



Perceptions and Practices of Incorporating Student-Centered  
Menu Items in School Meals

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# Perceptions and Practices of Incorporating Student-Centered Menu Items in School Meals

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## **PERCEPTIONS AND PRACTICES OF INCORPORATING STUDENT-CENTERED MENU ITEMS IN SCHOOL MEALS**

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### **EXECUTIVE SUMMARY**

Student-centered menu planning prioritizes learners' preferences, nutritional needs, traditional and community relevance, and engagement in the design of school nutrition program offerings. In educational settings, school nutrition program menus that align with student preferences and incorporate active student input are associated with higher participation in meal programs and increased consumption. This research assessed school nutrition professionals' perceptions, best practices, and strategies for incorporating students' voices into school-based menu development and modification.

This study used a participatory research model, engaging school nutrition professionals and administrators, United States Department of Agriculture Food and Nutrition Services (USDA) representatives, and State agency staff as both expert panelists and survey participants to assess student engagement practices in school menu planning. Three subject matter experts also provided feedback and insight to the researcher at each phase of the study. The researcher conducted a literature review to develop expert panel questions to elicit more input from school nutrition professionals who actively engage students in menu planning. Ten expert panel members responded to the qualitative questionnaire. The researcher summarized the data and drafted survey questions for a national online survey to identify perceptions, strategies, and practices for selecting and incorporating student-preferred menu items that reflect their input into school nutrition programs.

The draft survey was reviewed by 15 school nutrition program administrators and staff and revised for distribution as an online assessment tool. Of the 627 survey participants who read the survey consent form, 522 school nutrition professionals agreed to participate. They provided feedback on challenges, student engagement strategies, and their perceptions of the importance of including students' voices in menu planning. This study's results highlight the best practices and strategies that school nutrition professionals implement to create and modify school menus that reflect students' preferences. Many of the food service efforts and activities align with successful strategies found in existing studies. More studies evaluating students' selection, consumption, and acceptability of menu changes based on their suggestions are needed.

## INTRODUCTION

Food shapes individuals' eating experiences and is associated with their social, health, and belief systems, as well as the benefits they derive from it. Therefore, for this study, it is important to define the social contexts that shape individuals' preferences and perceptions regarding the foods they eat. Defining these social contexts as traditional foods, regional foods, and foods associated with customs, traditions, and celebrations is used interchangeably because many groups associate these terms with their dining practices and occasions. Traditional foods are those prepared and passed down over generations, reflecting long-standing practices and historical methods of preparation (Harriet V. Kuhnlein & Olivier Receveur, 1996). In contrast, regional foods are associated with a specific geographic area and are shaped by local ingredients, climate, and agricultural practices (Sidney W. Mintz & Christine M. Du Bois, 2002). Customs and traditions refer to established practices and behaviors followed by groups and often linked to shared history or celebrations (Edward Shils, 1981). Finally, familiar foods are those individuals recognize and feel comfortable consuming, typically influenced by repeated exposure and personal experience (Leann L. Birch, 1999).

Many studies show that local and traditional foods become a part of individuals' experiences and evolve as more non-traditional foods are introduced. The traditional and regional context of food evolves as more non-traditional foods are introduced, and social meanings and values vary by age (generation), community, and geographical location.

The inclusion of traditional foods in school meals may help students embrace and celebrate sustainability, connecting it to their belief system and community (Kittle, Sucher, & Nelms, 2017). Research indicates that consuming traditional foods has positive effects on mental, emotional, and physical health, which in turn positively impact overall well-being and enhance the quality of life (Bersamin et al., 2019). This implication is also important for the inclusion of traditional and familiar foods consumed by foreign students (Blanchet et al., 2021). Therefore, it is essential to assess students' demographics within school districts and to incorporate their input into menu development.

The provision of local and traditional foods enables students to appreciate and enjoy familiar dishes that contribute to the sustainability of their living and learning environment. Research on the differences between traditional, social, and local foods served in child nutrition programs is limited, hindering efforts to meet the demand for serving healthful, favorable foods (Bersamin et al., 2019). Some studies use the terms interchangeably, while others define them differently (Sanders et al., 2022). Therefore, it is essential to consider students' preferences and perspectives. This study aims to identify the perceptions and practices surrounding the selection and incorporation of menu items that reflect the backgrounds of students served in school nutrition programs across the nation.

Student-centered menu planning has emerged as a key strategy in nutrition and foodservice research to increase student satisfaction, consumption, and overall engagement with meal programs. Unlike traditional top-down menus, student-centered approaches involve active student input and consider taste, preferences, nutrition, and behavioral drivers of food choice. Research increasingly indicates that students' involvement in menu design leads to better

nutritional outcomes and reduced waste. There are eight key factors identified in research that are crucial for student-centered menu planning:

- Student consumption and taste preferences,
- Student engagement,
- Food trends,
- Optimization studies,
- Impact assessments on participation and the success of school nutrition programs,
- Consumption and plate waste,
- Strategies for implementing student-centered menus, transparency, and
- Nutrition education.

Research shows that students often reject meals not because of inadequate nutrition, but due to a lack of preferred menu items and the addition of perceived unappealing items that do not meet their taste preferences. In one study, students reported lower consumption when foods did not match their preferences, highlighting that “items on the menu are not the preferred items” was a primary reason for lower intake (Lee, 2019). Students’ feedback is also paramount to developing and revising menus. Several studies have found that incorporating students’ input can aid marketing and menu tailoring to help them learn nutrition information, enabling them to make healthier choices. Including students' tastes, values, traditions, and trends also helps drive menu selections and consumption decisions (Lartey-Gibson, Juboori, & Schaefer, 2025; Mathews, Patten, & Stokes, 2021; Feldman, Harwell, & Brusca, 2013).

Other studies have identified formal methods for capturing students’ acceptability of school menu items. Optimization and multi-objective menu-planning methods are used to evaluate student satisfaction with menu options, costs, and sustainability. Observations of meal service activities, student participation and consumption data, and modeling studies have yielded findings that inform recommendations to enhance the nutritional quality and acceptability of school meals while minimizing trade-offs with other menu selections (Stern et al., 2023). School nutrition programs that employ strategies (Lee, 2019) to assess and adjust menu options in alignment with student preferences, food trends, engage students in taste tests, and incorporate their feedback can significantly improve participation rates and decrease food waste (Lartey-Gibson et al, 2025; Hecht et al, 2023; Lee, 2019).

### **How Including Students’ Preferences Shapes Healthful Eating Behaviors**

Considering students’ preferences in menu planning is critical to shaping healthy eating behaviors. This strategy helps to increase autonomy, acceptance, and repeated exposure to nutritious foods. Research grounded in behavioral nutrition and educational psychology shows that when students feel their opinions are valued, they are more likely to engage positively with healthy food options (Deci & Ryan, 2000).

### **Student Autonomy and Ownership**

Self-Determination Theory suggests that autonomy enhances intrinsic motivation. When students participate in menu planning—through surveys, taste tests, or advisory committees—

they experience greater ownership over food choices, which increases willingness to select and consume healthier items (Deci & Ryan, 2000). This sense of control shifts healthy eating from an imposed behavior to a self-endorsed one.

### **Increased Acceptance and Repeated Exposure**

Research on food preference development suggests that repeated exposure to foods students prefer—or helped select—significantly increases their acceptance of nutrient-dense options, such as fruits, vegetables, and whole grains (Birch & Fisher, 1998). When healthier foods align with students' taste preferences (e.g., seasoning, preparation style), students are more likely to try and repeatedly consume them, reinforcing positive dietary habits.

### **Behavioral Economics and Choice Architecture**

Studies in school cafeteria settings have demonstrated that incorporating student-preferred healthy options into menus, especially when paired with appealing presentation and placement, increases the selection and consumption of nutritious foods without restricting choice (Cohen et al., 2015). This approach supports healthier decision-making while respecting student agency.

### **Long-Term Habit Formation**

When students regularly consume healthy meals, they are more likely to enjoy healthy behaviors and perceive them as “their choice,” and these behaviors are more likely to persist over time. Research indicates that preference-based menu adjustments can reduce plate waste and promote the consumption of healthier foods, contributing to sustainable eating habits that extend beyond the school environment (Hanks et al., 2013).

Student-centered menu planning may increase meal satisfaction, boost participation in meal programs, and support healthy school meal options that align with students' taste preferences. Research demonstrates that incorporating student voices into menu planning and combining preference data with other assessment methods and strategies yields more effective and acceptable foodservice outcomes.

This study aims to identify perceptions and practices for selecting and incorporating menu items that reflect the preferences, traditions, and backgrounds of students served in school nutrition programs nationwide. The objectives of the study will include an assessment of variables and strategies implemented by school nutrition professionals to create and revise student-centered menus.

This study had two objectives:

- Identify perceptions and practices for selecting and incorporating menu items that reflect the preferences and background of the students served in school nutrition programs; and
- Assess the components and strategies employed for assessing and implementing students' voices in creating student-centered menus.

## METHODOLOGY

### Research Design

The needs assessment instrument was developed using eight phases of qualitative and quantitative research. In the first two phases, researchers obtained USDA approval for the study, conducted a literature review, and submitted the study to and received approval from The University of Southern Mississippi's Institutional Review Board (IRB). Phases III, IV, and V included developing the case study protocol and instruments to collect qualitative data, and drafting and validating a national survey. Phases VI through VIII were designed with planned research steps to disseminate the national survey to school nutrition professionals across the country. The final research activities included analyzing, summarizing, and reporting the data as deliverables.

### Design

This study utilized a mixed-methods design across two phases. Data collection for Phases I and II was planned and conducted online using questionnaires and a rapid-response survey, facilitated by Qualtrics. Data collection included questions assessing the policies, procedures, and practices implemented to include student-preferred foods in school nutrition programs. A minimum of one member of the United States Department of Agriculture, Food and Nutrition Service (USDA FNS), and one Institution of Child Nutrition (ICN) administrator or staff member was invited to participate on the expert panel, survey review panel, and as a content expert member for this study. A statistician was consulted to help guide the data collection and analysis for this study.

Methods for marketing and disseminating the tools in Phases I and II were included in the study's design based on the use of national databases, expert panel recommendations, and comments and suggestions from the ICN's Information Services administrators and staff.

### Target Audience

The target audience for this study consisted of school nutrition administrators responsible for developing, evaluating, and revising school menus across the seven USDA regions. State agency representatives who provide guidance, resources, and technical assistance to school nutrition programs serving diverse populations were also invited to share their expertise and serve on the expert panel and review panel. Sampling procedures were selected based on similar studies in the literature review, recommendations from the statistician, and previous research by the ICN's Applied Research Division (ARD) for schools.

### Phase I: Qualitative Phase

For Phase I, the expert panel members were selected from the Market Data Retrieval sample (n = 10–12) of State agency and school nutrition administrators. An invitation was sent to potential expert panel members, including school nutrition professionals who prepared meals and engaged directly with students, to participate in answering a series of questions about student-

centered menu engagement. The invitation included the study's purpose, their rights and responsibilities under the IRB at The University of Southern Mississippi, information about the voluntary nature of their participation, a link to the expert panel questionnaire, and instructions and deadlines for participating in the virtual expert panel. Those who agreed to participate in the expert panel responded to open-ended questions in an online survey. The researcher employed the Delphi technique to correspond with expert panel members, develop survey questions to meet the study's objectives, and develop the rapid-response tool. Additional information was collected from subject matter experts, and questions and survey stems were created using the ICN ARD's rapid response survey methodology for expert panel members. Expert panel members were given two weeks to complete the questionnaire and received a follow-up reminder after the first week. The researcher summarized the expert panel data and collected additional responses as needed for clarification. The summary of responses was then used to draft survey questions and stems for an online national survey.

## **Phase II: Rapid Response Survey Development and Dissemination**

In Phase II, potential review panel participants (n = 30) were emailed invitations to review the draft rapid response survey. The invitation included the study's purpose, their rights and responsibilities under the IRB at The University of Southern Mississippi, information about the voluntary nature of their participation, a link to the rapid response survey, and instructions and deadlines for completing and submitting the survey. A follow-up email was sent to review panelists as a reminder to complete the evaluation of the draft tool before the due date. The survey responses were analyzed, and the researcher revised the survey to create the final online instrument.

The goal was to disseminate the surveys to a minimum of 700 respondents/100 per USDA region for the rapid response survey sample. The survey was distributed to school nutrition professionals nationwide using convenience samples from Market Data Retrieval, a list of State agency administrators, and the ICN Information Services Division's database of school nutrition professionals. The ICN ARD sampling procedures were based on school district enrollment size (small, medium, and large), income eligibility (paid, reduced, and free meals), and school location (urban, suburban, and rural), with representatives from several USDA FNS regions. Participants were emailed an invitation to respond to the rapid response survey. The invitation included the study's purpose and the consent form on the first page, which outlined their rights and responsibilities under the IRB, the voluntary nature of their participation, and provided instructions and deadlines for completing the survey. If participants declined to consent, the survey was closed, and they were thanked for their time. For participants who chose to participate, the survey advanced to the first question. A follow-up email was sent two weeks after the initial invitation to encourage participation. The researcher analyzed and summarized the data for the final report deliverables.

## **Description of Data Collection Instruments**

The expert panel questionnaire was an online tool developed from the research literature and the expert panel's recommendations. The questionnaire consisted of 20 open-ended questions in Qualtrics, which allowed participants to pause and resume the rapid-response survey at their leisure and to use a mobile device, laptop, or desktop to provide their input. The instrument included a consent form and a series of questions requesting input on defining “student-centered” variables and on strategies for gathering students’ perceptions, preferences, and selection and consumption behaviors for school-based menu selections.

The review panel tool included a draft survey with 21 rapid-response questions, followed by corresponding evaluation questions. The evaluation questions asked reviewers to agree or disagree with each perspective survey question. Panelists could select “yes” to agree with each draft rapid response question or select “no” to provide feedback to delete, modify, or replace the proposed survey question with a new rapid response question or statement. Additional space was provided for comments and suggestions to improve the overall survey.

The final online rapid response survey included the consent form and the survey questions classified into the following sections:

- Section 1: Demographic Questions
  - Three survey questions and three evaluation questions;
- Section 2: Student Engagement in Menu Planning
  - Seven survey questions and seven evaluation questions;
- Section 3: Menu Innovation and Responsiveness to Students’ Taste and Traditions
  - Five survey questions and five evaluation questions;
- Section 4: Student-Centered Meal Promotion Techniques
  - Three survey questions and three evaluation questions; and
- Section 5: Open Feedback
  - Three survey questions and three evaluation questions.

## **Institutional Review Board Approval**

The University of Southern Mississippi’s IRB approved this study, and its research activities, and respondents gave documented consent for the phase and activities they participated in.

## **Data Analysis**

The online open-ended questions designed for the expert panel provided statements and suggestions for developing the national survey. The data were thematically coded to provide researchers with a snapshot of student engagement strategies, practices, and procedures used to include students' voices in menu planning. The summary of data included survey questions and statements, as well as survey stems, to develop the draft rapid response survey. The survey review panel's data on the evaluation questions was reviewed, and suggestions were applied to improve completion time and clarity. Open-ended responses were used to incorporate reviewers' suggestions for deleting, modifying, revising, keeping, and developing new survey questions. The analysis of the finalized rapid response survey was conducted in Qualtrics using descriptive statistics. Frequencies, percentages, means, standard deviations, and internal consistency (Cronbach's alpha) were used to report the findings. The researcher followed ICN and USDA FNS policies and procedures for documenting and reporting the study results and the researcher's recommendations.

## **RESULTS AND DISCUSSION**

### **Phase I: Qualitative Phase**

#### ***Expert Panel***

Data collection began with an expert panel of 10 USDA FNS, State agency, and school nutrition professionals, who responded online to questions designed by a researcher to gather input on student engagement for school meal planning. The online questionnaire included 11 open-ended questions that asked expert panelists to share their expertise and experiences regarding student engagement in menu-planning activities. Questions covered panelists' perceptions and best practices for incorporating student-centered menu items; methods for including students' preferences related to customs, traditions, and celebrations; student engagement challenges; menu modification evaluations, and perceived taste preferences that reflect students' selection and participation in school nutrition programs. The questionnaire took approximately 20 minutes to complete and the expert panel responses provided the researcher with sample survey questions and stems to develop the student-centered survey. Eight expert panel members completed the survey and agreed to participate in the review panel to evaluate and provide feedback on the draft survey in Phase II of the study.

The researcher reviewed and summarized the data into survey questions, statements, and survey stems in preparation for Phase II of the study.

### **Phase II: Quantitative Phase**

#### ***Survey Development***

Two subject matter experts responded to a request to review the draft survey questions and stems from the expert panel results, as well as additional questions the researcher added based on the literature review. The subject matter experts' comments and suggestions, the expert panel's results, and questions derived from the literature review served as the foundation for the quantitative survey. The draft survey included five sections with 21 closed- and open-ended questions. The researcher added evaluation questions to the survey's consent information, survey instructions, and to each survey question, for a total of 44 questions. The final review questionnaire was reviewed by one subject matter expert to verify clarity and confirm the revisions.

#### ***Survey Review Panel***

The Market Data Retrieval database, expert panel members, and recommendations from ICN staff were used to select and invite 30 potential reviewers for the draft survey. Fifteen school nutrition professionals, USDA and State agency representatives, and ICN staff provided comments and suggestions to improve the survey. The researcher revised survey questions as necessary but retained the total number of questions under the five sections. A total of 11 review panelists completed the review process, of whom seven were school nutrition administrators. A final review was conducted by two subject matter experts to confirm the changes and provide

feedback on the clarity of the consent, survey instructions, survey questions, and the estimated time to complete the survey.

***Survey Distribution and Responses***

The researcher emailed the invitation with the online survey link to 1,000 school nutrition administrators in all seven USDA regions listed in the Market Data Retrieval database. The database was limited to school nutrition administrators. The survey response was low (n = 53), and many school nutrition administrators (n = 17) responded to the researcher by email to confirm that the survey invitation was not spam or junk mail. Emails from 221 addresses were returned as blocked, labeling the invitation as spam. The researcher requested that the survey invitation be distributed by the ICN Information Services Division via its database of more than 10,000 child nutrition professionals. The researcher specified the sample as school nutrition professionals administering the school nutrition programs in their school district. An additional 574 participants responded to the survey over a two-week period. Descriptive statistics were recorded and explained in the tables below.

***Survey Participants’ Responses***

**Participants’ Consent.**

Eighty-three percent of survey respondents read and agreed to participate. Those who selected “No” were directed to the final page of the online survey and thanked for their response. The consent data is presented in Table 1.

**Table 1**

*Survey Participant Consent Data*

<b>Consent Classification</b>	<b>Count</b>	<b>Percentage</b>
Yes	522	83%
No	105	17%

**Demographics.**

The majority of respondents were foodservice administrators (42%) serving all grade levels from Pre-Kindergarten to 12<sup>th</sup> grade (37%) and had more than ten years of career experience working in school nutrition programs. The demographics data are reported in Table 2.

**Table 2***Section 1: Demographics*


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<b>Demographic Factors</b>		
<b>Role (n = 495)</b>	<b>Count</b>	<b>Percentage</b>
Foodservice Director	209	42%
School Nutrition Manager/Supervisor	138	28%
Other	72	15%
Cafeteria/Kitchen Staff	56	11%
Registered Dietitian/Nutritionist	20	4%
<b>Grade Levels Served (n = 495)</b>	<b>Count</b>	<b>Percentage</b>
Pre-Kindergarten–12 <sup>th</sup> Grade	183	37%
Other	83	17%
Kindergarten–12 <sup>th</sup> Grade	82	17%
Middle/Jr. High School Only	39	8%
Elementary School Only	35	7%
Pre-Kindergarten Only	27	5%
I do not work in a school district.	24	5%
High School Only	22	4%
<b>Years Worked in School Nutrition (n = 488)</b>	<b>Count</b>	<b>Percentage</b>
Over 10 years	279	57%
1–5 years	110	23%
6–10 years	76	16%
Less than 1 year	23	5%

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**Student Engagement in Menu Planning.**

The respondents answered seven questions related to student engagement. Three of the questions were practice-based and asked about their experiences implementing student engagement strategies, the frequency of engagement, and the types of menu modifications implemented from students' input. The remaining four questions gauged participants' perceptions of the importance of students' voices for menu planning, food trends awareness, how and where they learn about students' preferences and trends, and social media use for student engagement information.

Informal conversations (66%), taste tests (54%), and surveys (47%) were the most common methods used by school nutrition professionals to capture students' voices for menu

planning. Engagement activities occurred for most respondents at least quarterly (39%), and only nine percent of participants reported not soliciting students’ input for menu planning. Students’ feedback was used to add preferred menu items (74%) and regional and traditional foods used for events and celebrations (41%) to existing menus. Many participants felt that students’ input was very important (69%) or somewhat important (22%), and had a level of awareness of food trends (somewhat aware 54% and very aware 33%) and student preferences. Most survey participants indicated that they learn about student preferences and emerging food trends directly from students (77%) and social media and online references (53%). A description of the results is listed in Table 3.

**Table 3**

*Section 2: Student Engagement in Menu Planning*

**Engagement Factors**

<b>School Nutrition Professionals’ Student Feedback Methods (n = 480)</b>	<b>Count</b>	<b>Percentage</b>
Informal Conversations with Students	315	66%
Taste Tests	259	54%
Surveys (Paper or Online)	224	47%
Student Advisory Committees or School Clubs	95	20%
School or Nutrition Department Website and School Social Media Outlets	77	16%
We do not currently gather student feedback.	57	12%
Suggestion Boxes	51	11%
Other	47	10%
<b>Student Feedback Frequency</b>	<b>Count</b>	<b>Percentage</b>
Occasionally (every quarter or seasonally)	184	39%
Frequently (monthly)	125	26%
Rarely (1–2 times per year)	122	26%
Never	44	9%
<b>Types of Menu Changes Resulting from Student Feedback</b>	<b>Count</b>	<b>Percentage</b>
Added more favorite student items	344	74%
Offered more regional or traditional foods/meals, or foods/meals served for celebration	194	41%
Adjusted spice and flavor combinations	158	34%
Introduced vegetarian or allergen-free menu options	137	29%
Changed preparation methods (fresh vs. processed)	133	28%
We have not made changes based on student input.	49	10%
Other	37	8%

*(Table 3 continues)*

(Table 3 continued)

*Section 2: Student Engagement in Menu Planning*

<b>Engagement Factors</b>		
<b>School Nutrition Professionals' Perception of the Importance of Student Engagement in Menu Planning (n = 466)</b>	<b>Count</b>	<b>Percentage</b>
Very Important	323	69%
Somewhat Important	104	22%
Neutral	30	6%
Not Very Important	6	1%
Not Important at All	3	1%
<b>School Nutrition Professionals' Awareness of Food Trends and Student Preferences</b>	<b>Count</b>	<b>Percentage</b>
I am somewhat aware and try to include some food trends when possible.	248	54%
I am very aware of food trends and student preferences, and incorporate them into the menu.	154	33%
I am slightly aware, but I do not actively use these trends.	36	8%
I am NOT aware of current food trends or student preferences for menu modifications.	22	5%
<b>Method of Learning about Students' Food Preferences and Emerging Food Trends</b>	<b>Count</b>	<b>Percentage</b>
Student Feedback	352	77%
Social Media/Online Resources	241	53%
Food Exhibit Shows and Publications	214	47%
Industry Conferences or Trainings (e.g., face-to-face or online)	201	44%
I would like access to more resources and support to stay current with food trends and student preferences.	152	33%
Other	33	7%
<b>School Nutrition Professionals' Social Media Use to Assess Food Trends</b>	<b>Count</b>	<b>Percentage</b>
Occasionally, when trends are relevant.	159	35%
No, we do not consider social media trends when planning menus.	134	30%
Rarely, due to limitations (e.g., budget, regulations, food accessibility, etc.).	83	18%
Yes, frequently.	53	12%

### **Menu Innovation and Responsiveness to Students' Tastes and Traditions.**

The third section of the survey assessed school nutrition professionals' menu planning practices, the evaluation of their menus to ensure they meet students' tastes and traditions, perceived challenges in meeting students' preferences, and their efforts to meet school nutrition program meal pattern requirements. Participants noted that they had issues meeting USDA regulations and guidelines (81%), had budget limitations (62%), faced challenges in obtaining foods that meet students' tastes (55%), and faced staffing and training challenges (51%). Half of the school nutrition professionals believed their current menus reflected their students' customs/traditions, tastes, and dietary needs, and expressed interest in receiving more resources and training on student-centered menu planning (83%).

Survey respondents evaluate students' acceptance of new and modified menu changes by reviewing sales and production records (75%), plate waste, and student food selection observations (69%). School nutrition professionals make efforts to comply with school nutrition programs' meal pattern requirements by modifying student-preferred recipes that meet the requirements (66%), utilizing the USDA Foods to align with students' tastes and preferences (65%), and offering taste tests of proposed menu items before adding them to standard school menus (45%). Additional results on the challenges, menu compliance practices, resources, training preferences, and evaluation techniques for menu innovation are presented in Table 4.

**Table 4***Section 3: Menu Innovation and Responsiveness to Students' Tastes and Traditions*


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**Tastes and Traditions Factors**

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<b>Challenges Faced in Incorporating Students' Preferences</b>	<b>Count</b>	<b>Percentage</b>
USDA Regulations and Guidelines	361	81%
Budget Limitations	277	62%
Vendor Availability/Product Sourcing	247	55%
Staff Capacity or Training	227	51%
Limited Student Engagement	65	15%
Other	30	7%
Traditional/Regional/Language Barriers	29	6%

  

<b>School Nutrition Professionals' Perceptions of Their Current Menus' Reflection of Customs/Traditions, Tastes, and Dietary Needs of the Student Population</b>	<b>Count</b>	<b>Percentage</b>
Somewhat	224	50%
Yes	183	41%
No	38	8%
Not Sure	4	1%

  

<b>School Nutrition Professionals' Interest in Receiving Resources or Training on Student-Centered Menu Planning</b>	<b>Count</b>	<b>Percentage</b>
Yes	372	83%
No	75	17%

  

<b>Evaluation Techniques of Students' Acceptance of New or Modified Student-Centered Menus (n = 441)</b>	<b>Count</b>	<b>Percentage</b>
Foodservice Records (i.e., Sales [POS] data, Production Records, etc.)	331	75%
Plate Waste and Student Selection Observations	304	69%
School Teachers' and Administrators' Feedback	153	35%
Parent Feedback	86	20%
Students' Participation via Classes, School Clubs, and as Menu Planning Committee Members	79	18%
Social Media Polls, Posts, and Comments	47	11%
Other	30	7%
I do not know.	19	4%

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*(Table 3 continues)*

**(Table 4 continued)***Section 3: Menu Innovation and Responsiveness to Students' Tastes and Traditions***Tastes and Traditions Factors**

	<b>Count</b>	<b>Percentage</b>
Foodservice Records (i.e., Sales [POS] data, Production Records, etc.)	331	75%
Plate Waste and Student Selection Observations	304	69%
School Teachers' and Administrators' Feedback	153	35%
Parent Feedback	86	20%
Students' Participation via Classes, School Clubs, and as Menu Planning Committee Members	79	18%
Social Media Polls, Posts, and Comments	47	11%
Other	30	7%
I do not know.	19	4%
<b>School Nutrition Professionals' Incorporation of Student-Centered Menu Changes That Comply with School Nutrition Program Meal Pattern Requirements</b>		
	<b>Count</b>	<b>Percentage</b>
Modify student-preferred recipes to meet meal pattern requirements	287	66%
Utilize USDA Foods to align with students' tastes and preferences (e.g., hot/spicy, sour, savory)	284	65%
Offer taste tests of student-preferred menu items before adding them to school menus	197	45%
Collaborate with vendors to provide compliant ingredients and food items on school menus	68	16%
Collaborate with a registered dietitian, State agency representative, or consultant	68	15%
It is difficult to incorporate changes due to compliance limitations.	66	15%
Other	11	3%

**Student-Centered Meal Promotion Techniques.**

The identification of marketing and promotion methods for student-centered menus, techniques, and evaluation practices is reported in Table 5. School nutrition professionals indicated that they use themed menu items for events, holidays, and celebrations (54%), share school menus and modified recipes with parents and community members (46%), and use posters, social media outlets, and digital signage to share menu options served with students and the school community (44%). To maintain students' interest, respondents reported rotating student-favored items seasonally (53%) or adding "limited time menu items based on students' menu feedback occasionally (48%). Tracking the success of these meal promotion methods is conducted using meal participation data (66%), point-of-service (61%), and à la carte

sales (25%).

**Table 5**

*Section 4: Student-Centered Meal Promotion Techniques*

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**Meal Promotion Techniques Factors**

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<b>Marketing and Promotion</b>	<b>Count</b>	<b>Percentage</b>
Utilize theme menu items for events, holidays, and celebrations.	229	54%
Share school menus and modified recipes with parents and community members.	196	46%
Use posters, digital signage, or social media outlets.	187	44%
Conduct taste tests of the requested food items.	167	39%
We do not advertise or promote student-centered menu options.	79	19%
Others.	11	3%
<b>Current Advertisements and Marketing Techniques to Promote Student-Centered Menu Items or Recipes</b>	<b>Count</b>	<b>Percentage</b>
Rotate student-favored recipes seasonally.	222	53%
Add “limited time” new menu items to get students’ feedback	200	48%
Offer menu items based on students’ demographics and global taste preferences.	129	31%
We do not implement any specific strategies to modify menus to incorporate student preferences.	74	18%
Other	11	3%
<b>Evaluation of Incorporated Student-Centered Menu Items</b>	<b>Count</b>	<b>Percentage</b>
Track changes in meal participation on the day new or modified student-centered menu items are added.	276	66%
Review Point of Service (POS)	258	61%
À la Carte Sales	103	25%
We do not evaluate new or modified student-centered menu items.	66	16%
Other	15	4%

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### Open Feedback.

The final section included open-ended questions for survey participants to share one to three student engagement best practices and strategies. Survey participants provided 328 statements on student engagement techniques and best practices for adding or modifying menu items inspired by students. The researcher coded the responses into 13 current best practices and strategies that they implement for their school nutrition programs. Taste tests (n = 46), formal and informal observations and conversations with students (n = 42), student surveys and comment cards (n = 38), nutrition and culinary classes and contests (n = 23), and input from student advisory and health classes (n = 18) were the top five best practices and themes used. Many respondents reported using multiple practices or strategies to address student preferences.

**Table 6**

*Section 5: Open Feedback*

<b>*Listed Themes of Student Engagement Strategies or Best Practices for Menu Planning (n = 328)</b>	<b>Number of Response Themes</b>
Pilot New and Modified Recipes and Taste Test	46
Conversations, observations, and face-to-face engagement during meal service with Students	42
Student Survey/Comment Cards	38
Nutrition Education/Culinary Class and Recipe Development	
Contests/Challenges, and Events	23
Student Advisory Clubs/Council, Student Health Class	18
I do not know. None.	13
Students, Parents, and School Personnel Input Collectively	7
Vendor Fairs/Chefs, Dietitians	6
Showcase Students and their Recommendations	5
Support or Resources to Help School Nutrition Programs Reflect Students' Needs and Food Preferences for Menu Planning	4
Advertise/Market the Daily/Weekly Menus/ Newsletter	4
Use the School Student App	3
Follow Food Trends on Social Media	1

\*There were seven statements that were not coded because they did not relate to the topic and could not be identified as best practices or strategies for implementing or modifying student-centered menus.

## DISCUSSION AND RECOMMENDATIONS

The research shows that student-centered menu planning enhances meal satisfaction, boosts participation in meal programs, and aligns nutrition with student taste preferences when offered. This study's results demonstrate that school nutrition professionals employ a range of strategies and best practices to capture students' preferences during menu planning. The findings also align with other studies showing that including traditional foods at mealtime helps students bridge the gap between school and community (Kittle, Sucher, & Nelms, 2017). Using foodservice sales and participation data to evaluate and monitor students' acceptance of menu items helps meet school nutrition programs' goals of providing and encouraging healthful eating at school. Additional evaluation techniques, such as combining preference data with optimization methods, can be used to produce more effective and acceptable foodservice outcomes, such as decreasing plate waste.

This research study supports previous findings that students' input can positively impact the design of school menus that are both student-acceptable and health-promoting. To implement student-centered menus successfully, school nutrition programs should use structured student feedback, incorporate nutrition education, and apply evidence-based approaches that respect both health and preference. Many of the school nutrition professionals' perceptions aligned with other studies, which acknowledge that student input and the inclusion of student-centered menu items that reflect their tastes are common practices. Regular informal and formal observations and conversations with students, taste tests, and evaluations of meal preparation and sales data were the most practical and cost-effective strategies for school foodservice staff to gauge satisfaction, findings that correlate strongly with other studies. Research consistently shows that when student opinions influence menus, food waste decreases because students are more likely to finish meals that reflect their choices (Lee, 2019).

The 13 student engagement themes and more than 300 statements shared by school nutrition professionals could be used to create a best practices resource for providers who want to include students' input in menu-planning efforts to increase the selection, consumption, and acceptability of the healthy food items offered. In conclusion, the data from this study show that school nutrition professionals who implement student-centered menu planning strategies perceive that these efforts may enhance acceptability and align nutrition with student taste preferences. To implement student-centered menus successfully, foodservice programs could use informal and structured student feedback, incorporate nutrition education, and apply evidence-based approaches that respect both students' values and preferences and support their health. More studies evaluating students' selection, consumption, and acceptability of menu changes based on their suggestions are needed.

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