Culinary Training Needs of School Nutrition Professionals: Perspectives from the Field

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OVERVIEW

The United States Department of Agriculture (USDA) updated the standards for foods served in child nutrition programs by introducing the Healthy, Hunger-Free Kids Act in 2010, marking significant shifts in school nutrition. According to Nutrition Standards in the National School Lunch and School Breakfast Programs (2012), schools were required to serve increased portion sizes of fruits, vegetables, and whole grains and to reduce the sodium content of meals. These standards were further revised in 2018, requiring schools to incorporate lean proteins, low-fat dairy, and limit sugar in school meals, ensuring that the meals provided were both nutritious and balanced (Child Nutrition Programs, 2018).

To meet healthier school meal standards, schools should focus on preparation methods that reduce fat, sodium, and sugar and minimize the use of prepackaged foods. This practice involves incorporating scratch cooking, preparing fresh vegetables, and cooking fresh foods daily using healthier techniques such as steaming, grilling, and roasting instead of frying. Enhancing flavor with herbs and spices, using whole grains, and opting for plant-based proteins or lean meats helps preserve nutrients and promotes student health through nutritious, flavorful meals. School nutrition professionals may lack the culinary skills to prepare appealing foods that follow the guidelines. The Kids' Safe & Healthful Foods Project (Pew Research Center, 2016) examined progress and challenges in transitioning to healthier food standards and reported that school nutrition directors identified their most common difficulties as keeping sodium below the limit (78%), meeting the whole grain-rich requirement (60%), and staying under the maximum calorie limit (54%). Culinary training can help school nutrition professionals learn to prepare student-accepted, nutritious meals that reduce food waste and boost student participation.

This study aimed to (1) identify culinary training topics of highest priority by school nutrition professionals, (2) determine the preferred training duration, delivery methods, time of day, and month of the year, and (3) explore whether responses differ according to professional job titles.

METHODOLOGY

Survey Design

The researcher developed the survey with input from two culinary experts at the Institute of Child Nutrition (ICN) from the Culinary Institute of Child Nutrition (CICN). The survey aimed to identify culinary training topic needs across four key areas: (1) food preparation, (2) menu development, (3) recipe development, and (4) operations. Additional questions were included to identify preferences for training logistics, including training length, delivery method, time of day, and time of year for training sessions. Participants were asked to rate their interest in each training topic using the Likert Scale: Interested, Neutral, Disinterested, or Not Applicable. Demographic questions were included to obtain relevant information about the participant's work experience in school nutrition programs.

Participants were instructed to complete the survey based on their specific job titles within the school nutrition program. These job titles were grouped into three categories: School Nutrition Administration (e.g., School Nutrition Director/Supervisor, Manager, Supervisor Chef), School Nutrition Staff (e.g., Professional/Worker, Chef, Menu Planner),

and State Agency (SA) Professional. School nutrition administration respondents were asked to answer based on their staff's needs. School nutrition staff were asked to respond based on their perspectives, and SA professionals were asked to respond based on the broader needs of their state.

An expert review panel of subject matter experts (SMEs) was invited via email to validate the survey for content and face validity. Non-probability purposive sampling was used to identify SMEs based on their knowledge of the survey topic and willingness to participate. The expert panel (N=14) included members of the ICN, CICN advisory council, school nutrition directors/chefs, an SA director, and USDA Food and Nutrition Service (FNS) representatives. The SMEs were invited via email, which included a consent form, the survey link, and a guided review form to evaluate the survey. Participants were asked to complete a consent form, the survey, and the evaluation form and return the consent and evaluation forms via email. The draft survey was revised based on the input from the expert review panel.

Participant Recruitment and Survey Distribution

This study's target audience included a nationally representative sample of school nutrition professionals and SA professionals. The sampling framework included school nutrition professionals and SA professionals listed in the ICN's database of contacts, working in all seven USDA regions (Mid-Atlantic, Midwest, Mountain Plains, Northeast, Southeast, Southwest, and Western) and from school districts of various enrollment sizes (small, medium, and large). The only criteria for participant selection were involvement in a USDA FNS Child Nutrition Program and willingness to participate in an online rapid response survey. The researcher focused on promoting the survey to the intended audience, aiming to collect as many responses as possible within the predetermined period.

The survey and a consent form were distributed via an email invitation that included a survey link. The ICN's marketing and communications manager emailed all 243,061 school nutrition program contacts in the ICN's database. The survey opened on May 13, 2024, and closed on June 10, 2024.

Data Analysis

The data were analyzed both across all participants and by differentiating responses based on job titles within school nutrition, as staff in various roles may have distinct responsibilities, skills, and training needs. This approach allowed for comparisons between the overall group and specific job roles, helping to identify targeted training needs. Descriptive statistics were used to characterize survey responses.

RESULTS

Participant Response Rate

Of the 243,061 school nutrition program contacts in the ICN's database, 88,924 individuals opened the email invitation, with 2,715 proceeding to open the survey. Of those, 2,417 initially consented. However, 692 of those who consented did not complete any additional survey questions, resulting in 1,725 fully engaged participants (71.4%).

Demographics

Demographic information was collected to understand the background of the survey participants better. They were asked about their job title, years in current position, district size, and USDA FNS region. The largest groups of survey participants were school nutrition directors/assistant directors (36%) and school nutrition managers/supervisors (33%). The "Other" job titles (18%) included administrative positions, cooks, childcare providers, and teachers. Over half of the respondents have been in their current role for either 1–5 years (31%) or 6–10 years (23%). The district size distribution indicates most respondents came from districts with less than 1,000 students (31%) or 1,000–5,000 students (25%). Finally, the geographic distribution of participants shows that the Southwest, Midwest, and Southeast USDA FNS regions represented the most, 28%, 20%, and 19%, respectively.

Preferred Training Topics

The survey results for preferred training topics and training logistics are presented in two ways: first, across all participants, and second, differentiated by participants' job titles (School Nutrition Administration, School Nutrition Staff, and SA professionals, as previously defined). This approach provides both an overall view of the data and insights specific to each job title group.

The results for culinary training topics—categorized into food preparation, menu development, recipe development, and operations—are presented based on participant interest ratings across job titles within the school nutrition program.

Food Preparation

For the food preparation topics, the results indicate that 82% of all respondents showed the highest interest in increasing the variety of vegetables and proper preparation for greater appeal. Other top areas of interest include food preparation techniques that reduce sodium and sugar while maintaining flavor and appeal (78%), speed scratch-based food production – adding fresh ingredients to ready-made products (78%), and quantity food production (76%). The topic that generated the least interest was plant-based meals, with only 33% of respondents expressing interest.

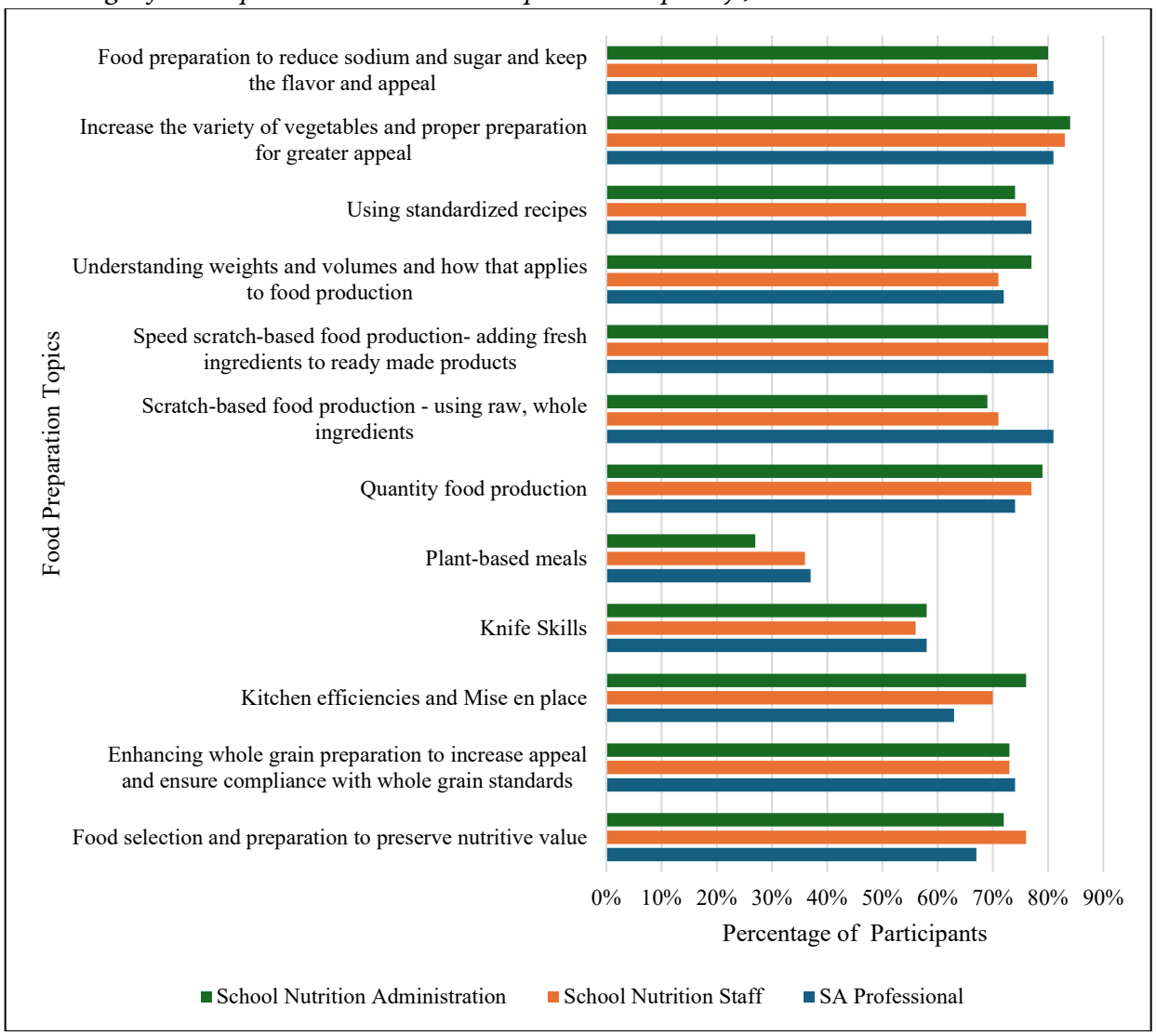
When analyzed by job titles, the results were consistent across job titles, as shown in Figure 1. A strong majority, more than 82% of school nutrition administration and school nutrition staff, expressed interest in increasing vegetable variety and preparation for greater appeal. Additionally, 80% showed interest in incorporating speed-scratch cooking by adding fresh ingredients to ready-made products, while 79% were interested in reducing sodium and sugar in food preparation. School nutrition administration indicated a strong interest in training on quantity food production (79%), understanding weights and measures (77%), and kitchen efficiencies (76%). Whereas school nutrition staff indicated an interest in quantity food production (77%), preserving nutritive value (76%) and using standardized recipes (76%).

State agency professionals indicated the topics of greatest interest of equal importance were increased variety of vegetables and preparation for greater appeal, speed scratch cooking by adding fresh ingredients to ready-made products, scratch-based food production-using raw, whole ingredients and food preparation to lower sodium and sugar at 81%. Additional topics of greatest interest were using standardized recipes, 77%, and quantity food production, 74%.

The topic of the least interest was consistent among all school nutrition program job titles: plant-based meals (less than 37%). This indicates that the main priorities and areas of low interest were shared across job titles in the school nutrition program.

Figure 1

Percentage of Participant Interest in Food Preparation Topics by Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

Menu Development

Regarding menu development topics, 78% of respondents expressed the most interest in menu planning for efficiency. This was closely followed by menu planning for an added variety of foods to meet guidelines (75%), menu planning based on current trends (74%), and menu planning for cost control (72%). While more than half of the participants (58%) expressed interest in menu planning for culturally inclusive meals, it garnered the least interest compared to the other topics.

When the results were differentiated by the participants' job titles, the results of the School Nutrition Administration reflected the trends seen in the overall analysis (see Figure 2). These participants indicated the most interest in menu planning for efficiency (81%), followed by menu planning for a variety of foods to meet guidelines (77%), and an equal interest in menu planning for cost control (75%), and menu planning for current trends (75%). They also prioritized menu planning based on available equipment, labor, and inventory (74%).

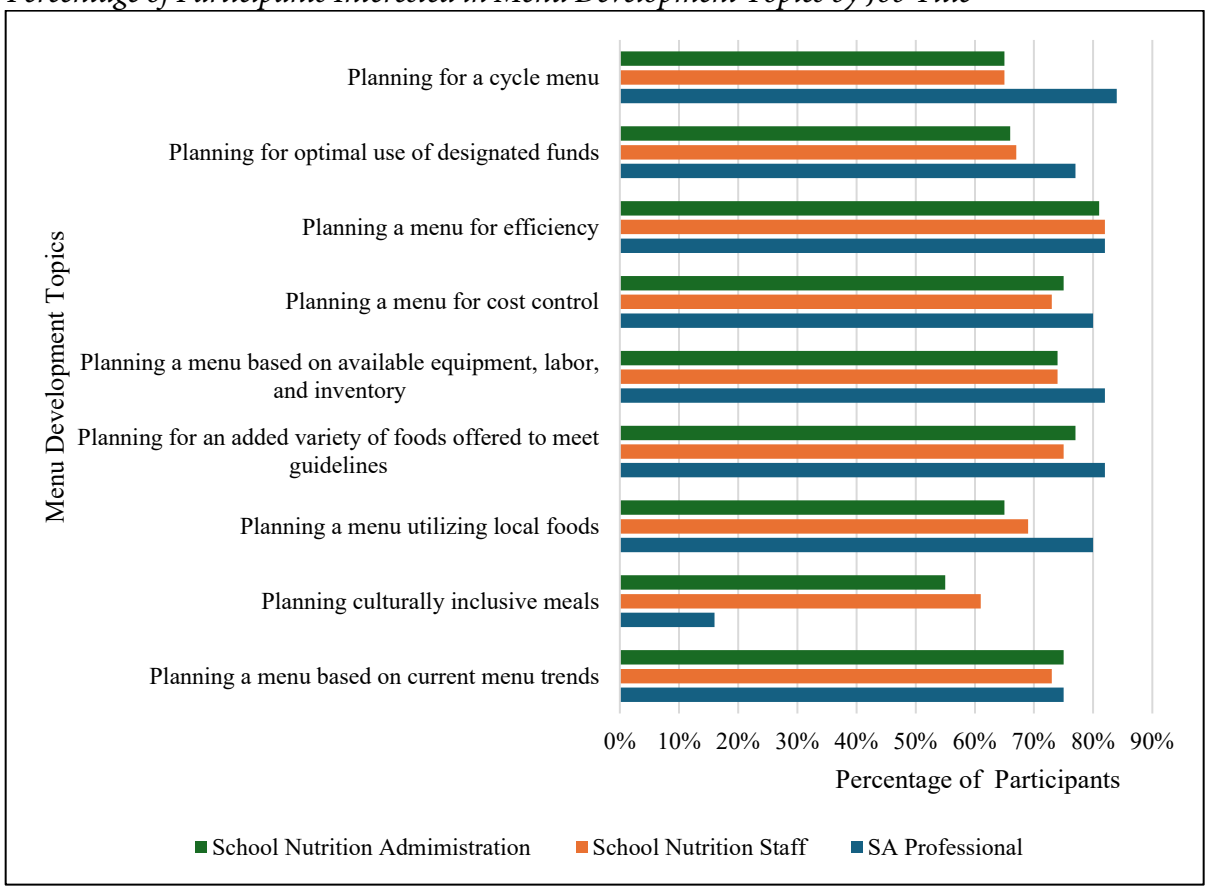
School nutrition staff had similar priorities but ranked them slightly differently. They expressed the most interest in menu planning for efficiency (82%), followed by menu planning for a variety of foods to meet guidelines (75%). Notably, menu planning based on available equipment, labor, and inventory was ranked higher (74%) by this group than by the directors, with menu planning for cost control and current trends tied in interest (73%).

State agency professionals, however, had different priorities. They showed the most interest in planning a cycle menu (84%), followed by a tie between menu planning for efficiency, menu planning for a variety of foods to meet guidelines, and menu planning based on available equipment, labor, and inventory (82%). After that, menu planning for cost control and menu planning for local foods (80%) were tied in their level of interest. Planning culturally inclusive meals received the least interest across all school nutrition program job titles (16%–61%).

While menu planning for efficiency and menu planning for a variety of foods to meet guidelines were top priorities across all job titles, school nutrition administration and school nutrition staff emphasized equipment, labor, and inventory training. In contrast, SA professionals focused more on cycle menus and local foods, reflecting distinct operational needs.

Figure 2

Percentage of Participants Interested in Menu Development Topics by Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

Recipe Development

The results of the recipe development topics reveal that 84% of the respondents expressed the highest interest in recipes to meet student preferences. Other topics of interest include enhancing recipes through flavor development (82%) and training staff on new recipes (77%). Although more than 65% of participants showed interest, the topics that generated the least interest were student taste testing (68%), standardized recipe development (68%), and addressing special dietary needs (67%).

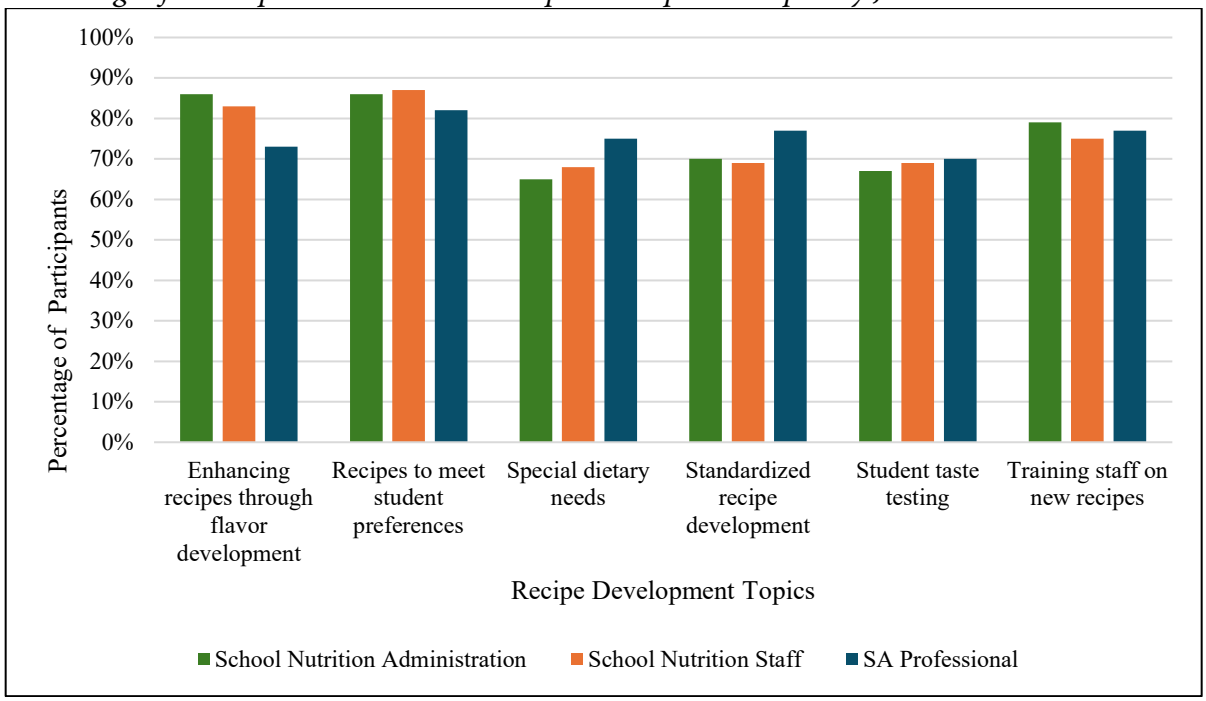
When the results were differentiated by participant job titles, the findings corresponded with the general analysis (see Figure 3). School nutrition administrators and school nutrition staff consistently expressed the highest interest in the training topics: recipes that meet student preferences (87%), enhancing recipes through flavor development (85%), and training staff on new recipes (77%). Similarly, SA professionals were most interested in the training topics: recipes that met student preferences (82%), training staff in new recipes (77%), and standardized recipe development (77%).

Special dietary needs (66%) were the topics of least interest for school nutrition administration and staff, followed by student taste testing (68%). Student taste testing (70%) and enhancing recipes through flavor development (73%) were the topics of least interest for SA professionals.

All job titles prioritized recipes that met student preferences and trained staff on new recipes, but school nutrition administration and school nutrition staff placed more emphasis on flavor development, while SA professionals showed stronger interest in standardized recipe development. The topics of least interest varied slightly, with special dietary needs and student taste testing ranking lower across all job titles.

Figure 3

Percentage of Participants Interested in Recipe Development Topics by Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

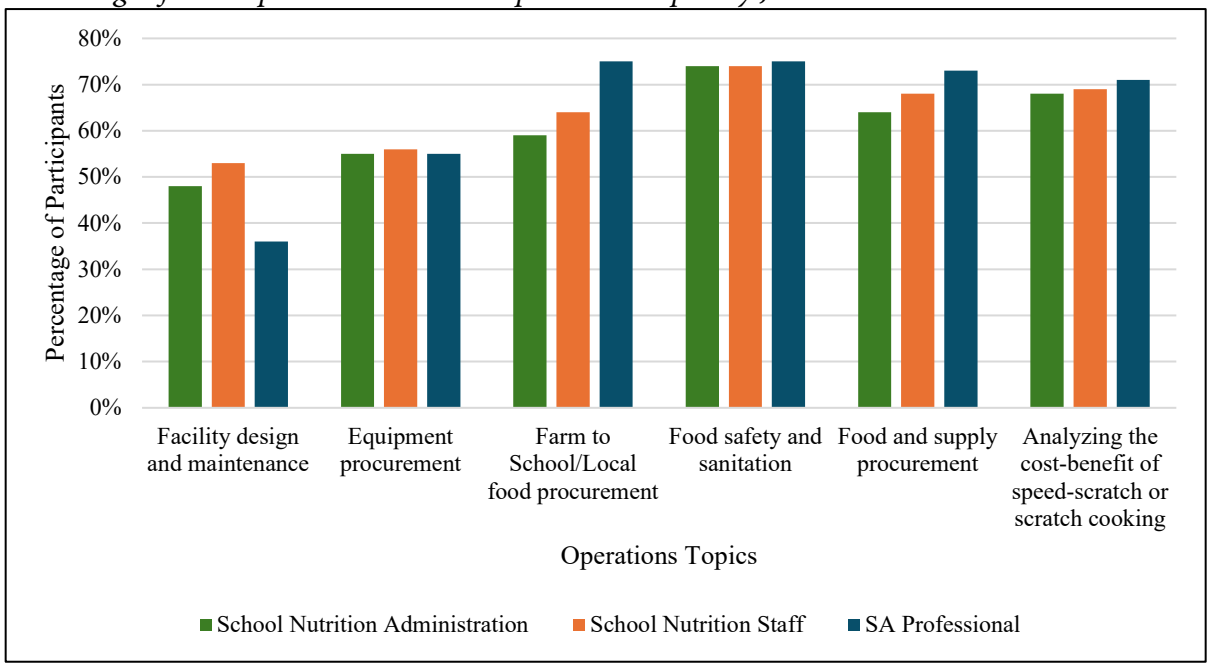
Operations

Across all participants, 74% expressed the highest interest in food safety and sanitation, followed by analyzing the cost-benefit of speed-scratch or scratch cooking (66%), food and supply procurement (64%), and Farm to School/local food procurement (60%). There was less interest in facility design and maintenance (49%) and equipment procurement (54%).

As shown in Figure 4, school nutrition administrators, along with school nutrition staff, prioritized food safety, and sanitation (74%), cost-benefit analysis of speed-scratch or scratch cooking (69%), food and supply procurement (66%), and Farm to School/local food procurement (62%). In contrast, SA professionals showed the most interest for their state in both food safety and sanitation (75%) and Farm to School/local food procurement (75%), followed by food and supply procurement (73%), and then cost-benefit analysis of speed-scratch or scratch cooking (71%). Across all job titles, facility design and maintenance and equipment procurement training were the least favored topics (less than 53%).

Figure 4

Percentage of Participants Interested in Operations Topics by Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

Preferred Training Logistics

Survey participants were asked to rate their preference for (1) training delivery methods, (2) training duration, (3) training time of day, and (4) month for training. The questions were formatted to allow participants to select multiple options.

Training Delivery Method

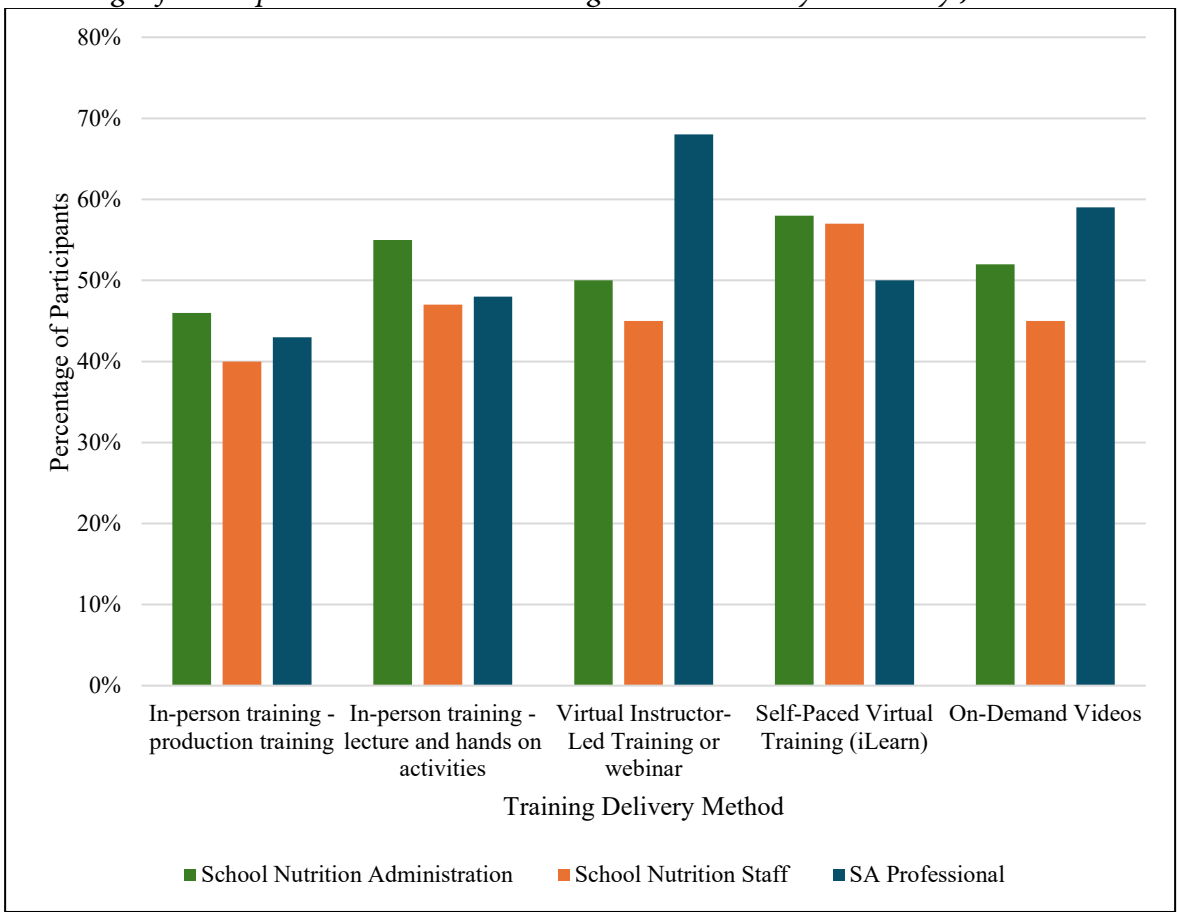
The survey results revealed varied preferences among school nutrition professionals for different training delivery methods. Self-paced virtual training, such as iLearn, was the most preferred option, with 56% of respondents expressing interest. In-person training that combines lectures with hands-on activities was also well received, with 53% of respondents favoring this traditional format. Conversely, on-site production training was the least preferred (43%).

When the results were broken down by participant job titles (refer to Figure 5 below), the preferred choice among school nutrition administration and school nutrition staff was Self-Paced Virtual Training (iLearn) (57%). On the other hand, SA professionals prefer Virtual Instructor-Led Training or webinars, with 68.2% indicating this as their preferred method.

In contrast, in-person production training, which takes place during meal preparation, is the least preferred option across all groups. This suggests a growing inclination towards virtual and self-paced learning over hands-on, in-person training for these job titles.

Figure 5

Percentage of Participants Interested in Training Method Delivery Method by Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

Training Duration

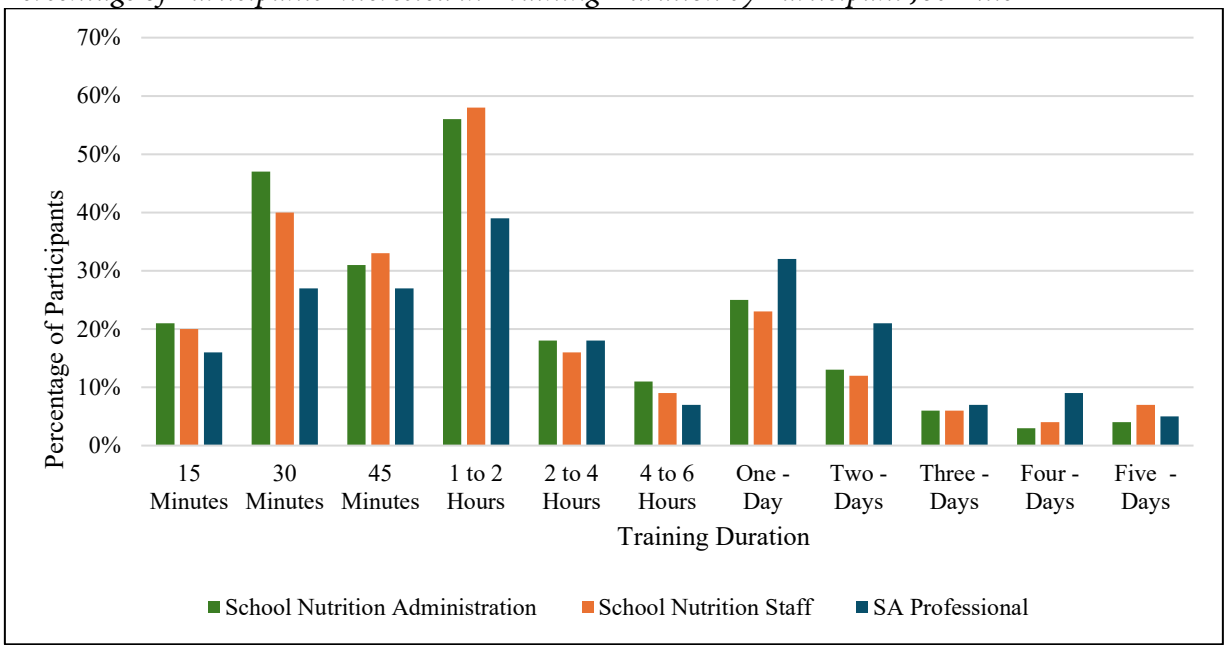
The overall survey results indicate a strong preference for shorter training sessions. The most favored training duration is 1 to 2 hours, preferred by 54% of respondents, followed by 30-minute sessions, preferred by 42% of respondents.

Figure 6 below illustrates the overall preferences for training duration according to participant job title. The findings aligned with the overall analysis when analyzed according to participant job titles. Training that lasted 1 to 2 hours was the most preferred among school nutrition administration (56%) and school nutrition staff (58%). Shorter sessions, such as 30 minutes, are the second most favored option among school nutrition administration (47%) and school nutrition staff (40%). Among SA professionals, 30-minute sessions garnered the most interest (39%) followed by one-day sessions (32%).

Three- to five-day sessions are the least preferred training duration across all job titles, with less than 9% of respondents in each group favoring these extended periods.

Figure 6

Percentage of Participants Interested in Training Duration by Participant Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

Training Time of Day

The survey results show that school nutrition professionals prefer training sessions in the late afternoon, with 46% indicating that 2 to 4 p.m. is their ideal time. Early morning sessions, between 7 and 10 a.m., are also favored by 44% of respondents.

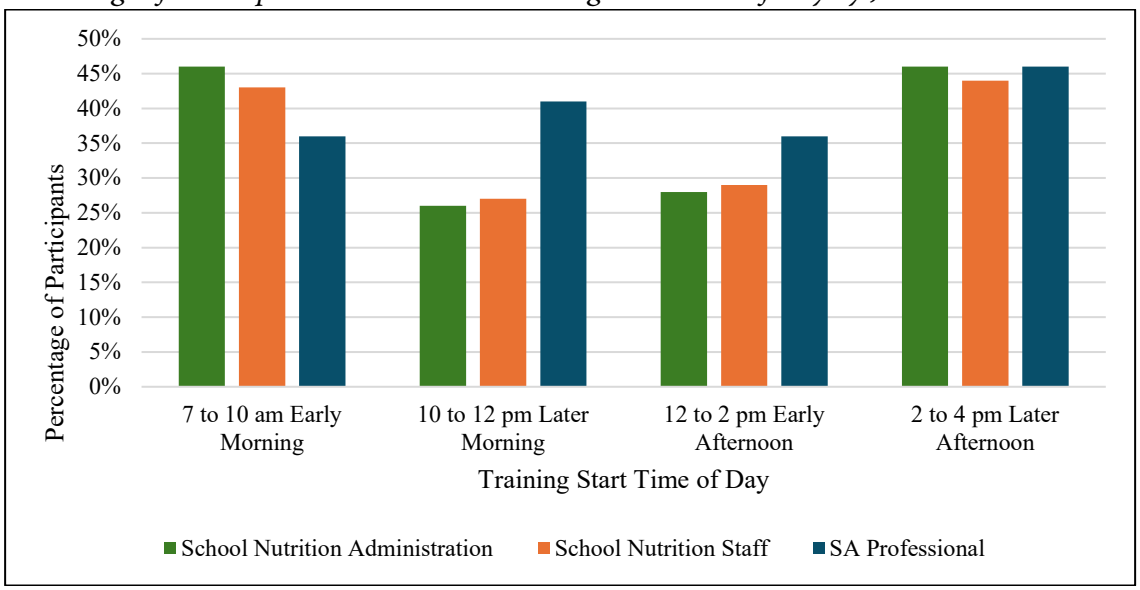
Figure 7 illustrates the preferred training start time of day by participant job title. When differentiating the results by job titles, the findings corresponded with the general analysis. The school nutrition administration

preferred the early morning (7 to 10 a.m.) or late afternoon (2 to 4 p.m.) training start time equally (46%). School nutrition staff preferred early morning (43%) or late afternoon (44%) about equally. State agency professionals preferred the late afternoon sessions, 2 to 4 p.m. (46%), followed by the late morning sessions, 10 a.m. to 12 p.m. (41%).

Aside from SA professionals, the late morning (10 to 12 p.m.) and early afternoon (12 to 2 p.m.) slots are less favored, with only 25–28% of respondents across all job titles preferring these times. This data indicates a stronger preference for either early or late-in-the-day training sessions.

Figure 7

Percentage of Participants Interested in Training Start Time of Day by Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

Training Month

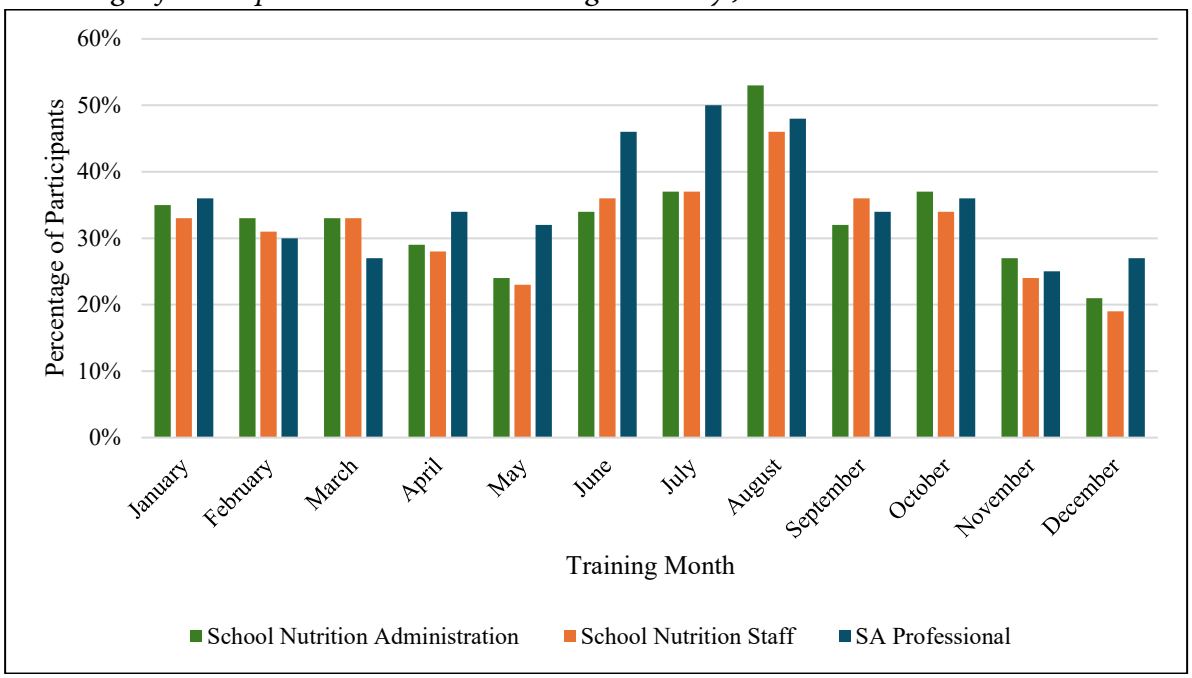
Participants indicated that August was the most preferred month to attend training (52%), followed by July (37%), June (35%), and October (35%). The least desired months were May (25%), November (26%), and December (21%).

When the results were broken down by participant job titles (see Figure 8 below), 53% of school nutrition administrators and 46% of school nutrition staff favored August. The second most popular month for training was July, with 37% of school nutrition administrators and school nutrition staff favoring that month. Conversely, SA professionals preferred July (50%) and August (48%). Other months, including June, October, and March, are moderately preferred, with around 33–36% of respondents from each group favoring these months.

In contrast, December and November are the least preferred months for training, with only 19–27% of respondents choosing these times across all job titles. This data suggests that training is less favorable during the holiday season and the end of the year and that summer months are particularly favorable for training across all job titles.

Figure 8

Percentage of Participants Interested in Training Month by Job Title



Note: Questions were not mutually exclusive, allowing participants to choose multiple options.

CONCLUSIONS

This study can help provide direction for developing culinary training for school nutrition professionals. According to the results across all school nutrition job titles, training for vegetable preparation, speed-scratch food production, and sodium- and sugar-reducing food preparation were of greatest interest. For school nutrition administration and school nutrition staff, quantity food production was also a top priority, while SA professionals emphasized the need for scratch-based food production. Training in plant-based meal preparation ranked the lowest among all job titles. The survey results indicate that the menu development training topics of greatest interest across all school nutrition job titles were planning for efficiency, expanding food variety to meet guidelines, cost control, equipment, and labor and inventory considerations. In contrast, SA professionals emphasized training for cycle menus and local foods. All school nutrition job titles shared a strong interest in training for developing recipes that align with student preferences, enhancing recipes through flavor development, and training staff on new recipes. In addition, SA professionals showed a greater interest in training for standardized recipe development. Concerning operations topics, across all job titles, training on food safety and sanitation, cost-benefit analysis of speed-scratch or scratch cooking, and food and supply procurement ranked highest. State agency professionals indicated Farm to School/local food procurement and food safety, and sanitation training were most needed in their state.

The results indicated that self-paced virtual training and in-person lectures with hands-on activities should be offered. The training should be relatively short, consisting of 1–2 hours or a 30-minute session, either late afternoon (2 p.m. to 4 p.m.) or early morning (7 a.m. to 10 a.m.). August was the best month for training, followed by June or July, while there was also interest in October.

Limitations

The survey was distributed on May 13, 2024, and remained open for five weeks through June 10, 2024, a period when schools may be winding down for the year, which may have an impact on the response rate or the completion of the survey.

Two aspects of the survey design may have limited the data collected. Participation was voluntary, and respondents were not required to complete the entire survey. Since responses were not mandatory for each question, participants could skip questions or stop at any time. Additionally, the survey lacked optional open-comment fields, which could have provided valuable insight into why participants selected certain answers.

The study's population was limited to the individuals listed in the Institute of Child Nutrition's contact database, which may not fully represent all professionals involved in school nutrition. This constraint could exclude key voices and limit the diversity of perspectives captured.

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