

## **Delivery and Evaluation of Training for School Nutrition Administrators and Managers on Meeting Special Food and Nutrition Needs of Students in the School Setting**

**Charlotte B. Oakley, PhD, RD, LD, FADA; Kathy Knight, PhD, RD, LD; Margie Hobbs, PhD; Lacy M. Dodd, MS; Janie Cole, RD, LD**

*Please note that this study was published before the implementation of Healthy, Hunger-Free Kids Act of 2010, which went into effect during the 2012-13 school year, and its provision for Smart Snacks Nutrition Standards for Competitive Food in Schools, implemented during the 2014-15 school year. As such, certain research may not be relevant today.*

### **ABSTRACT**

#### **Purpose/Objectives**

The purpose of this investigation was to complete a formal evaluation of a project that provided specialized training for school nutrition (SN) administrators and managers on meeting children's special dietary needs in the school setting.

#### **Methods**

The training was provided as part of the *Eating Good and Moving Like We Should* nutrition education program. Two experts in special food and nutrition needs delivered the training. Each four-hour session used a blend of lecture and problem solving activities. The training materials, *Meeting Special Food and Nutrition Needs of Students in the School Setting*, were published by the National Food Service Management Institute. Multiple evaluation strategies were used: pre- and post-training learning assessments, end-of-seminar session reaction evaluations, and a follow-up survey to assess implementation of the training concepts for those attending the two training sessions (N = 42).

#### **Results**

Data show that the training, "Meeting Special Food and Nutrition Needs of Students in the School Setting," was effective in increasing participants' knowledge of various aspects of the federal regulations, as well as specifics of several special needs conditions. The results of the evaluation show the training was delivered in a meaningful manner that met the learning needs of participants. Participants' overall reactions to the training were very positive. Participants reported they were able to apply the information presented in the training to the school setting.

#### **Applications to Child Nutrition Professionals**

The training focused on a critical issue facing SN personnel and was of particular benefit for the population of the region represented in the training. Training, delivered by content experts in a timely manner, is not only practical, but is important to ensure SN personnel are prepared to meet students' nutrition needs. The evaluation results support offering the training to other SN administrators and managers to increase the behavioral knowledge related to providing for the special dietary needs of students with and without disabilities.

### **INTRODUCTION**

The purpose of this project was to provide specialized training on meeting children's special dietary needs at school for school nutrition (SN) administrators and managers in the Mississippi Delta region. SN professionals are required by federal regulations to modify meals for children with

medical authorizations stating that the diet is restricted by a disability, and SN professionals may make modifications for non-disabled children with special dietary needs when properly documented. This project focused on training SN administrators and managers to meet the needs of these children.

Most SN managers serve at least one child in their school with special dietary needs. Diabetes, food allergies, and a variety of disorders that require modifications to the texture of food are the medical conditions reported most frequently (American Diabetes Association, 2003; National Food Service Management Institute [NFSMI], 2006; U.S. Department of Agriculture, Food and Nutrition Service [USDA], 2001). The “Meeting Children’s Special Food and Nutrition Needs in the School Setting” sessions were conducted as part of the *Eating Good and Moving Like We Should* school-based nutrition education program, which provides nutrition education activities for other school personnel, students, parents, and community groups. NFSMI’s *Meeting Children’s Special Food and Nutrition Needs 2006 Breakfast Lunch Training Module* (NFSMI, 2007a) and *Handbook for Children with Special Food and Nutrition Needs Resource Guide* (NFSMI, 2006) were used as the basis for the training. Experienced NFSMI trainers with expertise in special dietary needs provided the training. Additional follow-up support services were available through the NFSMI Help Desk.

According to the Delta Health Alliance (DHA), the 18 counties that comprise the Mississippi Delta share characteristics that impact the health of their residents: they are located in rural areas, have high levels of poverty, and their populations have relatively high percentages of African Americans, making them particularly vulnerable to the disproportionate disease burden that accompanies our nation’s existing racial and ethnic health disparities (DHA, 2008). Children in food insufficient households have lower general health status and more negative health-related symptoms, including under nutrition associated with both under- and overweight. Additionally, children in food insufficient households have higher rates of special nutrition concerns such as diabetes (Cook & Frank, 2008; Seligman, Bindman, Vittinghoff, Kanaya, & Kushel, 2007). The Delta Nutrition Intervention Research Initiative examined food security and other quality of life issues in 36 counties/parishes of the Lower Mississippi Delta region in Arkansas, Louisiana, and Mississippi. Researchers concluded that children living in food insecure households have poorer health-related quality of life (Casey et al., 2005; Champagne et al., 2007). These findings support the importance of addressing the dietary needs of children at school, which may be their most reliable source of nutritious meals (Robert Wood Johnson Foundation, 2010).

Approximately 17% of all U.S. children younger than 18 years have some type of developmental disability. Congress first addressed this concern in the Rehabilitation Act of 1973. Since 1975, these children have been served in the public schools under Public Law 94-142, the Education of All Handicapped Children Act, and since 1986, Public Law 99-457 (Individuals with Disabilities Education Act [IDEA]) expanded the number of children eligible for special meals. In 1990, the Americans with Disabilities Act, Public Law 101-336, extended civil rights protections for Americans with disabilities. These legislative mandates led USDA to develop regulations and policy guidelines that ensure all children have equal access to school meals (Willis & Shockey, 2008). Many students served under this law have health problems that require nutrition intervention and benefit from modifications to the school breakfast and lunch (NFSMI, 1994, 2006).

A growing number of non-disabled children could benefit from dietary modifications at school, such as for overweight, underweight, diabetes, or food allergies. Coordinated efforts are important to meet the needs of students, including nutrition education for school personnel, parents/caregivers, and students themselves. Providing information and training for SN personnel about special dietary needs is a critical support to students in the educational setting, and may in some instances, such as with diabetes and food allergies, be a prevention measure that protects children’s health and safety (Food Insight, 2007).

## METHODOLOGY

In 2009, two "Meeting Special Food and Nutrition Needs of Students in the School Setting" sessions were conducted as part of the *Eating Good and Moving Like We Should* nutrition education program. The Office of Child Nutrition in the Mississippi Department of Education Office of Healthy Schools collaborated with researchers to enlist participants in 18 counties served by the DHA. Twenty-six SN administrators/managers and one foodservice assistant from four counties attended the workshop at the NFSMI, Oxford, MS. Fifteen participants from five additional counties attended the workshop at the Mississippi State Department of Health, Jackson, MS. A total of 42 participants, including, 16 SN administrators participated in the training, as did 25 managers and one foodservice assistant. Participants received NFSMI's *Meeting Children's Special Food and Nutrition Needs 2006 Breakfast Lunch Training Module* (NFSMI, 2007a) and the *Handbook for Children with Special Food and Nutrition Needs Resource Guide* (NFSMI, 2006). Experienced NFSMI trainers with expertise in special dietary needs provided the training. The training covered four areas: regulations, diabetes, allergies, and inborn errors of metabolism. All topics were designed to increase knowledge in serving students with special dietary needs. NFSMI has previously offered the training at multiple locations throughout the United States. Evaluations from NFSMI-sponsored sessions indicate they were well received and perceived as useful and applicable to the school setting.

The Application to Conduct Research with Human Subjects was approved by the University of Mississippi Institutional Review Board. One method of evaluation of the training was a set of pre- and post-assessment questions designed to assess SN professionals' knowledge of students' special dietary needs. A follow-up survey assessed participants' perceived effectiveness of the training by determining the extent of change or improvement that was made based on the training.

Training sessions were evaluated using the Kirkpatrick Evaluation Model (Kirkpatrick, 1959a, 1959b, 1960a, 1960b; Watkins, Leigh, Foshay, & Kaufman, 1998). The framework uses a basic four-step model for training-specific evaluations: Level 1 measures participants' feelings about training; level 2 measures acquired knowledge, improved skills, or changed attitudes; level 3 measures participants' ability to change on-the-job behavior as a result of the training; and level 4 measures the final results that occur due to training (Kirkpatrick, 1996, 1998). Although widely accepted as the "standard in the field," limitations to the model include: "incompleteness of the model, the assumption of causality, and the assumption of increasing importance of information as the levels of outcomes are ascended" (Bates, 2004).

To measure participants' satisfaction with the training sessions (Kirkpatrick's level 1), NFSMI's training session evaluation tool of 14 Likert-like statements was used. Because reaction to the training was freshest at the completion of the training program, it was important to get immediate responses at the completion of the training session. Responses ranged from "strongly agree" equaled 5 to "strongly disagree" equaled 1 and included two open-ended qualitative questions: "comment on the information that was most useful" and "additional comments." Individual question responses were analyzed to determine the percentage of responses for "strongly agree" or "agree." To be considered effective training, the trainers expected 90% of responses for each question to be "strongly agree" or "agree."

To evaluate whether the training program produced learning or an increase in knowledge, a multiple choice assessment was used (Kirkpatrick's level 2). The NFSMI-developed assessments have been applied in multiple sessions across the United States. Analysis included comparing the percentage of correct answers for each pre- and post-training assessments question to determine differences in scores, signifying learning had occurred. The same questions were asked on both pre- and post-training assessments; questions were reordered for the post-training assessments to ensure validity and reliability, and then questions were aligned for analysis.

Electronic follow-up surveys were administered approximately one year post training (level 3). Participants were asked to describe how they had used the information, indicate any challenges they had experienced in implementing the information, and suggest future training to help them meet the special dietary needs of students and/or use in staff training. Descriptive statistics are used to present the evaluation results.

# RESULTS AND DISCUSSION

## Training evaluation

Table 1 shows the number and percentage of responses that were “strongly agree” or “agree” for the NFSMI training session evaluation instrument. Thirty-nine of the 42 training participants completed the training session evaluation forms. All 39 participants responded that they “strongly agreed” or “agreed” for all questions except questions 6, 9, and 14. For each of these questions, one participant responded with “neutral” which resulted in 97% of the responses being “strongly agreed” or “agreed” for these three questions. There were no training session ratings of “strongly disagree” or “disagree,” and the overall average of all ratings for both sessions was 4.69 using the 5-point scale. This exceptionally high overall average rating indicates the participants were very satisfied with the “Meeting Students’ Special Food and Nutrition Needs in the School Setting” training.

Table 1. SN Administrators’, Managers’, and Foodservice Assistants’ Satisfaction Ratings of Training.

Statement	“Strongly Agree” (N) (%)	“Agree” (N) (%)	Total Number of Ratings (N)	“Strongly Agree” or “Agree” (%)
1. Objectives were clearly stated.	28 (73.7%)	10 (26.3%)	38	100%
2. Objectives were achieved.	21 (55.3%)	17 (44.7%)	38	100%
3. Session provided opportunity to actively participate.	25 (64.1%)	14 (35.9%)	39	100%
4. Content was organized.	28 (73.7%)	10 (26.3%)	38	100%
5. Activities supported learning.	28 (73.7%)	10 (26.3%)	38	100%
6. Activities held my attention.	23 (60.5%)	14 (36.8%)	38	97% <sup>a</sup>
7. I can apply what I learned in this session in my job.	27 (71.1%)	11 (28.9%)	38	100%

8. Trainer(s) answered questions adequately.	26 (68.4%)	12 (31.6%)	38	100%
9. Training activities helped me to understand the content.	25 (64.1%)	13 (33.3%)	39	97% <sup>a</sup>
10. Handouts provided will be useful reference materials.	32 (84.2%)	6 (15.7%)	38	100%
11. Attending the session increased my knowledge on the topic.	30 (76.9%)	9 (23.1%)	39	100%
12. Attending the session increased my skill on the topic.	25 (64.1%)	14 (35.9%)	39	100%
13. I would recommend this session to others.	31 (81.6%)	7 (18.4%)	38	100%
14. Overall, the training session met or exceeded my expectations.	23 (58.9%)	15 (38.5%)	39	97% <sup>a</sup>

<sup>a</sup>One respondent rated this item as “neutral.” Thus, 97% of all the responses for this item were either “strongly agree” or “agree.”

Examining the number and percentage of responses that were at or above the expected level of reporting is preferred to an average of the scores for each question since averaging reveals the way data tend to the “middle” but does not show how the data deviate or “spread.” Rating for each question on the evaluation of the training session exceeded the researchers’ expectations (>90%) with 95% or more of the scores of “strongly agree” or “agree,” which indicated the participants were satisfied with all aspects of the training sessions that were rated on the evaluation. Eighty-four percent of participants “strongly agreed” with statement 10, “the handouts provided will be useful reference materials,” and 82% of the participants “strongly agreed” that they would recommend this session to others.

Participants added comments that indicated they found several topics especially helpful. These topics include: diet for students with childhood diabetes; inborn errors of metabolism, treatment and dietary recommendations for students with phenylketonuria (PKU); and how to help students, as well

as their families, deal with food allergies. Other participants cited that the training materials, which would be used to train other SN personnel, as being the most useful information gained from the workshop. Several participants noted the need for additional workshops, and one participant suggested that SN administrators and managers could benefit from a 2–3 day in-depth training on “special needs children.”

### Pre- and post assessment of knowledge gained

The comparison of the percentage of correct responses to pre-training assessment of knowledge with those of post-training assessment for each of the questions on the lesson topics is provided in Table 2. The trainers encouraged participants to complete the assessment questions; however, they were also informed that there were no penalties associated with not completing the assessment. Not all participants chose to participate in the pre- or post-training assessment process.

Additionally, some participants chose not to answer all items. Participants were further informed that the assessments were one way for the program providers to evaluate the training offered and they were not intended to be considered a test or exam. Pre- and post-training assessments that were returned with no answers marked were excluded from the data analysis. However, pre- or post-training assessments that had at least one answer marked were used and, for these responses, questions with no marked answers were considered incorrect answers, which will help explain why some questions have fewer responses than expected and may explain why it appears some questions were more often answered correctly on the pre- than the post-training assessment.

Table 2. *Correct Responses on Pre- and Post-Training Assessment Questions by SN Administrators and Managers.*

<b>Assessment Questions<sup>a</sup></b>	<b>Correct Responses on Pre-Training (N<sup>b</sup>) (%<sup>c</sup>)</b>	<b>Correct Responses on Post-Training (N<sup>b</sup>) (%<sup>c</sup>)</b>
<u>Regulations</u>		
1. School food service assistants are required to make substitutions and modifications to school meals for students who have disabilities.	2 (4.9%)	10 (30.2%)
2. A student who has a medical condition and requires special food can receive this accommodation if school food service is provided with a statement from a recognized medical authority.	40 (97.6%)	31 (93.9%)
3. When preparing meals for a student with special dietary needs, school food service assistants should never interpret, revise, or change the diet order.	22 (53.7%)	20 (60.6%)
4. When school food service assistants receive information about a student with special needs, they should keep this information confidential and only discuss it on a need-to-know basis.	30 (73.2%)	28 (84.8%)
5. If school food service assistants do not understand the diet order for a student with	39	32

special dietary needs, they should tell their supervisor.	(92.0%)	(97.0%)
<u>Diabetes</u>		
1. Symptoms of diabetes are extreme hunger, unusual weight loss, and excessive thirst.	31 (75.6%)	17 (41.5%)
2. A student with diabetes can have an occasional dessert.	35 (85.4%)	34 (82.9%)
3. A food service assistant can help students with diabetes follow their diabetes meal plans by providing accurate portion sizes.	35 (85.4%)	32 (78.0%)
4. Students with diabetes keep track of the amount of carbohydrate in their diets.	28 (68.3%)	38 (92.7%)
5. A person with type 1 diabetes does not produce insulin.	35 (85.4%)	38 (92.7%)
<u>Allergies</u>		
1. Symptoms of an allergic reaction may include itchy mouth, hoarseness, and nausea.	33 (85.6%)	34 (91.9%)
2. The best treatment for food allergies is to prevent exposure.	24 (61.5%)	29 (78.4)
3. A food service assistant can keep students with allergies safe by doing all EXCEPT saving time by not reading labels on food that has previously been served to students with allergies.	15 (38.5%)	29 (78.4%)
4. Food intolerances are different from food allergies because they do not involve the immune system.	13 (33.3%)	23 (62.2%)

5. Anaphylaxis is a potentially life threatening medical condition.	25 (64.1%)	32 (86.5%)
<u>Inborn Errors of Metabolism</u>		
1. Inborn errors of metabolism are rare genetic disorders.	21 (53.8%)	27 (73.0%)
2. A student with phenylketonuria (PKU) can only have small amounts of protein.	21 (53.8%)	35 (94.6%)
3. A student with galactosemia cannot have dairy products.	27 (69.2%)	26 (70.3%)
4. When serving a student with an inborn error of metabolism keep information about his/her condition confidential.	26 (66.7%)	31 (83.8%)
5. During metabolism, enzymes break down proteins into amino acids.	26 (66.7%)	31 (83.8%)

<sup>a</sup>Forty-one of the 42 individuals who participated in the training responded to the pre-training assessment. Thirty-two individuals who participated in the training responded to the post-training assessment; however, with both the pre- and post-training assessments, not all items on the survey were completed by some individuals.

<sup>b</sup>N=number of individuals who responded correctly to an item the training assessment survey however, with both the pre- and post-training assessments, not all items on the survey were completed by some individuals.

<sup>c</sup>%=the percentage of those who responded correctly to an item on the training assessment surveys; however, with both the pre- and post-training assessments, not all items on the survey were completed by some individuals.

Overall the number of correct responses increased for 16 of the 20 questions and decreased for four out of 20. While the percentage of correct answers for questions one and three (Table 2) increased on the post-training assessment, the percentage of correct responses for each question (30.3% and 60.6%, respectively) was lower than expected. The training material and the pre- and post-training assessment questions were examined. It was determined that for future trainings, modifications will be needed to clarify training concepts, additional time might be needed for complex topics, or perhaps revisions in the assessment questions are needed to clarify rather than confuse the learner.



Researchers noted that the percentage of correct responses for questions 1, 2, and 3 of the diabetes assessment (Table 2) was greater on the pre-training assessment than the post-training assessment. Upon closer examination of the lesson content and the pre- and post-training assessment results, it was noted that the time for the diabetes lesson in the first training session at the NFSMI, Oxford, MS, was shorter than needed to cover all of the information because the lesson prior to the diabetes lesson ran longer than expected. The participants had to complete the post-training assessment for diabetes just before lunch; thus, there may have been insufficient time to complete the post-training assessment.

The data show (Table 2) that the percentage of correct answers for each post-training assessment question related to information on allergies exceeded the percentage of correct answers for the respective question on the pre-training assessment, indicating participants' knowledge increased as a result of the training. For example, the percentage of correct answers increased for the question: A SN assistant can keep students with allergies safe by doing all EXCEPT: a. saving time by not reading labels on food that has previously been served to students with allergies; b. clean table with a household cleaner to remove allergens; c. designate an allergy-free zone in the kitchen; d. be able to identify students with allergies. The percentage of correct answers for the pre-assessment was 38.5% while the percentage of correct answers for the same question on the post-assessment was 78.4%, a gain of 39.9 percentage points.

Although the pre-training assessment results indicate a relatively high level of knowledge of "Errors of Inborn Metabolism," the training session resulted in learning gains for each aspect of "Errors of Inborn Metabolism" as shown by the comparison of pre- and post-training assessment scores for each question (Table 2).

### Assessment of usefulness of the training

Twenty-two of the 42 (52%) participants in the training sessions responded to an electronic survey designed to assess the level of usefulness of the training at the local school level (Kirkpartick level 3). Table 3 shows that the training regarding menu planning and service of meals that met special dietary needs received the highest level of agreement and was very beneficial to the participants. When asked for examples of how the training was used to plan, prepare, and serve meals for students with special needs, 42.9% of those responding indicated they had used the information to help plan, prepare, and serve meals for "students with type 2 diabetes," 33.3% responded "students with type 1 diabetes," and 9.5% indicated "students that required texture modifications." Not surprisingly, most of the respondents (95.2%) reported they had used the information learned in the training to offer meals for students with food allergies. Respondents had not used information related to calorie modifications or for rare metabolic disorders, although, they had indicated on the training session feedback that information on inborn errors of metabolism would be useful.

Table 3. SN Administrators', Managers', and Foodservice Assistants' Responses to Training's Usefulness and Implementation at One Year Follow-Up.

Question:	"Strongly Agree" (N) (%)	"Agree" (N) (%)	"No Opinion" (N) (%)	Total Responses (N)	"Strongly Agree" or "Agree" (%)
Please tell us how the training workshop "Meeting the Special Food and Nutrition Needs of Children" was beneficial to you.					
Information has been helpful to me in planning and serving meals that meet special food and nutrition needs of students	6 (27.3%)	14 (63.6%)	2 (9.1%)	22	90.9%

Training helped me to better understand Federal requirements for meeting special food and nutrition needs of students	7 (31.8%)	12 (54.5%)	3 (13.6%)	22	86.4%
Training helped me to become more involved as a team member with other school personnel in meeting the special food and nutrition needs of students	5 (22.7%)	12 (54.5%)	5 (22.7%)	22	77.3%

When asked to comment on how they had been equipped to become a more involved team member focusing on accomodating students with special needs, participants responded as follows:

- At our monthly nutrition meeting we discuss the special needs of our children at each center and work out a solution.
- Attended planning meetings and explained procedures foodservice has to adhere to.
- Talking to the school nurse, the school counselor, dietitian at the hospital.
- Knowing who is allergic to certain foods helps us be prepared ahead of time when students change buildings (move from one school site to another).
- Met with teachers, nurses, principal, and parents.
- The workshop has encouraged me to become more involved. I am working toward more involvement next school term to get a team effort started.
- Planning the menus for students with special needs.
- Working closer with the parents.
- When we are presented with a special needs child, my staff and I discuss the needs of the child and how to best provide meals that will benefit the child.

Other specific actions taken by participants (20 responses) in the training included the following:

- 70% (14) of those responding reported they had checked to ensure all special dietary requests were on file.
- 80% (16) of those responding reported they had taken action to ensure that food production staff were correctly implementing diet orders.
- 70% (14) of those responding reported they were verifying that staff could accurately identify each student with special dietary orders.
- 25% (5) of those responding reported they had provided special needs training to SN staff.

## CONCLUSIONS AND APPLICATIONS

According to the research-based *essential* knowledge and skills identified in the NFSMI's *Competencies, Knowledge, and Skills for District-Level School Nutrition Professionals in the 21st Century* (NFSMI, 2007b, pp. 26-27), district SN program administrators should:

- Know menu planning and service techniques for children with special food and/or nutrition needs, as appropriate; and
- Know regulations, requirements, and liabilities of serving children with special food and/or nutrition needs.
- Collaborate with school staff, teachers, parents, physicians, and other health professionals to meet the special food and/or nutrition needs of children, as appropriate; and

- Develop policies and procedures to accommodate children with special food and/or nutrition needs.

Similarly, the NFSMI (2003) has identified research-based knowledge and skills for managers, which include the following:

- Know sources of guidance for schools to use in meeting nutritional needs of children with special needs (entry level);
- Ensure special food and nutrition needs are met for students with an appropriately approved diet order from a recognized medical authority (entry level);
- Maintain appropriate USDA guidance for the SN program staff to use when accommodating children with special dietary needs (entry level);
- Know how to follow a medical authorization to modify meals for a special needs child (beyond entry level);
- Alter the food items to meet the nutritional requirements of students with special dietary needs (beyond entry level); and
- Provide required substitutions or modifications in school meals for children whose special needs restrict their diets (beyond entry level).

The training incorporated these concepts and was framed around the USDA *Accommodating Children with Special Dietary Needs in the School Nutrition Programs: Guidance for School Food Service Staff* (USDA, 2001). Additionally, studies have shown that school administrators respond well to theme-based seminars such as this one (Sullivan, Harper, & West, 2001), which are interactive, hands-on, timely, and practical (Sullivan et al., 2002). Other organizations, such as the American Diabetes Association (2003), also stress the importance of the role of a well trained school staff in meeting the daily and emergency needs of students with the special needs associated with diabetes. The USDA's guidance also discusses ways for SN personnel to interact with other responsible parties in the school and community to meet the needs of children (USDA, 2001). Results of this evaluation indicate that "Meeting Special Food and Nutrition Needs of Students in the School Setting" is an effective training program for SN personnel to achieve and/or strengthen the essential knowledge and skills related to providing for the special dietary needs of students.

The American Diabetes Association (2003) has stressed that the diabetes training for SN personnel be provided by health care professionals with expertise in diabetes. The "Meeting Special Food and Nutrition Needs of Students in the School Setting" training sessions were conducted in a standardized format using training materials that had been vetted and carefully revised and were presented by expert trainers with extensive experience in presenting the training to similar audiences. According to the NFSMI, the training materials were designed to help SN professionals understand and apply the laws and regulations that require accommodations for children with special dietary needs, and to familiarize the SN professionals with the special dietary needs most often seen in schools, such as diabetes, food allergies, and inborn errors of metabolism such as PKU (NFSMI, 2007a). Participants clearly benefitted from the training that resulted in a higher level of awareness of the regulations concerning meeting students' special dietary needs in the school meals programs. However, pre- and post-training assessments also indicate the importance that all training provided to SN professionals be presented in a clear and direct manner so that participants are clear on what the correct take home messages are. This is especially important when training on critical topics such as meeting the special dietary needs of children.

An annual survey to assess the implementation of best practice action plans related to serving students with special dietary needs is recommended (Castillo, Carr, & Nettles, 2009). The *Eating Good and Moving Like We Should* program's "Meeting the Special Food and Nutrition Needs of Students in the School Setting" training, based on the NFSMI training program, is consistent and supportive of national efforts to create healthier and safer environments for children through the Child Nutrition Programs.

**For More Information on Meeting Children's Special Food and Nutrition Needs in the School Setting:**

Accommodating Children with Special Dietary Needs in the School Nutrition Programs: Guidance for School Food Service Staff and links to many other valuable resources and websites. Available at [www.fns.usda.gov/](http://www.fns.usda.gov/)

American Diabetes Association's *Diabetes Care at School*. Available at <http://www.diabetes.org/living-with-diabetes/parents-and-kids/diabetes-care-at-school/>  
Diabetes Preparedness in Schools: What do Foodservice Personnel Need to Know to Respond? *Journal of Child Nutrition & Management*. Available at <http://www.schoolnutrition.org/jcnm>  
Culturally Competent Dietetics: Increasing Awareness, Improving Care. May 2010 supplement to the *Journal of the American Dietetic Association*, (110).  
*Handbook for Children with Special Food and Nutrition Needs*, Special Needs Factsheets, Guide to Special Nutrition Needs and Fact Sheets, and Web-based Seminars. Available at <http://www.nfsmi.org/>

HealthierUS School Challenge Resources. Available at <http://healthymeals.nal.usda.gov/>

*Menu Planning for Healthy School Meals*. Available at <http://www.fns.usda.gov/tn/resources/>

NFSMI Best Practice Resource for Serving Students with Special Food and/or Nutrition Needs in School Nutrition Programs and other related research reports. Available at <http://www.nfsmi.org/>

School Meals: Building Blocks for Healthy Children. Available at <http://www.iom.edu/Reports/2009/School-Meals-Building-Blocks-for-Healthy-Children.aspx>

## ACKNOWLEDGEMENTS

The project is funded at least in part by a grant from the U.S. Department of Health and Human Services, Health Resources and Services Administration through the Delta Health Initiative (DHI) to the National Food Service Management Institute and the Department of Nutrition and Hospitality Management, the University of Mississippi. All DHI projects are designed to improve the quality of life for residents of the Mississippi Delta region through education and social, economic, and health care services. Additional support for the project was provided at least in part with funds from the USDA Food and Nutrition Service. The content of this publication does not necessarily reflect the views or policies of the Department, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

## REFERENCES

American Diabetes Association. (2003). Care of children with diabetes in the school and day care setting [Electronic version]. *Journal of Diabetes Care*, 26(Suppl. 1), S131–S135.

Americans with Disabilities Act of 1990, Public Law 101-336.

Bates, R. (2004). A critical analysis of evaluation practice: The Kirkpatrick model and the principle of beneficence. *Evaluation and Program Planning*, 27, 341–347.

Casey, P. H., Szeto, K. L., Robbins, J. M., Stuff, J. E., Connell, C., Gossett, J. M., Simpson, P. M. (2005). Child health related quality of life and household food security. *Archives of Pediatrics and Adolescent Medicine*, 159, 51–56.

Castillo, A., Carr, D. H., Nettles, M. F. (2009). *NFSMI best practice resource for serving students with special food and/or nutrition needs in school nutrition programs* (Publication No. NFSMI R-144-09). University, MS: National Food Service Management Institute. Retrieved from <http://www.nfsmi.org/documentlibraryfiles/PDF/20091207020115.pdf>

Champagne, C. M., Casey, P. H., Connell, C. L., Stuff, J. E., Gossett, J. M., Harsha, D. W., ... Bogle, M. L. (2007). Poverty and food intake in rural America: Diet quality is lower in food insecure adults in the Mississippi Delta. *Journal of the American Dietetic Association*, 107(11), 1886–1894.

Cook, J. T., & Frank, D. A. (2008). Food security, poverty, and human development in the United States. *Annals of the New York Academy of Science*, 1136, 193–209.

Delta Health Alliance. (2008). DHA-08-001: Addressing healthcare gaps in the

Mississippi Delta as a component of the 2008-2009 Delta Health Initiative grant proposal, 4–5.

Food Insight. (2007). Understanding food allergy: A primer for dietitians CPE program. Retrieved from [http://www.foodinsight.org/Resources/Detail.aspx?topic=Understanding\\_Food\\_Allergy\\_A\\_Primer\\_for\\_Dietitians\\_CPE\\_Program](http://www.foodinsight.org/Resources/Detail.aspx?topic=Understanding_Food_Allergy_A_Primer_for_Dietitians_CPE_Program)

Individuals with Disabilities Education Act of 1986. Public Law 99-457.

Kirkpatrick, D. L. (1959a). Techniques for evaluating training programs. *Journal of ASTD*, 13(11), 3–9.

Kirkpatrick, D. L. (1959b). Techniques for evaluating training programs: Part 2-Learning. *Journal of ASTD*, 13(12), 21–26.

Kirkpatrick, D. L. (1960a). Techniques for evaluating training programs: Part 3-Behavior. *Journal of ASTD*, 14(1), 13–18.

Kirkpatrick, D. L. (1960b). Techniques for evaluating training programs: Part 4-Results. *Journal of ASTD*, 14(2), 28–32.

Kirkpatrick, D. L. (1996). Great ideas revisited: Revisiting Kirkpatrick's four-level model [Electronic version]. *Training and Development*, 50(1), 54.

Kirkpatrick, D. L. (1998). *Evaluating training programs: The four levels* (2nd ed.). San Francisco: Berret-Koehler.

Mississippi Department of Health. (2009). Vital Records & Statistics. Retrieved from <http://www.msdh.state.ms.us/>

National Food Service Management Institute. (1994). Managing nutrition services for children with special needs. *NFSMI Insight* (1). Retrieved

from <http://www.nfsmi.org/documentlibraryfiles/PDF/20080313122723.pdf>

National Food Service Management Institute. (2003). *Competencies, knowledge, and skills of effective school nutrition managers* (Publication No. R-110-07). Retrieved

from <http://www.nfsmi.org/documentlibraryfiles/PDF/20090310022657.pdf>

National Food Service Management Institute. (2006). *Handbook for children with special food and nutrition needs*. University, MS: Author. Retrieved

from <http://www.nfsmi.org/documentlibraryfiles/PDF/20080213015556.pdf>

National Food Service Management Institute. (2007a). *Meeting children's special food and nutrition needs in child nutrition programs*. University, MS: Author. Retrieved from <http://nfsmi-web01.nfsmi.olemiss.edu/ResourceOverview.aspx?ID=89>

National Food Service Management Institute. (2007b). *Competencies, knowledge, and skills for district-level school nutrition professionals in the 21st century* (Publication No. R-136-09). University, MS: Author. Retrieved from <http://www.nfsmi.org/ResourceOverview.aspx?ID=284>

Nord, M. (2008). *Food security in the United States: Key statistics and graphics*. Retrieved from [http://www.ers.usda.gov/Briefing/FoodSecurity/stats\\_graphs.htm#food\\_secure](http://www.ers.usda.gov/Briefing/FoodSecurity/stats_graphs.htm#food_secure)

Rehabilitation Act of 1973, Public Law 93-112.

Rehabilitation Act of 1973, Public Law 93-112.

Robert Wood Johnson Foundation. (2010, April). *Food insecurity and risk for obesity among children and families: Is there a relationship?* Retrieved

from <http://www.rwjf.org/files/research/herfoodinsecurity20100504.pdf>

Seligman, H. K., Bindman, A. B., Vittinghoff, E., Kanaya, A. M., & Kushel, M. (2007). Food insecurity is associated with diabetes mellitus: Results from the National Health and Nutrition Examination Survey 1999-2002. *Journal of General Internal Medicine*, 22(7), 1018–1023.

Sullivan, K., Harper, M., & West, C. K. (2001). Professional development needs of school foodservice directors [Electronic version]. *Journal of Child Nutrition & Management*, 25(2), 89–95.

Sullivan, K., Harper, M., & West, C. K. (2002). Training needs of school foodservice site managers [Electronic version]. *Journal of Child Nutrition & Management*, 26(1), 89–95.

U.S. Department of Agriculture, Food and Nutrition Service. (2001). *Accommodating children with special dietary needs in the school nutrition programs: Guidance for school food service staff*.

Retrieved from [www.fns.usda.gov/cnd/guidance/special\\_dietary\\_needs.pdf](http://www.fns.usda.gov/cnd/guidance/special_dietary_needs.pdf)

Watkins, R., Leigh, D., Foshay, R., & Kaufman, R. (1998). Kirkpatrick plus: Evaluation and continuous improvement with a community focus. *Educational Technology Research and Development*, 46(4), 90–96.

Willis, J. H., & Shockey, W. L. (2008). Serving children with special needs. In J. Martin & C. B. Oakley (Eds.). *Managing child nutrition programs: Leadership for excellence* (2nd ed.). Sudbury, MA: Jones and Bartlett.

## BIOGRAPHY

**Oakley** and **Knight** are, respectively, Research Associate Professor and Associate Professor for the Department of Nutrition and Hospitality Management at The University of Mississippi in University, MS. **Hobbs** is the Project Evaluator from Oxford, MS. **Dodd** and **Cole** are Food and Nutrition Specialists with the Department of Nutrition and Hospitality Management at The University of Mississippi.