effort required for scratch cooking. Additionally, the transition may require a significant overhaul of the kitchen equipment and facilities to support scratch cooking, which may require substantial investment.

2.3 Inquiry questions

The following inquiry questions guided the current dissertation in practice improvement project with modifications to staff training and school meals:

- 1. How does integrating more scratch meals in the school lunch menu impact student meal participation?*
- 2. How does participating in a brief training impact food service staffs' confidence and skills in preparing scratch meals?*
- 3. Post-implementation, what are staff perceptions of the initial training and implementation process to integrate more scratch meals on the menu?*

2.4 Intervention Description

For the 2022-2023 school year, I had a vision to create a new and innovative menu at two elementary schools in the District. This decision to focus on two schools was to limit the overall number of schools to pilot the approach through this initial PDSA cycle and provide a 'proof of concept' moving forward, if successful. Furthermore, alongside the scratch meal option, students were also provided with the option to choose from the five Daily Alternate Meals, including the

Crispy Chicken Sandwich, Grilled Chicken Sandwich, Chicken Salad, Hummus and Crackers, and Chicken Wrap. These additional meal choices aimed to provide students with a diverse selection to cater to various tastes and dietary preferences, ensuring students had a variety of nutritious options to enjoy alongside the scratch meal offerings.

There is a 5-week menu cycle at the elementary schools (K-5th grade). For the 5-week menu cycle, 2 days of week one and 2 days of week two (4 days in total), I incorporated a new scratch recipe with no changes to the side dishes. Previously, the 5-week cycle menu had pre-cooked and ready-to-eat frozen entrees 5 days a week. For example, instead of reheating a frozen bag of precooked macaroni and cheese, we prepared it from scratch using fresh ingredients. Similarly, instead of reheating a precooked beef pasta bake, we created a nutritious beef pasta bake from scratch. The examples above are particularly important because they are items that students are more likely to try and enjoy. Additionally, these meals are also more acceptable for the staff because they are relatively easy to cook and prepare.

The new scratch menu was centered around whole-food recipes with the goal to limit pre-cooked and ready-to-eat entree options. The scratch menu items were integrated into the menu beginning in August 2023. Before the first week of implementation, I (the Food Service Director) generated a menu cycle choosing 4 of the entrees to be a scratch recipe. I calculated and ordered the allotted number of groceries for the new entrees. To implement these menu changes, I led an 8-hour workshop to train the staff on how to prepare standardized recipes serve, and promote the whole food recipes to the students. This training took place at the Middle School cafeteria. Staff learned how to cook 4 recipes; Beef Pasta Bake, Beef Lo Mein Noodle, Herb Roasted Chicken Drumstick with Yellow Rice, and Macaroni and Cheese. During this day, the staff learned the new

recipes, practiced cooking, and rehearsed serving the meals. Taste tests occurred to ensure the staff understood the expected flavors.

2.5 Methods and Measures

2.5.1 Participants

For this study, the food service staff included one member per elementary school (n=2), and three members of the secondary school (n=3) that often cover for staff in the elementary school. These participants included 5 cooks who hold a ServSafe Certification and are trained in cooking pre-cooked foods while also ensuring food safety. All of the staff members are white females who are older than 40 years old. Their years of experience varied, with the range spanning from 1 year to 13 years.

2.5.2 Measures

This study utilized three different measures to assess the impact of the new menu and the training of foodservice staff in preparing the scratch recipes.

2.5.2.1 Meal Sales Data

The first measure assessed the meal participation in both elementary schools during the 2022-2023 and 2023-2024 school year. This information was gathered using the Primeroedge software (Sales Activity Report, n.d.) owned by the District. The sales activity report is produced

to include a count of the total number entrees sold per day for each school. This data can be summarized for both the original (pre-cooked) entree sold before the menu change and the scratch recipe entree sold after the menu change. The count for scratch entrees included the reimbursable meals (with a fruit or a vegetable) plus any scratch entree sold as à la carte (without a fruit or vegetable).

2.5.2.2 Food Service Staff Survey

The second measure is food service staff feedback, which was gathered through a survey. This survey measured how the training impacted the staff confidence and skills in preparing scratch meals. The pre-training survey included 11 questions and the post-training survey included 9 questions, with Likert-type response options, check-all-that-apply, open-ended text responses (**Appendix B**). Sample items included; “On a scale of 1-5, how **comfortable** do you feel with cooking scratch meals?” with response options ranging from 1= not at all comfortable, 5 = very comfortable; and “What are some of the **challenges** you face when cooking scratch meals (check all that apply)?” with response options including “ a. Finding and sourcing ingredients, b. Lack of cooking skills and knowledge, c. Limited kitchen resources and equipment, d. Balancing flavors and seasonings, e. Meal prep and clean up time, f. Other (please describe). This survey provided valuable insights into staff’s confidence and skills with the new menu and the availability of scratch recipes.

2.5.2.3 Food Service Staff Focus Group

Following the implementation of the scratch menu items, food service staff were invited to participate in a focus group discussion. The primary objective of this focus group was to gain valuable insights into the staff’s perception of the training’s adequacy in preparing them to

implement the new menu changes. I moderated the discussion using a semi-structured discussion guide (**Appendix C**) and included questions such as, “Can you share a bit about how it went preparing and serving the 4 new scratch meals on the menu?”, and “What challenges did you encounter when cooking, preparing and serving scratch meals after completing the training program?” The focus group lasted approximately 1 hour and was audio-recorded and held in a private conference room at a District office.

2.5.3 Data collection procedures

I calculated the meal sales data after implementation of the menu changes. The food service staff survey was designed and distributed via Google Forms (Google, Mountain View, CA) and was sent to staff electronically via email before the training workshop. After the training was completed, a second survey was distributed to evaluate any changes in confidence and skill level. The focus group was scheduled and conducted after the new scratch menu items had been prepared and served at the schools.

2.5.4 Data Analysis

To analyze student entree purchase, I measured the meal participation, including both pre-cooked entrees and scratch recipe entrees, which included data from the 2022-2023 and 2023-2024 school year. By utilizing the Primoedge software, I had access to comprehensive data on the count of entrees sold, which was organized in an Excel sheet for efficient and accurate analysis. Both the pre-cooked menu item that was available during the 2022-2023 school year and the scratch menu item that was available during the 2023-2024 school year were offered twice. I then

calculated average percentage of meals sold for each menu item (pre-cooked and scratch meal), and compared them. A total of 804 students were enrolled at Edgeworth Elementary and Osborne Elementary during the 2022- 2023 school year. During the 2023-2024 school year, this enrollment declined to 784 students. Because the number of times the entree was served during the assessment period and student enrollment varied from the 2022-2023 and 2023-2024, I calculated the average percentage of entrees sold per day (meal participation), both pre- and post-intervention. Differences in average percentage of entrees sold (meal participation) were compared as well as changes over time in the scratch entree were summarized visually with a bar chart. This data analysis measurement provided valuable insights into student purchasing of the scratch meals.

To analyze the survey data, I utilized the Google Forms data analysis program. This tool allowed me to easily and accurately summarize the survey results using descriptive statistics (frequencies). Using this data, I identified areas where the training program was particularly effective or where additional modifications were needed.

The focus group discussion audio was transcribed verbatim with Otter AI (OTTER. AI, Mountain View, CA). I reviewed the transcripts against the original audio file for accuracy. Transcripts were qualitatively coded using content analysis to identify common themes, patterns, and ideas that emerged during the discussion (Erlingsson & Brysiewicz, 2017). This process helped us gain a deeper understanding of the staff's perceptions on the adequacy of the training program and provided valuable insights into any areas that needed improvement.

3.0 PDSA Results

3.1 Meal Sales Data

Figure 1 includes the average percent meal sales for each of the 4 scratch recipes, comparing sales in 2022-2023 and 2023-2024. Descriptively, there were not any changes in meal sales when the “Homemade Shells n Cheese” or the “Beef Lo Mein Noodle” recipes were integrated into the menu, replacing the original (similar but not from scratch) menu item. The meal “Homemade Shells n Cheese” and its processed counterpart maintained an average percentage meal sale of 52% in 2022-2023 and 2023-2024. Similarly, the “Beef Lo Mein Noodle” maintained an average percentage meal sale of 40% when the scratch recipe was integrated into the menu for the 2023-2024 school year. In contrast, the “Baked Drumsticks with Yellow Rice” and the “Homemade Beef and Cheese Pasta Bake” saw a notable decrease in average percentage meal sales when compared with the original menu item sold the previous school year. Specifically, average percentage meal sales declined for the scratch recipe of “Baked Drumsticks with Yellow Rice” from 48% in 2022-2023 to 40% in 2023-2024 and “Homemade Beef and Cheese Pasta Bake” from 53% in 2022-2023 to 51% in 2023-2024.

Average Percent Entree Sales

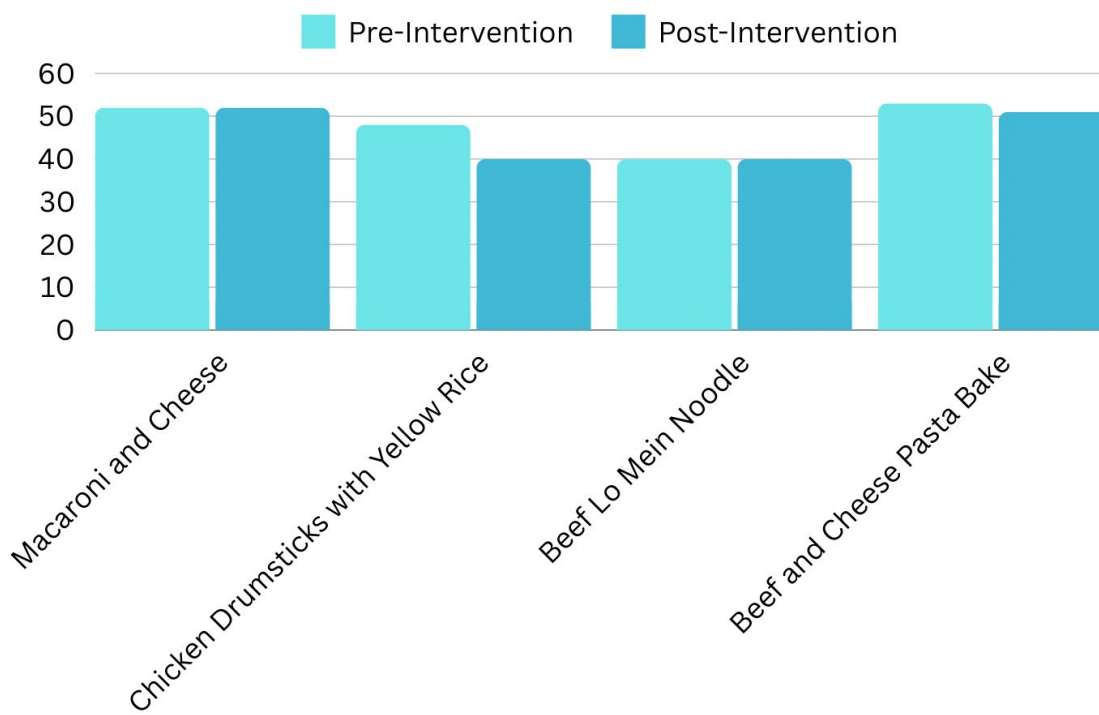


Figure 1 Average Percent Entree Sales for the 4 Modified Menu Items in the 2022-2023 and 2023-2024 school year.

Figure 2 includes the average percent meal sales for each of the 4 scratch recipes for each time it was offered in 2023-2024. Descriptively, the sales of three of the four scratch entrees increased each time they were offered to students. Homemade Mac Shells n Cheese saw an increase from 51% to 53%, Homemade Beef Lo Mein rose from 39% to 42%, and Homemade Beef and Cheese Pasta Bake experienced a boost from 49% to 54%. However, the sales of Baked Drumsticks with Yellow Rice decreased slightly from 40% to 39%

Post Intervention Average Percent Entree Sales 2023-2024 SY



Figure 2 Post Intervention Average Percent Entree Sales for the 4 Modified Menu Items in the 2023-2024 school year.

3.2 Food Service Staff Survey Results

3.2.1 Pre-Training Survey Results

The majority of participants (60%, n=3) indicated that they have not received any previous training from the District in scratch cooking (n=3), while 40% (n=2) indicated that they had received prior training. The staff varied in the frequency they reported cooking from scratch at

home, with 20% (n=1) reporting daily scratch cooking, 40% (n=2) indicating they cooked from scratch at home 4-6 days/week (n=2), another 40% (n=2) indicating 2-3 days/week.

Table 1 includes additional results from the pre-training survey. The majority of participants agreed or strongly agreed (80%, n=4) while 20% (n=1) were neutral that they were familiar with scratch cooking techniques. Similarly, 80% (n=4) participants agreed or strongly agreed while 20% (n=1) were neutral that scratch cooking is important for the food service program. Regarding familiarity with the scratch recipes that were covered in the training program, most participants (80%, n=4) agreed or strongly agreed that they were familiar with the recipes, while 20% (n=1) disagreed. However, only 40% (n=2) of participants agreed, 40% were neutral, and 20% strongly Agreed that they were motivated to cook scratch meals for the food service program.

Table 1 Food Service Staff Pre- Training Survey Results

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Familiar with the scratch cooking techniques (e.g., roasting, grilling, sauteing, and baking) covered in the training program	80% (n=4)	0% (n=0)	20% (n=1)	0% (n=0)	0% (n=0)
Familiar with the recipes (i.e, Macaroni and Cheese, Beef Pasta Bake, Lo Mein Noodle, Herb Roasted Chicken Drumstick with Yellow Rice) covered in the training program	40% (n=2)	40% (n=2)	0% (n=0)	20% (n=1)	0% (n=0)
Scratch cooking is important for our food service program	20% (n=1)	60% (n=3)	20% (n=1)	0% (n=0)	0% (n=0)
Scratch cooking will have a positive impact on the overall quality of our food service program.	20% (n=1)	60% (n=3)	20% (n=1)	0% (n=0)	0% (n=0)
Motivated to cook scratch meals for food service program.	20% (n=1)	40% (n=2)	40% (n=2)	0% (n=0)	0% (n=0)

Figure 3 includes a graphical depiction of the participant responses to the question, “*What are some of the challenges you face when cooking scratch meals (check all that apply)?*” The participants highlighted several challenges they encounter while preparing scratch meals. The top challenge reported by the participants included ‘meal prep and clean up time’ (100%, n=5). Additional challenges reported by participants included ‘finding and sourcing ingredients’ (40%, n=2) and ‘limited kitchen resources and equipment’ (40%, n=2). None of the participants reported that ‘lack of cooking skills and knowledge or ‘balancing flavors or seasonings’ was a challenge when cooking scratch meals.

What are some of the challenges you face when cooking scratch meals (check all that apply)?

5 responses

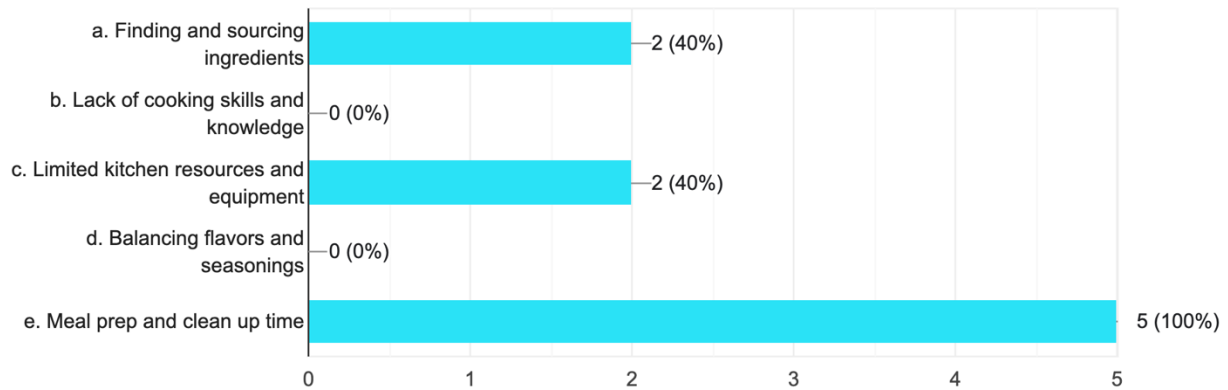


Figure 3 Reported Challenges Faced by Participants (n=5) when Cooking Scratch Meals.

Figure 4 includes a graphical depiction of the participant responses to the question, “*What areas of scratch cooking do you feel you need improvement in (Check all that apply)?*” The participants identified several areas in which they believed they could benefit from improvement in their scratch cooking skills. The top area selected for improvement was ‘meal planning and organization’ (60%, n=3). Additional areas for improvement included ‘understanding flavor combinations and seasoning’ (20%, n=1), ‘preparing sauces and soups from scratch’ (20%, n=1), ‘baking and sautéing techniques’ (20%, n=1), and ‘understanding cooking times and temperatures’ (20%, n=1). No participants selected ‘knife skills and cutting techniques’ as an area for improvement.

What areas of scratch cooking do you feel you need improvement in? (Check all that apply):

5 responses

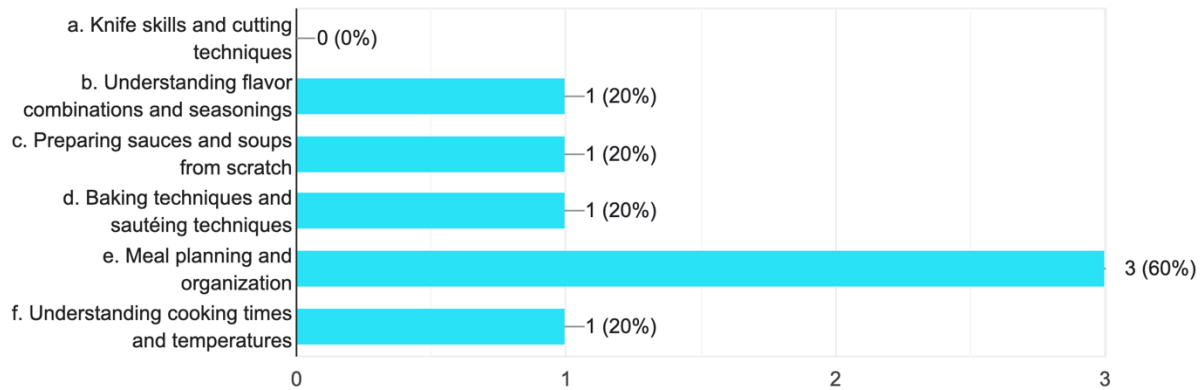


Figure 4 Participant (n=5) Reported Areas of Scratch Cooking in which Need Improvement

3.2.2 Post- Training Survey Results

Table 2 includes results from the post-training survey. In terms of kitchen staff's perception of the training program efficacy, the majority of participants agreed or strongly agreed (80%, n=4) that the training adequately prepared them to cook scratch meals for the food service programs, while 20% (n=1) were neutral. Similarly, the majority of participants agreed or strongly agreed (80%, n=4) that the training program increased their motivation to cook scratch meals for the food service program, while 20% (n=1) were neutral.

Table 2 Food Service Staff Post-Training Survey Results

Question	Strongly Agree	Agree	Neither Agree or Disagree	Disagree	Strongly Disagree	Prefer Not To Answer
The training program adequately prepared me to cook scratch meals for our food service program.	60% (n=3)	20% (n=1)	20% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)
The training program has increased my motivation to cook scratch meals for our food service program.	40% (n=2)	40% (n=2)	20% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)

The food service staff also responded to a survey question about topics they would like to see in future trainings. All but one participant (80%, n=4) said they would like to engage in ‘more group discussions and feedback sessions.’ A majority of participants (60%, n=3) said they would like to have ‘additional hands-on cooking exercises’ in future workshops as well as a ‘greater focus on menu planning.’ No participants expressed interest in ‘more in-depth lectures on cooking techniques.’

After completing the comprehensive training program, food service staff were also invited to provide feedback through three open-ended questions. When asked about their favorite part of the training, 60% (n=3) participants said discussions and feedback and 60% (n=3) said cooking and making new recipes. Participants mentioned their least favorite part of the training for the participants was related to the recipe (i.e., cooking the yellow rice recipe, recipes not turning out as expected), timing of the training (i.e., wish it started earlier, lasted too long), and group

dynamics (i.e., being corrected by others for not recalling exact numbers). Finally, participants also shared recommendations and changes for future trainings. They mentioned topics related to the menu (i.e., more time to spend on the menu, asking the leads what some of their menu suggestions would be) and the training format (i.e., break into groups, dividing training into two days).

3.2.3 Pre and Post Training Survey Results Comparison

Table 3 includes a comparison of the pre-training and post-training survey results. On both the pre- and post-training survey, all of the participants (100%, n=5) agreed or strongly agreed that they felt comfortable cooking scratch meals. On the pre-survey, the majority of participants agreed or strongly agreed (80%, n=4) while 20% (n=1) were neutral that they were confident in their scratch cooking abilities. On the post-training survey, all of the participants (100%, n=5) agreed or strongly agreed that they were confident in their scratch cooking abilities. In the pre-training survey, 80% of participants (n=4) agreed or strongly agreed while 20% (n=1) were neutral that scratch cooking will have a positive impact on the overall quality of the food service program. In the post-training survey there was an improvement, in that all of the participants (100%, n=5) agreed or strongly agreed that scratch cooking will have a positive impact on the overall quality of the food service program.

Table 3 Food Service Staff Pre-Training and Post- Training Survey Results Comparisson

Question	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Comfort					
Pre-Comfortable cooking scratch meals	20% (n=1)	80% (n=4)	0% (n=0)	0% (n=0)	0% (n=0)
Post-Comfortable with cooking scratch meals.	80% (n=4)	20% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)
Confidence					
Pre-Confident in scratch cooking skills	20% (n=1)	60% (n=3)	20% (n=1)	0% (n=0)	0% (n=0)
Post-Confident in scratch cooking abilities.	80% (n=4)	20% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)
Quality					
Pre-Scratch cooking will have a positive impact on the overall quality of our food service program.	20% (n=1)	60% (n=3)	20% (n=1).	0% (n=0)	0% (n=0)
Post-Scratch cooking will have a positive impact on the overall quality of our food service program.	80% (n=4)	20% (n=1)	0% (n=0)	0% (n=0)	0% (n=0)

3.3 Focus Group Results

The qualitative analysis of focus group transcripts revealed two overarching themes regarding the cooks’ perceptions of the impact scratch food recipes and staff training had on the menu: (1) Staff Voices in Scratch Meals, and (2) Looking Ahead: Practical Tips to Implement Scratch Meals at School. The core categories and category descriptions related to these themes are detailed below in Table 4.

Table 4 Theme and Category Descriptions (continued)

Table 4 Theme and Category Descriptions

Themes	Core Categories	Category Descriptions
Theme 1: Staff Voices in Scratch Meals	<ul style="list-style-type: none"> • Attitudes Toward Scratch Meals. • Barriers to Scratch Meals • Strategies to Overcome Barriers 	<ul style="list-style-type: none"> • Staff perception of the benefits and importance of scratch meals. • This category encompasses the barriers faced by the kitchen staff in preparing and serving scratch meals. • Staff discussed strategies as a group to overcome the aforementioned barriers.
Theme 2: Looking Ahead: Practical Tips to Implement Scratch Meals at School	<ul style="list-style-type: none"> • Feedback from Staff on Menu Items • Recommendations for Future 	<ul style="list-style-type: none"> • Kitchen staff expressed varying sentiments regarding the preparation of recipes. • Staff provided several recommendations to enhance the scratch meal recipes.

3.3.1 Theme 1: Staff Voices in Scratch Meals

The core categories within this theme were kitchen staff attitudes towards scratch meals and barriers and strategies to including scratch meals in a school. Collectively, these categories highlight the importance and benefits of scratch meals, the occasional preference of the staff for utilizing pre-cooked, ready-to-eat foods, and the different barriers to including more scratch meals in the school, along with potential strategies for overcoming these barriers.

Attitudes Towards Scratch Meals: This category pertains to the staff perceptions of the benefits and importance of scratch meals. The staff believed that providing more scratch foods on the menu would make it more appealing to parents and demonstrate care and thoughtfulness in meal preparation. As expressed by one cook, *“The parents, I’m sure, find it more appealing if we’re saying that it’s made from scratch, so to speak. That we care and we’re putting more thought*

into it." Additionally, they mentioned that scratch meals often taste better and are healthier. However, there were differing opinions among the staff members, with one expressing a preference for processed cheese sauce due to its ease of preparation and integration into the meal.

Barriers to Scratch Meals: This category encompasses the challenges faced by the kitchen staff in providing scratch meals. The primary obstacles discussed in the group were time constraints and labor shortages, which are interrelated. Cooks explained that they do not have enough time to cook scratch meals due to the complexity of recipes, as there is insufficient staff to chop and prepare all foods from scratch. For example, one cook said, *"I'd say that's the biggest thing. I wouldn't mind doing more homemade, but there's just not enough time and help."* Another concern mentioned was food safety. The cooks feel uncomfortable and anxious about cooking raw chicken due to fear of cross-contamination and ensuring the food meets safe temperature standards. *"I was really fretful and uncomfortable with the chicken, with just being wrong. Like it just made me anxious."* Additionally, the cooks found it challenging to serve scratch meals with all meal components mixed together, such as protein, grain, and vegetables, as there was no way to measure how much protein each student received. They also noted difficulties in serving specific scratch meals, such as Macaroni and Cheese, Beef Baked Pasta, and Beef Lo Mein, due to the long noodles and stringy cheese, making it cumbersome to portion accurately. As one cook expressed, *"Like, it's not easy to serve the pasta bake. Just because the cheese and like it's just that's always the pain. When we did it separate at least we knew they were getting like the three ounces of beef."*

Strategies to Overcome Barriers: The kitchen staff also discussed several strategies as a group to overcome the aforementioned barriers. One suggestion was to allocate additional time for ingredient preparation, either by extending work hours or assigning specific tasks to food service staff. For example, one cook proposed, *"Would it even work to have a server come in an hour early*

and do that shopping for you?... that's not necessarily overtime, you don't have to stay late, but you still have the extra labor you need to get that done." Another strategy involved implementing separate stations for handling raw ingredients to prevent cross-contamination, as suggested by a cook who stated, *"I think for a solution for that would be one specific table... All the other food is prepared on the table that is normally prepared on."* In addition to the strategies mentioned, the kitchen staff also devised a solution to address the barrier of serving recipes like the Beef Lo Mein, where components cannot be accurately measured due to the beef being mixed with the noodles. The proposed strategy is to cook the noodles separately from the beef. By preparing the noodles and beef as separate components, kitchen staff can ensure that each ingredient is measured accurately and meets the minimum requirements for serving. This approach allows for greater control over portion sizes and ensures that students receive the appropriate amount of each component in their meal, thereby addressing concerns related to portioning and meeting nutritional standards. A cook stated, *"But that's when you have beef beef strips, whatever it's like, yeah, it just seems where you would be trying to make sure that they're getting the right amount. Some kids might not care, but some kids, you know, that's why when we did it, separate it, at least we knew they were getting, like, the three ounces of beef."*

3.3.2 Theme 2: Looking Ahead: Practical Tips to Implement Scratch Meals at School

The core categories within this theme were feedback from staff on menu items and their recommendations for the future. Collectively, these categories highlight areas of improvement to increase scratch meal productivity in the kitchens as well as how to improve the integration of scratch meals into school kitchens moving forward.

Feedback from Staff on Menu Items: Kitchen staff expressed varying sentiments regarding the preparation of recipes. Some of the staff had positive comments about the experience of preparing and serving some of the scratch recipe entrees. For example, one staff member remarked, *"I think, I mean other than the little bit of mess, I think with the chicken it was pretty easy. I mean, it's just tossing it in the seasoning... the prep time on that was a lot easier than some of the other [from scratch meals]."*

It was also noted that the scratch meals elicited positive reactions from both staff and students. One cook remarked, *"It actually smells like you're in a restaurant or kitchen...I think the smells sell people. 'Oh, that smells good. I can't wait to come and eat lunch!' You know, because it's from scratch and it smells good."* Furthermore, the kitchen staff expressed satisfaction with the overall appeal and taste of the scratch recipes. According to one cook, *"It looked good. It tasted good. And I just, you know, there are some kids that just don't like things mixed together and you're always gonna have that, but I think it's a better product."* Another cook shared an anecdote illustrating positive feedback from other staff who tried the meals, stating, *"[student name] never had a chicken leg in her life and [she was] saying, 'Ohh this is so good!... when are we having chicken next?'"*

However, there were also negative aspects noted. Some staff members felt that there was an excess of cheese in dishes like Mac and Cheese, leading to difficulties in melting, and the pasta in certain meals became overly mushy. Additionally, concerns were raised about the appeal of scratch meals compared to the pre-cooked entrees served alongside them. One cook described the situation, stating, *"that's how it's been for me the past couple of days... my line is out the door for all the alternatives."* Another observation was that students often hesitate to try new foods, making it challenging to gauge their long-term popularity. One cook highlighted this issue, stating, *"I think*

it just like any new menu item, I don't think you can really judge how popular it could be long term until you've tried it a few times."

Staff also discussed the negative reactions of students to the new scratch meals, reporting instances where students expressed disdain upon seeing or tasting the meals. Some mentioned that younger students preferred simpler, familiar foods and might not fully comprehend the difference between homemade and pre-cooked entrees. As one staff member noted, *"The little kids don't usually have much to comment... They just say, 'I have peanut butter and jelly.' 'Can I have a bagel?' I mean, it was one kid that's very particular. He said the chicken looked great. But he didn't take it. So, like, I think for the younger elementary students... I don't think they understand the difference in what we're serving them. And if something is homemade versus just out of the box."*

Recommendation for Improvement: Despite these challenges, staff provided several recommendations to enhance the scratch meal recipes and next steps moving forward. Suggestions included undercooking pasta to prevent it from becoming mushy, preparing cheese sauce separately for dishes like Mac & Cheese, and increasing portion sizes, such as for chicken drumsticks. Additionally, it was proposed to offer samples of new recipes for students to try before they are featured on the menu. One staff member expressed the power of (positive) peer pressure, *"...their friend tried it and they said it was good. So maybe they'll try it next time."*

Staff Training and Future Planning: Staff expressed appreciation for the staff training sessions and recommended making them an annual occurrence. Looking ahead, staff emphasized the importance of ongoing training, with one member stating, *"I think we all liked the training, we'd like to see that again."* Another suggestion involved dividing the training into multiple sessions to ensure that it is not too long and overwhelming for the staff, allowing for better

absorption of the material and practical application of the skills learned. One cook mentioned, *“maybe yeah, and not doing so much in one day, either having, like, a couple things one day than a couple things another day, or whatever, but we're not all trying to make 500 things in one day.”* Additionally, they stressed the need for adequate staffing to support the transition to scratch meals, with another staff member affirming, *“The training and having enough labor to help.”* They also highlighted the importance of recipe refinement and experimentation to ensure culinary success and student satisfaction.

4.0 Learning & Actions

4.1 Discussion

My theory of improvement hypothesized that change can be implemented to prepare meals from scratch in school cafeterias in a way that is both financially and logistically feasible. This hypothesis was grounded in the belief that by strategically leveraging resources, investing in staff training, and fostering stakeholder collaboration, schools can effectively integrate scratch meal recipes into the school lunch menu.

The integration of scratch meals into school lunch menus has significant implications for both student meal participation and food service staff proficiency. Analysis of the data on meal participation sales revealed fluctuations in the popularity of certain scratch recipes over the original recipes during the observed period. While some recipes, such as "Homemade Shells n Cheese" and "Beef Lo Mein," maintained consistent levels of popularity, others like "Baked Drumsticks with Yellow Rice" and "Homemade Beef and Cheese Pasta Bake" experienced notable decreases in average percentage meal sales. These fluctuations may reflect differences in student preferences for scratch recipes, as evidenced by Tam et al. (2017) with University students. Additionally, it is important to consider that school meal prices increased for the 2023-2024 academic year at District schools, which may have influenced students' meal selections. While some meal sales stayed the same and others decreased, the price increase could have played a role in these patterns. Evidence from the literature suggests that social media and marketing can influence meal selections among students (Kucharczuk et al., 2022). There is also evidence that social interactions and peer pressure within the school cafeteria environment can affect students' meal choices, as they may be

influenced by what their peers are selecting (Chung et al., 2021). However, this is only speculation, as these external factors were not assessed in the current study.

Overall, the sales of three scratch meals increased between the first and second time they were offered to students. This increase in sales of scratch meals post-training may suggest a positive response from students to the newly introduced menu items. The consistent rise in sales for Homemade Shells n Cheese, Homemade Beef Lo Mein, and Homemade Beef and Cheese Pasta Bake aligns with existing literature emphasizing the repeated exposure of a meal to increase participation and acceptability among students (Fildes et al., 2014). This trend underscores the potential appeal and acceptance of scratch recipes among elementary school students. However, the slight decrease in sales for Baked Drumsticks with Yellow Rice warrants further investigation into potential factors influencing student preferences or perceptions of this particular menu item. Possible factors such as taste preferences (Guerrero et al., 2018) could be considered in future studies to better understand and address fluctuations in sales.

The survey results shed light on the food service staff perceptions of and readiness for scratch cooking. Prior to the training, some participants expressed comfort and confidence in cooking scratch meals, although areas for improvement, such as meal planning and familiarity with certain recipes, were identified. Notably, staff members recognized the importance of scratch cooking for the food service program and acknowledged its potential to enhance overall meal quality. After the training, there was a marked improvement in staff comfort levels and confidence in scratch cooking following the training program. Moreover, staff unanimously agreed on the positive impact of scratch cooking on food service quality and expressed increased motivation to incorporate scratch meals into the program. These findings underscore the potential efficacy of

targeted training interventions in enhancing staff proficiency and readiness for scratch cooking. (O'Shea, et al., 2023).

During the focus group, staff members also identified challenges to the implementation of scratch meals at school. Time constraints and labor shortages emerged as primary barriers hindering the preparation of scratch meals. This aligns with prior research which indicates that school districts heavily engaged in scratch cooking tend to have a greater number of food service workers, particularly full-time staff, in comparison to districts with minimal scratch cooking practices (Vincent et al., 2020). A primary obstacle in scaling up scratch cooking initiatives revolves around the considerable labor expenses and constraints in staffing availability, impeding schools' capacity to adopt extensive scratch cooking approaches while ensuring operational efficiency in meal provision (Vincent, et al., 2020). Additionally, staff raised concerns regarding food safety and portion control in scratch meals, necessitating strategic interventions to address these challenges effectively (Poppendieck, 2010; Woodward-Lopez et al., 2014). The apprehension arises from the potential financial strain on districts due to the additional expenses associated with scratch cooking. Consequently, some districts may resort to the use of processed foods to ensure compliance with nutrition standards, as they perceive it as a more cost-effective approach.

The responses to the open-ended questions from post-survey and focus group discussion provide valuable insights into the strengths and weaknesses of the training program and suggestions for improvement. Staff shared their desire for additional workshops and trainings, integrating hands-on cooking exercises to maximize skill development, a greater focus on menu planning and recipe refinement, and more group discussions. The interactive and collaborative elements of the training were well-received, which is in line with previous research suggesting that

group training fosters a supportive environment for skill development and knowledge exchange (Hollingshead, 1998). Staff raised concerns about the duration of the training, and they recommended breaking into smaller groups for more focused activities and dividing the training into multiple days. Training sessions spread over multiple days can enhance effectiveness by improving concept acquisition and knowledge retention, as well as facilitating skill-building among participants (Kang, 2016). Additionally, because training over multiple days allows staff to avoid feeling overwhelmed and tired, they can engage more fully in the learning process. They suggested that future trainings include more time for menu planning and soliciting menu suggestions from the staff ahead of time. Such an interactive and collaborative approach may help to gain stakeholder buy-in and improve program acceptability and sustainability (Ommen et al., 2016).

The need for additional time to cook and more employees to help with food preparation, as indicated by staff feedback, could lead to higher operating expenses. Balancing the desire to provide nutritious scratch meals with budgetary constraints requires careful financial planning and resource allocation (Vincent et al., 2020). While the staff's willingness to embrace scratch cooking and the understanding of its importance are encouraging, ensuring the sustainability of these changes amidst union issues and financial constraints necessitates proactive measures. Strategies to address these barriers may include collaboration and communication, fostering open dialogue between food service staff, union representatives, and financial stakeholders to discuss concerns, explore potential solutions, and negotiate mutually beneficial agreements (Ommen et al., 2016). Additionally, investing in staff training and skill development programs to optimize efficiency and productivity in scratch cooking practices can help mitigate labor-related challenges (Fejoh &

Faniran, 2016). Equipping employees with the necessary tools and knowledge can facilitate the successful integration of scratch meals into school lunch menus.

4.2 Next Steps and Implications

Following the completion of the dissertation study on the integration of scratch cooking initiatives in school lunch programs, several avenues for future research and implications for practice have emerged.

4.2.1 Implications for Research

Future research presents an opportunity to delve deeper into stakeholders' perspectives on scratch cooking initiatives. Engaging with various stakeholders, including students, parents, teachers, food service staff, and administrators is essential to gain a comprehensive understanding of attitudes, perceptions, and experiences related to scratch cooking in schools. For students, I would like to conduct a focus groups or a survey to explore their preferences for scratch-cooked meals, their perceptions of food quality and taste, and any barriers they perceive to integrating more scratch meals into the school menu. Similarly, it would be important to gather parents' perspectives on the importance of scratch cooking, their concerns about meal options available to their children, and their preferences for school menu items.

In the context of research implications, it has been shown that increasing student acceptance and consumption of scratch meals can be achieved by providing exposure through taste-testing opportunities before incorporating the items into the school meal menu (Wardle et al.,

2003). Taste-tests allow students to provide feedback on the flavor, texture, and overall appeal of the scratch-cooked items, which can inform menu development and recipe refinement. Additionally, conducting taste-tests and following up with student surveys after offering scratch-cooked items as part of the school meals may yield more accurate measures of acceptance than relying solely on participation data. This comprehensive approach allows researchers to gather valuable insights into student preferences and perceptions, thereby guiding future efforts to enhance the quality and appeal of school meal programs.

School staff would also be an important group to target for future data collection. Teachers could provide valuable insights into the integration of scratch cooking into school curricula, as well as any challenges or opportunities they perceive in promoting healthy eating habits among students. Administrators' perspectives on the implementation of scratch cooking initiatives, their support for such programs, and their perceptions of the impact on student health and academic performance can be explored through interviews or surveys. By utilizing a combination of focus groups, interviews, and surveys tailored to each stakeholder group, I could gather rich and diverse data to inform the development and refinement of future interventions.

4.2.2 Implications for Practice

In terms of implications for practice, ongoing training and professional development opportunities for food service staff are essential. By leveraging staff input on the strengths of the original training (i.e., interactive and collaborative activities), while addressing weaknesses (i.e., recipe selection and training duration), future trainings can be optimized to better meet the needs and preferences of participants. Evidence from the literature beyond school settings suggests that incorporating elements of discussion and feedback into training sessions can foster a sense of

ownership and empowerment among staff (Jing et al., 2017). If the food service personnel are actively engaged in discussions and provided avenues for feedback, it may positively impact their approach to work and foster a greater sense of worth in their profession, transcending the routine of simply reheating food for students. By enhancing their skills in scratch cooking techniques, menu planning, and nutrition education, staff can effectively implement and sustain scratch cooking initiatives (Carmichael et al., 2023).

To build on the input from kitchen staff, involving parents and students in menu changes is likely paramount to understanding their views of the current menu offerings and their acceptance of future meal changes. Including parents and students in the decision-making process can increase buy-in and ensure that menu changes align with the preferences and needs of the school community (Mauer et al., 2022). Collaboration with nutrition experts, culinary professionals, and community stakeholders is also crucial for developing nutritious, culturally relevant, and appealing scratch-cooked meal options that both meet dietary guidelines and student preferences (Carmichael et al., 2023). Moreover, conducting regular student surveys to gather feedback on meal options, preferences, and satisfaction levels can inform menu planning and enhance student engagement with school meals.

As the Food Service Director, navigating barriers to implementing scratch cooking initiatives involves addressing various factors, including union issues and financial constraints. While the data from the focus group suggests that staff understand the importance of cooking from scratch and are willing to adapt to changes, concerns raised by the Director of Finance regarding increased labor costs present significant challenges. Union issues, such as labor agreements and collective bargaining agreements, may dictate staffing levels, work hours, and job responsibilities, impacting the feasibility of introducing scratch cooking practices. Negotiating with union

representatives to accommodate changes in workload and job roles may require time and resources, posing potential barriers to implementation. Moreover, the Director of Finance's concerns about increased labor costs are valid considerations. Performing a comprehensive cost-benefit analysis would help evaluate the financial implications of implementing scratch cooking initiatives. This analysis should consider factors such as initial investment costs, ongoing operational expenses, and potential cost savings from improved health outcomes and buying food on a larger scale.

4.2.3 Conclusions

Overall, the findings underscore the importance of comprehensive training initiatives and ongoing support mechanisms in facilitating the successful integration of scratch meals into school lunch menus. While challenges exist, staff readiness and receptiveness to scratch cooking, coupled with strategic interventions informed by staff feedback, position schools to deliver nutritious, flavorful, and appealing meals that cater to evolving student preferences and promote overall well-being. Additional research is needed to examine the acceptance of scratch meals from the student and parent perspective. Comprehensive training initiatives and support mechanisms for kitchen staff are crucial for successfully integrating scratch meals, though barriers such as union issues and financial constraints require proactive measures for sustainability.

5.0 Reflections

Reflecting on my journey through this Ed.D program as both a Dietitian and the School Food Service Director, I've undergone a profound transformation in my approach to problem-solving and enacting change. Initially, I entered the program with lofty aspirations, fueled by a desire to revolutionize the school food system and address all its myriad challenges at once. However, my professors and advisor quickly guided me to a more nuanced understanding, emphasizing the importance of delving deep into the roots of problems and approaching change with thoughtful deliberation, principles that align closely with improvement science methodologies. By embracing improvement science frameworks, I learned to systematically identify areas for enhancement, test innovative strategies, and iteratively refine interventions based on feedback and data analysis. This iterative process fosters a culture of continuous learning and improvement, ultimately empowering me to make more informed decisions and drive meaningful change within the school food system.

Through implementing my first Plan-Do-Study-Act (PDSA) cycle as part of this dissertation in practice, I learned to focus on one problem at a time, honing my critical thinking skills to identify underlying issues and synthesize best practices and evidence-based solutions to organizational-level problems of practice. What initially seemed like a small, narrow problem revealed itself to be interconnected with larger systemic challenges upon closer examination. From the perspective of my organization, the problem appeared straightforward: transitioning from pre-cooked meals to scratch-cooked meals. However, as we delved deeper, numerous complexities emerged. Challenges such as time constraints, staff shortages leading to insufficient time for meal preparation, the need for additional labor to meet production demands,

staff apprehension about handling raw foods, financial concerns, ensuring meals meet nutritional standards, and observing meal participation rates remaining stagnant or decreasing all surfaced. This realization was a pivotal moment in my journey, as it taught me to recognize that no problem is truly small or easily addressable. Instead, in my case, each challenge serves as a piece of the larger puzzle.

My ultimate career goal is to work with legislation and advocate for policy changes that address the challenges I have encountered as a practitioner in school food service. My goal is to enhance the frequency and accessibility of existing training programs that have been available for the past decade, aimed at encouraging School Food Authorities to transition to cooking more meals from scratch, with the state incentivizing this shift through measures such as grants or increased reimbursements. In pursuit of this goal, future Plan-Do-Study-Act (PDSA) cycles would involve evaluating the expenses required for preparing meals from scratch compared to pre-cooked options and then comparing these costs to the federal reimbursement rates. By conducting this analysis, I could demonstrate the financial feasibility and potential benefits of scratch cooking, thereby advocating for policies that support and incentivize healthier meal options in schools. Ultimately, my efforts are aimed at contributing to the overarching goal of improving children's health and reducing the risk of chronic diseases by ensuring access to nutritious and freshly prepared meals in school environments.

This program has been a profound learning experience, not only in terms of academic knowledge but also in personal growth and development. It has taught me the value of patience, persistence, and humility in the face of complex problems. Moreover, it has instilled in me a deeper sense of purpose and commitment to effecting positive change in the lives of children and families through nutrition and education. Amidst the challenges and demands of completing this

dissertation, I am proud to have achieved notable personal milestones. I was honored with the title of Food Service Director of the Year and received the Achieva Employment of the Year award, highlighting my dedication and excellence in my professional endeavors. Additionally, I navigated the joys and difficulties of welcoming two beautiful babies into my family during the course of this program, overcoming complications during pregnancies with resilience and strength, with the help of my lovely husband and family. Simultaneously, I achieved a significant personal milestone by purchasing the house of my dreams and successfully transitioning to a new home. These accomplishments, amidst the academic rigor of the program, underscore my ability to manage multiple responsibilities and thrive in the face of adversity.

Moving forward, I am equipped with a newfound understanding of the interconnected nature of problems within the school food system and the importance of systematic, evidence-based approaches to addressing them. Armed with this knowledge and experience, I am confident in my ability to continue driving meaningful change in my role as a Dietitian and School Food Service Director, contributing to the collective effort to create healthier environments for our youth.

Appendix A Driver Diagram for the Theory of Improvement to decrease the availability of pre-cooked and ready-to-eat foods to students at the District.

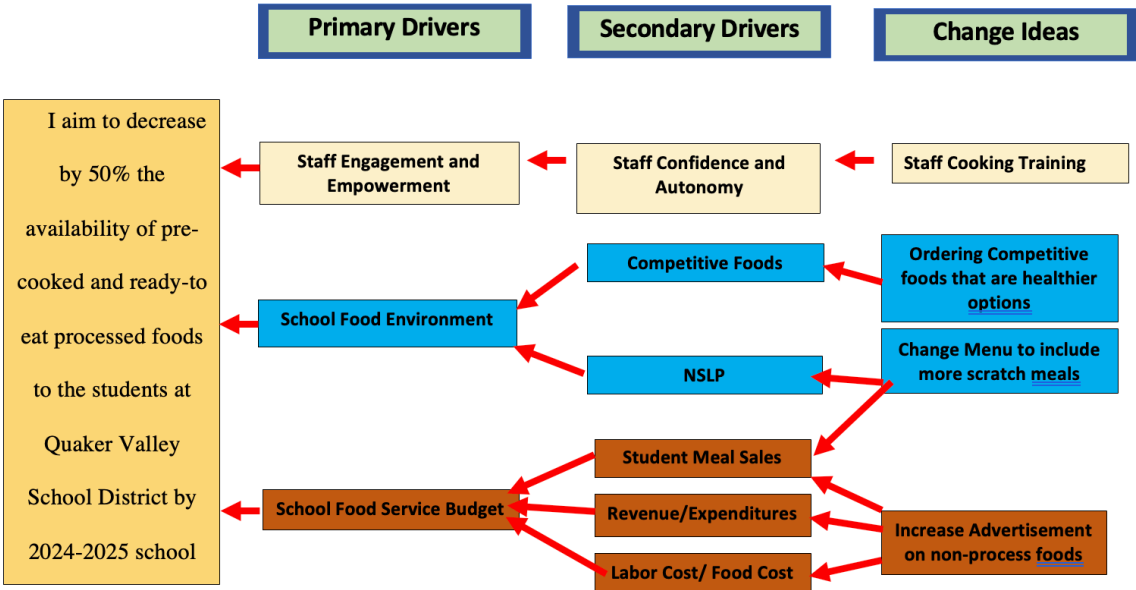


Figure 5 Driver Diagram for the Theory of Improvement to decrease the availability of pre-cooked and ready-to-eat foods to students at the District.

Appendix B Food Service Staff Survey

Appendix B.1 Pre-training survey:

1. On a scale of 1-5, how **comfortable** do you feel with cooking scratch meals?
 - a. 1 = not at all comfortable, 5 = very comfortable
2. On a scale of 1-5, how **confident** are you in your scratch cooking abilities?
 - a. 1 = not at all confidence, 5 = very confident
3. On a scale of 1-5, how **familiar** are you with the scratch cooking techniques (e.g., roasting, grilling, sauteing, and baking) we will be covering in the training program?
 - a. 1 = not at all familiar, 5 = very familiar
4. On a scale of 1-5, how **familiar** are you with the recipes (i.e, Macaroni and Cheese, Beef Pasta Bake, Lo Mein Noodle, Herb Roasted Chicken Drumstick with Yellow Rice) we will be covering in the training program?
 - a. 1 = not at all familiar, 5 = very familiar
5. In an average week, **how often** do you cook from scratch at home?
 - a. Daily
 - b. 4-6 days
 - c. 2-3 days
 - d. Once a week
 - e. Rarely/Never
6. What are some of the **challenges** you face when cooking scratch meals (check all that apply)?

- a. Finding and sourcing ingredients
- b. Lack of cooking skills and knowledge
- c. Limited kitchen resources and equipment
- d. Balancing flavors and seasonings
- e. Meal prep and clean up time
- f. Other (please describe): _____

7. What areas of scratch cooking do you feel you need **improvement** in? (Check all that apply):

- a. Knife skills and cutting techniques
- b. Understanding flavor combinations and seasonings
- c. Preparing sauces and soups from scratch
- d. Baking techniques and sautéing techniques
- e. Meal planning and organization
- f. Understanding cooking times and temperatures
- g. Other (please describe): _____

8. Have you received any **formal training** from the District in scratch cooking before?

- a. Yes
- b. No
- c. Unsure

9. On a scale of 1-5, how **important** do you think scratch cooking is for our food service program?

- a. 1 = not at all important, 5 = very important

10. Rate your level of agreement with the following statement: Scratch cooking will have a **positive impact** on the overall quality of our food service program.

- a. 1= Strongly Disagree
- b. 2= Disagree
- c. 3= Neither Agree or Disagree
- d. 4= Agree
- e. 5= Strongly Agree

11. Rate your agreement with the following statement: I am **motivated** to cook scratch meals for our food service program.

- a. 1= Strongly Disagree
- b. 2= Disagree
- c. 3= Neither Agree or Disagree
- d. 4= Agree
- e. 5= Strongly Agree

Appendix B.2 Post-training survey:

1. After completing the training, on a scale of 1-5, how **comfortable** do you feel with cooking scratch meals?

1 = not at all comfortable, 5 = very comfortable

2. After completing the training, On a scale of 1-5, how **confident** are you in your scratch cooking abilities?

1 = not at all confidence, 5 = very confident

3. Rate your level of agreement with the following statement: Scratch cooking will have a **positive impact** on the overall quality of our food service program.

1. 1= Strongly Disagree
2. 2= Disagree
3. 3= Neither Agree or Disagree
4. 4= Agree
5. 5= Strongly Agree

4. Rate your agreement with the following statement: The training program adequately **prepared** me to cook scratch meals for our food service program.

- f. 1= Strongly Disagree
- g. 2= Disagree
- h. 3= Neither Agree or Disagree
- i. 4= Agree
- j. 5= Strongly Agree

5. Rate your agreement with the following statement: The training program has increased my **motivation** to cook scratch meals for our food service program.

- k. 1= Strongly Disagree
- l. 2= Disagree
- m. 3= Neither Agree or Disagree
- n. 4= Agree
- o. 5= Strongly Agree

6. What would you like to see in future training workshops? (Check all that apply)
- a. More hands-on cooking exercises
 - b. More in-depth lectures on cooking techniques
 - c. A greater focus on menu planning
 - d. More group discussions and feedback
 - e. Other (please describe): _____
7. What was your favorite part of the training? (open-ended text response)
8. What was your least favorite part of the training? (open-ended text response)
9. What recommendations do you have or what changes would you make in future trainings? (open-ended text response)

Appendix C The District Food Service Staff Focus Group

Objective: The focus group discussion with staff members is to gather their perceptions on the adequacy of the training in preparing scratch meals.

Welcome/Introduction (2-3 min)

Introduce yourself.

Ground rules: Please talk loudly and clearly, and speak one at a time so we can hear everyone in the recording well. Be courteous; we want to hear from everyone.

Remind them of confidentiality, session recorded, etc.

Ask questions, Have fun!

Opening Question (2-3 min)

1. “Please tell me the name you would like us to refer you as during this discussion, and your favorite food to cook at home?.”

Introductory Question (5-10 min)

2. Today we are going to talk about the scratch meals that were prepared in the past two weeks, as well as the staff training workshop that took place three weeks ago. To start off, I'd like to ask, why do you think scratch meals are being integrated into the lunch menu at the District?

Transition Questions (10 min)

3. In your opinion, what makes it harder to integrate more scratch meals into the school lunch menu?

Key Questions (40-50 min)

4. Can you share a bit about how it went preparing and serving the 4 new scratch meals on the menu these last two weeks?
5. What challenges did you encounter when cooking, preparing and serving scratch meals after completing the training program?
6. What went well or what made it easier to prepare and serve the meals?
 1. Probe: training, other support
7. How do you think the children or other colleagues felt about the new menu items?
 1. Probe: what evidence did they have? Direct comments, observations, meal waste, etc.
8. In general, what concerns do you have about integrating more scratch meals on the menu?
 1. Probe: what supports do they need to be successful?
9. What suggestions do you have for improving the scratch meal trainings in the future?
 1. Probe: skills, knowledge, topics, etc.

Concluding Questions (10 min)

10. “Do you have anything else you’d like to share about the training, scratch meal menu items, or other thoughts?”

Thank the participants for their time.

Dismiss them.

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