

**Determining the Perceptions, Practices, and the  
Perceived Barriers Associated with School Professionals  
Serving the Nutritional Needs  
of the PreK Child in the Public School Setting**

**2005**

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# **National Food Service Management Institute The University of Mississippi**

## **Building the Future Through Child Nutrition**

The National Food Service Management Institute (NFSMI) was authorized by Congress in 1989 and established in 1990 at The University of Mississippi in Oxford. The Institute operates under a grant agreement with the United States Department of Agriculture, Food and Nutrition Service.

### **PURPOSE**

The purpose of NFSMI is to improve the operation of Child Nutrition Programs through research, education and training, and information dissemination. The Administrative Offices and Divisions of Technology Transfer and Education and Training are located in Oxford. The Division of Applied Research is located at The University of Southern Mississippi in Hattiesburg.

### **MISSION**

The mission of the NFSMI is to provide information and services that promote the continuous improvement of Child Nutrition Programs.

### **VISION**

The vision of the NFSMI is to be the leader in providing education, research, and resources to promote excellence in Child Nutrition Programs.

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**DETERMINING THE PERCEPTIONS, PRACTICES, AND THE PERCEIVED  
BARRIERS ASSOCIATED WITH SCHOOL PROFESSIONALS SERVING THE  
NUTRITIONAL NEEDS OF THE PREK CHILD IN THE PUBLIC SCHOOL SETTING**

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**EXECUTIVE SUMMARY**

Decision makers in public education are increasingly recognizing the benefit of positive early educational experiences for young children and are moving toward providing education programs for the PreKindergarten (PreK) child in the public school setting. At present, 40 states have at least one state-funded preschool program and other states have programs forthcoming. To date, there has been no research related to identifying issues associated with serving the nutritional needs of this new customer, the PreK child, in the school setting. To address this issue, the National Food Service Management Institute (NFSMI), Applied Research Division embarked upon a two-phase research study to explore the perceptions, practices, and the perceived barriers facing school food service directors, school food service managers, and other school professionals (principals, classroom teachers, and early education directors) faced with serving the nutritional needs of the PreK child in the public school setting.

In Phase I of the research study, four 2-hour focus group sessions were conducted. Four food service directors from selected school districts in Alabama, Georgia, Louisiana, and Mississippi were contacted and asked to identify a school nutrition manager, a principal, a classroom PreK teacher, and the early education director and/or federal program director responsible for special education to participate in the discussion sessions. The school

professionals were asked semi-structured, open-ended questions designed to explore issues associated with serving the nutrition needs of the children. Following the focus groups, the researchers thematically coded the responses into meaningful categories that were used to develop survey statements for Phase II of the study.

Phase II of the research study utilized survey methodology. The 4 section questionnaire was developed from the qualitative data obtained from the focus group sessions. The survey contained three sections asking participants to indicate their agreement with practices, perceptions, and the perceived barriers related to serving the nutritional needs of the PreK child at their school. In the fourth section, participants were asked to provide information about themselves or their school district. The sample participants for the study were food service directors, food service managers, elementary school principals, PreK classroom teachers, and early education directors in public school districts with PreK programs. From a listing of public school districts with PreK programs, researchers selected a stratified random proportional sample of 700 food service directors in public school districts with PreK programs representing the seven USDA regions (N=3500). Five packets of surveys were mailed to the food service director who distributed the packets to the food service manager, elementary school principal, PreK classroom teacher, and early education director. A follow-up letter was mailed to food service directors asking them to complete and return their survey and to remind the school professionals to complete their surveys as well. The research sample generated a 21% response rate from the school professionals.

Respondents were provided with 42 statements regarding practices in serving the nutritional needs of the PreK child at their school and were asked to indicate their agreement with each statement using a scale ranging from 1, strongly disagree, to 4, strongly agree with a

fifth response for “not applicable.” Practices with the highest agreement mean ratings were: “I encourage children to try new foods” ( $3.59 \pm .54$ ), “the food service staff follows the USDA meal pattern” ( $3.58 \pm .56$ ), “I encourage children to try the foods offered” ( $3.58 \pm .55$ ), “my immediate supervisor supports a consistent routine for this age child” ( $3.56 \pm .56$ ), and “children who do not have lunch money are fed following school policy” ( $3.56 \pm .58$ ). Principal component factor analysis with varimax rotation generated seven practice factors: Communication and Training, Nutritious Meals and Meal Experiences, Administrative Support, Encouragement, Mealtime Opportunities, Dining Environment, and Healthy Wellness Practices. Analysis of variance resulted in significant differences by job titles of school professionals for four factors: Encouragement, Administrative Support, Nutritious Meals and Meal Experiences, and Communication and Training. Respondents were provided with 24 statements concerning perceptions in serving the nutritional needs of the PreK child at their school and were asked to indicate their agreement with each statement using the same 4 point scale. Perceptions with the highest agreement mean ratings were: “children feel safe in the cafeteria” ( $3.42 \pm .57$ ), “school professionals can influence PreK children to make healthy food choices” ( $3.40 \pm .57$ ), “children view the cafeteria as a friendly place” ( $3.38 \pm .58$ ), and “teaching the child to make good food choices is challenging” ( $3.30 \pm .63$ ). Respondents were also presented with 18 statements regarding barriers that could inhibit school professionals from serving the nutritional needs of the PreK child at their school and were asked to indicate their agreement using the same 4 point scale. Barriers with the highest agreement mean ratings were: “PreK children require additional time to eat” ( $3.10 \pm .72$ ), “school staff needs continuous training on nutrition education” ( $3.06 \pm .68$ ), “meals brought from home consist of unhealthy snack items” ( $3.04 \pm .73$ ), and “handling trays and opening items present challenges for the PreK child” ( $3.01 \pm .73$ ).

The findings of this research suggest that serving the nutritional and developmental needs of PreK children is a more wide-ranging and complex undertaking than just serving meals. A team approach should be implemented to fully meet the needs of the PreK child. Team members should include but not be limited to the food service director, food service manager, PreK teachers, principals, and early education director. Effective communication among team members is essential. Understanding how each team member can and does contribute in each practice area will enhance the provision of nutritional services for the PreK child.

Recommendations for additional education and training include the development of training modules to address each of the seven practice factors. The modules should provide strategies to address the significant differences identified in the research in order to improve the outcome of serving the PreK child. Other training modules could elucidate the appropriate role of each school professional and highlight best practices in serving the nutritional needs of the PreK child in the public school setting. Educational materials are needed to help school professionals address developmental issues of the PreK child. Since PreK children are new customers in the public school setting, food service directors, managers, and staff need to be aware of the unique needs of 3- and 4-year-old children. Modules should address menu concerns, equipment issues, and motor/skill development for application in their school nutrition program. Training materials are needed to address the importance of effective communication among all members of the school team who service the nutritional needs of the PreK child. Recommendations should include examples of best practices in schools with effective school teams as well as strategies for improving communication. Education materials should be developed for food service directors and other school team professionals to utilize to overcome the barriers in their specific operations. Recommendations could be delineated on what could be

done to decrease the barrier. For example, if opening food items presents challenges for PreK children, recommendations might be to purchase items that eliminate this problem or to provide closer adult-child interaction during mealtime. Additional education materials are needed on nutrition and menu recommendations to target parents of PreK children.

## INTRODUCTION

Preschool education provides services to young children in various settings such as private programs, Head Start, and public schools. Participation in preschool programs in the United States has been steadily increasing since the 1960s; however, much of this growth has occurred in settings outside public education (Barnett, Hustedt, Robin, & Schulman, 2004). Initially, most states that considered incorporating preschool programs in public schools targeted children with the greatest needs. Two types of preschool programs were established, one providing preschool special education for children with disabilities and the other providing preschool education either to children in low-income families or to children otherwise identified as being at high risk for school failure (Barnett, et al, 2004). More recently, several state programs have since recognized that all young children stand to benefit from positive early educational experiences and have begun to move toward universal pre-kindergarten (PreK) (FPG Child Development Institute, 2005). At present, 40 states have at least one state-funded preschool program and other states have programs forthcoming (Gilliam & Marchesseault, 2005).

Researchers associated with the National PreK Study have defined state-funded PreK systems as consisting of five components: 1) The programs are administered and funded, at least in part, by a state agency or department; i.e., not solely by federal pass-through dollars with no state contribution. 2) The program serves children in the 3- through 4-year-old range. 3) Each program should have a classroom-based component that meets on a regular basis. 4) There should be a programmatic goal of facilitating children's development, providing early education, or promoting school readiness. 5) State-funded programs should not exclusively serve children with disabilities (Gilliam & Marchesseault, 2005).

Smith, Kleiner, Parsad, and Farris (2003) reported that during the 2000-2001 school year, there were about 19,000 public elementary schools with PreK classes, representing approximately 35% of all regular and special education elementary schools in the country. Almost half (46%) of elementary schools in the Southeast, 30% of schools in the Northeast, 32% of schools in the Central region, and 35% of schools in the West offered PreK programs.

According to the Multi-State Study of Pre-Kindergarten survey of state PreK program administrators, all states that have PreK programs serve 4-year-olds, but almost half also include 3-year-olds and some even include younger children (FPG Child Development Institute, 2005). Program directors also reported that all states focus on children who are at risk of later school failure, and three states have implemented universal programs in which they are attempting to serve all 4-year-olds, recognizing that all can gain from positive early educational encounters. Researchers also found that the majority of state-funded PreK programs (59%) required services to be offered for 2.5 to 4 hours per day. Half of the states required that classes be held 5 days a week for 9 to 10 months a year. Only 7 states, all in the south, offered 6-hour school-like days (FPG Child Development Institute, 2005).

The National Association of Elementary School Principals (NAESP, 2005) has encouraged principals to take leadership roles in partnering with their communities and early childhood educators to ensure that all children develop as proficient students. The NAESP has developed seven principles to define quality early childhood programs in elementary schools. The principles are: supportive interactions between teachers and children; safe, supportive and engaging learning environments; a focus on the whole child; meaningful learning for the individual child; a culture of authentic assessment and continuous learning; connections to families and community organizations; and effective administration (NAESP, 2005). The

NAESP also described an effective principal as one who facilitates the school community's understanding of the developmental issues of PreK children, provides appropriate learning environments for young children, and incorporates early childhood programs into the school's culture and organizational structure. An effective principal also works with families and community organizations to support children at home, in the community, and in PreK and kindergarten programs (NAESP, 2005).

Barnett et al. (2004) indicated in their report, *The State of Preschool, 2004 State Preschool Yearbook*, that in 24 of the 44 state preschool initiatives, all children were offered at least one meal per day. While not requiring meals for all participants, an additional 13 programs offered meals under certain circumstances, particularly when children attended programs that offered longer class days or were operating during mealtimes. In the remaining state preschool programs, either no meals were served or only snacks were offered.

Oakley and Carr (2003) developed self-assessment tools for use by child care center directors and family day care home providers who supervise children, many of whom are the same ages as those in public school PreK programs. The researchers categorized best practices for child care centers and family day care homes into three content areas: administration and operations; nutrition; and health, safety, and well-being of children – working with parents and others in the community. Briley and Roberts-Gray (2005) identified benchmarks for effective nutrition programs in child care settings, many of which are also applicable for PreK programs in public school settings. Their recommendations include the following: parents should be involved in the nutrition component of the child care facility, furniture and eating utensils should be age-appropriate and developmentally suitable to encourage children to accept and enjoy mealtime, personnel should encourage positive experiences with food and eating, personnel should receive

appropriate training in nutrition and food service, and nutrition education for children and parents should be a component of the program.

To date, there has been no research related to identifying issues associated with serving the nutritional needs of this new customer, the PreK child, in the school setting. This research project attempted to address this void. The purpose of this study was to assess the perceptions, practices, and the perceived barriers facing school food service directors, school food service managers, and other school professionals (principals, classroom teachers, and early education directors) faced with serving the nutritional needs of the PreK child in the public school setting.

### **Research Objectives**

- Identify states currently providing services to the PreK child in the public school setting.
- Conduct focus group interviews with school nutrition directors and school professionals on the issues associated with providing for the nutritional needs of the PreK child.
- Develop a survey instrument(s) to measure school food service directors', school food service managers', principals', early education directors', and teachers' perceptions and practices, and the barriers to serving the nutritional needs of PreK children.
- Conduct a survey on the study groups.
- Compare differences among the survey groups with regard to their perceptions and practices, and the barriers to providing for the nutritional needs of PreK children.

## **METHOD**

### **Research Plan**

The purpose of this research was to identify issues associated with serving the nutritional needs of the PreK (PreK) child (ages 3 to 4) in the school setting. To accomplish this goal, the perceptions, practices, and the perceived barriers identified by school professionals responsible for serving the nutritional needs of PreK children were explored. A concept paper was developed outlining the purpose, research objectives, methodology, project timetable, and outcomes of the study (Appendix A). This concept paper was provided to members of the Food and Nutrition Subcommittee of the Education Information Advisory Committee (EIAC) for their review and comments. The term *servicing* was used in developing the concept paper since this term was more encompassing than the term *feeding*. The research project was conducted in two phases. The purpose of Phase I was to conduct focus groups to ascertain school professionals' (food service director, food service manager, principal, PreK teacher, and early education director) opinions regarding serving the PreK child in the school setting. The qualitative data from the Phase I focus groups were used to develop a survey instrument that was mailed to a nationwide sample of school professionals in Phase II. As the survey instrument was in development, EIAC members were sent copies for review and comments; their suggestions were incorporated as the survey was finalized.

### **Phase I**

#### ***Focus Group Discussions***

In Phase I of the research study, four 2-hour focus group sessions were conducted. States were profiled to identify those with PreK programs. Four states were selected based on a varied level of experience in offering PreK classes, diverse student population, and geographic location

that allowed researchers to drive to the site. State agency directors in the four selected states were contacted and informed of the research study. In some instances, they provided names of food service directors in school districts serving the PreK population.

Four food service directors from selected school districts in Alabama, Georgia, Louisiana, and Mississippi were contacted to request their participation in the study and determine their willingness to contact other school professionals from their school district who were identified by the researchers as important to the discussion process. They were asked to identify a food service manager, a principal, a classroom PreK teacher, and the early education director and/or federal program director responsible for special education. After the directors agreed to participate, confirmation letters were mailed (Appendix B). The food service directors and school districts participating in the focus groups were Gail Kavanaugh from Vicksburg Warren School District, Vicksburg, MS; Sylvia Dunn from Saint Tammany Parish Schools, Covington, LA; Carlton Robertson from Tuscaloosa City School District, Tuscaloosa, AL; and Karen Green from Thomas County School District, Thomasville, GA. The student population of the selected school districts ranged from 5,500 at Thomas County to 35,000 in St. Tammany Parish.

The discussion sessions were held in the local school district at a school or district office. The discussions were facilitated by an NFSMI research scientist with an assistant moderator/recorder capturing the school professionals' comments on a flip chart. Each focus group session also was tape-recorded and later transcribed so that a permanent complete record of the discussion was available. The number of participants in the focus groups in each district ranged from 5 to 7. *Focus Groups: A Practical Guide for Applied Research* by Krueger and Casey (2000) was used to plan the methodology for conducting the focus groups. The school

professionals were asked semi-structured, open-ended questions designed to explore issues associated with serving the nutrition needs of the PreK child in the school setting (Appendix C). Each question had a distinctive function in the focus group research process. Each focus group discussion was limited to a maximum of 2 hours. Throughout the session, the research scientist used a structured approach to keep the discussion focused on the selected topics. After all questions were discussed, the assistant moderator summarized responses and participants were invited to verify that the summary comments were an accurate depiction of the discussion. Following transcription of the audio tapes from the focus group sessions, researchers thematically coded the responses into meaningful categories. Researchers used these groupings to develop statements that were incorporated in the questionnaire.

## **Phase II**

### ***Survey Development***

The questionnaire for Phase II was developed from information acquired from the qualitative data obtained from the focus group sessions. The questionnaire entitled, *Determining the Perceptions, Practices, and Barriers Associated with School Professionals Serving the Nutritional Needs of the PreK Child in the Public School Setting* consisted of four sections (Appendix D). In the first three sections of the survey, participants were asked to indicate their agreement with 42 practices (section one), 24 perceptions (section two), and 18 barriers (section three) related to serving the nutritional needs of the PreK child at their school. For all three sections of the survey, agreement was rated on a 4 point scale, ranging from 1, strongly disagree, to 4, strongly agree with a fifth response for “not applicable.” In section four, participants were asked to provide additional information about themselves or their school district. Participants responded to questions concerning their job title, length of time in their current position, school

student enrollment, school grade levels, ages of PreK students, number of schools in district offering PreK programs, number of PreK students served in district, district enrollment, and USDA region.

### ***Pilot Study***

Focus group participants (N = 20) were asked to pilot test the questionnaire. Each food service director was mailed a packet containing a food service director cover letter and an envelope each for the food service director, food service manager, principal, PreK teacher, and early education director. Included in each envelope were the questionnaire and school professional cover letter, pilot study cover letter (Appendix E), evaluation form (Appendix F), pencil, and a postage-paid return envelope. Pilot study participants were instructed to complete the questionnaire as though they were participating in the study. In addition to completing the questionnaire, participants were asked to use the evaluation form to assess the two cover letters for clarity and the questionnaire for clarity and completeness of directions, statements, and response categories. Length of time required to complete the questionnaire also was solicited. Fourteen (70%) of the pilot study participants returned the pilot study questionnaires. Minor wording changes for clarity recommended by pilot study participants were incorporated into the final version of the cover letters and questionnaire.

### ***Sample***

The sample for the research study consisted of food service directors, food service managers, elementary school principals, PreK classroom teachers, and early education directors in public school districts with Pre-Kinderarten programs. States were profiled to identify those with PreK programs. A listing of states in each USDA region as well as states with identified PreK programs was provided to Market Data Retrieval, a company that specializes in the school

market. The resulting list of mailing labels identified the number of school districts with PreK programs within the seven USDA regions and each district food service director's contact information. The research sample was stratified based on USDA region. Sample proportionality was based on a percentage of school districts reported as having PreK programs within each of the seven USDA regions: i.e., if X% of the PreK programs were represented in Region Y, then X% of the school districts were proportionally sampled from Region Y. The total school districts reporting PreK programs included 3,192 school districts in the seven USDA regions with 290 districts in the Western region, 315 districts in the Mountain Plains region, 671 districts in the Midwest region, 375 districts in the Northeast region, 249 districts in the Mid-Atlantic region, 613 districts in the Southeast region, and 679 districts in the Southwest region. The resulting study sample of 700 school districts maintained the proportional distribution with 64 districts in the Western region, 69 districts in the Mountain Plains region, 147 districts in the Midwest region, 82 districts in the Northeast region, 55 districts in the Mid-Atlantic region, 134 districts in the Southeast region, and 149 districts in the Southwest region. The determination of the proportional sample is located in Appendix G. The school districts for the study sample were randomly selected from the Market Data Retrieval listing of school districts with PreK programs in each USDA region by choosing every fourth school district and eliminating any districts that had participated in the pilot study. This process was followed until every USDA region was included with the appropriate number of school districts. This procedure resulted in a stratified random proportional sample of 700 food service directors in public school districts with PreK programs representing the seven USDA regions (N=3,500).

### ***Questionnaire Distribution***

Each food service director was mailed a packet containing a food service director cover letter and an envelope each for the food service director, food service manager, principal, PreK teacher, and early education director. The food service director cover letter provided instructions on how to distribute the survey packets for the five school professionals in his/her district (Appendix H). Included in each envelope were the questionnaire and school professional cover letter (Appendix I) pencil, and postage-paid return envelope. Both cover letters informed participants of the purpose of the study, asked for their participation, assured them of confidentiality of their responses, and provided researchers' contact information for questions and concerns. No identifying codes were placed on the questionnaires, thus preserving the anonymity of all respondents. Approximately three weeks later, a follow-up letter was mailed to all food service directors asking them to complete and return their survey and to remind the school professionals in their district to complete their surveys as well (Appendix J).

### ***Informed Consent***

The researchers followed informed consent procedures established by the Human Subjects Protection Review Committee of The University of Southern Mississippi for Phase I and Phase II of the research study.

### ***Data Analysis***

Surveys were analyzed using the statistical package SPSS Version 12.0 for Windows. Descriptive statistics included means, standard deviations, and frequencies of total responses. Factor analysis was performed using the practice item section of the questionnaire to determine whether they could be grouped into a smaller number of factors. Factors were considered salient if the eigenvalue was 1.0 or higher. The resulting matrix was then rotated using the varimax

procedure. Items loading at .40 or greater were retained. A seven-factor solution was generated for the practice items. Cronbach's alpha reliability coefficients were calculated to determine the reliability of each factor. One-way ANOVA was conducted to see if there were differences in the practice factors, perception statements, and barrier statements among the five different school professionals. For all statistical tests, an alpha level of 0.05 was used for significance.

## **RESULTS AND DISCUSSION**

### **Focus Groups**

Data were collected in a systematic approach by asking semi-structured, open-ended questions, each having a distinctive function in the focus group research process. Participants were willing to openly and freely respond to the focus group questions. When asked about the use of the term *servicing* to describe the purpose of the research project, participants agreed that it was the appropriate expression to use. Following transcription of the audio tapes from the focus group sessions, researchers collapsed the responses to the questions into meaningful categories. Based on the collapsed responses, participants indicated that their role in servicing the nutritional needs of the PreK child could be classified into four areas: administration, quality meals, nutrition education, and encouragement of children. Challenges that participants encounter were classified into child-friendly menus, developmental issues, special nutrition needs, administrative details, parent issues, and teacher issues. Responses to the question on what was needed to assure a quality environment for the PreK child were sorted into responsiveness to children's needs; friendly, well-trained staff; effective communication; and appropriate equipment/facilities. Researchers categorized responses to factors that should be considered to ensure a quality program into environment, communication, training, child-centered focus, administration/leadership issues, and concern about menu/food choices. The successes that participants shared were grouped into responsive administration, effective communication, focus on the child, menu/food choices/nutrition, nutrition education, and partnerships.

### **Phase II Survey**

Seven hundred school districts with PreK programs were selected to participate in Phase II of the research study. Five packets of surveys were mailed to the food service director who

distributed the packets to the food service manager, elementary school principal, PreK classroom teacher, and early education director resulting in a total of 3,500 surveys. Survey packets were returned from 36 districts, whose food service director indicated that they did not have a PreK program, another 44 responses reported that their district had a one-half day PreK program with no meals being served, and four responses indicated that no one was functioning in one of the relevant positions in their district. These responses decreased the potential study sample to 3,272, from which 685 (21%) school professionals responded to the Phase II study. Twelve surveys were not used in the data analysis since they arrived too late to be included.

Program and personal characteristics of respondents are listed in Table 1. All school professionals are represented with 25.9% being food service directors and 22.9% PreK teachers. Over half of the respondents (55.4%) had been in their current position from 1 to 10 years while another 36.7% had more than 11 years of experience. The majority of respondents were from school districts with 10,000 or fewer students (74.8%), had one or two schools offering PreK programs (55.3%), had PreK programs with fewer than 200 students (71.4%) and served children ages three and four (65.3%).

### ***Practices in Serving the Nutritional Needs of the PreK Child***

Respondents were provided with 42 statements regarding practices in serving the nutritional needs of the PreK child at their school and were asked to indicate their agreement with each statement using a scale ranging from 1, strongly disagree, to 4, strongly agree with a fifth response for “not applicable.” Table 2 presents the means and standard deviations for the 42 practice statements in descending order of agreement. Thirty-three of the statements had mean ratings greater than three suggesting that school professionals agreed with these practices.

Table 1

*Program and Personal Characteristics of Respondents*

<b>Questions</b>	<b>Frequency<sup>a</sup></b>	<b>%</b>
<b>Job Title</b>		
Food Service Director	173	25.9
Food Service Manager	133	19.8
PreK Teacher	153	22.9
Elementary Principal	94	14.1
Early Education Director	64	9.5
Other	52	7.8
<b>Years in Current Position</b>		
Less than one year	53	7.9
1 to 5 years	233	34.7
6 to 10 years	139	20.7
11 to 15 years	120	17.9
16 to 20 years	61	9.1
Greater than 20 years	65	9.7
<b>Student Enrollment in School</b>		
Less than 200	105	16.1
201 – 400	181	27.8
401 – 600	152	23.4
601 – 800	71	10.9
801 - 1000	32	4.9
Greater than 1000	110	16.9
<b>Grade Levels of School</b>		
PreK only	82	12.4
PreK – Lower Elementary	184	27.8
PreK – Upper Elementary	253	38.3
Other	142	21.5
<b>Ages of PreK Children at School</b>		
Age 3 only	2	.3
Age 4 only	224	34.4
Ages 3 and 4	425	65.3

<sup>a</sup> Total N varies based on responses for each question

(table continues)

Table 1 (continued)

*Program and Personal Characteristics of Respondents*

<b>Questions</b>	<b>Frequency<sup>a</sup></b>	<b>%</b>
Number of Elementary Schools in District Offering PreK Programs		
One	276	44.6
Two	66	10.7
Three	49	7.9
Four	56	9.0
Five or more	172	27.8
Number of PreK Students in School District		
Less than 25	69	11.2
26 – 100	228	37.0
101 – 200	143	23.2
201 – 300	60	9.8
301 – 400	34	5.5
Greater than 400	82	13.3
Student Enrollment in School District		
2,799 or less enrollment	270	43.9
2,800 – 9,999	190	30.9
10,000 – 19,999	52	8.5
20,000 – 44,999	66	10.7
45,000 or greater enrollment	37	6.0
USDA Region	45	7.1
Mid-Atlantic	35	5.5
Midwest	106	60.7
Mountain Plains	53	8.3
Northeast	46	7.2
Southeast	182	28.7
Southwest	168	26.5
Western	35	5.5

<sup>a</sup> Total N varies based on responses for each question

Table 2

*Mean Agreement Ratings and Standard Deviations for Practices in Serving the Nutritional Needs of the PreK Child*

<b>Statement</b>	<b>N</b>	<b>Mean<sup>a</sup></b>	<b>SD</b>
I encourage children to try new foods.	554	3.59	.54
The food service staff follows the USDA meal pattern.	632	3.58	.56
I encourage children to try the foods offered.	555	3.58	.55
My immediate supervisor supports a consistent routine for this age child.	583	3.56	.56
Children who do not have lunch money are fed following school policy.	603	3.56	.58
The food service staff is friendly to the children.	639	3.52	.59
My immediate supervisor values my contribution to the PreK Program.	596	3.52	.61
I watch to see the foods the children are eating.	546	3.51	.59
During mealtime I make an effort to interact with children.	534	3.50	.61
Food is available for children who come to school hungry.	642	3.50	.65
School meals play an important role in the overall nutritional intake of the PreK child.	649	3.49	.61
Nutrition concerns of children with special needs are met.	637	3.48	.63
Parents are welcome during mealtime.	633	3.47	.67
Age-appropriate serving sizes are provided.	662	3.43	.62
The mealtime environment is pleasant.	646	3.39	.60
Required documentation/forms are completed allowing me to respond effectively.	510	3.38	.63
Mealtime provides an opportunity to link good nutrition, learning, and socialization.	638	3.38	.59
Mealtime provides an opportunity to introduce a variety of new foods.	657	3.35	.62
The mealtime experience meets the needs of this age child.	647	3.34	.66
Nutritious choices of menu items are provided.	649	3.32	.70
Fine motor skills are developed during mealtime.	585	3.32	.60
Meals are planned with the children in mind.	646	3.30	.71
Age appropriate menu items are provided.	650	3.29	.66
Nutritional services are provided for PreK children arriving to school late.	613	3.28	.74
The school staff operates as a child-focused, cohesive team.	619	3.25	.67
The dining room furniture is age appropriate.	625	3.24	.78
School personnel stay current on PreK trends.	574	3.19	.75
Teachers eat the same meals as the children.	617	3.12	.88
Staff is trained on issues related to communicating with young children.	594	3.11	.75
Age-appropriate nutrition education resources are utilized.	575	3.10	.73

<sup>a</sup> Scale = 1, strongly disagree, to 4, strongly agree

(table continues)

Table 2 continued

*Mean Agreement Ratings and Standard Deviations for Practices in Serving the Nutritional Needs of the PreK Child*

<b>Statement</b>	<b>N</b>	<b>Mean<sup>a</sup></b>	<b>SD</b>
Meal schedules are adjusted to meet the needs of the PreK child.	621	3.08	.80
A system is in place to insure issues regarding the PreK child are addressed.	550	3.06	.78
Nutrition education involves parents.	596	3.02	.84
Teachers eat with their children during mealtime.	598	2.95	1.00
Staff is trained on child development issues.	572	2.92	.84
PreK nutrition information is disseminated to parents.	565	2.91	.80
Food service director and school staff communicate on menu issues.	617	2.88	.91
PreK nutrition information is disseminated to the school community.	544	2.81	.82
Partnerships are established with community agencies to promote nutrition education.	528	2.78	.84
Recess/play time is scheduled prior to lunch time.	499	2.77	.91
Teachers and food service staff communicate on menu issues.	608	2.69	.87
The teachers partner with the food service staff to use the cafeteria as a learning lab.	573	2.41	.82

<sup>a</sup> Scale = 1, strongly disagree, to 4, strongly agree

Practices with the highest agreement mean ratings were: “I encourage children to try new foods” (3.59 ± .54), “the food service staff follows the USDA meal pattern” (3.58 ± .56), “I encourage children to try the foods offered” (3.58 ± .55), “my immediate supervisor supports a consistent routine for this age child” (3.56 ± .56), and “children who do not have lunch money are fed following school policy” (3.56 ± .58). Practices with the lowest mean ratings were: “the teachers partner with the food service staff to use the cafeteria as a learning lab” (2.41 ± .82), “teachers and food service staff communicate on menu issues” (2.69 ± .87), “recess/play time is scheduled prior to lunch time” (2.77 ± .91), “partnerships are established with community agencies to promote nutrition education” (2.78 ± .84), and “PreK nutrition information is disseminated to parents” (2.88 ± .80).

One of the objectives of the research study was to compare the differences among the survey groups with regard to the practices related to serving the nutritional needs of Pre-K children. Principal component factor analysis with varimax rotation generated seven practice factors explaining 63.7% variance. Items loading .40 or greater were retained. One item did not load and thus was eliminated; four items double loaded, and in three cases the higher loading was retained. The fourth was retained with the lower loading factor because of cognitive association with the other items in the factor. There was adequate internal consistency for six of the factors; the seventh factor reported an alpha level of .61, which the researchers recognize as a limitation. The alpha levels of the remaining six factors range from .83 to .89. The practice factors were Communication and Training with 10 items and a Cronbach alpha of .89; Nutritious Meals and Meal Experiences with 10 items and a Cronbach alpha of .88; Administrative Support with three items and a Cronbach alpha of .85; Encouragement with four items and a Cronbach alpha of .85; Mealtime Opportunities with seven items and a Cronbach alpha of .84; Dining Environment with three items and a Cronbach alpha of .83; and Healthy Wellness Practices with three items and a Cronbach alpha of .61. Table 3 presents the means and standard deviations of the practice items by factor category and alpha levels for each factor. The first factor, Communication and Training, encompasses communication and training issues related to child development, nutrition education, and menus among various school constituencies. Included are statements such as “the school staff operates as a child-focused cohesive team,” “staff is trained on issues related to communicating with young children,” and “nutrition education involves parents.” The factor, Nutritious Menus and Meal Experiences, comprises items related to mealtime and menu issues. Statements in this factor are “the food service staff follows the USDA meal pattern,” “the food service staff is friendly to the children,” and “food is available

Table 3

*Means and Standard Deviations of the Practice Items by Factors*

		<b>Mean</b>	<b>SD</b>
<b>Item #1</b>	<b>Factor I: Communication and Training</b> ( $\alpha = .89$ ) ( $n = 377$ )	<b>2.95</b>	<b>.59</b>
24	The school staff operates as a child-focused cohesive team.	3.22	.68
22	Staff is trained on issues related to communicating with young children.	3.07	.75
35	Nutrition education involves parents.	3.03	.81
30	A system is in place to insure issues regarding the PreK child are addressed.	3.02	.80
39	PreK nutrition information is disseminated to parents.	2.94	.79
23	Staff is trained on child development issues.	2.90	.84
26	Food service director and school staff communicate on menu issues.	2.88	.91
38.	PreK nutrition information is disseminated to the school community.	2.83	.81
36	Partnerships are established with community agencies to promote nutrition education.	2.82	.83
25	Teachers and food service staff communicate on menu issues.	2.68	.85
<b>Item #2</b>	<b>Factor II: Nutritious Menus and Meal Experiences</b> ( $\alpha = .88$ ) ( $n = 484$ )	<b>3.38</b>	<b>.47</b>
21	The food service staff follows the USDA meal pattern.	3.60	.57
20	The food service staff is friendly to the children.	3.55	.58
17	Food is available for children who come to school hungry.	3.54	.63
16	Nutrition concerns of children with special needs are met.	3.50	.64
19	Age appropriate serving sizes are provided.	3.45	.61
7	Nutritious choices of menu items are provided.	3.36	.72
8	Age appropriate menu items are provided.	3.34	.64
15	Meals are planned with the children in mind.	3.32	.71
42	Nutritional services are provided for PreK children arriving to school late.	3.30	.74
13	Teachers eat the same meals as the children.	3.16	.86
<b>Item #3</b>	<b>Factor III: Administrative Support</b> ( $\alpha = .85$ ) ( $n = 487$ )	<b>3.48</b>	<b>.54</b>
3	My immediate supervisor supports a consistent routine for this age child.	3.57	.57
1	My immediate supervisor values my contribution to the PreK Program.	3.54	.61
2	Required documentation/forms are completed allowing me to respond efficiently.	3.39	.63

(table continues)

Table 3 continued

*Means and Standard Deviations of the Practice Items by Factors*

		<b>Mean</b>	<b>SD</b>
<b>Item #4</b>	<b>Factor IV: Encouragement</b> ( $\alpha = .85$ ) ( $\underline{n} = 492$ )	<b>3.53</b>	<b>.49</b>
10	I encourage children to try the foods offered.	3.61	.54
11	I encourage children to try new foods.	3.61	.54
12	I watch to see the foods the children are eating.	3.54	.57
18	During mealtime I make an effort to interact with children.	3.53	.59
<b>Item #5</b>	<b>Factor V: Mealtime Opportunities</b> ( $\alpha = .84$ ) ( $\underline{n} = 487$ )	<b>3.32</b>	<b>.47</b>
34	School meals play an important role in the overall nutritional intake of the PreK child.	3.50	.60
37	Parents are welcomed during mealtime.	3.49	.67
32	Mealtime provides an opportunity to link good nutrition, learning, and socialization.	3.43	.58
33	Mealtime provides an opportunity to introduce a variety of new foods.	3.37	.62
31	Fine motor skills are developed during mealtime.	3.34	.59
41	School personnel stay current on PreK trends	3.19	.75
28	Meal schedules are adjusted to meet the needs of the PreK child.	3.12	.79
<b>Item #6</b>	<b>Factor VI: Dining Environment</b> ( $\alpha = .83$ ) ( $\underline{n} = 611$ )	<b>3.32</b>	<b>.59</b>
4	The mealtime environment is pleasant.	3.39	.60
5	The mealtime experience meets the needs of this age child.	3.35	.65
6	The dining room furniture is age appropriate.	3.25	.77
<b>Item #7</b>	<b>Factor VII: Healthy Wellness Practices</b> ( $\alpha = .61$ ) ( $\underline{n} = 428$ )	<b>2.72</b>	<b>.74</b>
14	Teachers eat with their children during mealtime.	2.92	1.01
29	Recess/play time is scheduled prior to lunch time.	2.73	.91
27	The teachers partner with the food service staff to use the cafeteria as a learning lab.	2.39	.82

for children who come to school hungry.” The third factor, Administrative Support, relates to the role of the supervisor and required documentation. An example of a statement in this factor is “my immediate supervisor supports a consistent routine for this age child.” Encouragement is the fourth factor and encompasses statements related to this supportive role. Statements in this factor include “I encourage children to try the foods offered” and “I encourage children to try new foods.” The fifth factor, Mealtime Opportunities, relates to the many possibilities for learning and interaction with PreK children that can occur during mealtime. Examples of

statements in this factor are “school meals play an important role in the overall nutritional intake of the PreK child,” “parents are welcomed during mealtime,” and “mealtime provides an opportunity to link good nutrition, learning, and socialization.” Statements that loaded onto the Dining Environment factor revolve around the mealtime environment and the dining room. One example of these statements is “the mealtime environment is pleasant.” The seventh factor is Healthy Wellness Practices. An example of the statements included in this factor is “teachers eat with their children during mealtime.”

Analysis of variance was conducted to determine whether ratings of practice factors differed based on job titles of school professionals who serve PreK students. Significant differences were found for four factors: Encouragement, Administrative Support, Nutritious Meals and Meal Experiences, and Communication and Training (Table 4).

Significant differences were found for the Encouragement factor. Means ranged from 3.38 for principals to 3.69 for PreK teachers. The means of the PreK teacher were significantly different from the food service director ( $p < .001$ ) and the food service manager ( $p = .015$ ). The responses of elementary principals were significantly different from those of PreK teachers ( $p < .001$ ) and early education directors ( $p = .043$ ). Upon examination of the statements included in the Encouragement factor, these differences reflect the role of teachers and their daily contact with PreK children as related to encouraging children to eat.

The second factor in which significant differences were found was Administrative Support. Means for this factor ranged from 3.31 for food service directors to 3.64 for PreK teachers. The means of the PreK teacher were significantly higher than the means of food service directors ( $p < .001$ ) and food service managers ( $p = .001$ ). Elementary principals’ responses were

Table 4

*Means and Standard Deviations of Practice Item Factors by Job Title*

<b>Practice Factor</b>	<b>Job Title</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Encouragement*</b>		<b>549</b>	<b>3.53</b>	<b>.49</b>
	Food Service Director	141	3.44	.54
	Food Service Manager	128	3.51	.47
	PreK Teacher	150	3.69	.39
	Elementary Principal	83	3.38	.53
	Early Education Director	47	3.62	.41
<b>Administrative Support*</b>		<b>567</b>	<b>3.49</b>	<b>.53</b>
	Food Service Director	152	3.31	.59
	Food Service Manager	128	3.40	.48
	PreK Teacher	149	3.64	.45
	Elementary Principal	80	3.59	.55
	Early Education Director	.58	3.62	.47
<b>Nutritious Meals and Meal Experiences*</b>		<b>616</b>	<b>3.37</b>	<b>.47</b>
	Food Service Director	173	3.54	.40
	Food Service Manager	133	3.52	.37
	PreK Teacher	153	3.21	.47
	Elementary Principal	93	3.22	.54
	Early Education Director	64	3.24	.46
<b>Mealtime Opportunities</b>		<b>617</b>	<b>3.32</b>	<b>.47</b>
	Food Service Director	173	3.33	.47
	Food Service Manager	133	3.34	.44
	PreK Teacher	153	3.33	.47
	Elementary Principal	94	3.22	.53
	Early Education Director	64	3.35	.43
<b>Dining Environment</b>		<b>601</b>	<b>3.32</b>	<b>.59</b>
	Food Service Director	165	3.34	.57
	Food Service Manager	129	3.37	.50
	PreK Teacher	150	3.29	.67
	Elementary Principal	93	3.32	.62
	Early Education Director	64	3.24	.60

<sup>a</sup> Items presented in descending order based on practice factor means (table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\* p<.05 comparison by job title using ANOVA

Table 4 continued

*Means and Standard Deviations of Practice Item Factors by Job Title*

<b>Practice Factor</b>	<b>Job Title</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Communication and Training*</b>		<b>617</b>	<b>2.94</b>	<b>.59</b>
	Food Service Director	173	3.03	.51
	Food Service Manager	133	3.02	.57
	PreK Teacher	153	2.82	.65
	Elementary Principal	94	2.83	.63
	Early Education Director	64	2.96	.55
<b>Healthy Wellness Practices</b>		<b>591</b>	<b>2.72</b>	<b>.74</b>
	Food Service Director	159	2.70	.72
	Food Service Manager	128	2.72	.82
	PreK Teacher	149	2.78	.75
	Elementary Principal	92	2.58	.66
	Early Education Director	63	2.81	.66

<sup>a</sup> Items presented in descending order based on practice factor means

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\*  $p \leq .05$  comparison by job title using ANOVA

significantly different from food service directors ( $p = .001$ ), and early education directors' responses were significantly different from food service directors ( $p = .001$ ) and food service managers ( $p = .049$ ). Statements in this factor revolve around the support from the immediate supervisor and validate the higher means of PreK teachers, principals, and early education directors.

Responses to the Nutritious Meals and Meal Experiences factor also generated significant differences based on job title. Means ranged from 3.21 for PreK teachers to 3.54 for food service directors. Means for food service directors were significantly higher than PreK teachers ( $p < .001$ ), elementary principals ( $p < .001$ ), and early education directors ( $p < .001$ ). Food service managers were significantly different from PreK teachers ( $p < .001$ ), elementary principals ( $p < .001$ ), and early education directors ( $p < .001$ ). Items in this factor center on the provision of nutritious meals for the PreK child; the different responses can be attributed to the

fact that food service directors and managers have greater knowledge of and responsibility for this topic than other school professionals do.

The fourth factor in which significant differences were found is Communication and Training. Means ranged from 2.82 for PreK teachers to 3.03 for food service directors. PreK teachers had means significantly lower than food service directors ( $p = .012$ ) and food service managers ( $p = .041$ ).

### ***Implications for Education and Training***

Training modules should be developed addressing each of the seven factors: Communication and Training, Nutritious Menus and Meal Experiences, Administrative Support, Encouragement, Mealtime Opportunities, Dining Environment, and Healthy Wellness Practices. The modules should provide strategies to address the significant differences identified in the research in order to positively impact the outcome of serving the PreK child. Additional training modules could elucidate the appropriate role of each school professional and highlight best practices in serving the nutritional needs of the PreK child.

### ***Perceptions in Serving the Nutritional Needs of the PreK Child***

Respondents were provided with 24 statements about perceptions in serving the nutritional needs of the PreK child at their school and were asked to indicate their agreement with each statement using a scale ranging from 1, strongly disagree, to 4, strongly agree, with a fifth response for “not applicable.” Table 5 presents the means and standard deviations for the 24 perception statements in descending order of agreement. Eighteen of the 24 statements had mean ratings greater than three, signifying that school professionals agreed or strongly agreed with these perception statements. Perceptions with the highest agreement mean ratings were:

Table 5

*Mean Agreement Ratings and Standard Deviations for Perceptions in Serving the Nutritional Needs of the PreK Child*

<b>Statement</b>	<b>N</b>	<b>Mean<sup>a</sup></b>	<b>SD</b>
Children feel safe in the cafeteria.	588	3.42	.57
School professionals can influence PreK children to make healthy food choices.	654	3.40	.57
Children view the cafeteria as a friendly place.	588	3.38	.58
Teaching the child to make good food choices is challenging.	632	3.30	.63
The style of service in the cafeteria is child friendly.	614	3.29	.69
It is important that the children eat in the cafeteria.	597	3.28	.78
School staff model appropriate mealtime behavior.	628	3.27	.67
School professionals are child centered when addressing the PreK child.	612	3.27	.65
Nutrition services is an integral component to educating the PreK child.	629	3.26	.68
Parents want their child to eat in the cafeteria.	526	3.23	.68
School professionals understand PreK developmental issues.	613	3.23	.67
Children who have playtime prior to lunch eat more of their meal.	465	3.21	.70
Resources are needed to promote school partnerships with parents.	603	3.19	.62
The food service staff is willing to modify the menu to improve food acceptability.	628	3.18	.74
Menus in our school are appropriate for PreK children.	651	3.18	.67
The dining furniture is child friendly.	625	3.17	.76
Classes are scheduled for mealtime based on available space in the dining room.	546	3.14	.78
Children who have playtime prior to lunch focus more on eating than talking.	471	3.01	.75
Creative ways are needed to distribute meal components to provide a p.m. snack.	497	2.97	.77
Serving line equipment is appropriate for children.	570	2.96	.75
Family style meals are appropriate for the PreK child.	595	2.92	.84
Children enjoy eating raw vegetables.	635	2.86	.63
Parents have input to school nutrition services.	583	2.53	.75
Children enjoy eating cooked vegetables.	634	2.44	.67

<sup>a</sup> Scale = 1, strongly disagree, to 4, strongly agree

“children feel safe in the cafeteria” ( $3.42 \pm .57$ ), “school professionals can influence PreK children to make healthy food choices” ( $3.40 \pm .57$ ), “children view the cafeteria as a friendly place” ( $3.38 \pm .58$ ), and “teaching the child to make good food choices is challenging” ( $3.30 \pm .63$ ). Perceptions with the lowest mean ratings were: “children enjoy eating cooked vegetables” ( $2.44 \pm .67$ ), “parents have input to school nutrition services” ( $2.53 \pm .75$ ), “children enjoy eating raw vegetables” ( $2.86 \pm .63$ ), and “family style meals are appropriate for the PreK child” ( $2.92 \pm .84$ ).

Principal component factor analysis of the perception statements did not yield factors that held together cognitively with adequate internal consistency. Analysis of variance was conducted to determine whether ratings of the 24 perception statements differed based on job titles of school professionals who service PreK students. Significant differences were found for 17 statements (Table 6), several of which will be discussed. Two statements encompassed menu issues for PreK children. Mean ratings for the statement “the food service staff is willing to modify the menu to improve food acceptability” ranged from 2.88 for PreK teachers to 3.46 for food service directors. Food service directors rated this statement significantly higher than PreK teachers ( $p < .001$ ), elementary principals ( $p < .001$ ), and early education directors ( $p < .001$ ) did. Food service managers also rated this statement significantly higher than did the PreK teachers ( $p < .001$ ), elementary principals ( $p = .001$ ), and early education directors ( $p = .001$ ). Mean ratings for the statement “menus in our school are appropriate for PreK children” ranged from 3.02 for PreK teachers to 3.44 for food service directors. Food service directors rated this statement significantly higher than PreK teachers ( $p < .001$ ), elementary principals ( $p < .001$ ), and early education directors ( $p = .006$ ). Food service managers also rated this statement significantly higher than PreK teachers ( $p < .001$ ) and elementary principals ( $p = .017$ ) did. Two

Table 6

*Means and Standard Deviations of Perception Statements by Job Title*

<b>Perception Statement</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>			
Children feel safe in the cafeteria.	541	3.42	.55
Food Service Director	155	3.44	.56
Food Service Manager	124	3.53	.52
PreK Teacher	124	3.36	.53
Elementary Principal	86	3.40	.60
Early Education Director	52	3.29	.57
School professionals can influence PreK children to make healthy food choices.*	600	3.39	.58
Food Service Director	168	3.46	.59
Food Service Manager	129	3.36	.59
PreK Teacher	149	3.41	.56
Elementary Principal	91	3.24	.56
Early Education Director	63	3.44	.56
Children view the cafeteria as a friendly place.*	540	3.38	.58
Food Service Director	152	3.43	.57
Food Service Manager	124	3.52	.52
PreK Teacher	127	3.33	.58
Elementary Principal	85	3.27	.61
Early Education Director	52	3.15	.61
Teaching the child to make good food choices is challenging.*	579	3.31	.63
Food Service Director	159	3.53	.54
Food Service Manager	127	3.40	.55
PreK Teacher	146	3.22	.67
Elementary Principal	87	3.14	.67
Early Education Director	60	3.03	.61
The style of service in the cafeteria is child friendly.*	563	3.28	.69
Food Service Director	162	3.44	.58
Food Service Manager	127	3.44	.59
PreK Teacher	130	3.16	.77
Elementary Principal	89	3.11	.71
Early Education Director	55	2.96	.79

<sup>a</sup> Items presented in descending order based on total means

(table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\*  $p \leq .05$  comparison by job title using ANOVA

Table 6 continued

*Means and Standard Deviations of Perception Statements by Job Title*

<b>Perception Statement</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>			
It is important that the children eat in the cafeteria.*	549	3.28	.78
Food Service Director	152	3.42	.73
Food Service Manager	123	3.56	.56
PreK Teacher	131	3.20	.81
Elementary Principal	85	3.02	.86
Early Education Director	58	2.92	.86
School professionals are child centered when addressing the PreK child.	559	3.26	.65
Food Service Director	147	3.37	.58
Food Service Manager	110	3.23	.59
PreK Teacher	146	3.19	.71
Elementary Principal	93	3.27	.72
Early Education Director	63	3.22	.68
Nutrition services is an integral component to educating the PreK child.	580	3.26	.67
Food Service Director	158	3.34	.67
Food Service Manager	121	3.29	.60
PreK Teacher	146	3.23	.72
Elementary Principal	91	3.18	.63
Early Education Director	64	3.22	.72
School staff model appropriate mealtime behavior.	574	3.25	.67
Food Service Director	157	3.16	.69
Food Service Manager	123	3.19	.69
PreK Teacher	145	3.36	.65
Elementary Principal	89	3.28	.66
Early Education Director	60	3.32	.62
Parents want their child to eat in the cafeteria.*	480	3.23	.69
Food Service Director	128	3.32	.66
Food Service Manager	107	3.36	.55
PreK Teacher	114	3.23	.73
Elementary Principal	81	3.06	.71
Early Education Director	50	3.04	.78

<sup>a</sup> Items presented in descending order based on total means

(table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\* p≤.05 comparison by job title using ANOVA

Table 6 continued

*Means and Standard Deviations of Perception Statements by Job Title*

<b>Perception Statement</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>			
Children who have playtime prior to lunch eat more of their meal.*	423	3.22	.70
Food Service Director	114	3.48	.58
Food Service Manager	97	3.28	.77
PreK Teacher	103	3.04	.71
Elementary Principal	58	3.00	.70
Early Education Director	51	3.16	.61
School professionals understand PreK developmental issues.*	559	3.21	.67
Food Service Director	146	3.34	.64
Food Service Manager	116	3.21	.61
PreK Teacher	142	3.08	.76
Elementary Principal	91	3.26	.65
Early Education Director	64	3.14	.66
Resources are needed to promote school partnerships with parents.*	554	3.20	.62
Food Service Director	150	3.36	.57
Food Service Manager	117	3.17	.63
PreK Teacher	136	3.13	.64
Elementary Principal	90	3.04	.60
Early Education Director	61	3.21	.61
Menus in our schools are appropriate for PreK children.*	597	3.18	.67
Food Service Director	170	3.44	.55
Food Service Manager	131	3.29	.56
PreK Teacher	143	2.90	.74
Elementary Principal	91	3.02	.67
Early Education Director	62	3.11	.68
The foodservice staff is willing to modify the menu to improve food acceptability.*	576	3.17	.74
Food Service Director	169	3.46	.58
Food Service Manager	126	3.36	.57
PreK Teacher	134	2.88	.82
Elementary Principal	90	2.97	.76
Early Education Director	57	2.91	.85

<sup>a</sup> Items presented in descending order based on total means

(table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\*  $p \leq .05$  comparison by job title using ANOVA

Table 6 continued

*Means and Standard Deviations of Perception Statements by Job Title*

<b>Perception Statement</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>			
The dining furniture is child friendly.*	576	3.17	.76
Food Service Director	157	3.32	.69
Food Service Manager	127	3.34	.66
PreK Teacher	143	3.04	.85
Elementary Principal	90	3.01	.71
Early Education Director	59	2.92	.84
Classes are scheduled for mealtime based on available space in the dining room.	497	3.12	.77
Food Service Director	130	3.15	.81
Food Service Manager	112	3.03	.79
PreK Teacher	119	3.29	.65
Elementary Principal	84	3.08	.79
Early Education Director	52	2.96	.77
Children who have playtime prior to lunch focus more on eating than talking.*	428	3.01	.76
Food Service Director	113	3.34	.68
Food Service Manager	102	3.00	.82
PreK Teacher	105	2.77	.76
Elementary Principal	58	2.91	.73
Early Education Director	50	2.92	.63
Creative ways are needed to distribute meal components to provide a p.m. snack.	451	2.96	.77
Food Service Director	115	3.08	.83
Food Service Manager	87	2.95	.68
PreK Teacher	108	2.93	.77
Elementary Principal	84	2.81	.77
Early Education Director	57	3.04	.78
Serving line equipment is appropriate for children.*	524	2.94	.76
Food Service Director	153	3.14	.66
Food Service Manager	122	3.10	.67
PreK Teacher	121	2.71	.84
Elementary Principal	80	2.85	.75
Early Education Director	48	2.65	.81

<sup>a</sup> Items presented in descending order based on total means

(table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\*  $p \leq .05$  comparison by job title using ANOVA

Table 6 continued

*Means and Standard Deviations of Perception Statements by Job Title*

<b>Perception Statement</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>			
Family-style meals are appropriate for the PreK child.*	546	2.93	.84
Food Service Director	153	2.84	.87
Food Service Manager	116	2.77	.86
PreK Teacher	135	3.16	.77
Elementary Principal	84	2.77	.84
Early Education Director	58	3.16	.77
Children enjoy eating raw vegetables.*	581	2.85	.63
Food Service Director	160	2.95	.59
Food Service Manager	128	2.86	.68
PreK Teacher	147	2.85	.62
Elementary Principal	85	2.67	.64
Early Education Director	61	2.84	.52
Parents have input to school nutrition services.*	534	2.52	.76
Food Service Director	151	2.79	.64
Food Service Manager	107	2.66	.71
PreK Teacher	131	2.18	.78
Elementary Principal	90	2.37	.71
Early Education Director	55	2.51	.81
Children enjoy eating cooked vegetables.	582	2.42	.68
Food Service Director	161	2.45	.68
Food Service Manager	129	2.44	.72
PreK Teacher	145	2.38	.69
Elementary Principal	86	2.38	.65
Early Education Director	61	2.43	.59

<sup>a</sup> Items presented in descending order based on total means

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\*  $p \leq .05$  comparison by job title using ANOVA

perception statements in which significant differences were found centered on service and dining issues. Mean ratings for the statement “the style of service in the cafeteria is child friendly” ranged from 2.96 for early education directors to 3.44 for food service directors and food service managers. Food service directors rated this statement significantly higher than PreK teachers ( $p = .003$ ), elementary principals ( $p = .002$ ), and early education directors ( $p < .001$ ) did. Food service

managers also rated this statement significantly higher than did PreK teachers ( $p = .008$ ), elementary principals ( $p = .004$ ), and early education directors ( $p < .001$ ). Means for the statement “the dining room furniture is child-friendly” ranged from 2.92 for early education directors to 3.34 for food service managers. Food service directors rated this statement significantly higher than PreK teachers ( $p = .009$ ), elementary principals ( $p = .013$ ), and early education directors ( $p = .003$ ). Food service managers also rated this statement significantly higher than PreK teachers ( $p = .010$ ), elementary principals ( $p = .013$ ), and early education directors ( $p = .003$ ) did.

### ***Implications for Education and Training***

School nutrition professionals need educational materials to address developmental issues of the PreK child. Because PreK children are new customers in the public school setting, food service directors, managers, and staff need to be aware of the unique needs of 3 and 4 year-old children. Modules should address menu items, equipment issues, and skill development for application to each school’s nutrition program.

Training modules also are needed to address the importance of effective communication among all members of the school team who serve the nutritional needs of the PreK child. Recommendations should include examples of best practices in schools with effective school teams as well as strategies for improving communication.

### ***Barriers in Serving the Nutritional Needs of the PreK Child***

Respondents were presented with 18 statements regarding barriers that could inhibit school professionals from serving the nutritional needs of the PreK child at their school and were asked to indicate their agreement with each statement using a scale ranging from 1, strongly disagree, to 4, strongly agree, with a fifth response for “not applicable.” Table 7 gives the means

and standard deviations for the 18 barrier statements in descending order of agreement. Only four of the 18 statements had mean ratings greater than three, indicating that school professionals either agreed or strongly agreed that these statements were barriers to serving the nutritional needs of the PreK child. Barriers with the highest agreement mean ratings were: “PreK children require additional time to eat” ( $3.10 \pm .72$ ), “school staff needs continuous training on nutrition education” ( $3.06 \pm .68$ ), “meals brought from home consist of unhealthy snack items” ( $3.04 \pm .73$ ), and “handling trays and opening items present challenges for the PreK child” ( $3.01 \pm .73$ ). Statements with the lowest mean ratings were: “adequate space is unavailable for dining” ( $2.17 \pm .81$ ), “the school community is reluctant to change to meet the needs of the PreK child” ( $2.22 \pm .79$ ), “mealtime scheduling is problematic for PreK children” ( $2.28 \pm .79$ ), “the dining furniture prevents an effective mealtime experience” ( $2.29 \pm .88$ ), and “PreK children lose their lunch money” ( $2.29 \pm .77$ ).

As with the perception statements, principal component factor analysis of the barrier statements did not yield factors that held together cognitively with adequate internal consistency. Analysis of variance was conducted to determine whether ratings of the 18 barrier statements differed based on the job titles of school professionals. Significant differences were found for 11 statements (Table 8), several of which will be discussed. Means for “school staff needs continuous training on nutrition education” ranged from 2.87 for PreK teachers to 3.22 for food service directors. Food service directors rated this statement significantly higher than PreK teachers ( $p < .001$ ) and elementary principals ( $p = .003$ ) did. Food service managers also rated this statement significantly higher than PreK teachers ( $p = .007$ ) did. Means for “parents are unclear about their role in promoting physical activity for the PreK child” ranged from 2.76

Table 7

*Mean Agreement Ratings and Standard Deviations for Barriers in Serving the Nutritional Needs of the PreK Child*

<b>Statement</b>	<b>N</b>	<b>Mean<sup>a</sup></b>	<b>SD</b>
PreK children require additional time to eat.	652	3.10	.72
School staff needs continuous training on nutrition education.	645	3.06	.68
Meals brought from home consist of unhealthy snack items.	544	3.04	.73
Handling trays and opening items present challenges for the PreK child.	612	3.01	.73
Parent's knowledge of quality nutrition for the PreK child is limited.	608	2.93	.66
Parents are unclear about their role in promoting physical activity for the PreK child.	586	2.91	.69
Problems arise when adults impose their food preferences during mealtime.	584	2.79	.71
Parents are forgetful about communicating their child's special nutrition needs.	614	2.54	.75
It is difficult to get children to eat the foods offered.	629	2.52	.67
The dining room is often chaotic during mealtime.	590	2.43	.78
Food choices are planned to meet the preferences of older children.	622	2.41	.75
Scheduling adequate time for PreK children to eat is a challenge.	580	2.33	.80
Servicing the nutritional needs of the PreK child is labor intensive.	625	2.32	.74
PreK children lose their lunch money.	456	2.29	.77
The dining room furniture prevents an effective mealtime experience.	609	2.29	.88
Mealtime scheduling is problematic for PreK children.	569	2.28	.79
The school community is reluctant to change to meet the needs of the PreK child.	585	2.22	.79
Adequate space is unavailable for dining.	610	2.17	.81

<sup>a</sup> Scale = 1, strongly disagree, to 4, strongly agree

Table 8

*Means and Standard Deviations of Barrier Statements by Job Title*

<b>Barrier Statement</b>			
<b>Job Title</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
PreK children require additional time to eat.*	600	3.10	.73
Food Service Director	166	3.22	.71
Food Service Manager	129	3.04	.71
PreK Teacher	150	3.13	.78
Elementary Principal	92	2.92	.68
Early Education Director	63	3.07	.69
School staff needs continuous training on nutrition education.*	593	3.06	.68
Food Service Director	170	3.22	.64
Food Service Manager	130	3.15	.66
PreK Teacher	139	2.87	.71
Elementary Principal	90	2.90	.70
Early Education Director	64	3.11	.59
Meals brought from home consist of unhealthy snack items.	505	3.05	.73
Food Service Director	149	3.20	.66
Food Service Manager	115	3.03	.79
PreK Teacher	106	2.96	.75
Elementary Principal	82	2.98	.72
Early Education Director	53	3.00	.68
Handling trays and opening items present challenges for the PreK child.	563	3.02	.73
Food Service Director	158	2.99	.66
Food Service Manager	123	3.02	.76
PreK Teacher	136	3.02	.76
Elementary Principal	86	3.08	.77
Early Education Director	60	3.03	.74
Parent's knowledge of quality nutrition for the PreK child is limited.*	557	2.95	.65
Food Service Director	154	3.10	.57
Food Service Manager	115	2.85	.72
PreK Teacher	139	2.91	.70
Elementary Principal	88	2.86	.61
Early Education Director	61	2.92	.61

<sup>a</sup> Items presented in descending order based on total means

(table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\* p<.05 comparison by job title using ANOVA

Table 8 continued

*Means and Standard Deviations of Barrier Statements by Job Title*

<b>Barrier Statement</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>			
Parents are unclear about their role in promoting physical activity for the PreK child.*	536	2.91	.68
Food Service Director	138	3.11	.67
Food Service Manager	108	2.92	.71
PreK Teacher	139	2.84	.72
Elementary Principal	88	2.76	.63
Early Education Director	63	2.86	.56
Problems arise when adults impose their food preferences during mealtime.*	539	2.79	.71
Food Service Director	154	3.08	.65
Food Service Manager	116	2.79	.80
PreK Teacher	126	2.65	.71
Elementary Principal	83	2.58	.59
Early Education Director	60	2.65	.58
Parents are forgetful about communicating their child's special nutrition needs.*	564	2.56	.75
Food Service Director	152	2.74	.75
Food Service Manager	122	2.67	.81
PreK Teacher	142	2.32	.69
Elementary Principal	85	2.49	.67
Early Education Director	63	2.51	.74
It is difficult to get children to eat the foods offered.	577	2.52	.68
Food Service Director	156	2.51	.65
Food Service Manager	127	2.43	.73
PreK Teacher	146	2.61	.70
Elementary Principal	86	2.50	.65
Early Education Director	62	2.55	.67

<sup>a</sup> Items presented in descending order based on total means

(table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\*  $p \leq .05$  comparison by job title using ANOVA

Table 8 continued

*Means and Standard Deviations of Barrier Statements by Job Title*

<b>Barrier Statement</b>		<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>				
The dining room is often chaotic during mealtime.*		543	2.45	.77
Food Service Director		153	2.46	.74
Food Service Manager		118	2.58	.85
PreK Teacher		132	2.48	.77
Elementary Principal		87	2.18	.72
Early Education Director		53	2.45	.70
Food choices are planned to meet the preferences of older children.*		574	2.40	.75
Food Service Director		166	2.23	.69
Food Service Manager		120	2.35	.81
PreK Teacher		140	2.56	.74
Elementary Principal		87	2.47	.74
Early Education Director		61	2.52	.70
Scheduling adequate time for PreK children to eat is a challenge.*		536	2.35	.80
Food Service Director		136	2.54	.79
Food Service Manager		115	2.32	.84
PreK Teacher		138	2.27	.85
Elementary Principal		88	2.19	.69
Early Education Director		59	2.36	.71
Servicing the nutritional needs of the PreK child is labor intensive.*		574	2.33	.75
Food Service Director		164	2.35	.78
Food Service Manager		125	2.25	.73
PreK Teacher		135	2.31	.75
Elementary Principal		90	2.31	.71
Early Education Director		60	2.47	.72
PreK children lose their lunch money.*		422	2.30	.78
Food Service Director		123	2.45	.76
Food Service Manager		102	2.42	.84
PreK Teacher		89	2.04	.82
Elementary Principal		65	2.15	.62
Early Education Director		43	2.33	.64

<sup>a</sup> Items presented in descending order based on total means

(table continues)

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\* p<.05 comparison by job title using ANOVA

Table 8 continued

*Means and Standard Deviations of Barrier Statements by Job Title*

<b>Barrier Statement</b>	<b>N</b>	<b>Mean<sup>ab</sup></b>	<b>SD</b>
<b>Job Title</b>			
The dining furniture prevents an effective mealtime experience.	558	2.28	.88
Food Service Director	152	2.29	.93
Food Service Manager	125	2.26	.90
PreK Teacher	139	2.27	.84
Elementary Principal	86	2.28	.81
Early Education Director	56	2.32	.94
Mealtime scheduling is problematic for PreK children.	521	2.28	.80
Food Service Director	127	2.35	.80
Food Service Manager	112	2.22	.78
PreK Teacher	134	2.28	.84
Elementary Principal	87	2.16	.71
Early Education Director	61	2.41	.82
The school community is reluctant to change to meet the needs of the PreK child.*	537	2.23	.80
Food Service Director	145	2.26	.83
Food Service Manager	110	2.19	.80
PreK Teacher	132	2.33	.81
Elementary Principal	89	1.97	.63
Early Education Director	61	2.41	.82
Adequate space is unavailable for dining.	562	2.16	.79
Food Service Director	156	2.16	.83
Food Service Manager	123	2.11	.81
PreK Teacher	136	2.18	.77
Elementary Principal	90	2.08	.75
Early Education Director	57	2.32	.74

<sup>a</sup> Items presented in descending order based on total means

<sup>b</sup> Scale = 1, strongly disagree, to 4, strongly agree

\*  $p \leq .05$  comparison by job title using ANOVA

for elementary principals to 3.11 for food service directors. Food service directors rated this statement significantly higher than PreK teachers ( $p = .009$ ) and elementary principals ( $p = .002$ ) did. Mean ratings for the statement “problems arise when adults impose their food preferences during mealtime” ranged from 2.58 for elementary principals to 3.08 for food service directors.

Food service directors rated this barrier statement significantly higher than did the food service manager ( $p = .005$ ), PreK teacher ( $p < .001$ ), elementary principal ( $p < .001$ ), and early education director ( $p < .001$ ). Means for the statement “the school community is reluctant to change to meet the needs of the PreK child” ranged from 1.97 for elementary principals to 2.41 for early education directors. Early education directors rated this statement significantly higher than elementary principals ( $p = .007$ ) did. PreK teachers also rated this statement significantly higher than elementary principals ( $p = .006$ ) did.

### ***Implications for Education and Training***

Everyone on the school team makes a contribution, either positive or negative, in serving the nutritional needs of the PreK child. Education materials should be developed for all school team members to utilize in order to overcome the barriers in their specific operations.

Recommendations could be delineated on what could be done to decrease the barriers. For example, if opening items presents challenges for PreK children, a recommendation might be to purchase items that eliminate this problem or to provide closer adult interaction to assist the children. As mentioned previously, educational modules are proposed on the appropriate role of each member of the school team and on effective communication techniques. Understanding each member’s role, valuing the contribution of others, and implementing effective communication techniques with team members should aid in reducing the barriers faced with serving PreK children. Additional education materials are needed on nutrition and menu recommendations to target parents of PreK children.

## **CONCLUSIONS AND RECOMMENDATIONS**

### **Limitations to the Research Study**

There were several limitations to this research study. The response rate of this research is lower than desired, which may cause concern for generalizability of the results. Several causes for this return rate can be proposed. Surveys were returned indicating that the district either did not have a PreK program or only offered a half-day program with no meals. Additional school professionals, knowing that their districts either did not offer a PreK program or did not serve meals in their program, may have discarded their surveys upon receipt. Another cause may be that the food service director, to whom the packet of surveys was mailed, failed to distribute the packets to the identified school professionals or the school professionals did not complete or return the surveys. This, however, may not be a severe limitation in light of the fact that responses were received from all seven USDA regions and that all school professional categories were represented. As mentioned previously, some respondents returned their surveys unanswered indicating that their district had a half-day program and did not serve meals; another limitation could be that other school professionals may have completed and returned surveys when it was inappropriate to do so.

### **Research Study Conclusions**

The number of school districts offering PreK classes is increasing; therefore, school nutrition programs should be prepared to serve the needs of this new customer. The findings of this research suggest that serving the nutritional and developmental needs of PreK children is a more wide-ranging and complex undertaking than just serving meals. A team approach should be implemented to fully meet the needs of the PreK child. Team members should include but not be limited to the food service director, food service manager, PreK teachers, principals, and early

education director. Findings from this research suggest that practices in serving the nutritional needs of PreK children factor into seven areas: Communication and Training, Nutritious Meals and Meal Experiences, Administrative Support, Encouragement, Mealtime Opportunities, Dining Environment, and Healthy Wellness Practices. Effective communication among team members is essential. Understanding how each team member can and does contribute in each practice area will enhance the provision of nutritional services for the PreK child.

Upon examination of the perception ratings by school professionals, the majority of items rated 3.20 or higher appear to fall into two categories, dining issues or adult influences. Statements such as “children feel safe in the cafeteria,” “children view the cafeteria as a friendly place,” and “the style of service is child friendly” demonstrate the importance of understanding school professionals’ perceptions related to the dining experience for the PreK child. Statements such as “school professionals can influence PreK children to make healthy food choices,” “teaching the child to make good food choices is challenging,” and “school staff model appropriate mealtime behavior” suggest that positive adult influence on PreK children is recommended and cannot be underestimated. Communication among school team members and full understanding of team members’ roles will alleviate some of the differences in opinions that school professionals indicated regarding several perceptions.

All school professionals either agreed or strongly agreed that 4 of the 18 barrier statements were indeed barriers to serving the nutritional needs of the PreK child. These statements, “PreK children require additional time to eat,” “school staff needs continuous training on nutrition education,” “meals brought from home consist of unhealthy snack items,” and “handling trays and opening items present challenges for the PreK child” should be the launching point for discussion among school team members. School professionals also have

differing opinions regarding other barriers to serving the nutritional needs of the PreK child. As communication and understanding of individual team members' roles increase, school teams can work together to overcome the barriers in their PreK program.

### **Education and Training Implications**

The following are recommendations for additional education and training:

- Training modules should be developed addressing each of the seven factors: Communication and Training, Nutritious Menus and Meal Experiences, Administrative Support, Encouragement, Mealtimes Opportunities, Dining Environment, and Healthy Wellness Practices. The modules should provide strategies to address the significant differences identified in the research in order to improve the outcome of serving the PreK child.
- Additional training modules could elucidate the appropriate role of each school professional and highlight best practices in serving the nutritional needs of the PreK child in the public school setting.
- Educational materials are needed to help school professionals address developmental issues of the PreK child. Since PreK children are new customers in the public school setting, food service directors, managers, and staff need to be aware of the unique needs of 3- and 4-year-old children. Modules should address menu concerns, equipment issues, and motor/skill development for application in their school nutrition program.
- Training modules are needed to address the importance of effective communication among all members of the school team who service the nutritional needs of the PreK child. Recommendations should include examples of best practices in schools with effective school teams as well as strategies for improving communication.

- Education materials should be developed for food service directors and other school team professionals to utilize to overcome the barriers in their specific operations.

Recommendations could be delineated on what could be done to decrease the barrier.

For example, if opening food items present challenges for PreK children,

recommendations might be to purchase items that eliminate this problem or to provide closer adult-child interaction during mealtime.

- Additional education materials are needed on nutrition and menu recommendations to target parents of PreK children.

## REFERENCES

- Barnett, W. S., Hustedt, J. T., Robin, K. B., & Schulman, K. L. (2004). *The state of preschool, 2004 state preschool yearbook*. Retrieved June 24, 2005, from the National Institute for Early Education Research Web site: <http://nieer.org>.
- Briley, M. E., & Roberts-Gray, C. (2005). Position of the American Dietetic Association: Benchmarks for nutrition programs in child care settings. *Journal of the American Dietetic Association, 105*, 979-986.
- FPG Child Development Institute (2005, Spring). Pre-K education in the States. *Early Developments, 9*, Retrieved June 24, 2005, from <http://www.fpg.unc.edu/~ncedl/pages/ED9.cfm>.
- Gilliam, W. S., & Marchesseault, C. M. (2005, March). *From capitols to classrooms, policies to practice: State funded PreKindergarten at the classroom level. Part 1: Who's teaching our youngest student?* Retrieved June 24, 2005, from the National Institute for Early Education Research Web site: <http://nieer.org>.
- Krueger, R. A., & Casey, M. A. (2000). *Focus groups: A practical guide for applied research*. Thousand Oaks, CA: Sage Publications, Inc.
- National Association of Elementary School Principals. (2005). *Leading early education learning communities: What principals should know and be able to do*. Alexandria, VA: Author.
- Oakley, C., & Carr, D. H. (2003). *Steps to nutrition success checklist: A program self-assessment checklist for family day care home and child care center providers participating in the Child and Adult Care Food Program*. (R-64-03). University, MS: National Food Service Management Institute.

Smith, T., Kleiner, A., Parsad, B., & Farris, E. (2003, March). *PreKindergarten in U.S. public schools: 2000 – 2001*. (NCES Publication No. 2003-019). Washington, DC: U.S.

Department of Education, Institute of Education Sciences.

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Appendix A  
Research Concept Paper

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**RESEARCH CONCEPT PAPER**

**Determining the Perceptions, Practices, and Barriers Associated with School Professionals  
Serving the Nutritional Needs of the PreK Child  
in the Public School Setting**

**Purpose**

The purpose of the study is to assess the perceptions, practices, and the perceived barriers facing school nutrition directors/managers and other school professionals (principals, classroom teachers, and early education directors) faced with meeting the nutritional needs of the PreK child in the public school setting.

**Research Objectives**

- Identify states currently providing services to the PreK child in the public school setting.
- Conduct focus group interviews with school nutrition directors and school professionals on the issues associated with providing nutritional needs to the PreK child.
- Conduct observations of PreK children being served in the public school setting.
- Develop a survey instrument(s) to measure school nutrition directors', school nutrition managers', principals', early education directors', and teachers' perceptions, practices, and barriers to serving the nutritional needs of PreK children.
- Conduct a survey on the study groups.
- Compare differences among the survey groups with regard to their perceptions, practices, and the barriers to providing the nutritional needs of PreK children.

**Research Methodology**

**Phase I**

1. Conduct a literature review on the topic.
2. Submit Human Subjects Review Form for Phase I following protocol as established by The University of Southern Mississippi, Institutional Review Board.
3. Conduct focus group interviews with school nutrition directors and school professionals on the issues associated with providing nutritional needs to the PreK child.
4. Conduct observations of PreK children being served in the public school setting.
5. Contact a sample (a minimum of one state per USDA region) of State agencies with PreK participation or purchase mailing labels from Market Data Retrieval for potential survey participants.
6. Develop survey instrument(s).



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7. Critique the survey instrument(s) for preliminary validation, using a panel of four to eight experts.
8. Submit the DRAFT survey instrument(s) to EIAC for review and comments.

**Phase II**

1. Submit Human Subjects Review Form for Phase II following protocol as established by The University of Southern Mississippi, Institutional Review Board.
2. Pilot test the survey instrument(s) by selected target participants for internal consistency, reliability, face validity, content, clarity, and ease of reading.
3. Revise instrument(s) based on pilot results.
4. Distribute survey instrument(s) based on a random selection process.
5. Perform data analysis.
6. Report and disseminate study findings.

**Project Timetable**

**Spring and Summer 2004**

- Conduct a literature review on the topic.
- Submit Human Subject Review Form, Phase I.
- Conduct interviews of study groups and observations of PreK children being served in the public school setting.
- Contact a sample (a minimum of one state per USDA region) of State agencies where PreK participation is reported based on literature review and verifies the public schools and request contact information.

**Fall 2004**

- Present study information to EIAC.
- Develop DRAFT survey instrument(s).
- Submit Human Subject Review Form, Phase II.
- Critique the survey instrument(s) for preliminary validation, using a panel of four to eight experts.
- Submit DRAFT survey instrument(s) to EIAC for review and comments.
- Pilot test the survey instrument(s) by selected target participants for internal consistency, reliability, face validity, content, clarity, and ease of reading.
- Revise instrument(s) based on pilot results.



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Winter 2005

- Submit survey instrument(s) to EIAC for final review.
- Distribute survey instrument(s) based on a random selection process.
- Perform data analysis.

Spring 2005

- Submit final report.

**Outcomes**

Results of the study will provide a better understanding of the needs associated with serving the PreK child in the public school setting. Also, the findings will assist NFSMI in developing education materials and implementing training for those directly association with serving the PreK child.

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Appendix B

Focus Group Confirmation Letter

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July 19, 2004

Karen Green, Director  
School Nutrition Services  
Thomas County School District  
11343 U.S. Highway 319 North  
Thomasville, GA 31757

Dear Ms. Green:

Thank you for agreeing to participate in a research project being conducted by The National Food Service Management Institute, Applied Research Division to identify the issues related with servicing the nutritional needs of the Pre-Kindergarten (PreK) child (ages 3 through 4) in the school setting. The project goal is to explore the perceptions, practices, and barriers associated with school professionals (school nutrition director, school nutrition manager, principal/assistant principal, early education director, and classroom teacher) servicing the nutritional needs of the PreK child.

To accomplish the project goal, Dr. Mary Frances Nettles and I will come to your school district and conduct a focus group discussion with the individuals identified. My intent is to engage these individuals in a discussion, approximately one and a half hours that will ultimately support the project goal. Per our conversation, the selected date is August 9, 2004. The selected location will be the Hand-in-Hand Primary.

Please invite the identified individuals to participate in the discussion and confirm the meeting room. For this discussion to be a success, your support is crucial. Once again, thank you and I look forward to visiting in the Thomas County School District.

I have made a reservation at the Hampton Inn and will meet you there at 8:00 a.m. the morning of August 9<sup>th</sup>. If you have additional questions, please do not hesitate in contacting me at 1-800-321-3054.

Sincerely,

Deborah H. Carr, PhD, RD  
Research Scientist

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Appendix C

Focus Group Questions

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### **Focus Group Questions**

1. How does this age group differ from other elementary children?
2. What do you see as your role in serving the nutrition needs of the PreK child?
3. Based on your experience, what has been the greatest challenge to serving the nutrition needs of the PreK children in the school setting?
4. Describe what it would take to assure a quality environment to serve the nutrition needs of this age group.
5. What factors should be considered to ensure a quality program?
6. What has been your greatest success in serving the nutritional needs of the PreK child in the school setting?
7. If you were provided the opportunity to make a wish list, what information/resources would assist you in serving the nutrition needs of the PreK child?
8. Are there any issues or concerns that we have not discussed?

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Appendix D  
Research Study Questionnaire

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Appendix E  
Pilot Study Cover Letter

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January 25, 2005

Dear School Professional:

The National Food Service Management Institute (NFSMI), Applied Research Division, is conducting a research study to assess the perceptions, practices, and barriers facing school professionals (principal, classroom teacher, early education director, food service director, and food service manager) with serving the nutritional needs of the PreK (PreK) child (ages 3 to 4) in the school setting. Thank you for agreeing to participate in this pilot study. We appreciate your assistance in reviewing the questionnaire and cover letters that have been developed for this project.

The questionnaire was developed from the results of the focus group discussion sessions your school district participated in last year. The NFSMI values the input and insight your school district provided in this study and realizes that our research efforts are made better by involving those at the local level.

To assist with this pilot study, please read and answer all of the questions on the enclosed questionnaire. In addition, use the enclosed blue evaluation form to record your comments, suggestions, or revisions for the questionnaire statements, response categories, and cover letters as well as the time you spent completing the questionnaire. Please focus on the instructions and content of the survey, NOT THE FORMAT; the final version of the survey will be printed as a scannable form. Please return the completed questionnaire and evaluation form in the enclosed self-addressed postage-paid envelope by **Tuesday, February 8**.

Due to the anonymous nature of the study, there are no identifying codes that link your responses to you. We solicit open and honest answers. We also ask that you respond based on your professional position and experiences. This project has been reviewed by the Human Subjects Protection Review Committee at The University of Southern Mississippi, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406, (601) 266-6820.

Your response is important to the success of this study. We appreciate your efforts in completing and reviewing the questionnaire and letters. If you have questions, do not hesitate to contact us by Email at Deborah.Carr@usm.edu or Mary.Nettles@usm.edu or by telephone at 1-800-321-3054.

Sincerely,

Deborah H. Carr, PhD, RD  
Director, Applied Research

Mary Frances Nettles, PhD, RD  
Researcher

Enclosure

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Appendix F  
Survey Evaluation Form

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**Determining the Perceptions, Practices, and Barriers Associated with School Professionals Serving the Nutritional Needs of the PreK Child in the Public School Setting**

**Survey Evaluation Form**

**Thank you for volunteering your time to assist us in the development of this survey. We want to be sure that the cover letters and survey are clear and easy to respond to before beginning our research project. Please assist us by answering the following questions. Revisions will be made based on your suggestions.**

<b>Cover Letter – Food Service Director</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Did the cover letter clearly indicate what the purpose of the research is? If not, suggest improvement.			
Did the cover letter clearly indicate what is expected of the food service director? If not, suggest improvement.			
<b>Cover Letter – School Professional</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Did the cover letter clearly indicate what the purpose of the research is? If not, suggest improvement.			
Did the cover letter clearly indicate what is expected of each participant? If not, suggest improvement.			
<b>Part I</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Were directions for completing the section clear? If not suggest improvement.			
Were the statements written clearly? If not, suggest improvement.			
Were there statements in the section that you would exclude from the questionnaire? If yes, indicate in the last column the statement that you would exclude.			
Were there any other statements that you would include in this section? If yes, indicate statements you would add.			
Were the response categories understandable? If not, suggest improvement.			
<b>Part II</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Were directions for completing the section clear? If not, suggest improvement.			
Were the statements written clearly? If not, suggest improvement.			
Were there statements in the section that you would exclude from the questionnaire? If yes, indicate in the last column the statement that you would exclude.			

<b>Part II</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Were there any other statements that you would include in this section? If yes, indicate statements you would add.			
Were the response categories understandable? If not, suggest improvement.			
<b>Part III</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Were directions for completing the section clear? If not, suggest improvement.			
Were the statements written clearly? If not, suggest improvement.			
Were there statements in the section that you would exclude from the questionnaire? If yes, indicate in the last column the statements that you would exclude.			
Were there any other statements that you would include in this section? If yes, indicate statements you would add.			
Were the response categories understandable? If not, suggest improvement.			
<b>Part IV</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Were directions for completing the section clear? If not, suggest improvement.			
Were the questions in this section clear and understandable? If not, suggest improvement.			
<b>Cover Letter – Follow-up to School Food Service Director</b>	<b>Yes</b>	<b>No</b>	<b>Recommendations for improvement</b>
Did the follow-up letter clearly indicate what the purpose of the research is? If not, suggest improvement.			
Did the follow-up letter clearly indicate what is expected of the food service director? If not, suggest improvement.			

How long did it take you to complete the questionnaire? \_\_\_\_\_ minutes

In the space below, please indicate any additional suggestions for improvement of the questionnaire.

Thank you for your assistance!

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Appendix G

Determination of Proportional Sample for Phase II

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*Determination of Proportional Sample for Phase II*

USDA Region	Number of School Districts with PreK Program <sup>a</sup>	Percentage of Total Districts	Number of School Districts in Research Sample
Mid-Atlantic	249	7.8	55
Midwest	671	21.0	147
Mountain Plains	315	9.9	69
Northeast	375	11.8	82
Southeast	613	19.2	134
Southwest	679	21.2	149
Western	290	9.1	64

<sup>a</sup> Provided by Market Data Retrieval, Shelton, CT.

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Appendix H

Food Service Director Cover Letter

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March 7, 2005

Dear School Food Service Director:

The National Food Service Management Institute (NFSMI), Applied Research Division, is conducting a research study to assess the perceptions, practices, and barriers facing school professionals (food service director, manager, principal, classroom teacher, and early education director) with serving the nutritional needs of the PreK (PreK) child (ages 3 to 4) in the school setting. You play a vital role in the success of this study. We need your help to distribute the survey packets as listed in the steps below.

- ⇒ **Step 1** – Select an elementary school in your district that has a PreK program. If you have more than one elementary school with a PreK program, please select the elementary school with a supportive principal.
- ⇒ **Step 2** – The survey packets are labeled for the five school professionals in your district. Please distribute the survey packets to the early education director, and the elementary principal and food service manager at the school selected in Step 1. Please request that the principal select and distribute the survey packet to the PreK elementary teacher of his/her choosing, as instructed on the principal's packet.
- ⇒ **Step 3** – Complete the survey in the packet labeled food service director and return the survey in the enclosed self-addressed postage-paid envelope by **March 23, 2005**.
- ⇒ **Step 4** – Remind the School Professionals to complete and return the survey in the enclosed self-addressed postage-paid envelope by **March 23, 2005**.

In each packet, there is a cover letter explaining the study, survey questionnaire, large self-addressed postage-paid envelope, and pencil. The questionnaire is to be completed by each school professional representing one of the five professionals selected in your school district. It should take approximately ten minutes to complete the questionnaire. We are asking each participant to return the completed survey questionnaire in the envelope provided by **March 23, 2005**.

School professionals participated in the development of the survey questionnaire as the NFSMI realizes that our research efforts are made better by involving those at the local level. The results of this study will assist USDA, state agencies, and the NFSMI in the development of education resources that will ultimately aid those providing a PreK program.

Due to the anonymous nature of the study, there are no identifying codes linking responses to any individuals. We solicit open and honest answers. We also ask that each person respond based on his/her professional position and experiences. This project has been reviewed by the Human Subjects Protection Review Committee at The University of Southern Mississippi, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406, (601) 266-6820.

Thank you for taking time from your busy schedule to distribute the survey packets, complete your questionnaire, and returning it by **March 23, 2005**. If you have questions, please do not hesitate to contact us by Email at Deborah.Carr@usm.edu or Mary.Nettles@usm.edu or telephone at 1-800-321-3054.

Sincerely,

Deborah H. Carr, PhD, RD  
Director, Applied Research

Mary Frances Nettles, PhD, RD  
Researcher

Enclosure

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Appendix I

School Professional Cover Letter

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March 7, 2005

Dear School Professional:

The National Food Service Management Institute (NFSMI), Applied Research Division, is conducting a research study that will assess the perceptions, practices, and barriers facing school professionals (principal, PreK classroom teacher, early education director, food service director, and food service manager) with serving the nutritional needs of the PreK (PreK) child (ages 3 to 4) in the school setting. Your participation is vital to the study's success. You are one of 3,500 school professionals from across the country to be randomly selected to participate in the study.

School professionals, like yourself, participated in the development of the survey questionnaire as the NFSMI realizes that our research efforts are made better by involving those at the local level. The results of this study will assist USDA, state agencies, and the NFSMI in the development of education resources that will ultimately aid those providing a PreK program.

In this packet, you will find a survey questionnaire, large self-addressed postage-paid envelope, and pencil. The questionnaire is to be completed by you, the school professional representing one of five professionals selected in your school district. It should take approximately ten minutes of your time. Please return the completed survey questionnaire in the envelope provided by **March 23, 2005**.

Due to the anonymous nature of the study, there are no identifying codes that link your responses to you. We solicit open and honest answers. We also ask that you respond based on your professional position and experiences. This project has been reviewed by the Human Subjects Protection Review Committee at The University of Southern Mississippi, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406, (601) 266-6820.

Thank you for taking time from your busy schedule to complete the questionnaire and returning it by **March 23, 2005**. If you have questions, please do not hesitate to contact us by Email at [Deborah.Carr@usm.edu](mailto:Deborah.Carr@usm.edu) or [Mary.Nettles@usm.edu](mailto:Mary.Nettles@usm.edu) or by telephone at 1-800-321-3054.

Sincerely,

Deborah H. Carr, PhD, RD  
Director, Applied Research

Mary Frances Nettles, PhD, RD  
Researcher

Enclosure

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Appendix J

Follow-up Cover Letter

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March 24, 2005

Dear School Food Service Director:

Several weeks ago we mailed you a packet of information regarding a research study to assess the perceptions, practices, and barriers facing school professionals with serving the nutritional needs of the PreK (PreK) child (ages 3 to 4) in the school setting. At the time of the initial mailing, we requested your assistance in distributing the surveys to the early education director, and a principal and school food service manager from an elementary school with PreK. The principal's packet provided instructions on how to select the PreK teacher. We hope that you were able to carve out time from your busy schedule to assist with our request. Without your assistance, this national research study will not be successful. Therefore, we are counting on your support!

Please remind your team members to complete and return the surveys in the self-addressed postage-paid envelopes. The participation of all school professionals involved in servicing the nutritional needs of the PreK child is vital to the success of this study. Due to the anonymous nature of the study, there are no identifying codes that will link any responses to an individual. The results will assist USDA, state agencies, and the NFSMI in the development of education resources that will ultimately aid those providing a PreK program.

Thank you for taking time from your busy schedule to complete your survey and for reminding the school professionals to complete theirs as well. Please ask all team members to return the completed surveys **as soon as possible**. If you have questions, do not hesitate to contact us by Email at Deborah.Carr@usm.edu or Mary.Nettles@usm.edu or telephone at 1-800-321-3054.

Sincerely,

Deborah H. Carr, PhD, RD  
Director, Applied Research

Mary Frances Nettles, PhD, RD  
Researcher

The project has been reviewed by the Human Subjects Protection Review Committee at The University of Southern Mississippi, which ensures that research projects involving human subjects follow federal regulations. Any questions or concerns about rights as a research subject should be directed to the chair of the Institutional Review Board, The University of Southern Mississippi, Box 5147, Hattiesburg, MS 39406, (601) 266-6820.



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