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**Development of an Atlanta Public Schools Equipment Training Manual for
Cafeteria Employees**

By

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Master's in Public Administration
Troy University, 2000
Bachelor of Science
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Introduction

The School Breakfast Program (SBP) is a federally assisted meal program which started as a pilot project in 1966 and was signed into law by Congress in 1975 (SBP Fact Sheet, 2017). The program operates in public and nonprofit private schools and residential childcare institutions. The program served approximately 500,000 children in 1970 and has grown to serve over 14.6 million in 2016 (SBP Fact Sheet, 2017). The SBP and National Lunch program (NSLP) were created to enhance the diet and health of school children (Rules & Regulations, 2012). Students experiencing food insecurity are at a disadvantage in school compared to their peers from food-secure families. Food insecurity negatively impacts the social, emotional, and behavioral development of school-age children and adolescents and exacerbates their risk for behavioral issues that interfere with learning and achieving academic (The Connections between Food Insecurity, the Federal Nutrition Programs, and Student Behavior, 2018). Participation in the breakfast and lunch programs reduced student absentee and tardy rates that allow students to focus on the learning objective. Students perform better scholastically when they are properly nourished. The SBP provides students from low-income families with a healthy morning meal everyday who would arrive at school hungry. School meal programs decrease the risk of food insecurity while enhancing dietary patterns and academic performance. The programs have evolved into mitigating behavioral problems, childhood obesity and preventing diseases such as high blood pressure and cholesterol, cardiovascular disease, stroke, and type 2 diabetes (Rules & Regulations, 2012).

The process of cooking school meals is as important as the ingredients used to prepare them. School cafeteria equipment must be modernized and able to cook high quality meals

consistently and efficiently to meet health and safety regulations, improve meal quality, increase student participation, as well as efficiency and productivity of foodservice workers. Modern technology has created advanced cafeteria equipment to deliver healthier more nutritious food due to improved cooking processes. Hot food is stored for extended periods of time in a Holding Cabinet without spoiling. Combi Ovens (both convection and steamer oven) are able to steam crisp vegetables faster at lower temperatures to maintain the nutritional value. This oven keeps chicken moist and hydrated while producing a fried exterior (School Nutrition and Kitchen Equipment: Combi Ovens, 2022). Serving line counters are more flexible with the ability to hold hot, cold or frozen food in the same unit. Serving stations with see through partitions are more appealing to students, because they can view the food and make selections by the appearance. Dishwashers with digital readout temperature ranges from 150° to 190° guarantees that dishes are sanitized and germ free. Selecting the appropriate school kitchen equipment allows foodservice workers to control the cooking process better which leads to reduced wastefulness with food and in budgetary spending. While increasing the nutritional value of food and improving the lives and eating behaviors of school age children.

School nutrition programs are ever changing due to various limitations such as budget reductions, limited cafeteria space, lack of modern equipment, time restraints, and student participation. Foodservice administrators are tasked with providing a healthy and safe environment to prepare nutritious school meals. Knowing how to prepare a menu is only one part of the equation. Knowledge of cafeteria logistics and design, in addition to equipment safety and training allows staff to be more productive and efficient. The purpose of this project is to prepare a summary Operations Manual for equipment commonly used in school

cafeterias. The preparation of a summary operations manual for all of the equipment used in the cafeterias in the Atlanta Public Schools (APS) will promote standardized use and serve as a resource for current and future employee training.

Overview of School Nutrition Program

A. School Breakfast and Lunch Standards

The SBP and NSLP are meal programs that must meet strict federal nutrition standards established by the Dietary Guidelines for Americans (Food & Nutrition Service. *USDA National School Lunch Program*, 2019). Nutritional standards are necessary to ensure nationwide uniformity with nourishing school meals in an efficient and effective way. The Dietary Guidelines for Americans promotes healthy eating and drinking by advising Americans of all ages on the importance of consuming nutritious foods. Guidance is given to enhance dietary and eating behaviors to prevent disease, while promoting health and longevity. These standards, also referred to as “the meal pattern,” require schools to offer students a balance of fruits, vegetables, low-fat or fat-free milk, whole grains, and lean protein with every meal (School Nutrition Standards, 2022). In July 2012, additional improvements recommended by the Institute of Medicine of the National Academies went into effect. The recommendations included reducing intake levels of sodium, saturated fat and trans-fat (Rules and Regulations, 2012). Age-appropriate meals must meet the nutritional needs of children within their calorie requirements (Rules and Regulations, 2012). This act requires that school meals reflect the most recent Dietary Guidelines for Americans which promotes nutritional intake from each food groups. More specifically it requires schools to increase the availability of fruits, vegetables, whole grains, fat-free and low-fat milk, reduce the levels of sodium, saturated fat

and trans-fat in meals; and meet the nutrition needs of school children within their calorie requirements (Rules and Regulations, 2012). School Breakfast Program meals must contain a daily and weekly minimums of fruits or vegetables, grains or meats/meat alternatives, and fluid milk. Healthy guidelines must be followed in order for institutions to receive federal reimbursements. Improving the quality and appearance of food will increase student participation in the school nutritional program because children eat with their eyes.

In Georgia, all K-8 schools with 25 % or more reduced price or free certified students and all other schools with 40 % or more certified students are required to establish and support a breakfast program (*School Meals Legislation and Funding by State, 2022*).

The breakfast programs improve educational learning by increasing food security for students from low income families. The overall goal is to provide healthy nutritious quality meals, high in nutrients but low in calories to children from kindergarten to K12. This is a response to combat the childhood obesity epidemic while exposing children to a variety of fruits, vegetables and improved eating habits. In order to ensure compliance, State agencies are required to conduct nutritional reviews with menus and production records for a two-week period, as well as a review every three years in conjunction with Healthy Hunger Free Kids Act (Rules and Regulations, 2012).

B. Free/Reduced Price Lunch Policy

The NSLP is a federally assisted meal program operating in public and nonprofit private schools and residential childcare institutions (*National School Lunch Program (NSLP) Fact Sheet, 2019*). The intention of the program was to alleviate hunger with impoverished children living

below the poverty line. The plan offered nutritionally balanced low-cost or free lunches to children from low-income families each school day. It was established under the Richard B. Russell National School Lunch Act, signed into law by President Harry Truman in 1946 (*National School Lunch Program (NSLP Fact Sheet, 2019)*). During its first year of conception it served 7.1 million students; in 2019, it served over 4.9 billion students nationwide (*National School Lunch Program (NSLP)*). The overall objective is to feed those in need while enhancing their diet and health by alleviating childhood obesity. The United States Department of Agriculture (USDA) proposes and updates regulations for school meals, while state and local school boards facilitates implementation of serving specific foods and preparation methods.

Participants must be a resident of Georgia to be eligible for the school meal program and their parents' annual income must fall within the ranges listed in Table 1 (*National School Breakfast and Lunch Program for Georgia*). Children can qualify for the program under the status of "categorically eligibility" due to being homeless, a migrant, a runaway, or a foster child (*National School Lunch Program (NSLP Fact Sheet, 2019)*). Meal applications are normally sent home at the beginning of each school year or are available upon request. Lunches must meet Federal standards but are determined by local authorities (*National Breakfast and Lunch Program for Georgia*). All public schools in the state of Georgia must participate in NSLP to meet the nutritional needs of certified participants (*School Meals Legislation and Funding by State, 2022*). Clayton County Public Schools was the first metro Atlanta district to offer free meals to all their students in 2013 (McCray, 2019). School Breakfast Program participation increased from 37% to 47% and NSLP rose from 82.3% to 85% (McCray, 2019). Atlanta Public Schools started offering free breakfast and lunch to all their students in August 2019, regardless

of a family’s income (McCray, 2019). Students attending a district-run or charter school that uses the district’s food service are eligible for all students to receive free meals (McCray, 2019).

Table 1 Annual Household Income Requirements

Annual Household Income Limits (before taxes)

Household Size*	Maximum Income Level (Per Year)
1	\$25,142
2	\$33,874
3	\$42,606
4	\$51,338
5	\$60,070
6	\$68,802
7	\$77,534
8	\$86,266

Household income eligibility before taxes. For households with more than eight people, add \$8,732 per additional person. (*National School Breakfast and Lunch Program for Georgia*)

C. Fresh Fruit and Vegetable Program

The Fresh Fruit and Vegetable Program (FFVP) was established in 2009 as a recurring federal grant program offered by the USDA to participating elementary schools. The Food and Nutrition Service of the United States Department of Agriculture administers the program on the Federal level (The Fresh Fruit & Vegetable Program, 2017). State agencies administer FFVP on the State level (The Fresh Fruit & Vegetable Program, 2017).

The Georgia Department of Education received a \$5.9 million grant in 2022, which served 97,655 students in 43 districts for 186 elementary schools (*Fresh Fruit & Vegetable Program, 2022*). Grants are intended for elementary schools with a high percentage of free or reduced-price meals. New and different varieties of fruits and vegetables (healthy snacks) are served to students outside of their regular breakfast or lunch school meal at least two days per

week. Schools have the flexibility of selecting the type of produce through local grocery stores, farmers' markets, orchards, or wholesalers within the community.

Only elementary schools are eligible to partake in the FFVP and they must offer the NSLP. Schools must have a minimum 50% enrollment of students receiving free and or reduced-price meals. Funding is determined by the State agency based on total yearly funds allocated to the State and participation numbers, schools receive \$50 to \$75 per student (The Fresh Fruit & Vegetable Program, 2017). Monthly claims are submitted to the State for reimbursement for the cost of fresh fruits and vegetables.

The goal of the program is to increase consumption by introducing students to a variety of unprocessed produce of fresh fruits and vegetables, to create healthy eating patterns sustainable throughout their lives.

D. Special Milk Program

The Special Milk Program (SMP) was established in 1955, to increase milk consumption by children in schools, summer camps, and non-residential childcare institutions that do not participate in other Federal meal service programs. Other participants were pre-kindergarten/kindergarten programs in the NSLP or SBP that do not have access to school meal programs. In 1966, the SMP was incorporated into the Child Nutrition Act (*The Special Milk Program: An Introduction, 2019*). The program serves fat free or low fat (1%) pasteurized milk that contains vitamins A & D in addition to a choice between flavored or unflavored and lactose free or lactose reduced milk.

The USDA reimburses participating schools for every half pint serving of milk served. The program is designed to operate on a non-profit basis where the funds help subsidize milk that is sold to all children. According to the statistics there was a 42% increase in milk drinking in SMP schools compared to non-SMP schools (*The Special Milk Program: An Introduction, 2019*). There was a 30% increase in schools that participated in the NSLP along with SMP (*The Special Milk Program: An Introduction, 2019*). These numbers show that the program is successful in providing nutritious milk to children of all ages. The program is developing positive healthy habits that should last a lifetime from childhood to adulthood.

Professional Standards

Two professional standards for state and local school nutrition personnel were implemented in 2015 by the USDA, for those who manage or operate the NSLP or the SBP. These standards were established by the Healthy, Hunger-Free Kids Act of 2010 (Hiring Flexibility under Professional Standards, 2019). The standards include:

1. Minimum education standards for new State and local school nutrition directors.
2. Annual training standards for all school nutrition professionals.

The standards were created to guarantee that everyone has knowledge, training and the tools they need to plan, prepare and purchase healthy products to create nutritious, safe, and enjoyable school meals (Hiring Flexibility Under Professional Standards, 2019).

A. Hiring Requirements:

There are four hiring flexibilities standards for new School Nutrition Program (SNP) Directors and new State Directors in small local educational agencies (LEAs) (Hiring Flexibility under Professional Standards, 2019).

- a.) Hiring challenges with-less than 2,499 students can substitute school nutrition program experience with relevant food service experience.
- b.) State agencies have the discretion to accept documented volunteer or unpaid work as relevant experience.
- c.) With 500 or less students, State agencies can accept less than the required years of food service experience when the applicant has the minimum required education.
- d.) Adds hiring flexibility to allow states to accept applicants with a bachelor's or master's degree.

In Georgia, Federal and State hiring standards for a SNP Director or Manager-Supervisor hired on or after July 1, 2015, depends on student enrollment size of the school system (*Hiring Standards, 2022*). The Georgia Department of Education (GA DOE) has two State Board Rules:

I. 160-5-6-.01 STATEWIDE SCHOOL NUTRITION PROGRAM

- a.) Specifically defines every job qualification.
- b.) A Nutrition Program Director must hold a certificate issued by Georgia Professional Standards Commission (GaPSC).

II. 160-5-1-.22 PERSONNEL REQUIRED

- a.) Defines the minimum enrollment for base-sized school systems.
- b.) Defines employment requirements for SNP director, director-trainee, manager, & supervisors.

Directors must obtain a Renewable School Nutrition Director Certificate issued by the Georgia Professional Standards Commission (GPSC) (*Hiring Standards, 2022*). The University of Georgia

offers a certificate program on the master's level. **Table 2** Compares Georgia Board of Education Broad Rule to USDA Professional Standard hiring requirements (*Hiring Standards.2022*). The table outlines specific hiring requirements for Directors, Managers, and Supervisors for both agencies prior to July 2015 and after July 2015.

Table 2 Professional Standards Hiring Requirements (*Hiring Standards.2022*)

Georgia DOE Board Rule Comparison to USDA Professional Standards Hiring Requirements for New School Nutrition Directors

This summary describes the changes to the **minimum** hiring requirements for new School Nutrition Program (SNP) Directors. To ensure that Georgia LEAs are compliant when hiring new SNP Directors, the chart compares both the State of Georgia Board of Education Rule 160-5-6-.22: Personnel Required and the USDA Professional Standards Hiring Requirements (effective July 1, 2015). *New Hiring Flexibility Under Professional Standards* became effective April 30, 2019 to address hiring challenges for small LEAs.

No Change in Hiring		
LEA size: 3,300 students or greater (unweighted FTE)	A School Nutrition Director is required. SN directors must hold a Georgia Clear Renewable School Nutrition Director certificate issued by the Georgia Professional Standards Commission (GPSC) (Master's Degree or higher) or be issued an Induction Certificate (Bachelor's Degree or higher) and convert to a Clear Renewable certificate (Master's Degree or higher) within 3 years.	
LEA size: less than 3,300 students with five (5) or more schools	A School Nutrition Director-Trainee is required on a part-time or full-time basis. SN Director-Trainees must hold a certificate (Induction or other) issued by the GPSC (Bachelor's Degree or higher) and complete 6 semester hours annually toward the requirement for a School Nutrition Director certificate (Master's Degree or higher).	
Change in Hiring		
	Hired prior to July 1, 2015	Hired on or after July 1, 2015
LEA size: less than 3,300 students with four (4) or fewer schools NOTE: As of 4/30/19, State agencies have the discretion to: <ul style="list-style-type: none"> • consider documented volunteer or unpaid work as relevant food service experience • accept less than the required years of food service experience for a new director in LEA with fewer than 500 students when applicant has the minimum required education. 	A Manager/Supervisor is required. A Manager/Supervisor holds a high school diploma or GED or was employed as a Manager/Supervisor prior to September 1, 1988.	A Nutrition Manager/Supervisor is required. A Manager/Supervisor holds either: <ul style="list-style-type: none"> • an Associate Degree in a specific major (food and nutrition, food service management, dietetics, family and consumer sciences, nutrition education, culinary arts, business or a related field) with two years of relevant food service experience, OR • a Bachelor's degree in any academic major with two years or relevant food service experience, OR • a Bachelor's degree with any academic major and a school nutrition director induction certificate issued by the Georgia Professional Standards Commission, OR • a Bachelor's degree with academic major in food and nutrition, food service management dietetics, family and consumer sciences, nutrition education, culinary arts, business, or a related field.
Prior Training Standards for New SNP Directors	As of July 1, 2015, all new directors must have completed 8 hours of food safety training within 5 years prior to the starting date (or complete it within 30 days of the starting date).	

B. Training Standards

The second Professional Standard mandates that each employee complete a specific number of annual training hours based on their position. Suggestions on training topics and approved training sources are provided.

Outline of Training Standards

(Training Requirements. 2022)

- Training must be job-specific to duties.
- Training must align with USDA key areas:
 - a.) Nutrition (1000)
 - b.) Operations (2000)
 - c.) Administration (3000)
 - d.) Communications and Marketing (4000)
- Professional Standards Learning Objectives & Training Topics used to plan training
- School Nutrition Association (SNA) developed Professional Standards Training Codes different than the original USDA Professional Standards list.
- Training:
 - In person, online, local meetings, webinars, conferences, etc.
- Training is measured in hours but no less than 15 minutes per training segment.

Training Hours

- | | |
|---------------------------|---|
| • New & Current Directors | 12 hours of Annual Continue Education/Training Plus, Safety training in the first year. |
| • New & Current Managers | 10 hours of Annual Continue Education/Training |
| • New & Current Staff | 6 hours of Annual Continue Education/Training |
| • New & Current PT Staff | 4 hours of Annual Continue Education/Training |

USDA, Professional Standards Summary of Hiring Requirements for School Nutrition Program Directors. (2021, January).

Documentation of all training must be maintained by the local district and available for review during an Administrative Review. Specific training recommendations and hours according to employee positions are presented in **Table 3**.

Table 3 Outlines the required training and training hours needed for employees (*Training Requirements. 2022*).

Annual Training Requirements for SFA School Nutrition Personnel

Training Hours Requirement by Position

Position	Annual Training Hours
School Nutrition Director (System-Level)	12 hours
Manager (School-Level)	10 hours
Staff (System and School-Level) working at least 20 hours per week	6 hours
Staff (System and School-Level) working < 20 hours per week	4 hours
Non-School Nutrition Staff (School-Level) with school nutrition related duties	Specific to duties

Note: If hired on January 1 or later, an employee must only complete half of the above training hours.

Training Topics by Position

Position	Suggested Training Topics
School Nutrition Directors (System Level) including: Directors, Manager/Supervisors, Assistant Directors, Director Trainees, Supervisors and Coordinators	<ul style="list-style-type: none"> Administrative practices (including training in application, certification, verification, meal counting, and meal claiming procedures), and Any specific topics required by FNS, as needed, to address Program integrity or other critical issues. <p><i>This required continuing education/training is in addition to the food safety training required in the first year of employment.</i></p>
Managers (School Level) including: Managers, Manager Trainees and Assistant Managers	<ul style="list-style-type: none"> Administrative practices (including training in application, certification, verification, meal counting, and meal claiming procedures), The identification of reimbursable meals at the point of service, Nutrition, health and safety standards, and Any specific topics required by FNS, as needed, to address Program
Staff that work an average of at least 20 hours per week (System and School Level)	<ul style="list-style-type: none"> Free and reduced-price eligibility, Application, certification, and verification procedures, The identification of reimbursable meals at the point of service, Nutrition, health and safety standards, and Any specific topics required by FNS, as needed, to address Program integrity or other critical issues.
Staff that work < 20 hrs. per week (System and School Level)	<i>At least 4 hours of annual continuing education/training</i>
Non-School Nutrition employees with school nutrition related duties	<i>Annual training related to the specific duties being performed for the School Nutrition Program</i>

Note: Effective July 1, 2015, USDA Professional Standards replaced Advanced Training-in Depth (TID) courses.

Approved Training Sources:

- Locally developed training with appropriate learning objectives in key areas (click here for: [USDA training codes](#))
- State Agency (GaDOE) and Professional Associations (such GSNA) conferences and training events
- School Nutrition Association (SNA): <https://schoolnutrition.org/learning-center/>
- The Institute of Child Nutrition (ICN): <https://theicn.org/>
- USDA Professional Standards Database: <https://professionalstandards.fns.usda.gov/>

Georgia Department of Education School Nutrition Program

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Equipment for School Foodservice

School Nutrition Directors and staff are responsible for delivering nutritious meals in a timely manner. Therefore, K12 foodservice equipment should be efficient, innovative,

dependable, and able to serve high volume capacity meals while maintaining cost. The equipment is designed to produce consistent results under repeated daily heavy use in school cafeterias. In addition, the equipment must be manufactured to be super tough to help workers perform their best while providing delicious and nutritious meals. Equipment must be energy efficient to help maintain overall utility bills and provide safety measures for the staff and students. Modern technology has developed various types of devices such as sneeze guards, antimicrobial paint, and even colorful drawer options for coding allergenic foods for everyone's safety (School Cafeteria & Kitchen Equipment, 2022).

School cafeterias need heavy duty equipment such as convection ovens or cook and hold ovens, griddles, refrigerators, blixers, and steamers. A blixer is a food processor which has the ability to work as a blender or mixer combined in one. This particular equipment saves on space with dual possibilities of prepping vegetables either by chopping or shredding and mixing ingredients. Cook and Hold Ovens maintain heat more efficiently and are designed to cook food, in addition to storing it for extended periods of time (Kitchen Equipment Essentials for School Cafeterias, 2019). Food can be prepared early and served hot for lunch. Convection ovens cook faster which saves time, energy, and money. Their glass door design makes it easier to follow the progress of food cooking. Reliable and durable walk-in refrigerators are a necessity to prevent spoilage of food and reduce bacteria growth or foodborne illnesses. Mass quantities of food is stored according to planned meals therefore refrigerators must maintain efficient and accurate temperatures, be organized, and well labeled. Steamers have the capacity of high-power cooking with reduced water usage. Steamers don't require butter or oil

and they preserve more flavor and nutrients. Prepared food can be stored in a Steamer for extended periods of time.

Understanding foodservice equipment operation helps staff strategize and develop school nutrition menus with proficiency and ease, as well as allowing staff members to prepare a variety of healthy foods in various quantities in a limited amount of time. Identifying smarter working solutions gives the staff more cooking control along with the ability to keep food & beverages fresh and healthy. Installing the right serving equipment in a cafeteria helps keep food fresh and sanitary and allows for quick grab-and-go access for students who otherwise would be waiting in long serving lines (School Food Service, 2022). Thus, ensuring proper nutrition and a healthy successful school nutrition program. School cafeteria equipment is essential to help staff prepare and serve the student body within a limited amount of time, therefore it is imperative that these tools are ideally designed and efficient.

School Foodservice Challenges

A. Safety

School cafeterias have transitioned from a central kitchen where food was prepared for every school, to food now being prepared at every individual school. This measure improved the quality of meals and food safety due to home prepared meals not being store properly. School safety is the utmost important objective due to the vulnerability of the student population. Safety standards are in place to prevent cross contamination and exposures to allergens, or foodborne illness. Personal hygiene is very important to prevent exposure to foodborne pathogens. Foodservice employees should always wash their hands and wear

gloves, apply clean aprons from the start of the shift, while following proper food handling procedures. Handwashing Practice is without a doubt the most critical part of personal hygiene, a vital step towards the prevention of spreading pathogens. Food handlers should always wash their hands after doing any of the following (Food Safety 101: A Crash Course):

- Using the restroom
- Touching the body or clothing
- Coughing, sneezing, blowing their nose, or using a handkerchief or tissue
- Eating, drinking, smoking, chewing gum or tobacco
- Handling soiled items, raw meat, seafood or poultry
- Taking out the garbage
- Handling service animals
- Handling chemicals
- Before beginning a new task
- Leaving and returning to the prep area
- Handling money
- Using electronic devices
- Touching anything that may contaminate hands, (dirty equipment, work surfaces or clothes)
- Using hand antiseptic is not a substitute for washing hands

To reduce the spread of germs electronic sensors are on door levers to produce a touchless environment.

School cafeterias tackle challenges such as student safety, food handling safety, meal patterns, and cafeteria cleaning logistics. Disinfecting and maintaining clean equipment or areas is a major task to prevent cross-contamination which could result in an allergic reaction. Mold, mildew, and bacteria are dangerous in any kitchen; however cafeterias combat microbial invasions by using all-natural antimicrobial products such as utensils, dish ware, ladles, and tongs. Natural antimicrobial compounds prevent growth in cell reproduction, obstruct cell respiration and starves the bacteria creating a clean and safe food environment (All-Natural Antimicrobial Utensils, 2020). Breath or sneeze guards offer superior safety and sanitation that reduce the spread of possible transmittable germs or airborne droplets. School cafeterias need other equipment to ensure proper operation of meals, for instance dishwashers, food processors, cutting boards, serving trays, and utility carts. Each kitchen item should be meticulously selected to achieve the desired outcome while saving time and money. Products must provide safety to workers and students, in addition to being cost effective, long-lasting, and reusable.

B. Facilities

School cafeterias are the location where students obtain meals as well as have social interaction. Designing a variety of seating options that are inviting and aesthetically pleasing to students increases participation in school nutritional programs. Hundreds of students are served in school cafeterias within a limited amount of time and space, consequently creating two serving lines or multiple serving stations to necessary to ease congestion. Maintaining efficient operational processes in addition to energy saving equipment helps sustain the budget and cafeteria environment. Ensuring there is adequate room for supplies to be properly stored

in a temperature control area reduces food spoilage. Thus, it is essential to select the latest innovated equipment available for maximum production throughout the structural design of any cafeteria kitchen (Why Is Good Kitchen Layout Important for Restaurants). Healthy meals begin with a well-organized operational plan that consist of space for new food technologies and equipment. Crafting a comfortable environment where children can obtain a healthy nutritious meal remains to be the overall objective. (School Nutrition Standards. *School Nutrition Association, 2022*).

Methodology

A literature review was conducted to examine the types of meals served at schools and the types of equipment used in the preparation of school meals. The APS district provides food service for 77 schools, including 13 charter schools (McCray V, 2019). Thirty two Pre-Health audits were conducted of foodservice facilities within the district. I shadowed four different Compliance Specialist covering four different regions in APS district.

Pre-Health audits were conducted to assess actual compliance or noncompliance with operational procedures performed by APS cafeteria employees. Observations were made and analyzed as a means to develop fundamental skill sets which enhance operational procedures. Educating, training, or retraining employees with proper operational procedures will improve efficiency, production, equipment maintenance, and food quality. Development of an equipment manual based on the audit results and Department of Public Health-Environmental Code will give employees the essential skills needed to identify deficiencies or malfunctioning equipment instantly. Improved technical skills and workplace safety allows employees the

ability to successfully obtain their performance goal of preparing healthy meals for the students. The manual consist of information pertaining to cold units such as Walk-in Freezers or Coolers, Cold Pass Thru units, Milk Boxes, and Hot Pass Thru units. It describes Non-compliant operational procedures found during the Pre-Health Audit then provides corrective training and educational information to enhance technical skills.

The purpose of the audit is to inspect the operational procedures of the facilities; maintenance and functioning status of equipment, the safety conditions of the kitchen environment, personal hygiene of food service workers, and organization/safety of food stored in dry storage, walk-in coolers, and freezers, as well as food preparation and the quality of meals served to students. The overall goal is to serve nutritiously balanced meals every day to the students. This is accomplished only if the entire organization is working properly and efficiently on all levels.

An audit typically takes 60 minutes to perform; visual inspections are photographed and recorded with audit software called I Auditor. The federal government and state guidelines require compliance permits such as Serv Safe, Food Service permit, and City of Atlanta, Department of Watershed Certificate must be visible at the front of the cafeteria serving line. Local agencies require the menu with pricing to be posted. Other documentation that must be viewable is a Justice for All and CPR poster, the latest facility health score, and the custodian's name. Photographs were taken and recorded of the required certificates through I Auditor.

The gas is recorded as on, Ice machines are inspected for operation, photographed and noted if on or off. Garbage is reviewed for proper storage. Employees were inspected for

hairnets, personnel hygiene, jaundice, discharges from eyes or nose, long nails, or eating while working. Compliant or noncompliant was recorded in I Auditor.

Equipment was inspected for cleanliness, working status, and temperature checks. Per policy, temperatures must be taken from individual thermometers that are placed inside every unit. This is a secondary measure to ensure equipment is working correctly, because temperatures gauges on the units could be broken. Temperature logs were maintained and posted every morning by employees on walk-in coolers, freezers, and holding equipment after they were turned on. Temperature ranges for the walk-in coolers is around 35°Fahrenheit, freezers fall within (-20°- 0°) Fahrenheit, cold holding units should be 30° Fahrenheit or below, and hot holding units should be 160°-180° Fahrenheit. Each log sheet was reviewed, photographed, and recorded through I Auditor as compliant or noncompliant with a corrective action note. If a unit was outside of set temperature range, the vendor was called in immediately to make repairs. Milk boxes were inspected for cleanliness, temperature log was reviewed, and expiration dates were reviewed along with temperature checks on individual milk containers was viewed and recorded in I Auditor. If the milk temperature was greater than 40; it was removed from the line and placed in the freezer until it was within the correct range. A noncompliant result was recorded in I Auditor with corrective action notes. If the temperature was within range compliant results were recorded.

Walk in coolers and freezers were inspected for condensation, leaking water, properly working fans, recorded temperatures, received or open dates, properly posted signs, food labeled and sealed, 72 hour trays, employee area for personal food items, and food stored according to regulations. Noncompliant issues were photographed and recorded through I

Auditor with corrective action notes. Compliant status were noted as such and recorded through I Auditor.

Food was inspected in dry storage for cleanliness, dented cans, received, opened, and expiration dates, as well as open food being properly sealed. The temperature within the dry storage area should not be higher than 80° Fahrenheit. Maintaining dates is essential in order to follow the policy of first in-first out and to ensure food is used before the expiration date. Food shouldn't be stored on the floor; if it was the manager was asked to correct the issue. Dented cans should be placed on a designated labeled shelf. Not using dented cans is crucial due botulism, which could develop and cause food poisoning. Cans were assessed for dents, dates, and proper storage location of dented cans. Photographs were taken, the incidence was recorded as compliant or noncompliant, and notes were added to include immediate corrective action through I Auditor. The United States Department of Agriculture (USDA) through (NSLP) purchases foods items for meal programs in public and nonprofit private schools (Food and Nutrition Service, 2019). These shipments must be identified by a posted sign, labeled with orange stickers, and stored separately due to federal regulations. During the inspection photographs of missing dates, food not adequately closed or improper storage of USDA products were taken and recorded as compliant or noncompliant through I Auditor. Foodservice managers were asked to correct errors, if a sign was missing or if USDA food wasn't stored properly.

Hand washing sinks were inspected for water temperature, available soap, paper towels, and waste baskets. The temperature in the sinks should reach 100° Fahrenheit in order to destroy oil that harbors bacteria on workers hands. Each sink was tested for accuracy.

Documentation of results was recorded and photographed through I Auditor, notes of corrective action was included. If the temperature needed adjustments, the foodservice manager submitted a work order with facilities.

Throughout the district dishes and cooking utensils are washed by hand and air dried. Each item must be sanitized with Ecolab SmartPower Sink & Surface Cleaner. Sanitizing sinks and red buckets were inspected for proper pH levels with Ecolab pH strips. If there was no reaction activity with the strip, a vendor from Ecolab was called to make a cite visit. The serving line and counters that are in use must have a red and green bucket present for cleaning purposes. The red bucket contains sanitizing solution in it and a cleaning rag, the green bucket has detergent. Buckets and counter surfaces were photographed and recorded as compliant or non-compliant in I Auditor along with corrective action notes.

Bathrooms were inspected for cleanliness, and operational status. Compliant or non-compliant results were recorded with corrective action notes and photos.

The plumbing, floors, and ceilings were visually inspected for cleanliness, proper operation, and covered lights. Results were photographed and recorded as noncompliant or compliant in I Auditor with specific notations. If the floors needed pressure washing, lights bulbs needed to be replaced or covered, the manager submitted a work order to facilities for corrective action.

Food prepared for the line was photographed, temperature checked, and confirmed for accuracy by the posted menu. Managers must prepare meals according to planned menus unless given permission to switch or alter. Hazard Analysis Critical Control (HACCP) logs must be recorded daily of food prepared and served for breakfast and lunch. The log contains temperatures of food placed on the line, which was reviewed, photographed, and marked as

compliant or non-compliant in I Auditor. Salad bars are required along with two additional fruit options. The bar is photographed and recorded in I Auditor. Temperature checks of two items from the bar was required and recorded. If it fell above 40° Fahrenheit range, the item was placed in a cold holding unit or freezer to bring the temperature down. Noncompliant was recorded with photographs and corrective action notes. If temperatures were correct, a compliant result was recorded with photographs. Hot meals must have two meat entrees, two vegetarian entrees, whole grains, and vegetables. Inspections required three entrees to be temperature checked and recorded in I Auditor. If temperatures fell below the required range, the entrée were placed in a hot holding unit or oven until it reaches the proper temperature. Noncompliant results would be recorded in I Auditor with corrective action notes. If temperatures were correct compliance results were recorded, both scenarios were photographed in I Auditor.

Pest control logs are kept in a red binder that indicates when the vendor last sprayed for pest. The facility was inspected for signs of rodents, roaches, flies, gnats. If there was evidence of pest; the vendor was called to eradicate the situation. Compliant or non-compliant results were recorded in I Auditor with photographs and corrective action notes.

Grease trap logs are kept in a green binder with current certificates for review of maintenance.

Results of each Pre-Health audit was reviewed with the Manager in a respectful manner. Some incidences were able to be corrected instantly on cite, which resulted in no penalties being recorded. Other corrective actions were discussed with instructions of how to correct. Each inspection is filed in I Auditor with notes and a percentage score is attached.

Conclusion

The main objective for the nutrition department at APS is to deliver nutritious and safe meals to each student in the district. This is a daunting task that requires multi levels of workmanship from the entire department. Pre-Health audits give management an operational advantage by continuously inspecting foodservice facilities with a keen eye. Management is able to resolve issues before they develop into major problems. Inspections are detailed and intricate that exposes the operational procedures of a foodservice facility. As a result foodservices workers enhance daily procedures and increase scores with State Health Inspections. Understanding how every individual entity in the kitchen setting intertwines into the overall picture is important. Kitchen equipment is instrumental and necessary to achieve a nutritious meal, but the equipment must be supported by proper maintenance, plumbing, working gas, and a rodent free environment. Consistently recording temperatures is very important, because it's your first indication that a piece of equipment isn't working properly. Not identifying a problem with a holding unit, steamer, walk-in cooler or freezer would be detrimental to overall function of the facility. It could prevent spoilage of thousands of dollars' worth of food and bacteria growth. Food temperatures between 41 - 135° Fahrenheit is when bacteria can develop and cause food poison. Foodservice workers safety could be jeopardized when equipment isn't working properly. Rodents are a health hazard in food, however more dangerous with kitchen equipment. They chew on electrical cords, rubber, or nest inside the units, which would cause thousands of dollars in damage with the equipment, food and the facility itself.

Conducting inspections of the overall foodservice facility is essential for a safe and healthy environment. Maintaining operational procedures provides safety, structure and guidance when utilizing foodservice equipment. The functionality of equipment is imperative for production and providing healthy nutritious meals throughout the school district.

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Atlanta Public Schools Equipment Training Manual
For
Cafeteria Workers

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Purpose:

This manual will provide cafeteria workers with the necessary skill sets to ensure food is safe, healthy, and prevent cross contamination of food-borne illness. Inspecting and maintaining kitchen equipment is a necessary essential to prepare and serve nutritious meals.

Objective:

The Pre-Health Inspection is an assessment tool used to improve and streamline operational procedures in Atlanta Public Schools (APS) school kitchens. Proper maintenance of equipment improves efficiency, operational production, and reduces overall financial cost. Poorly maintained equipment can lead to food contamination, bacteria growth, and food borne illnesses. Safe and modernized equipment enables workers to prepare healthy and nutritious meals to the meet local health department standards in school districts.

Method:

Inspections conducted from September 14, 2022 - October 26, 2022, revealed several violations such improper temperatures in pass thru units, walk-in freezers & coolers, and food on the serving line was not at required temperature. All of which are critical mistakes that could cause bacteria growth, food contamination or illness. Diagram 1 Pre-Health Inspection Violations found with equipment during inspections of APS kitchen facilities.

PRE-HEALTH INSPECTION VIOLATIONS

SCHOOLS	NON-COMPLIANT EQUIPMENT				
	WALKIN COOLER	WALKIN FREEZER	MILK BOX	COLD PASS THUR	HOT PASS THUR
DAVID T. HOWARD		Ice buildup door/hinge			
DREW CHARTER				Not holding temp	
HERITAGE ACADEMY		Ice buildup under fan			
HOLLIS INNOVAT ACAI	Not work/high temp				Not work/low temp
M. A. JONES		Ice buildup door/floor			
MORNINGSIDE ELEM		Ice buildup under fan			
PARKSIDE ELEMEN			Overcrowded		
S ATLANTA HIGH			Condensation Temp high		
WESLEY INTERN ACAD		Not freez/high temp			

Diagram 1- Pre-Health Inspection violations.

Walk-In Freezer:

The list shows several schools had issues with ice buildup in their Walk-in freezers. Ice buildup is an indication the unit is not working properly. It creates a hazardous situation for cafeteria workers, where they might slip and fall. Condensate water must never be permitted to drip on the Walk-In floor. (1). Several reasons could be possible such as the fans are not blowing air, door not closing, or the heater cable has gone out. If the situation is not addressed, it could lead to thousands of dollars of food being destroyed or allowing bacteria to grow. Condensation or Ice buildup around doors may indicate leakage or heater failure. Contact a serviceman immediately (1). The temperature range for a freezer should remain in between (-20° - 0°F). To properly maintain a freezer or cooler unit, consistently recording the temperature must be conducted. Tracking temperatures is a quick visual observation that the unit is not operating properly. When equipment fails to perform correctly the staff is not able to produce healthy, safe, and nutritious meals for the students.

Walk-In Cooler:

Walk-in coolers are a necessary component for a cafeteria kitchen to produce healthy and nutritious meals for students. Each unit must be energy efficient to reduce cost and able to maintain proper refrigeration to safely store fresh produce. Food for consumption must be stored at a consistent temperature range of (35°- 31°F). Food stored at proper temperature slows the growth of dangerous bacteria. During the inspections units were recorded as being outside of the standard range. This could be because the doors were left open for an extended period of time, allowing warm/moist air to enter the unit. When doors are opened for extended periods of time, frost can form on the ceiling and floor due to the excessive condensation of warm moist air inside the walk-in (2). Parts of the door seal could be malfunctioning and the units needs to be repaired. The quickest way to visually observe the functionality of a walk-in refrigerator is to consistently monitor and record the temperature of the unit. APS utilizes individually placed thermostats in the unit, as opposed to the internal manufactory installed thermostat. Identifying temperature fluctuation early will prevent thousands of dollars of food from spoiling and lost revenue.

Cold Pass Thru:

A Cold Pass Thru is a refrigerator with two doors that allows food to accessible on either side. Food is prepared in the kitchen and placed in the unit then workers on the serving line can pull to serve on the line. It reduces the time cold items are exposed to hazardous temperatures in the kitchen, in addition to enhancing serving lines. Temperature range for a cold holding unit is below 30°F when in operation, the unit is turned off after meals are served. During one inspection cold tuna salads were placed on the line from the unit. The audit included temperature checks on several of the salads, which resulted as 52°F. The salads were placed in the freezer until it reached 40°F. A second tray from the pass thru was placed on the line, again the temperature was too high. As a reference cold food on the serving line must be below 40°F. The audit team immediately checked the temperature of the pass thru with the thermometer inside the unit to determine it was not working properly. It is imperative to monitor and record temperatures consistently, because this is the first step to determine if equipment is properly

working. This one action prevents the possibility of bacterial growth or food borne illness from developing in prepared food and being served on the line. It averted a financial dilemma by having to destroy food and a lunch time crunch by not having a menu item unavailable.

Hot Pass Thru:

A Hot Pass Thru is an oven with two doors that allows food to be accessible on either side. Food is prepared in the kitchen and placed in the unit so workers on the serving line can easily replenish food on the line. Temperature ranges for hot holding units is 160°-180°F when in operation, units are turned off after meals are served. Temperature checks with food on the serving line was conducted as part of the Pre-Health inspection. One example a menu item temped at 118°F, it was removed from the line because it was below required standard temperature. After a period of time the menu item was reheated, but was still below acceptable temperature range. The audit team observed the recorded daily temperature, which was compliant; however the thermostat inside the unit read below the require standard range. It was determined the hot holding unit was not operating properly. It is imperative to monitor and record temperatures consistently, because this is the first step to determine if equipment is properly working. This one action prevents the possibility of bacterial growth or food borne illness from developing in prepared food and being served on the line. By identifying the deficiency with the Hot Pass Thru unit it averted a financial dilemma of not having to destroy food or not having a menu item unavailable.

Milk Box:

APS district serves (Low-fat Chocolate or White) milk to their students. This is a requirement as part of the USDA meal service program, to encourage students to drink more milk and less sugary drinks. Milk boxes are used to stored milk on the serving line, it allows the student access to make individual selections. The temperature range is 36°-40°F. It was observed during several inspections that the temperature was outside of the standardize range, causing the milk not to be cold. The main reason this occurs is the door remains open an extended period time, even after a class completed their selections. Another observation was identified when the box had too much milk stored inside. This prevented the unit from circulating air properly thru out the unit. Good air flow in the milk box unit is critical (3). Refrigerated air off the coil must circulate down the back wall (3). These issues that can be corrected immediate by changing operational procedures.

Corrective Action Measures

Walk-in Freezer:

There are warning signs such ice buildup, temperatures outside of standard range, or stagnant water inside of a unit. The best mechanism to prevent hazardous situations is for employees to be proactive. Consistently, monitoring temperatures, performing maintenance/cleaning the unit, and notating improper operational changes is the first line of action. Employees should make sure the door is closed properly and try not to leave it open for an extended period of time. Other measures should include installation of curtain strips to prevent cool air from escaping when the door is open. Always check and record temperatures from the thermostat that was placed inside of the unit and the unit container to make sure it's still frozen. Abnormal or unsafe conditions you should be reported to your equipment maintenance team to have this condition corrected (2).

Walk-in Cooler:

There are warning signs such ice buildup, temperatures outside of standard range, or stagnant water inside of a unit. The best mechanism to prevent hazardous situations is for employees to be proactive. Consistently, monitoring temperatures, performing maintenance/cleaning the unit, and notating improper operational changes is the first line of action. Employees should make sure the door is closed properly and try not to leave it open for an extended period of time. Other measures should include installation of curtain strips to prevent cool air from escaping when the door is open. Always check and record temperatures from the thermostat that was placed inside of the unit. Abnormal or unsafe conditions you should be reported to your equipment maintenance team to have this condition corrected (2).

Cold Pass Thru:

A Cold Pass thru is vital to operation, it enhances efficiency of the serving line and productivity with cafeteria staff. Monitoring the temperature is very important and necessary on a daily basis. The danger zone for food to develop bacteria growth and or food borne illness is between 41°-145°F. Employees should make it a practice to record temperatures of all food immediately after removing it from a unit. In doing so, workers are instantly alerted to a problem either with the unit or the food. Food should be place in the freezer or cooler to reduce the temperature before serving. The temperature of the unit should be observed by the thermostat inside the unit. If it falls outside of the standard range, discontinue use and report immediately to the Cafeteria Manager.

Hot Pass Thru

A Hot Pass thru is vital to operation, it enhances efficiency of the serving line and productivity with cafeteria staff. Monitoring the temperature is very important and necessary on a daily basis. The danger zone for food to develop bacteria growth and or food borne illness is between 41°-145°F. Employees should make it a practice to record temperatures of all food immediately after removing it from a unit. In doing so, workers are instantly alerted to a problem either with the unit or the food. Food should be placed in the oven until it reaches 150°F or above, then placed back on the serving line.

The temperature of the unit should be observed by the thermostat inside the unit. If it falls outside of the standard range, discontinue use and report immediately to the Cafeteria Manager.

Milk Box:

Milk boxes are essential to the operation of the serving line. Employees must do regular cleaning/maintenance of the unit and monitor/record daily temperatures. It is imperative that the unit is not jammed full with milk because air cannot circulate. Closing the unit after each serving session is over will enhance temperature consistency. Maybe the last teacher in line can assist with making sure the box is closed. Inform the Cafeteria Manager when the unit develops operational faults.

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