

Effectiveness of In-Classroom Breakfast Programs



National Food Service Management Institute
The University of Mississippi
1-800-321-3054

2013

This project has been funded at least in part with federal funds from the U.S. Department of Agriculture, Food and Nutrition Service through an agreement with the National Food Service Management Institute (NFSMI) at The University of Mississippi. The contents of this publication do not necessarily reflect the views or policies of the U.S. Department of Agriculture, nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. government.

The information provided in this publication is the result of independent research produced by NFSMI and is not necessarily in accordance with U.S. Department of Agriculture Food and Nutrition Service (FNS) policy. FNS is the federal agency responsible for all federal domestic child nutrition programs including the National School Lunch Program, the Child and Adult Care Food Program, and the Summer Food Service Program. Individuals are encouraged to contact their local child nutrition program sponsor and/or their Child Nutrition State Agency should there appear to be a conflict with the information contained herein, and any state or federal policy that governs the associated Child Nutrition Program. For more information on the federal Child Nutrition Programs please visit www.fns.usda.gov/cnd.

The University of Mississippi is an EEO/Title VI/Title IX/Section 504/ADA/ADEA Employer.

© 2013, National Food Service Management Institute, The University of Mississippi

Except as provided below, you may freely use the text and information contained in this document for non-profit or educational use providing the following credit is included:

Suggested Reference Citation:

Rainville, A. J., King, A. D., and Nettles, M. F. (2013). *Effectiveness of In-Classroom Breakfast Programs*. University, MS: National Food Service Management Institute.

The photographs and images in this document may be owned by third parties and used by The University of Mississippi or The University of Southern Mississippi under a licensing agreement. The universities cannot, therefore, grant permission to use these images. For more information, please contact nfsmi@olemiss.edu.

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

Building the Future Through Child Nutrition

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

PURPOSE

The purpose of the National Food Service Management Institute is to improve the operation of child nutrition programs through research, education and training, and information dissemination.

MISSION

The mission of the National Food Service Management Institute is to provide information and services that promote the continuous improvement of child nutrition programs.

VISION

The vision of the National Food Service Management Institute is to be the leader in providing education, research, and resources to promote excellence in child nutrition programs.

CONTACT INFORMATION

Headquarters

Administrative Division

The University of Mississippi

Phone: 800-321-3054

Fax: 800-321-3061

www.nfsmi.org

Education and Training Division

Information Services Division

The University of Mississippi

6 Jeanette Phillips Drive

P.O. Drawer 188

University, MS 38677-0188

Applied Research Division

The University of Southern Mississippi

118 College Drive #5060

Hattiesburg, MS 39406-0001

Phone: 601-261-2480

Fax: 888-262-9631

Acknowledgments

WRITTEN AND DEVELOPED BY

**Alice Jo Rainville, PhD, RD, CHE, SNS
Professor, Eastern Michigan University**

**Amber D. King, MS, RD
Lecturer, Eastern Michigan University**

**Mary Frances Nettles, PhD, RD
Director
Applied Research Division
The University of Southern Mississippi**

**NFSMI EXECUTIVE DIRECTOR
Katie Wilson, PhD, SNS**

TABLE OF CONTENTS

EXECUTIVE SUMMARY	8
INTRODUCTION	12
Nutritional Benefits	
Academic Benefits	
In-Classroom Breakfast Research Studies	
Research Objectives	
METHODOLOGY	17
Research Design	
Site Selection	
Informed Consent	
Data Collection Instrument	
Data Collection Procedures	
Pilot Study	
Data Analysis	
RESULTS AND DISCUSSION.....	20
Demographics	
Description of Service and Distribution in Pilot District	
Description of Service and Distribution in District A	
Description of Service and Distribution in District B	
Description of Service and Distribution in District C	
Description of Service and Distribution in District D	
Student Outcomes	
Financial Analysis	
Teacher and Custodial Time Requirements	
Menus and Menu Costs	
Compliance with Dietary Guidelines for Americans, 2010	
Effectiveness Data	
CONCLUSIONS AND RECOMMENDATIONS	42
Conclusions	
Limitations	
Education and Training Implications	
Recommendations for Additional Research	
REFERENCES	46

LIST OF TABLES

Table 1: Selected Demographic Information for School Districts Chosen as Case Study Sites.....	21
Table 2: Average Daily Participation (2010-2011) in School Meals for School Districts Chosen as Case Study Sites	22
Table 3: In-Classroom Breakfast Service and/or Distribution in Five Exemplary Districts.....	28
Table 4: School Personnel Comments on Student Issues and School Culture Related to In-Classroom Breakfast	29
Table 5: Labor Costs (Without Fringe Benefits) for In-Classroom Breakfasts in School Districts and Schools Chosen as Case Study Sites	32
Table 6: District B In-Classroom Breakfast Equipment List for 2011-2012	32
Table 7: Equipment Specifications for In-Classroom Breakfast.....	33
Table 8: Menu Planning Considerations Ranked by School Nutrition Program Directors	36
Table 9: Most Popular In-Classroom Breakfast Menu Items.....	37
Table 10: Sample In-Classroom Breakfast Menus (with Food Costs/Breakfast)	38
Table 11: District B Menu Compliance with 2010 Dietary Guidelines for Americans.....	40

LIST OF FIGURES

Figure 1: Breakfast Service in Pilot District.....	23
Figure 2: Service in District A.....	24
Figure 3: Service in District B.....	25
Figure 4: District C Carts	26
Figure 5: Service in District D.....	27
Figure 6: In-Classroom Breakfast Effectiveness Data Collection.....	43

EFFECTIVENESS OF IN-CLASSROOM BREAKFAST PROGRAMS

EXECUTIVE SUMMARY

The benefits of the School Breakfast Program (SBP) have been documented; however, many of America's neediest children are not participating. In Fiscal Year 2010, the National School Lunch Program served more than 31.7 million children daily (U.S. Department of Agriculture [USDA], 2011a). During the same fiscal year, the SBP served far fewer children, totaling only 11.6 million daily. Of those, 9.7 million received their meals free or at a reduced price (USDA, 2011b). A national trend to improve school breakfast participation is the integration of breakfast within the school day and with in-classroom breakfast. Service models include “grab and go,” distribution of breakfasts to each classroom, and mobile breakfast carts in hallways. These in-classroom breakfast programs dramatically increase student access to school breakfast, while positively influencing the nutrition status of school-age children.

In spite of the positive results of in-classroom breakfast programs and SBP studies, some question the feasibility of in-classroom breakfast. Therefore, the purposes of this study were the following:

- Define and identify successful in-classroom breakfast programs based on state agency child nutrition directors’ recommendations;
- Interview school nutrition (SN) directors, SN managers, school administrators, teachers, custodians, and school health personnel to identify student outcomes, such as attentiveness, tardiness, attendance, visits to school nurses, and student behavior;

- Quantify student outcomes, district-level financial analyses of in-classroom breakfast, and teacher and custodial time requirements for in-classroom breakfast; and
- Review menus, food costs, and compliance with *Dietary Guidelines for Americans, 2010*.

This study used a case study method to explore best practices for providing breakfast in the classroom. The study utilized multiple-case designs that followed a replication format, in which the conclusions from each study site contributed to the “whole” study. This type of methodology can be used to conduct a detailed contextual analysis of a program; Reviews of documentation and archival records, direct observation, and structured interviews are used to collect, analyze, and interpret data (Yin, 2003). In this research project, structured and informal interviews, examination of documents, and direct observations were used to collect and analyze data.

State agency directors and Food and Nutrition Service regional directors were asked via e-mail to identify SN directors with exemplary in-classroom breakfast programs. School nutrition directors were contacted via telephone, the study was explained to them, and they were asked to participate. School nutrition directors who agreed to participate were asked to choose a school within their district for this study. If SN directors were willing to participate, letters requesting permission to visit the district were e-mailed to superintendents. Telephone calls and e-mails were used to follow up with SN directors and to make final arrangements for the visits. The University of Southern Mississippi and the Eastern Michigan University Human Subjects Committees approved the protocol and interview questions. Each SN director (n=5) signed a consent form to indicate their willingness to participate in the study.

Part I of the data collection instrument was designed to collect demographics and general information about the district's SBP. Part II of the data collection instrument included a structured interview guide with pre-determined questions designed to collect in-classroom data while visiting the district. The interview guide included questions for SN directors, SN managers, principals, teachers, custodians, and school health personnel. The researchers field tested both the data collection instrument and the procedures for direct observation during a one-day visit to a pilot district in the Midwest region.

After a pilot visit in a Midwest USDA region district, four districts of varying sizes in the Mid-Atlantic, West, Mountain Plains, and Northeast USDA regions were visited. Preparation, distribution, and service of breakfast were observed in elementary, middle, and high school settings. School nutrition directors, principals, teachers, and other school personnel were interviewed.

The analysis of data revealed that in-classroom breakfast improves school culture and has a positive effect on student behavior. Schools that offer in-classroom breakfast have experienced dramatic increases in participation, which leads to increased revenue. School nutrition directors, SN managers, principals, teachers, custodians, and school health staff were supportive of in-classroom breakfast programs and the effect of these programs on nutrition intake and readiness to learn. Some of the most impressive results in districts are listed below:

- A high school that served 50 breakfasts per day increased participation to 950 breakfasts per day by using mobile carts near classroom doors at the start of second period.
- A K-8 elementary school with in-classroom breakfast earned \$70,412 yearly in additional revenue, while a similar school that did not offer it earned \$29,813.

- A middle school that began in-classroom breakfast in 2011 experienced a drop in disciplinary referrals from 377 to 171 from 2010 to 2011.
- All breakfast menus were aligned with the *2010 Dietary Guidelines for Americans*.

In conclusion, increased breakfast participation through in-classroom breakfast leads to improved nutrition for children and can be financially rewarding for districts. In-classroom breakfast improves school culture and has a positive effect on student behavior. The districts provided effectiveness statistics, but there were limited statistics on food waste, nurse and health center visits, disciplinary referrals, attendance and tardies, and custodial and teacher time requirements. School nutrition directors can collect quantitative and qualitative data on effectiveness of in-classroom breakfast for marketing and program expansion. The outcomes of this study should be shared with SN personnel, school administrators, teachers, school staff, parents, and community members.

INTRODUCTION

The benefits of the School Breakfast Program (SBP) have been documented; however, many of America's neediest children are not participating. In Fiscal Year 2010, the National School Lunch Program served more than 31.7 million children daily (United States Department of Agriculture [USDA], 2011a). During the same fiscal year, the SBP served far fewer children, totaling at only 11.6 million daily. Of those, 9.7 million received their meals free or at a reduced price (USDA, 2011b). A national trend to improve school breakfast participation is the integration of breakfast within the school day and with in-classroom breakfast. These in-classroom breakfast programs dramatically increase student access to school breakfast, while positively influencing the nutrition status of school-age children. The USDA Food and Nutrition Service (FNS) Web site has suggestions for expanding SBP, and one of these suggestions is to serve in-classroom breakfast (USDA, 2012).

Nutritional Benefits

An evaluation of the SBP using the National Health and Nutritional Examination Survey III showed the nutritional benefits for children (Bhattacharya, Currie, & Haider, 2004). Children who have an SBP available consume a better overall diet, consume a lower percentage of calories from fat, are less likely to have a low intake of magnesium, and are less likely to have low serum levels of vitamin C and folate (Bhattacharya et al., 2004). A 2009 USDA Economic Research Service study (Gleason, Breifel, Wilson, & Hedley Dodd) found that participation in the SBP was associated with significantly lower body mass index.

Rampersaud (2009) reviewed breakfast literature, and recommended promoting daily nutrient-dense, energy-appropriate breakfast for all children. Rampersaud also recommended

focusing special attention on breakfast consumption for older children and adolescents, teenage girls, minority children, and children of lower socioeconomic status.

Academic Benefits

A 2011 study of 800 sixth graders in a Midwest city school district found that higher math scores were significantly associated ($p < .001$) with drinking milk and eating breakfast (Edwards, Mauch, & Winkelman). Some researchers have investigated the effects of skipping breakfast. Lien (2007) surveyed tenth grade students ($n=7,305$) in Oslo, Norway, and found that eating breakfast regularly is associated with less mental distress and improved academic performance measured by recorded grades in four subjects. After adjusting for parental educational level, family structure, dieting, smoking, and soft drink consumption, the association between mental distress, grades, and eating breakfast was consistent. A 2012 cross-sectional survey study in the Netherlands included students in grades 7-12 ($n=605$) from four schools (Boschloo, et al., 2012). Breakfast skippers ($n= 100$) earned lower end-of-term grades and had more attention problems than breakfast eaters ($n=505$).

Basch (2011) reviewed the literature on breakfast and the achievement gap among minority youth; he found evidence that a substantial proportion of urban minority children did not regularly eat breakfast. He recommended in-classroom breakfast as an effective strategy to increase participation in school breakfast, to improve dietary status of children, and to influence their readiness to learn.

In-Classroom Breakfast Research Studies

Huang, Lee, and Shanklin (2006) evaluated the effectiveness of a free school breakfast program in three experimental and three control schools in Missouri. They collected quantitative data including breakfast participation, student attendance, students' academic performance

(math and science scores), and student breakfast consumption behavior. Qualitative information included perceptions of principals, teachers, the superintendent, and school nutrition (SN) managers regarding the free breakfast program and was collected through surveys and interviews. Breakfast participation increased from 43% to 95% at the three experimental schools, and attendance was slightly increased from 91% to 94% at three experimental schools. They did not find any difference in academic performance.

Imberman and Kugler (2012) found that in-classroom breakfast increased math and reading achievement by 0.1 standard deviations when compared to providing breakfast in the cafeteria. They used data from a large urban school district in the Southwest that phased in an in-classroom breakfast program in 2010; 65% of elementary schools in the district had economic disadvantage rates of 90% or higher. The effects were larger for students with low pre-program achievement, those who were eligible for free lunch, Hispanics, children with limited English proficiency, and students with a low body mass index. There were also some improvements in attendance for high achieving students, but there was no impact on grades.

Godfrey (2012) interviewed Maryland Meals for Achievement (MMFA) staff and a director of school nutrition in a Maryland county to learn more about the MMFA in-classroom breakfast program. In-classroom breakfast participation doubled in comparison to Grab 'n' Go breakfast, and was four times the rate of traditional cafeteria service. The in-classroom breakfast is counted as part of the school day, and the food is ready to eat upon arrival at school. The teacher serves as a role model, and the classroom setting is relaxed and pleasant. Custodial staff in the district reported that less cleanup is required with in-classroom breakfast than with traditional cafeteria service. Additional studies that included school personnel have reported

positive opinions from school personnel in schools that have in-classroom breakfast programs (Conklin, Bordi, & Schaper, 2004; Murphy & Pagano, 2001; Rainville & Carr, 2008).

Tran (2009) completed an assessment of in-classroom plate waste within Milwaukee Public Schools in 2008. Approximately 470 students at 23 school sites were observed, resulting in 2,402 observations. Tran found that only 4.8% of food was wasted, minimal instructional time was needed, and the higher the grade level, the less food wasted. To further reduce food waste, she recommended that principals and teachers be reminded of the policy for saving unopened foods. The Milwaukee Public Schools policy is as follows: Once food is served to a student it is the property of the child, and they are free to eat it at school, share it with a classmate, take the item home, or return it to the teacher to be properly stored in the classroom.

A six-week 2010 pilot study of in-classroom breakfast for sixth graders (n=219) in a Minnesota middle school found that 64.5% of students were very satisfied or satisfied with eating breakfast in the classroom (Nanney, Olaleye, Wang, Motyka, & Klund-Schubert, 2011). Seventy-eight percent strongly agreed or agreed that breakfast helped students focus in the classes. Menu items were highly rated, and whole grain muffins and 100% juice were the most popular. Some students (43.5%) preferred hot breakfast options, and 15.2% saved breakfast foods for later. Teachers (n=10) were surveyed at six weeks post intervention, and 100% did not agree that breakfast foods were messy or that the process was disruptive. All teachers rated student behavior as excellent or good during service and while eating. Researchers found there was minimal food waste, only one spill, and the building supervisor had no concerns with waste, spills, or foods kept in lockers.

Research Objectives

In spite of the positive results of in-classroom breakfast programs and SBP studies, there are some who question the feasibility of in-classroom breakfast. Therefore, the purposes of this study were as follows:

- Define and identify successful in-classroom breakfast programs based on state agency child nutrition directors' recommendations;
- Interview SN directors, SN managers, school administrators, teachers, custodians, and school health personnel to identify student outcomes, such as attentiveness, tardiness, attendance, visits to school nurses, and student behavior;
- Quantify student outcomes, district-level financial analyses of in-classroom breakfast, and teacher and custodial time requirements for in-classroom breakfast; and
- Review menus, food costs, and compliance with *Dietary Guidelines for Americans, 2010*.

METHODOLOGY

Research Design

This study used a case study method to explore best practices for providing breakfast in the classroom. The study utilized multiple-case designs that followed a replication format, in which the conclusions from each study site contributed to the “whole” study. This type of methodology can be used to conduct a detailed contextual analysis of a program; Reviews of documentation and archival records, direct observation, and structured interviews are used to collect, analyze, and interpret data (Yin, 2003). In this research project, structured and informal interviews, examination of documents, and direct observations were used to collect and analyze data.

Site Selection

State agency directors and United States Department of Agriculture (USDA) Food and Nutrition Services regional directors were asked via e-mail to identify school nutrition (SN) directors with exemplary in-classroom breakfast programs. School nutrition directors were contacted via telephone, the study was explained to them, and they were asked to participate. School nutrition directors who agreed to participate were asked to choose a school within their district for this study. If SN directors were willing to participate, letters requesting permission to visit the district were e-mailed to superintendents. Telephone calls and e-mails were used to follow up with SN directors and to make final arrangements for the visits.

Informed Consent

The University of Southern Mississippi and the Eastern Michigan University Human Subjects Committees approved the protocol and interview questions. Each SN director (n=5) signed a consent form indicating their willingness to participate in the study.

Data Collection Instrument

A two-part research instrument that was used in a previous in-classroom breakfast study, the *In-Classroom Breakfast Best Practices Data Collection Instrument* (Rainville and Carr, 2008), was revised for use in this study. Part I of the data collection instrument was designed to collect demographics and general information about the district's school breakfast program. Part II of the data collection instrument included a structured interview guide with pre-determined questions designed to collect in-classroom data while visiting the district. The interview guide included questions for SN directors, SN managers, principals, teachers, custodians, and school health personnel.

Data Collection Procedures

The data collection instrument was slightly revised after the visit to the pilot district. School nutrition directors completed Part I of the data collection instrument before the researcher(s) arrived for a one day visit. Two researchers completed the visit to the pilot school district, but only one researcher visited the additional four districts. During the visits, breakfast preparation and service were observed. Structured interviews were conducted with SN directors, SN managers, principals, teachers, custodians, and school health personnel.

Pilot Study

The researchers field tested the data collection instrument and procedures for direct observation during a one-day visit to the pilot district in the Midwest region. The pilot case study site was chosen based on convenience, access, and geographic proximity. In addition to easy access and convenience, the site had an experienced SN director and staff with in-classroom breakfast in 56 sites to provide a good review of the data collection instrument. Also, the

principal of the Pre K-8 school suggested by the SN director was known to be a strong supporter of in-classroom breakfast.

Data Analysis

Information gathered from each case study site was analyzed individually for pertinent data and themes. Cross-case tabulations were performed to search for distinct patterns, similarities, or important differences in in-classroom breakfast approaches and strategies. As necessary, short and focused follow-up interviews were conducted via telephone to gather additional information, clarify ambiguous data, and/or verify observations.

RESULTS AND DISCUSSION

Demographics

After a pilot visit to a district in the Midwest United States Department of Agriculture (USDA) region, four districts of varying sizes in the Mid-Atlantic, West, Mountain Plains, and Northeast USDA regions were visited. The demographic characteristics of the school districts chosen are presented in Table 1. To protect the anonymity of study participants, school districts were designated as Pilot, A, B, C, and D in this report. School districts chosen for the case study ranged in size from a district with 7 schools and an enrollment of 4,959 students to a large district with 120 schools and 76,385 students. Table 2 shows the average daily participation for breakfast served in 2010-2011 ranged from 739 in the smallest district to 20,547 in the largest district. In 2010-2011, all five districts were offering in-classroom breakfast in some schools and traditional breakfast in some schools.

Table 1

Selected Demographic Information for School Districts Chosen as Case Study Sites

Variables	Pilot District (Midwest)	District A (Mid Atlantic)	District B (West)	District C (Mountain Plains)	District D (Northeast)
Student Enrollment	37,780	76,385	23,384	17,877	4,959
Number of Schools	59	120	30	35	7
Revenue for 2010-2011	\$23,129,574.00	\$23,771,327.00	\$9,446,316.00	\$7,625,333.00	\$1,662,391.00
Number of Schools with In-classroom Breakfast	59	30	5	23	2
Percentage of Students Approved for Free Meals	64.8%	23.3%	49.1%	60.9%	39.7%
Percentage of Students Approved for Reduced Price Meals	8.3%	5.7%	10.8%	8.1%	7.2%

Table 2

Average Daily Participation (2010-2011) in School Meals for School Districts Chosen as Case Study Sites

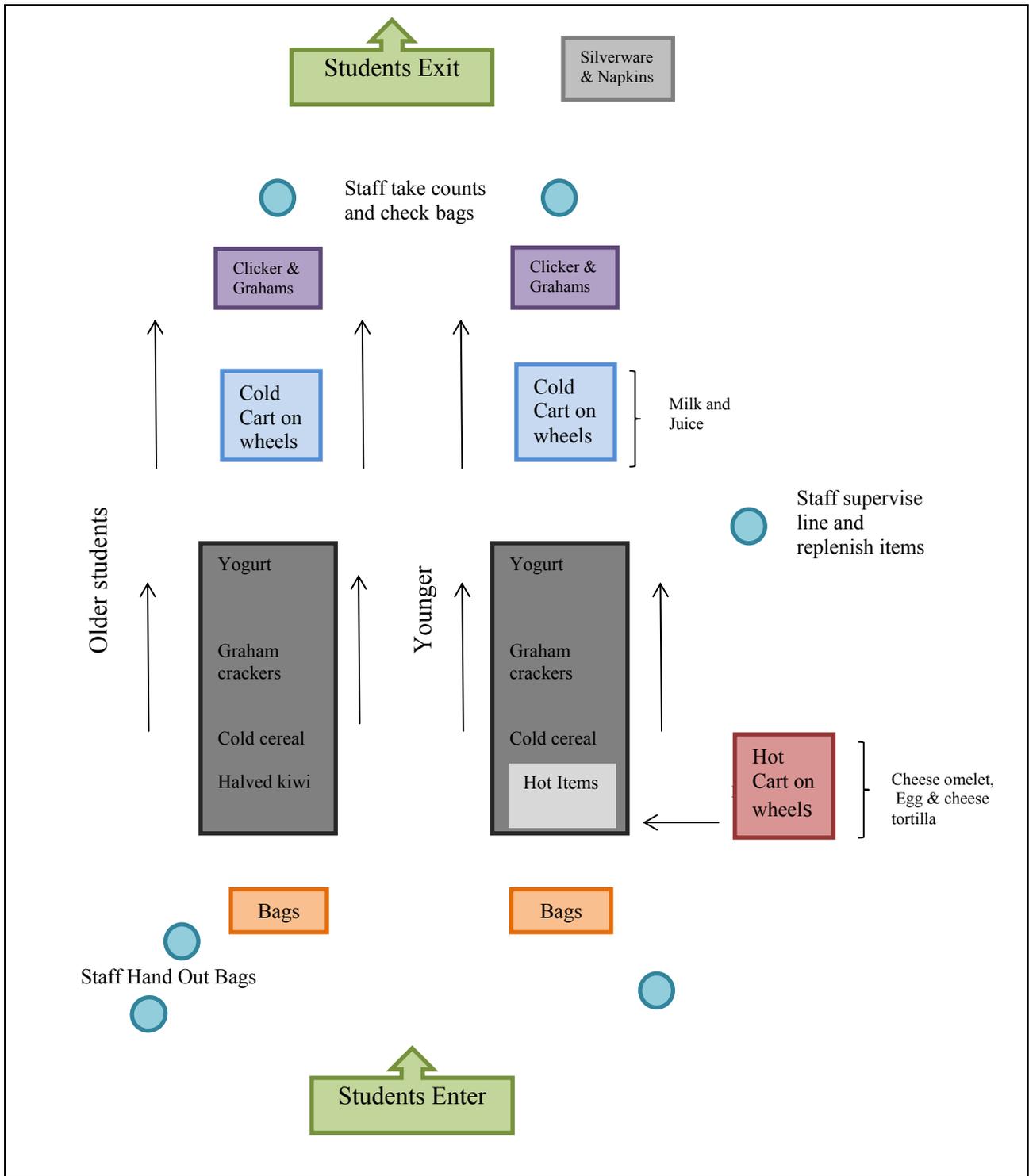
Meals	Pilot District (Midwest)	District A (Mid Atlantic)	District B (West)	District C (Mountain Plains)	District D (Northeast)
Student In-classroom Breakfast	16,438	5,370	600	7,330	353
Student Breakfast	20,547	9,264	5,279	8,670	739
Student Lunch	28,806	26,175	13,647	11,364	2,021

Description of Service and Distribution in Pilot District

A district in the Midwest USDA region was visited in December of 2011 to refine the protocol and to collect data. They started in-classroom breakfast in the 2008-2009 school year. In the Pre K-8 charter school that was visited, 459 K-8 students were served in 10 minutes; prior to classroom breakfast, about 200 students participated in breakfast each day. Preschool breakfasts are delivered to the classrooms, and all K-8 students came into the cafeteria from outside; teachers and teacher aides distributed translucent bags as the students filed into the cafeteria. Students then chose their breakfast foods, and cashiers with hand-held clickers counted the students. (See Figure 1.) All students filed through the cafeteria, even if they did not want to choose a breakfast. At some schools in the district, students entered a pin number at the point of selection.

Figure 1

Breakfast Service in Pilot District

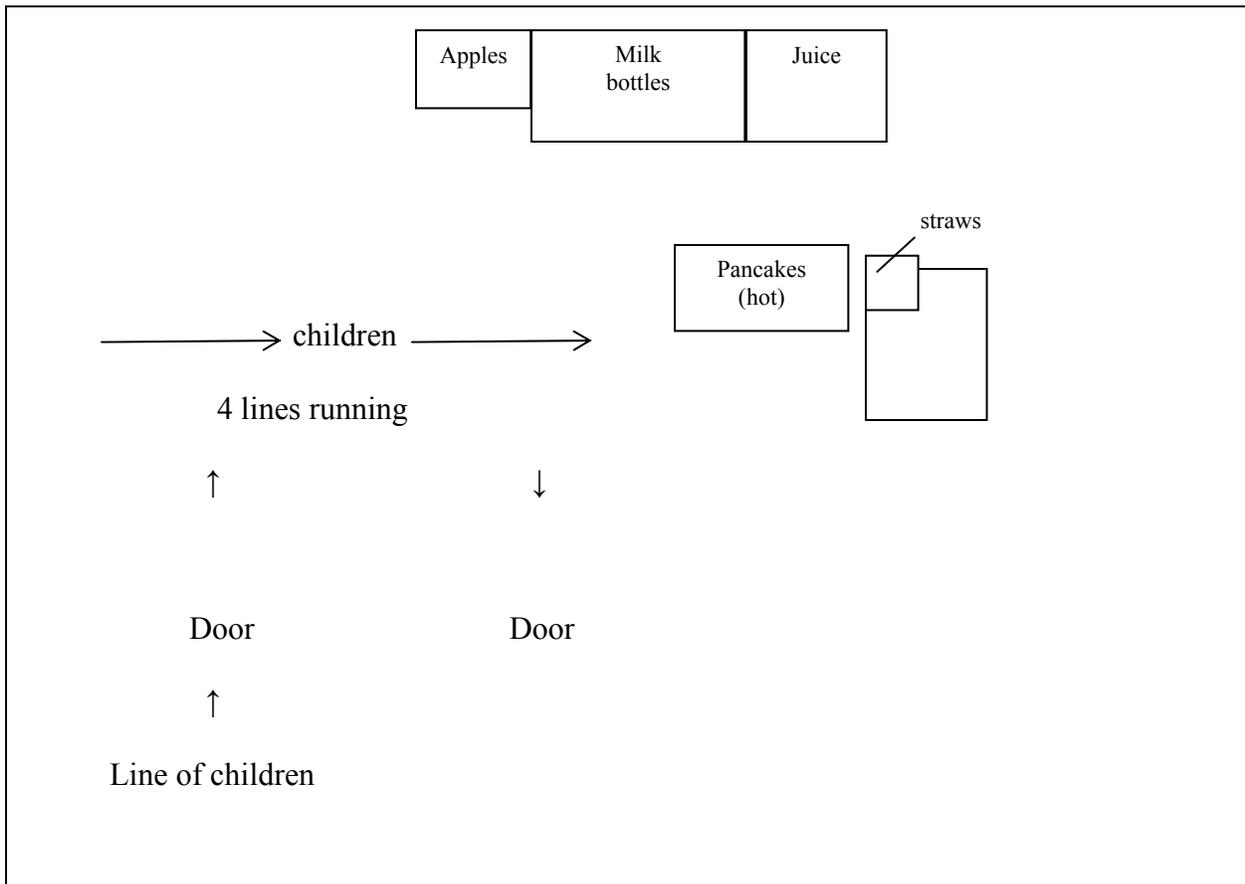


Description of Service and Distribution in District A

A district in the Mid-Atlantic USDA region that has offered in-classroom breakfast since 1998 was visited in January of 2012. A middle school that began serving in-classroom breakfast on April 4, 2011 has dramatically increased participation from about 80 per day to 350 per day. There were four cashiers, including a mobile cart in the cafeteria, and students lined up to choose their menu items and enter a pin number. There were 342 breakfasts served in 13 minutes; the prepaid category had increased dramatically. Students carried the three menu items in their hands to the classrooms. Teachers were able to participate at no charge, and usually 50 teachers participate.

Figure 2

Service in District A

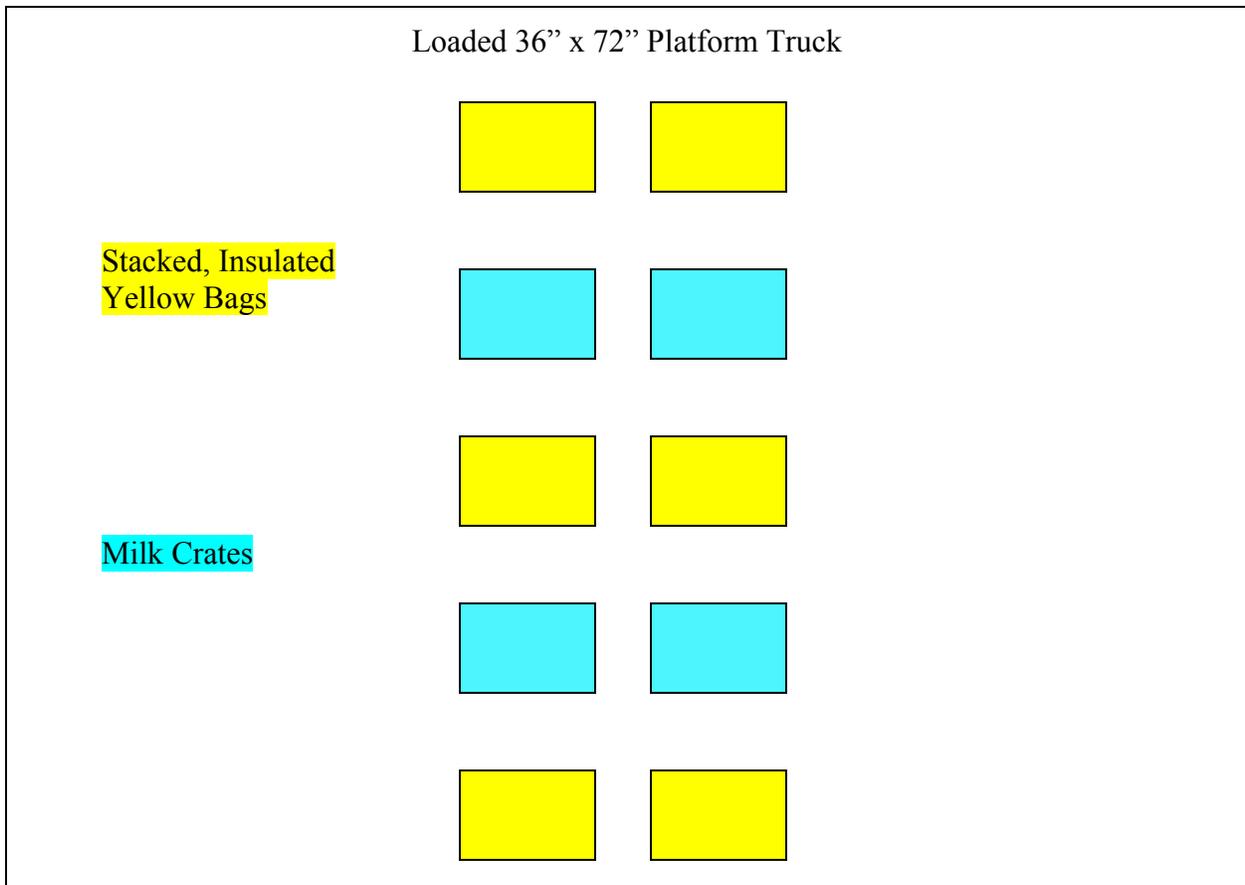


Description of Service and Distribution in District B

A district in the Western USDA region that has offered in-classroom breakfast for one year was visited in February of 2012. A K-8 elementary school, with an enrollment of 812 students, has dramatically increased participation from about 28% participation to about 78% participation. The breakfast foods were delivered to classrooms in insulated bags on carts by school nutrition (SN) staff. Milk was delivered in milk crates. Breakfast was served during the first 15 minutes of the school day.

Figure 3

Service in District B

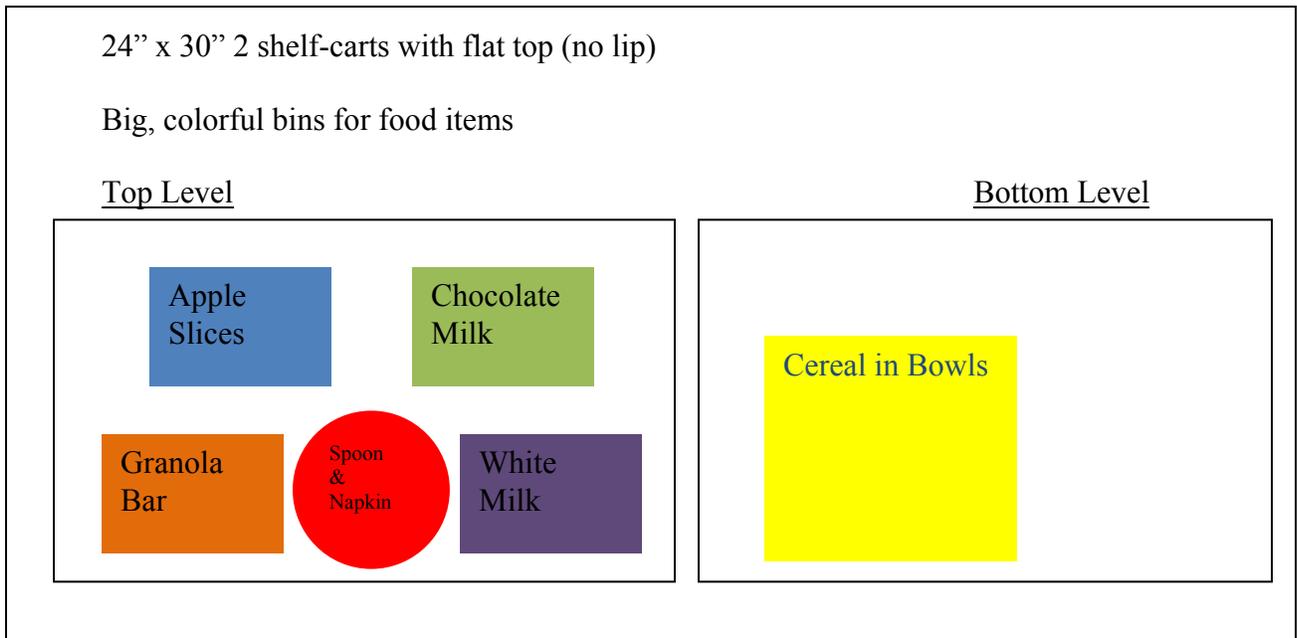


Description of Service and Distribution in District C

A district in the Mountain Plains USDA region that has offered an in-classroom breakfast since 1997 was visited in February of 2012. A high school that began in-classroom breakfast in 2010 has dramatically increased participation from about 50 students to about 950 students per day. The school won the top prize in a state-wide competition to increase breakfast participation rates. Breakfast was served during the first 12 minutes of second period. Six mobile two-tier carts were used to transport breakfast foods; the carts were stationed near each classroom, where the students came out of the classroom and circled the cart to select their breakfast items. (See Figure 4.) A nutrition employee used a numbered sheet on a clipboard to count the students. The students were very polite and friendly to the SN staff. Teachers were allowed to participate at no charge.

Figure 4

District C Carts

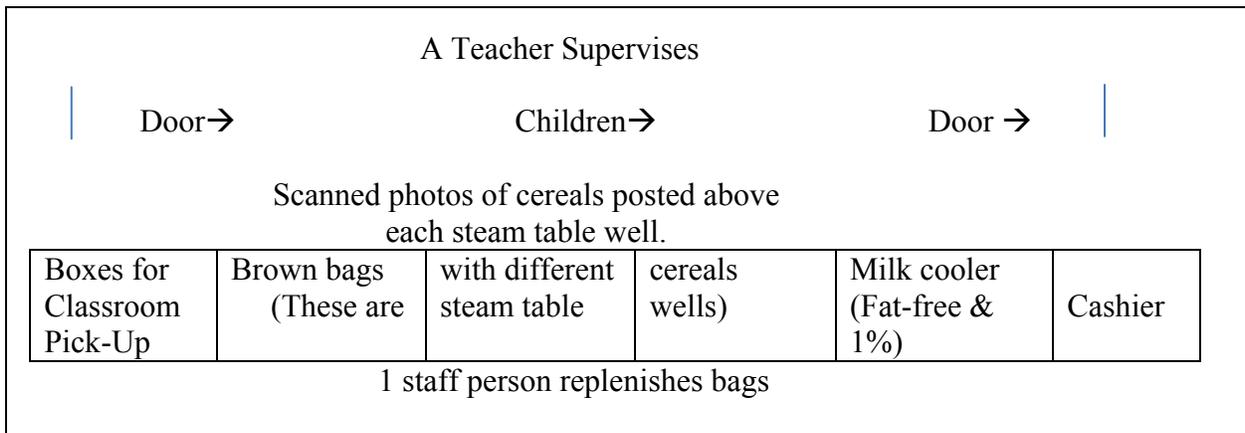


Description of Service and Distribution in District D

A district in the Northeast USDA region that offered “Breakfast in a Bag” was visited in January of 2012. A K-4 elementary school, with 77% free and reduced eligible students, began in-classroom breakfast in 2011; the school now serves about 350 breakfasts per day. First and second grade students came to the cafeteria to choose their breakfast items. Paper bags filled with cereal bowls and other menu items were marked with the type of cereal, and scanned color photos of the cereal were posted so students could choose which one they wanted. (See Figure 5.) A cashier scanned tickets with bar codes. Two teachers supervised and assisted students in selecting their breakfast. The kindergarten, third and fourth grade students, and special education students had children or teachers pick up a cardboard box filled with breakfast bags to take to the classroom. In the past, they had tried having all children come to the cafeteria, but it took too long, so now only first and second grade students come to the cafeteria.

Figure 5

Service in District D



A summary of in-classroom breakfast service and distribution is in Table 3.

Table 3

In-Classroom Breakfast Service and/or Distribution in Five Exemplary Districts

District	School Grades	School Enrollment	Method of Service and/or Distribution
Pilot District	K-8	750	All students file into cafeteria, choose foods in cafeteria, place in 7" x 12" translucent recyclable plastic bag with handle, and carry to classroom.
District A	6-8	950	Students choose foods in cafeteria and carry to classroom.
District B	K-8	812	Two platform trucks (36" x 72") with insulated bags and milk crates taken to classrooms.
District C	9-12	1,198	Six (24" x 30") two-shelf utility carts taken to classroom doorways, students file out of each classroom and circle cart to choose foods.
District D	K-4	575	Students in grades 1 and 2 choose a breakfast in a paper bag, choose milk, and carry them to the classroom. Classroom boxes packed with breakfast foods are picked up by students in other grades.

Student Outcomes

Schools that offer in-classroom breakfast have experienced dramatic increases in participation. A high school in District C that served 50 breakfasts per day increased participation to 950 breakfasts per day. An elementary school in District D that served an average of 173 breakfasts per day in March of 2011 increased their breakfasts served to 350 per day in May of 2011. A middle school in District A that began in-classroom breakfast in 2011 experienced a drop in disciplinary referrals from 377 to 171 from 2010. All district SN directors reported student satisfaction with in-classroom breakfast.

School health personnel in Districts A and B reported fewer student visits to the health office with complaints of hunger or stomachaches. School personnel were interviewed, and their comments about student outcomes are contained in Table 4. In these exemplary districts, there were many enthusiastic supporters of in-classroom breakfast.

Table 4

School Personnel Comments on Student Issues and School Culture Related to In-Classroom Breakfast

School Nutrition Directors

“Parents like it – thought about moving schools but wanted breakfast in the classroom. Sharing a meal contributes to school culture. Teachers see us as partners. We care about their concerns.”

“Sets the tone for the day – quiet. Social period - conversation. We encourage teachers to eat too. They get to know foodservice staff – same person every day, twice a day. It decreases tardies, morning illness. It integrates us into the school day. It is a given now. You are in ‘their world’. Opportunity for interaction.”

“Academically, they are ready to learn. Socially they are going with their classmates to pick up breakfast/return breakfast. They take responsibility for cleaning up.”

“It sets the tone – no one is late, eating together, manners – teacher uses it to teach manners. (School atmosphere) is easier, quieter, flow is better, keeps students on task.”

School Nutrition Managers

“It speeds up the process. Children are calmer.”

“Our kids enjoy breakfast. More contact with students and teachers. They know who we are and we get to know them.”

“I have – less fighting – more calm at lunch.”

“Many students wouldn’t wait in cafeteria lines.”

Principals

“It gives students a healthy environment to eat without being rushed or missing instruction. Family environment. We settle into our day quicker. Not as much fooling around. Kids get down to business. More organized. Breakfast in Bag assists with student responsibility. A culture of calm.”

“It was easy to implement. Students are hungry – almost every student takes a breakfast. It is convenient. The students have a relationship with the foodservice staff. It builds a relationship. We had to convince teachers. Now, they see the value. They eat breakfast too. It’s a great program. Students seem more alert.”

“Creating a culture – about students. I’m really pleased with the breakfast program. No stigma. Parents like it. Children who come late can still eat. Non-stressed way to start day. Children are not complaining of hunger at recess.”

(Table 4 continues)

(Table 4 continued)

School Personnel Comments on Student Issues and School Culture Related to In-Classroom Breakfast

Principals

“We’ve seen such a difference in student engagement. Breakfast is helping. Breakfast gives kids time to talk. Teachers are encouraged to eat it – sharing is encouraged. Having the kids nourished. It has become a focus. Better engagement, on-task, not in health office. Gives teachers time to talk to kids, gives them a relationship with teachers. Minimal amount of instructional time is worth the benefits. Now, there isn’t a stigma – helps environment. All kids are equal. Everyone has something to offer. We have a nice community feel. Breakfast is the only thing we’ve changed – it is having a huge positive impact.”

“The thing I notice is no conflicts in the cafeteria. More children eat breakfast – a leisurely, healthful experience.”

“Kids seem more light-hearted and less agitated when they come in. Now they can eat with their friends in the classroom. Fewer students are asking for a mid-morning snack.”

Teachers

“They work while they eat. Efficient and effective. They are able to focus and are ready to learn.”

“I’m for the program. I think it’s great during announcements. The kids are more awake and aware. It makes them more social with me.”

“They are calm in the morning. They are well-fed. Children are more alert. Breakfast helps.”

“Awesome! Proved beneficial to our students and our school culture! Students seem more focused and on task because their physical needs are met. They are able to focus when hunger is not a distraction for them. Students are used to eating, listening to announcements, and completing the warm-up on their own.”

“Students are not late from the cafeteria. Not fighting. Students have a chance to socialize. I think the pros outweigh the cons. I’m a believer. It doesn’t impact my classroom at all.”

Custodians

“Good program. Same amount of time. Not too much waste.”

“I enjoy it because I get to see the students. Same amount of time as cafeteria breakfast.”

“I love the program.”

School Health Personnel

“It’s great – a lot of kids come to school late. Every child eats. Parents love it. I love it. Children are not jittery. Concentration is better. Not as many tummy aches.”

“Significantly fewer visits complaining of hunger. It is a fabulous idea – lots of kids don’t eat breakfast but more are now.”

Financial Analysis

District B provided each school Excel™ spreadsheets demonstrating how a K-8 elementary school with in-classroom breakfast earned \$70,412 yearly in additional revenue, as opposed to a similar school that did not offer it (\$29,813). The SN director in District B used the spreadsheet analyses to show SN managers and principals the potential for in-classroom breakfast participation and additional revenue. The spreadsheet for each school contained income and expenses. Income includes reimbursement and cash. Expenses include food cost; labor cost; and other expenses, as well as various participation levels to reflect projected annual additional revenue or loss.

All SN directors mentioned economies of scale, and said that some tasks need to be done, regardless of how many students are served. The SN directors found that increased participation (both paid and reimbursable) covered the extra expenses associated with in-classroom breakfast. Labor costs for SN managers and staff are included in Table 5. District B provided a listing of one-time expenses and ongoing expenses for in-classroom breakfast (Table 6). The Pilot District and District B purchased carpet cleaners for schools with carpeting; specifications for the cleaners, mobile carts (Pilot District and District C), and platform trucks (District B) can be found in Table 7.

Table 5

Labor Costs (Without Fringe Benefits) for In-Classroom Breakfasts in School Districts and Schools Chosen as Case Study Sites

Position	Pilot District	District A	District B	District C	District D
School Nutrition Manager	\$69 / week in a K-12 charter school	\$180 / week in a middle school	\$71 / week in an elementary school	\$117 / week in a high school	\$44 / week in an elementary school
School Nutrition Staff	\$284 / week in a K-12 charter school	\$720 / week in a middle school	\$423 / week in an elementary school	\$485 / week in a high school	\$552 / week in an elementary school

Table 6

District B In-Classroom Breakfast Equipment List for 2011-2012

Item	Approximate Cost	Number Needed	One-Time Expense	Ongoing Expense
Schools/Classrooms				
Carpet Cleaner	\$779.95	1 per site	x	
Platform Truck	\$310.00	2 per site	x	
Insulated Bags “Wall hugger” trashcan	\$50.00	1 per classroom	x	
“Wall hugger” trashcan lid	\$26.50	1 per classroom	x	
Trash bags (200)	\$20.00	1 per classroom	x	
Sanitizing Wipes	\$26.40	150 per site		x
Raingear	\$34.60		x	
Clipboards	\$30.00	1 per classroom	x	
	\$.74			
Kitchen				
3 Door Refrigerator (if needed)	\$3673.00	1	x	
Milk Box	\$2,112.00	1	x	

Table 7

Equipment Specifications for In-Classroom Breakfast

Equipment	Specifications
Refrigerated choice bar (also used as salad bar for lunch)	<p>Frame construction shall be of hi-tensile box beam square aluminum tubing. Body is complete with front panel, end panels, and rear apron of aluminum with plastic laminate. Panels shall cover casters at bottom of cart. Bottom accent strip shall be customer's choice of color. Top to be 16 gauge, type 304 stainless steel, with a front edge that is rolled. Pan openings, if specified, to be die-formed 12"x20". Hot well openings have a 20 gauge die-formed 6" deep insulated stainless steel well with 850 watts heating element per opening, with individual valves and drains, and then connected to manifold with a valve; all valves extended toward operator. Refrigerated pan (where specified) has copper tubing on the bottom, has a drain with a valve and is fully insulated on all sides and bottom. Pan shall meet NSF #7 code, and has a 5 year compressor warranty. Cold pan shall be for 2-1/2" and 4" deep pans. Provide AD Plain adapter plates. Remote compressor on base of unit, with s/s louvers with on/off switch in apron with label. Casters shall be 5", non-marking, rubber tired, two with brake. Provide cam-locking devises to retain carts when in a line. Undershef shall be stainless steel.</p> <p>Laminate shall be Formica Stardust #1782-58 with accent stripe, black #1595-60 or per spec for school.</p> <p>Refrigerated Bars-High School version: Buffet style, dual sided, 77-1/2" long x 30-1/2" wide x 34" high with 5 refrigerated wells, undershef, rear sliding doors, with locks, with 2 each 10" flat s/s tray slides, with Designer Style DS-BCDFT with flip up sides and black powder coated brackets, with lights. Provide one each 10' cord and plug, and extend drain for well towards operator. Provide 5 each AD plain adapters per cart.</p> <p>Refrigerated Bars-Elementary School version: Same as High School but 77-1/2" long x 30-1/2" wide x 30" high with 5 refrigerated wells</p>
Mobile carts	<p>Three shelves, 5 casters, shelf dimensions 24" x 48", height 39" 600 lb capacity</p> <p>Two shelves, open base, shelf size 21 and 1/2 inches x 33 and 3/4 inches, heavy duty plastic shelf with 4 swivel resistant tread casters, 400 lb capacity</p>

(Table 7 continues)

*(Table 7 continued)**Equipment Specifications for In-Classroom Breakfast*

Equipment	Specifications
Platform truck	36" x 72" 182 lb Platform truck constructed of 12 gauge material with 10" x 2" mold on rubber wheels, 13-3/4" deck height, 2,400 lb capacity http://www.materialflow.com/index.cfm?mf=browse.showPart&partClassID=2667&pName=3672-10MRR&highlight=3672-10MRR#3672-10MRR
Carpet Cleaning Portable Extractor	<ul style="list-style-type: none"> • 0.8 gpm low moisture system • Dual cord (25 foot length each) • 2-stage vacuum motor • In-line heater heats water after the pump • Produces 212 degrees F. water at tip • Pump pressure 150 psi • 2 x 2-stage vacuum motors • 150" water lift • Easy to load and transport • Comes with a double bend polished stainless steel floor tool, 15 foot vacuum and 15 foot high pressure hose, operating manual, parts manual • On-board cord wrap and chemical storage • Large non-marking wheels • Easy-lift handles • Positive lock tank latches • 13 gallon solution tank • 11 gallon recovery tank • Product lifetime warranty on rotationally molded tanks and frame • Lighted rocker switches with sealed switch plate and switches <p>Dimensions: 17" W x 38" L x 36" H</p>

Teacher and Custodial Time Requirements

In the Pilot District, teachers and paraprofessionals assisted in distributing bags to children as they entered the cafeteria to choose their breakfasts. They rotated this position every two weeks. In classrooms that were observed during breakfast, teachers reported little change in morning routines and minimal loss of instructional time. In these districts, breakfast has been incorporated with morning announcements or completion of homework and warm-up activities.

Teachers reported little time or effort required on their part for in-classroom breakfast service, as students learn the responsibility of cleaning up after themselves. No one reported that the in-classroom breakfast custodial time requirements were greater than with traditional cafeteria breakfast.

Menus and Menu Costs

The Pilot District has a central kitchen that produces and packages 21.6% of the breakfast menu items, including muffins and mini loaves. Districts A, B, and C purchased mostly prepackaged foods, but District D wrapped some of their foods, such as cheese sticks and peanut butter and jelly sandwiches.

When ranking menu planning considerations, directors highly ranked nutritive value, student preferences, and food costs. (See Table 8). The District B SN director also considered storage issues; because schools have limited storage space, the vendor for most of the breakfast foods frequently delivers the products directly to schools. The most popular breakfast foods are listed in Table 9. The food costs of sample breakfast menus ranged from \$.50 to \$1.04. (See Table 10). The District D SN director reported receiving reimbursements for in-classroom breakfasts that are adequate to cover both food and labor costs.

Table 8

Menu Planning Considerations Ranked by School Nutrition Program Directors¹

Criteria	Pilot	District A	District B	District C	District D	Mean	Ranking
Nutritive Value	1	1	2	2	1	1.4	1
Student Preference	2	3	3	3	2	2.6	2
Food Cost	3	2	6	4	3	3.6	3
Prepackaged Portions	6	4	4	1	5	4.0	4
Food Safety	4	7	1	6	6	4.8	5
Labor	5	5	8	7	4	5.8	6
Packaging Requirements	7	6	5	8	8	6.8	7
Heating/Cooling Requirements	8	8	9	5	7	7.4	8
Teacher Requests	9	9	7	9	9	8.6	9

¹(1 is highest and 9 is lowest)

Table 9

Most Popular In-Classroom Breakfast Menu Items

Pilot District	District A	District B	District C	District D
Cheese Bread	Mini Pancakes	Muffin	Beef and Bean Burrito	Honey Graham Cold Cereal
Banana Chocolate Chip Muffins	Mini Cinnamon Rolls	Granola Bar	Peanut Butter and Jelly Sandwich	Berry Puffed Corn Cereal
Toasted Cinnamon Cold Cereal	Mini Waffles	Honey Bun	Egg to Go in Tortilla	Apple Cinnamon Oat Cold Cereal
Honey Graham Cold Cereal	Granola Bar	Fruit Bar	Grilled Cheese Sandwich	Crispy Rice Cold Cereal
Yogurt	Mini Loaf		French Toast	Peanut Butter and Jelly Sandwich
Fruit	Cold Cereal		Cold Cereal	Hard Cooked Eggs

Table 10

Sample In-Classroom Breakfast Menus (with Food Costs/Breakfast)

Pilot District	District A	District B	District C	District D
Graham Crackers Cold Cereal Milk Orange Juice (\$0.61)	Mini Pancakes Orange Juice Milk (\$0.86)	Honey Bun String Cheese Tangerine Milk (\$0.62)	Granola Bar Apple Slices Milk (\$0.84)	Assorted Cereal Cheese Slice Apple Juice Milk (\$0.53)
Pumpkin Muffin Cantaloupe Yogurt (\$1.04)	Orange Mini Loaf Cheese Stick Banana Milk (\$0.86)	Muffin Grapes Milk (\$0.62)	Omelet Apple Juice Milk (\$0.77)	Assorted Cereal Hard Cooked Egg Grape Juice Milk (\$0.65)
Cheese Bread Fresh Pineapple Milk (\$0.72)	Mini Waffles Tangerine Milk (\$0.80)	Chocolate Chip Granola Bar Banana Milk (\$0.50)	Pizza Bagel Apple Slices Milk (\$0.91)	Assorted Cereal Cheese Stick Orange Juice Milk (\$0.55)
Egg & Cheese Tortilla Kiwi Milk (\$0.77)	Mini Cinnamon Rolls Apple Juice Milk (\$0.83)	Strawberry Fruit & Grain Bar Apple Milk (\$0.50)	Bean and Cheese Burrito Apple Juice Milk (\$0.83)	Peanut Butter and Jelly Sandwich Apple Juice Milk (\$0.49)

Compliance with *Dietary Guidelines for Americans, 2010*

Directors in this study ranked nutritive value as their greatest consideration when planning in-classroom breakfast menus, and they have demonstrated that these menus can be aligned with the *2010 Dietary Guidelines for Americans*. Key recommendations of the *Dietary Guidelines* include reducing intake of sodium; limiting consumption of saturated and trans fats;

increasing consumption and variety of fruits and vegetables; increasing intake of fat-free and low-fat milk products and whole grains; and following an eating pattern that meets nutrient needs (USDA & US Department of Health and Human Services, 2010). District B uses nutrient standard menu planning to develop menus that ensure children are meeting nutrient targets within their calorie requirements. This district offers a simple, universal in-classroom breakfast menu that includes daily low-fat fluid milk, whole grain items, and a variety of fresh fruits, such as bananas, tangerines, apples, and grapes. Table 11 compares the nutritional value of the district's menu with the most recent federal nutrition guidelines for the school breakfast program (USDA, FNS, 2012). Despite storage limitations and reliance on pre-packaged foods, the district is able to comply with nutrition standards. As articulated by another SN director, "It (in-classroom breakfast) doesn't have to be glitzy," which applies in the context of menus.

Other districts have promoted the *Dietary Guidelines* recommendation for increased variety in their in-classroom breakfast menus. With its large central kitchen, the pilot district is able to offer many items prepared in-house, such as muffins, whole wheat cheese bread, and a breakfast cookie. Other daily offerings include fresh fruit (apple wedges, orange wedges, banana, kiwi, cantaloupe, pineapple, and mango), yogurt, 100% fruit juice, whole grain cereal, and milk (skim, 1%). This district follows a food-based menu planning approach to develop its three-week cycle menu, and employs a quality control specialist to analyze individual menu items and the full menu. District A is a large district that includes four registered dietitians on its staff who review the menus for compliance with nutrition standards. The SN director in District C reports membership in a purchasing cooperative that continually looks for new menu items, and also works closely with manufacturers to find products that meet nutrition specifications. To

encourage reduced intake of added sugars, as advocated in the *Dietary Guidelines*, this director limits purchases of prepackaged foods to those that contain 9 grams or less of sugar per serving.

Table 11

District B Menu Compliance with 2010 Dietary Guidelines for Americans

Universal Breakfast Menu		Calories	Total Fat (% of Calories)	Saturated Fat (% of Calories)	Trans Fat (g)	Sodium (mg)
Monday	Honey Bun, String Cheese, Fresh Fruit, Assorted WG Graham, 1% White Milk	596	31.3%	15.4%	0.07	634
Tuesday	Assorted Muffin, Fresh Fruit, Assorted WG Graham, 1% White Milk	511	25.5%	6.9%	0.07	419
Wednesday	WG Fruit & Grain Bar, Fresh Fruit, Assorted WG Graham, 1% White Milk	446	17.6%	6.4%	0.07	324
Thursday	WG Chocolate Chip Granola Bar, String Cheese, Fresh Fruit, Assorted WG Graham, 1% White Milk	526	25.2%	12.3%	0.07	534
Friday	Assorted Muffin, Fresh Fruit, Assorted WG Graham, 1% White Milk	511	25.5%	6.9%	0.07	419
	Weekly Average	518	25.4%	9.9%	0.07	466
	Dietary Guideline Grades K-5^a	350-500	< 30%	< 10%	0	≤ 430
	Dietary Guideline Grades 6-8^a	400-500	< 30%	< 10%	0	≤ 470

Note. WG = Whole Grain

a. Daily Amount Based on the Average for a 5-Day Week. Values Subject to Phased Implementation beginning SY 2012-2013. Source = U.S. Department of Agriculture, Food and Nutrition Service. (2012). Nutrition Standards in the National School Lunch and School Breakfast Programs; Final Rule. Federal Register, 77(17), 4088-4167. Retrieved August 18, 2012 from <http://www.gpo.gov/fdsys/pkg/FR-2012-01-26/pdf/2012-1010.pdf>

Effectiveness Data

District SN directors were interviewed regarding effectiveness. In the Pilot Study district, every child has a chance to eat in a more leisurely manner. Instead of children “hanging out” in

the hallways, they arrive to classrooms earlier, ready to eat and to learn. In-classroom breakfast is part of the school day, and has positively affected the image of SN in the schools. It has brought a community awareness of school nutrition, and several districts have used local television to gain publicity. One of the districts was featured in a national newspaper story and video in 2010. The District A director promotes the effectiveness through a local television program.

In District A, in-classroom breakfast has been financially successful except in the high school that has a second chance breakfast. The schools' atmospheres are easier, quieter, and the flow of students is better. Teachers have also used the program to teach manners.

In District B, the SN director mentioned the need for completed meal applications that can lead to greater reimbursement. Sharing a meal contributes to a positive school culture. In a September 2011 memo, the state superintendent encouraged school districts to expand in-classroom breakfast as a means to meet the nutritional needs of students and to strengthen their academic performance.

In District C, the SN director reported that the district wellness centers and behavior advocates were strong supporters of in-classroom breakfast. In-classroom breakfast has been beneficial for students getting to know the SN staff, because they see them at breakfast and at lunch.

The District D SN director conducted a survey, and found that children who paid for lunch were less likely to eat breakfast before school; this showed a need for increasing access to breakfast through in-classroom breakfast. The children are learning responsibility through picking up breakfast boxes and returning them. Children are also taking responsibility for cleaning up after their meals.

CONCLUSIONS AND RECOMMENDATIONS

The five exemplary districts had school nutrition (SN) directors who were actively promoting and improving in-classroom breakfast. These districts had supportive superintendents, principals and teachers who view in-classroom breakfast as a positive contributor to school culture and student learning. School nutrition managers in these districts see the behavioral effects of in-classroom breakfast. These districts had custodians who were willing to change daily routines to make in-classroom breakfast successful. Concerns from stakeholders were addressed to continually improve in-classroom breakfast.

All SN directors reported continuous quality improvement of in-classroom breakfast. The National Food Service Management Institute, Applied Research Division, developed a guide “*Continuous quality improvement process tailored for the school nutrition environment,*” that can be used for this process (Lambert, Carr, & Hubbard, 2006).

The districts did provide effectiveness statistics; however, there were limited statistics on food waste, nurse and health center visits, disciplinary referrals, attendance and tardies, and custodial and teacher time requirements. If statistics could be collected and analyzed, the districts would be able to better show effectiveness of their in-classroom breakfast.

In some instances, college and university dietetics students who are completing supervised practice in schools can assist with data collection and analysis. Figure 6 describes quantitative and qualitative data that can be collected and analyzed to promote effectiveness of in-classroom breakfast.

Figure 6

*In-Classroom Breakfast Effectiveness Data Collection***In-Classroom Breakfast Effectiveness Data Collection**

Before beginning, obtain permission (school nutrition director, school administrator(s), IRB, parents, students).

Quantitative Data and Sources

Tools: Excel™ spreadsheets, scales, nutrient analysis software, stopwatch

- Breakfast Participation – SN records (month by month, year to date, school year to school year)
- Accountability for Reimbursement – rosters and software
- Excess revenue – financial records (include income, labor cost, food cost, supplies cost)
- Service Time – number of meals served per minute
- Food Waste and Disposable Waste/Recycling – weight in pounds
- Student diet quality/nutrient intake – can be determined from menus/nutrient analysis and plate waste data
- Custodial Time – minutes and/or hours for clean up
- Disciplinary Referrals – school records
- Attendance/Tardies – school records
- School Nurse/Wellness Office Visits – school records
- Academic Performance/Test Scores – school records

Qualitative Data (Student and Stakeholder Satisfaction, School Culture and Climate, Perceptions, Opportunities, Barriers) and Sources

Tools: Survey design resources, software for web-based survey or software for surveys

- Students – interviews, surveys, focus groups
- Nutrition Services Staff – interviews
- School Nurse/Wellness Staff – interviews
- Teachers-interviews, surveys
- Principals – interviews
- Custodians-interviews
- Parents-interviews, surveys, focus groups

Conclusions

Results of this study suggest the following conclusions:

- In-classroom breakfast improves school culture, and has a positive effect on student engagement. The image of the SN department as a partner supporting student achievement is enhanced.
- Increased breakfast participation leads to improved nutrition for children, and can be financially rewarding for districts. All five districts had dramatic increases in breakfast participation.
- There are a variety of methods for distribution and service of in-classroom breakfast for all grade levels.
- All five SN directors are actively promoting and improving in-classroom breakfast and had supportive administrators.
- The outcomes of this study should be shared with SN personnel, school administrators, teachers, school staff, and parents.
- School nutrition directors can use quantitative and qualitative data on effectiveness of in-classroom breakfast for marketing and program expansion.

Limitations

- This study involved visits to five schools in five school districts in five United States Department of Agriculture (USDA) regions. It is possible that results would have been different if five districts in the same or other USDA regions were used for the study.

- The SN directors and school personnel had limited information to share regarding statistics on food waste, attendance, tardies, student health, and teacher/custodial time requirements.

Education and Training Implications

Every district needs to show effectiveness for their programs, including in-classroom breakfast programs. There are many methods of measuring effectiveness. The following steps can be used to collect effectiveness data:

1. Develop a plan and research questions.
2. Obtain permission.
3. Collect data.
4. Analyze data.
5. Write final report and prepare summaries, presentations, and press releases.
6. Share results with school board, principals, and community using reports, presentations, and media.

Recommendations for Additional Research

- Currently, the USDA does not provide USDA Foods through the School Breakfast Program, but there is a need for the USDA to do so.
- Financial analyses of in-classroom breakfast would be helpful. Many districts offer several types of breakfast service, including traditional service in some schools. It is a challenge to separate the finances associated with in-classroom breakfast from other finances.
- Additional studies documenting student achievement, student health, student perceptions, food waste, attendance, tardies, and disciplinary referrals would be helpful.

REFERENCES

- Basch, C. E. (2011). Breakfast and the achievement gap among urban minority youth. *Journal of School Health, 81*(10), 635-640.
- Bhattacharya, J., Currie, J., & Haider, S. J. (2004). *Final report: Evaluating the impact of school nutrition programs*. Retrieved July 31, 2012 from <http://webarchives.cdlib.org/sw1s17tt5t/http://ers.usda.gov/Publications/EFAN04008/>.
- Boschloo, A., Ouwehand, C., Dekker, S., Lee, N., de Groot, R., Krabbendam, L., & Jolles, J. (2012). The relation between breakfast skipping and school performance in adolescents. *Mind, Brain, and Education, 6*(2), 81-88.
- Conklin, M. T., Bordi, P. L., & Schaper, M. A. (2004). Grab 'n' go breakfast increases participation in the School Breakfast Program. *Journal of Child Nutrition and Management, 28*(1). Retrieved from <http://docs.schoolnutrition.org/newsroom/jcnm/04spring/conklin/>.
- Edwards, J. U., Mauch, L., & Winkelman, M. R. (2011). Relationship of nutrition and physical fitness measures to academic performance for sixth graders in a midwest city school district. *Journal of School Health, 81*(2), 65-73.
- Food Research and Action Center. *Breakfast in the classroom*. Retrieved July 31, 2012 from <http://frac.org/federal-foodnutrition-programs/school-breakfast-and-lunch/breakfast-in-the-classroom/>
- Gleason, P., Breifel, R., Wilson, A., & Hedley Dodd, A. (2009). *School meal program participation and its association with dietary patterns and childhood obesity*. Retrieved July 31, 2012 from <http://ddr.nal.usda.gov/dspace/bitstream/10113/35896/1/CAT31035734.pdf>

- Godfrey, J. R. (2012). Increasing student breakfast consumption: An established model in Maryland. *Childhood Obesity*, 8 (2), 162-166.
- Huang, H., Lee, K. I., & Shanklin, C. W. (2006). Evaluation of the Free School Breakfast Program in St. Joseph, Missouri. *Journal of Child Nutrition and Management*, 30(1). Retrieved from <http://docs.schoolnutrition.org/newsroom/jcnm/06spring/huang/index.asp>
- Imberman, S. A., & Kugler, A. D. (2012). The effect of providing breakfast on student performance: Evidence from an in-class breakfast program. National Bureau of Economic Research. Working paper 17720. Retrieved July 31, 2012 from <http://www.nber.org/papers/w17720>
- Lambert, L., Carr, D., & Hubbard, S. (2006). *Continuous quality improvement process tailored for the school nutrition environment*. University, MS: National Food Service Management Institute.
- Lien, L. (2007). Is breakfast consumption related to mental distress and academic performance in adolescents? *Public Health Nutrition*, 10(4), 422-429.
- Murphy, J. M., & Pagano, M. E. (2001). *Effects of a universally free, in classroom breakfast program: Final report from the third year of the Maryland Meals for Achievement Evaluation*. Baltimore: Maryland State Department of Education.
- Nanney, M. S., Olaleye, T. M., Wang, Q., Motyka, E., Klund-Schubert, J. (2011). A pilot study to expand the school breakfast program in one middle school. *Translational Behavioral Medicine(abbreviated TBM)*, 1, 436-442.
- Rainville, A. J., & Carr, D. H. (2008). In-classroom breakfast: Best practices in three school districts. *Journal of Child Nutrition and Management*, 32(2). Retrieved from <http://www.schoolnutrition.org/Content.aspx?id=10604>

- Rampersaud, G. C. (2009). Benefits of breakfast for children and adolescents: Update and recommendations for practitioners. *American Journal of Lifestyle Medicine*, 3(2), 86-103.
- Tran, C. (2009). *An assessment of plate waste with Milwaukee Public Schools' Universal Free Breakfast-in-the-Classroom*. Retrieved July 31, 2012, from http://www.hungertaskforce.org/fileadmin/htf/learn_about_hunger/publications/An_Assessment_of_PlateWaste.pdf
- U.S. Department of Agriculture & U.S. Department of Health and Human Services.(2010). *Dietary Guidelines for Americans, 2010*. 7th Edition, Washington, DC: U.S. Government Printing Office.
- U.S. Department of Agriculture, Food and Nutrition Service. (2011a). *National School Lunch Program* [Fact sheet]. Retrieved July 31, 2012 from <http://www.fns.usda.gov/cnd/Lunch/AboutLunch/NSLPFactSheet.pdf>.
- U.S. Department of Agriculture, Food and Nutrition Service. (2011b). *The School Breakfast Program* [Fact sheet]. Retrieved July 31, 2011 from <http://www.fns.usda.gov/cnd/breakfast/AboutBFAST/SBPFactSheet.pdf>.
- U.S. Department of Agriculture, Food and Nutrition Service. (2012). *Breakfast in the Classroom*. Retrieved July 31, 2012 from <http://www.fns.usda.gov/cnd/Breakfast/expansion/expansionstrategies.htm#classroom>
- U.S. Department of Agriculture, Food and Nutrition Service. (2012). Nutrition Standards in the National School Lunch and School Breakfast Programs; Final Rule. *Federal Register*, 77(17), 4088-4167. Retrieved August 18, 2012 from <http://www.gpo.gov/fdsys/pkg/FR-2012-01-26/pdf/2012-1010.pdf>

Yin, R. Y. (2003). *Case study research: Design and methods*. Thousand Oaks, CA: Sage Publications.



National Food Service Management Institute
The University of Mississippi
P. O. Drawer 188
University, MS 38677-0188
www.nfsmi.org

GY 2010 Project 16

© 2013 National Food Service Management Institute
The University of Mississippi