

INFLUENCE OF STUDENT SELECTED MENUS ON STUDENTS' ATTITUDES,  
SCHOOL FOODSERVICE PARTICIPATION AND PLATE WASTE

by

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## INTRODUCTION

Increasing participation in the school lunch program and decreasing plate waste are two primary concerns of school foodservice directors and managers (1,2). A pilot project indicated student involvement in menu planning can have a positive impact on student reaction to the school lunch program (3). Further work is needed to measure the impact of student involvement on participation, plate waste, and students' attitudes toward school foodservice.

Several reports have emphasized that to have an effective school foodservice program student feedback is necessary (4-6). A number of studies have been concerned with student involvement and food preferences (7-9); however, few studies have focused on elementary age student involvement in planning cycle menus suited to a particular school.

Today's society, with greater numbers of working mothers and greater distances to travel to school, makes it increasingly necessary that the nutritional needs of students be met at school (10). The type A lunch is designed, if it is consumed, to meet one-third of the nutritional needs of a six to twelve year old child (11).

The objective of this project was to study the influence of student-selected menus on school foodservice participation, plate waste, and attitudes toward school foodservice of sixth grade students in North Kansas City, Missouri, public schools. Literature reviewed focused on: the historical development of school foodservice, current status of school foodservice programs, participation in the school lunch program and student involvement in school lunch programs.

## REVIEW OF LITERATURE

### Historical Development

Bard (12) stated that it was the sight of the hungry child that gave impetus to the school lunch movement. The history of school lunch programs dates to the late 18th century. Munich, Germany, was the first known site of school feeding. The program was initiated in Germany as a campaign against vagrancy. Soup kitchens were established for school children and unemployed adults (13). France was next to follow with the aid of surplus National Guard funds and within a decade school lunches were a part of the compulsory education law (12).

In 1900, Holland became the first country to adopt national legislation to provide school lunches. The Royal Decree stated that municipalities must provide clothing as well as food to those children who needed both to be able to attend school (14).

After an investigation in school feeding, Switzerland passed a federal law in 1903 which provided food and clothing for needy school children. By 1906, cities were given permission to use public funds to provide school lunches for all children (13). In the same year, England's Provision of Meals Act brought school lunch programs from private charities to educational authorities. This was enacted because of the alarming number of men found physically unfit to fight in the 1902 Boer War (12).

School feeding programs had spread through the larger European cities by the early 1900's. Benefit to the children was the reason given by persons responsible for initiating the programs. In the early stages, the success of the program was measured by better attendance in the classroom, more alert

children and fewer discipline problems. Later a more lasting effect was noted in weight and height gains (14).

In America early organization of school lunches began in Boston in 1894. Ellen H. Richards, a home economist, initiated the Boston School Committee; however, the school lunch movement had a slow and difficult beginning (14). The number of physically unfit men in World War I once again alarmed a nation to action, and the school feeding program began to spread. Parent-Teacher Associations, civic clubs and volunteer fire departments became sponsors of the programs (12).

Marketing of America's agricultural products became a problem in the early 1930's. The nation was paralyzed by a depression and food was needed desperately to feed the poor. The earliest form of federal assistance was put into effect with the purchase and distribution of surplus farm commodities (13). By 1935, under Section 32 of the school lunch law, purchase and distribution of these commodities became a mainstay of the national program (15,16).

### Legislation

Congress passed the National School Lunch Act in 1946 (17). The dual purpose of the law was: (a) to safeguard the health and well-being of the nation's children and (b) to aid the farmer by increasing the consumption of farm products (18). Policies or standards developed for implementation of the National School Lunch Act were the following:

1. Programs would be operated on a non-profit basis.
2. Meals must meet the standards set forth by the United States Department of Agriculture (USDA) to qualify for reimbursement.

3. Free and reduced price lunches must be offered to those unable to pay the full price (19).

Since 1946 the program has expanded and broadened because of increased awareness of the nutritional needs, both physical and educational, of a nation's children. In the early 1960's the needy child became a concern of the program and it was stated that all children must be fed without regard to ability to pay (20). The 89th Congress passed the Child Nutrition Act of 1966 (21). This act gave recognition to the relationship among food, nutrition, learning capabilities and development of a child (22). Public Law 91-248 of 1970 strengthened the program in several aspects and gave greater assistance to the needy child. The law stated that every child from a low income home had the right to have a meal at school (23). Guidelines on family income were established to aid in determining the eligibility of a child for a free or reduced priced meal (24).

Amendments initiated during the fiscal year 1971-72 authorized major changes in funding procedures for school lunches (24). With these new changes, funds were allocated to states in accordance with participation, and reimbursement rates were increased from six cents to eight cents per Type A lunch with additional funds for free and reduced price meals (25,26).

Public Law 93-150 enacted in 1973 (27) again increased reimbursement from eight to ten cents with a forty-five cent average for free lunches and also provided an escalator clause. The escalator clause was designed to require the USDA to review rising food costs and to assign reimbursement in relation to the increased cost of food. As a result, in January, 1974, rates were adjusted from ten cents to ten and one-half cents for Type A meals, from forty five to forty seven and one-quarter cents for free lunches and from

thirty five to thirty seven and one-quarter cents for reduced meals. USDA will continue to review food costs semi-annually and determine the increase to the nearest one-fourth cent (28-30).

The school lunch program has grown to a fully developed part of the school day and serves a school in several ways. The lunchroom is a social center, classroom and business operation (31). The main functions, however, are to provide one-third to one-half of a child's daily nutritional needs and to provide a laboratory for nutrition education (32).

### Current Program Status

#### Participation

The school lunch program of this nation is the largest and most comprehensive school feeding program in the world (24,28). Participation has increased steadily to twenty five million meals in December 1972; 8.7 million meals were served to needy children. By the end of fiscal year 1973, 8.9 million needy children were receiving a free or reduced price meal (20, 24,28). In 1973-74, participation declined because of several factors: decline in birth rate, more white children in the southern states enrolling in private schools that do not participate in the school lunch program, two full sessions scheduled each day with no time for a lunch period, and unwillingness of children from low income families to participate because they considered the school lunch a welfare program (26).

Another possible cause for the decline is the increased price of school lunches. USDA studies indicate that a one cent increase in price results in a one per cent decrease in sales (33).

## Student Involvement

Participation in school lunch has a direct correlation to student involvement (4,5,7,8). Students can be involved in a variety of ways. In 1973, the American School Food Service Association (ASFSA) initiated a program at the national level with an advisory committee composed of seven high school students, one representing each ASFSA region (34). The committee represents all students, those eating school lunch and those not participating. The committee was designed to function in several ways: as advisors in nutrition education programs, as spokesman before Congress, and in other phases where improvements or changes are needed for the program to better meet the student needs.

At the local level, student involvement adds to the interest and participation in the foodservice program. Several studies reported effective methods to get students involved and to provide feedback for program improvement (4,5,7). Methods cited were: training programs for students in foodservice, correlating classroom activities with the lunch program, student advisory committees, parent-teacher involvement (4,34-36).

Students in twenty high schools throughout the United States were interviewed in an attitude study recently released by USDA (37). These students of both high and low participation schools listed factors that have an impact on participation. The items of importance were: choice within Type A requirements, a strong desire to be treated as customers, more appealing Type A lunches, larger portions for less money, time to enjoy eating, and what appeared to be the most important, involvement in menu planning.

### Nutritional Contribution

The Type A pattern, based on one-third of the daily food requirement of a ten to twelve year old boy or girl, was the nutritional standard defined by USDA (38). These requirements are as follows (39):

1. One-half pint of fluid whole milk.
2. Two ounces of edible portion as served of a protein rich food.
3. Three-fourths cup serving of two or more vegetables and/or fruits.
4. One slice of whole-grain or enriched bread.
5. Two teaspoons of butter or fortified margarine.

To help meet the nutritional goal it was recommended that lunches include (39):

- a) a Vitamin C-rich food each day.
- b) a Vitamin A-rich food twice a week.
- c) several foods rich in iron each day.

Adjustments have paralleled changes in the National Research Council's (NRC) recommended dietary allowances (40). Basically, recommendations have been that lesser amounts be served to younger children, three to six years of age, and that larger portions be served to secondary school students. Also recommended was that the lunch contain only one teaspoon of butter or fortified margarine (39,41).

Participation in school lunch has been shown to make a positive contribution to the nutritional intake of children. Studies in Massachusetts and elsewhere report that children who eat in the program consume a better lunch, nutritionally, than those who eat at home, bring a sack lunch, or eat elsewhere. In the Massachusetts study of children's food habits (42,43) two-thirds of the students who did not eat the Type A lunch consumed an inadequate lunch compared to only 28 per cent of the school lunch participants.



White House Conference  
Recommendations

In support of school food services, participants of the 1969 White House Conference made the following statement:

Children are helped to develop good food habits by receiving needed nutrients in the school setting from a variety of foods acceptable to all cultural groups represented in the schools, and planned, prepared, and served in accordance with scientific and aesthetic principles (44).

It was further asserted that the school foodservice can function as a laboratory for application of nutrition principles taught in the classroom.

Specific recommendations were developed to achieve nutrition education objectives:

- a) That lunch and breakfast be provided when needed to all school children, including preschool.
- b) That school authorities establish standards for foodservice and provide a comfortable, pleasant place for eating and allow time for social interaction.
- c) That programs be supervised at all levels by personnel trained in nutrition and management.
- d) That maximum use be made of foodservice facilities for nutrition education.
- e) That student, parent, and community involvement in school food-services be encouraged.
- f) That school authorities be encouraged to develop innovative approaches to feeding school children (44).

## METHODOLOGY

The objective of this project was to study the influence of student-selected menus on school lunch participation, plate waste, and attitudes toward school foodservice of sixth grade students in three North Kansas City, Missouri, Elementary Schools. Baseline data were collected in Fall 1973 for the control period and again in Spring 1974 during and following the experimental or test period.

When selecting the schools, consideration was given to the socio-economic characteristics of the neighborhood in which the schools were located and to the size of the school. Three schools were selected to provide a cross-section of the district's twenty-nine elementary schools. School 1 had a mean enrollment of eighty four; school 2, 293; and school 3, 633. Before the study was begun, school principals were contacted for their approval and to determine the most convenient time to meet with the students. Also, school lunch managers and other personnel were oriented to the study.

The control period of menus consisted of a district-wide sixteen day cycle manager planned menu served during October and November 1973 (Appendix A). The manager at each project school recorded all school and sixth grade attendance, enrollment and participation, plate waste and first and second most discarded foods for the sixth grade (Appendix B). Managers could identify sixth graders because students were served by grade in each school.

After this period the initial student contact at each school was made. Sessions were scheduled with all of the sixth grade students at each school. These students were asked to complete a twenty-one item instrument (pre-assessment; Appendix C). Seven items were biographical or informational for

use in analysis. The other fourteen items related to attitudes toward food and non-food factors. The students recorded their responses on the test sheet. Data were transferred to computer cards for electronic data processing.

The responses on the attitude instrument were given a weight of one, two, or three, with the most positive response weighted highest; two questions had only two responses. An overall score, a food score, and nonfood score were computed. The overall score was the cumulative weight of all fourteen attitude items, of which seven were food-related, and seven nonfood-related (Appendix D). The maximum overall score possible was 40; food score, 20; and nonfood, 20.

At this initial session, the requirements of the Type A lunch were outlined. The contribution to the basic four and to the nutrient requirements of a six to ten year old also were discussed.

During a second meeting all sixth grade students at school 1 and 2 but only forty-eight students (or 30 per cent) at school 3 were given a list of 161 food items regularly served on school lunch menus in the district (Appendix E). The students at school 3 were chosen by random selection of approximately six per class. It was decided the total sixth grade class of school 3 would be too large to work with if some food items had to be explained. These students were asked to rate each food using the following scale: (a) like a lot, (b) like, (c) dislike, and (d) do not know. Students recorded responses by pencil directly on optical marked reader (OMR) data collection cards.

These results were used to compile seventy-two menus using the foods ranked as *most preferred*. In appendix F, these results are summarized. Different levels of acceptance were used in establishing the lists for the

various categories of menu items; i.e., a main dish item was included if at least 64 per cent of the students indicated they liked the food; for vegetables and salads, 43 per cent; breads, 69 per cent; and desserts, 66 per cent. Three menus were constructed for twenty-four of the twenty-eight popular entree items with different selections of vegetables and/or salads, breads and desserts (Appendix G).

The seventy-two menus were presented to basically the same group of students who had completed the food preference instrument and they were asked to rate each menu using the scale constructed for the food preference instrument. Menu preferences were tabulated (Appendix H); results were used to compile a sixteen day cycle menu plan. The cycle contained fifteen days of students' choice and one day of manager's choice. The manager's one choice permitted introduction of a new recipe, a non-preferred food item needed for variety (spinach, broccoli, etc.) and use of a USDA donated commodity food. Menus were considered for use on the experimental cycle if at least 80 per cent of the students liked the combination of foods. The menu cycles were individualized for each school according to the differing preferences of the students (Appendix I).

Prior to service of the student selected menus, a publicity campaign was conducted in each school (Appendix J). The experimental period during which student selected menus spanned March and April, 1974. Participation, plate waste, and students' attitudes (post-assessment) were measured again using the same procedure as that used in the control period.

## RESULTS AND DISCUSSION

### General Information

Factors considered in selecting the three project schools were size of enrollment, geographic location within the district, and socio-economic characteristics of the various neighborhoods in which the elementary schools were located. The three schools provided a cross-section of the twenty-nine elementary schools in the district. School 1 is located in a rural area, and increases in attendance are expected. School 2 is located in an area with recent apartment development and has a large number of low income families. School 3 is located in an established neighborhood with comparatively equal numbers of lower to upper income families.

Table 1 details the enrollment, attendance and absences in the project schools. All-school enrollment and attendance were slightly less in the experimental period in each of the schools; although sixth grade enrollment and attendance were essentially the same during the two study periods.

### Participation Data

Average daily per cent participation (ADP) increased significantly during the experimental period for the overall sample and in each of the three project schools (Table 2). Both the all school participation (Grade 1-6) and the sixth grade participation were higher than during the control period. Per cent participation is the ratio of students eating the Type A school lunch in relation to the daily attendance.

The overall percentage increase in all school participation was 9.1; whereas the sixth grade increase was 10.9 per cent. School 3 recorded the

Table 1: Enrollment, attendance, absences in project schools

	period	school 1		school 2		school 3		all schools	
		mean <sup>1</sup>		mean		mean		mean	
school enrollment	control	88.7 ± 0.7		311.7 ± 1.5		659.7 ± 1.4		1060.1 ± 1.3	
	experimental	81.1 ± 1.4		295.3 ± 2.6		651.3 ± 1.0		1027.8 ± 3.8	
school absences	control	4.4 ± 1.4		18.3 ± 5.7		26.0 ± 6.2		48.7 ± 11.2	
	experimental	3.1 ± 1.7		31.5 ± 4.9		51.9 ± 23.0		86.5 ± 26.8	
school attendance	control	84.3 ± 1.7		293.4 ± 5.5		633.6 ± 6.3		1011.3 ± 11.1	
	experimental	78.1 ± 2.3		263.8 ± 7.2		599.4 ± 23.3		941.3 ± 30.3	
sixth grade enrollment	control	13.1 ± 0.3		49.7 ± 0.5		171.8 ± 0.8		234.6 ± 0.8	
	experimental	12.4 ± 0.5		48.9 ± 12.5		172.5 ± 0.5		233.8 ± 12.5	
sixth grade absences	control	0.4 ± 0.5		3.3 ± 1.5		8.1 ± 2.2		11.8 ± 2.6	
	experimental	0.1 ± 0.3		3.9 ± 2.5		11.8 ± 4.7		15.8 ± 3.7	
sixth grade attendance	control	12.8 ± 0.7		46.4 ± 1.7		163.5 ± 2.1		222.6 ± 2.7	
	experimental	12.4 ± 0.6		48.1 ± 2.5		160.8 ± 4.9		221.2 ± 4.0	

<sup>1</sup>Mean and standard deviation

Table 2: Participation in school lunchroom for control and experimental periods

	attendance		participation		% participation		t for related samples
	control period	experimental period	control period	experimental period	control period	experimental period	
	mean <sup>1</sup>	mean	mean	mean	mean	mean	
school 1							
all school	84.3± 1.7	78.1± 2.3	58.3± 3.4	59.1± 3.1	69.1± 3.4	75.8± 4.0	4.21***
sixth grade	12.8± 0.7	12.4± 0.6	8.6± 0.8	8.9± 1.1	67.3± 6.8	72.3± 8.1	2.21*
school 2							
all school	293.4± 5.5	263.8± 7.2	225.5± 6.2	222.3± 10.3	76.9± 2.1	84.2± 2.6	9.76***
sixth grade	46.4± 1.7	48.1± 2.5	36.8± 3.4	42.5± 3.1	79.1± 6.2	88.8± 3.1	5.52***
school 3							
all school	633.6± 6.3	599.4± 23.3	358.9± 29.0	402.7± 38.1	56.6± 4.6	67.2± 5.7	6.77***
sixth grade	163.5± 2.1	160.8± 4.9	92.3± 7.9	109.4± 8.7	56.4± 5.0	68.0± 4.3	8.14***
total							
all school	1011.3± 11.1	941.3± 30.4	642.7± 27.8	684.1± 39.6	63.6± 2.8	72.7± 3.7	8.39***
sixth grade	222.6± 2.7	221.2± 4.0	137.6± 8.8	160.9± 7.3	61.8± 3.9	72.7± 3.0	9.20***

<sup>1</sup> Mean and standard deviation

\*Significant at or beyond 0.05 level

\*\*\*Significant at or beyond the 0.001 level

greatest percentage increases of 10.6 and 11.6 for all school and sixth grade, respectively. However, school 2 had the highest per cent participation in both periods (76.9 and 88.8). This school has the greatest number of free or reduced meals which is a major influence on ADP.

The policy of the district foodservice is to regularly post menus on several bulletin boards in each school in the district. During the experimental period, menus also were printed in the parents' newsletter in school 3 with the notation that students were involved in selecting the menus. It was hypothesized that a major influence on the decision to eat school lunch is parents and students perusal of the menu. If this assumption is correct, students were apparently favorably influenced by menus during the experimental period which featured preferred foods. The pattern of percentage changes among the schools suggests the differences in publicity campaigns had little influence on ADP, because school 1 had the most active campaign but the smallest increase in participation.

#### Plate Waste Data

Total ounces of plate waste from sixth graders decreased in school 1 and 2 during the experimental period. School 3 had a small increase (Table 3). To provide a standard base of comparison, plate waste data also were analyzed in relation to ounces of plate waste per meal per student participating in the school lunch. Mean ounces of plate waste per meal per student decreased significantly during the experimental period in both schools 1 and 2 and increased slightly (non-significant) in school 3. Results were essentially the same for both periods for the overall sample.

During the control period, no plate waste was reported five times and during the experimental period, eleven times. Vegetables and salads were



Table 3: Plate waste of sixth grade students for control and experimental periods

	total ounces <sup>1</sup>		ounces per meal per student <sup>2</sup>				t for related samples
	control period	experimental period	control period		experimental period		
	mean <sup>3</sup>	mean	N	mean	N	mean	
school 1	6.4 ± 10.0	2.1 ± 4.3	8.6	0.78 ± 1.2	8.9	0.23 ± 0.5	1.97*
school 2	77.8 ± 22.0	60.2 ± 26.2	36.8	2.13 ± 0.6	42.5	1.43 ± 0.6	2.84*
school 3	124.4 ± 48.5	180.3 ± 131.1	92.3	1.37 ± 0.6	109.4	1.64 ± 1.2	0.81
total	208.7 ± 57.0	242.5 ± 128.1	137.6	1.52 ± 0.1	160.9	1.51 ± 0.2	0.60

<sup>1</sup>Mean total ounces per day; 16 days in each period.

<sup>2</sup>Mean ounces per meal per student participating in the school lunch.

\*Significant at or beyond 0.05 level.

observed to be the most discarded food less often during the experimental period than during the control period (Table 4). The main dish items were discarded more frequently during the experimental period, however. Perhaps students were consuming larger portions of other menu items which may account for this change. Also, main dish items may have been discarded more often but in lesser amounts.

Table 4: Comparison of most frequently discarded foods in control and experimental periods

	first most frequently discarded food <sup>1</sup>		second most frequently discarded food	
	control period <sup>2</sup>	experimental period <sup>2</sup>	control period	experimental period
meat or meat alternates	1	9	10	7
potatoes	1	2	0	4
vegetables other than potatoes	18	4	4	4
salad	23	16	4	8
fruit	0	2	2	1
dessert	0	1	4	4
bread	0	3	4	1

<sup>1</sup>The number of days of no plate waste increased from 5 to 11, when comparing the control and experimental periods.

<sup>2</sup>N = 48; 16 daily observations at each of 3 schools.

## Data from Attitude Instrument

### General Information

All sixth grade students in the three project schools completed the twenty-one item attitude instrument. The sample included an approximately equal distribution of boys and girls during the control and experimental periods (Table 5). Data indicate the sample responding to the instrument was basically the same during both periods.

The students were asked to indicate their usual place for eating lunch (Table 6). The reported participation (eat school lunch) was greater during the experimental period; these data are compatible with the recorded actual participation reported above. The change in school lunch participation was reflected in a decrease in number of students bringing sack lunches. School 1 had the largest increase in reported participation during the experimental period. In both control and experimental periods school 2 had the largest percentage of sixth grade students reporting participation in the school lunch program.

Those students who were usually participants in the school lunch program were asked to indicate reasons for eating lunch at school (Table 7). There was little change between periods in the reasons given. Of those students responding over 75 per cent indicated they liked the food served at school. There was a small increase from control to experimental period in the number of students who thought the lunch price was low (9.6 and 13.9, respectively). "My friends eat there" and "my parents want me to" also were strong influences on school lunch participation.

Overall, less than one-fourth of the students participating in the study indicated they usually brought a sack lunch (Table 6). A notable change in

Table 5: Comparison of sample for control and experimental periods

	control period	experimental period
	%	%
sex: boy	50.0	50.5
girl	50.0	49.5
student last year: yes	90.7	90.2
no	9.3	9.8

Table 6: Usual place for eating lunch of sixth grade students

period	N	eat school lunch	eat 3-4 times/wk	eat 1-2 times/wk	eat at home	sack lunch
		%	%	%	%	%
all schools						
control	204	52.9	12.3	11.3	1.0	22.5
experimental	200	60.0	9.5	9.5	2.5	18.5
school 1						
control	11	36.4	36.4	0.0	0.0	27.3
experimental	11	54.5	9.1	9.1	0.0	27.3
school 2						
control	41	82.9	2.4	7.3	0.0	7.3
experimental	42	88.1	2.4	4.8	0.0	4.8
school 3						
control	- 151	45.7	13.2	13.2	1.3	26.5
experimental	147	52.4	11.6	10.9	3.4	21.8

Table 7: Reasons for participation in school lunch program

reason	control period (N = 156)		experimental period (N = 158)	
	N <sup>1</sup>	% <sup>2</sup>	N	%
like the food	124	79.4	121	76.5
friends eat there	99	63.4	103	65.1
mother works	60	38.4	57	36.0
parents want me to	88	56.4	86	54.4
price lunch low	15	9.6	22	13.9

## Reasons for bringing a sack lunch

reason	control period (N = 46)		experimental period (N = 37)	
	N <sup>1</sup>	% <sup>2</sup>	N	%
don't like the food	32	69.5	28	75.6
friends bring lunch	10	21.7	23	62.1
sack lunch cheaper	41	89.5	28	75.6
have allergies	0	0.0	1	2.7
like sack lunch	37	80.4	31	83.7

<sup>1</sup>Number of times each reason was selected. Students could select one or more reasons.

<sup>2</sup>% of students selecting reason.

response from control to experimental period was the decline in percentage of students who brought sack lunches in the experimental period as compared to the control period. The main reasons given by those who brought sack lunches were that they did not like the food served at school, they like sack lunches, and sack lunches were cheaper (Table 7). Peer pressure was a much greater influence in the experimental period than in the control period. Only two students indicated they ate lunch at home during the control period and five during the experimental period.

### Attitude Scores

Attitude data were of particular interest because of the variable pattern of results. Responses on the fourteen attitude items were weighted one, two, or three with the most positive response weighted highest. An attitude score, a food score, and nonfood score were computed. The t-test for related samples were used to study differences in pre- and post-assessments. One-way analysis of variance was used to study relationships of various factors to the attitude scores with the Scheffé test for comparisons of differences among means.

Mean attitude scores for control and experimental periods are shown for the overall sample and by school (Table 8). In school 1 the attitude score was significantly higher after the experimental period when compared with data compiled following the control period. The attitude score of school 2 decreased significantly after the experimental period. However, personnel problems occurred during the spring in this school which may have influenced the data. The pre- and post-assessment scores were essentially the same for school 3 and the overall sample.

Mean food scores for control and experimental periods also were analyzed by school (Table 8). School 1 recorded a significant increase in the food

score from control to experimental period. Scores for school 2 and 3 and the overall sample were essentially the same for both periods.

The nonfood score decreased significantly on the post-assessment (Table 8). Data indicated the decrease was recorded for school 2. The personnel problem mentioned above was perhaps a key factor in this negative change.

Table 8: Mean attitude scores for control and experimental periods

	N	control period	experimental period	t for related samples
		mean <sup>1</sup>	mean	
school 1	11			
attitude score		28.5 ± 4.5	32.0 ± 3.8	2.62*
food score		14.5 ± 3.2	17.4 ± 2.6	2.73*
nonfood score		14.0 ± 3.0	14.6 ± 2.5	1.10
school 2	41			
attitude score		29.4 ± 4.0	27.7 ± 3.1	2.60**
food score		14.2 ± 3.5	14.5 ± 2.6	0.41
nonfood score		15.1 ± 1.7	13.2 ± 1.74	5.27***
school 3	151			
attitude score		27.1 ± 4.5	26.8 ± 4.8	0.83
food score		12.9 ± 3.0	12.8 ± 3.3	0.73
nonfood score		14.1 ± 2.4	14.0 ± 2.4	0.59
total	204			
attitude score		27.6 ± 4.4	27.3 ± 4.5	1.21
food score		13.3 ± 3.1	13.4 ± 3.3	0.36
nonfood score		14.3 ± 2.3	13.8 ± 2.3	2.48*

<sup>1</sup>Mean and standard deviation

\*Significant at or beyond the 0.05 level

\*\*Significant at or beyond the 0.01 level

\*\*\*Significant at or beyond the 0.001 level

These data prompted the analysis of results from other perspectives. Results were analyzed using frequency of participation and perception of cooks' attitudes as independent variables (Tables 9 and 10). Overall attitude and food scores were significantly higher for those students who were frequent participants; i.e., those who ate lunch three or more times per week. This was true for both the control and experimental periods.

Data yielded an interesting picture of the relationship of students' perception of foodservice employees' attitudes and students' opinions of the program (Tables 9 and 10). During both periods, students who viewed the cooks

Table 9: Relationship of attitude scores to frequency of school lunch participation and perceptions of cooks' attitudes

	control period			experimental period		
	N	mean score	F ratio	N	mean score	F ratio
<hr/>						
frequency of participation: <sup>2</sup>						
frequent	133	28.2 ± 4.2	7.1**	139	28.0 ± 4.2	11.1***
infrequent	71	26.5 ± 4.8		61	25.7 ± 4.9	
perception of cooks' attitude: <sup>1</sup>						
usually friendly	151	25.4 ± 4.3	8.4***	118	25.7 ± 4.6	4.7**
sometimes friendly	31	25.7 ± 3.9		40	24.3 ± 3.6	
often crabby	22	21.6 ± 3.2		46	23.5 ± 3.8	

<sup>1</sup>Adjusted mean score; weight of item related to cooks' attitudes was deleted in computing score.

<sup>2</sup>Frequent: students who eat lunch 3 or more times per week.  
 Infrequent: students who eat lunch fewer than 3 times per week.

\*Significant at or beyond the 0.05 level

\*\*Significant at or beyond the 0.01 level

\*\*\*Significant at or beyond the 0.001 level



Table 10: Relationship of food scores to frequency of participation and perceptions of cooks' attitudes

	control period			experimental period		
	N	mean <sup>1</sup>	F ratio	N	mean	F ratio
<u>frequency of participation:</u> <sup>2</sup>						
frequent	133	13.9 ± 3.0	12.0***	139	13.9 ± 3.2	8.7**
infrequent	71	12.4 ± 3.0		61	12.4 ± 3.4	
<u>perceptions of cooks' attitude:</u>						
usually friendly	150	13.5 ± 3.0	5.1**	118	13.9 ± 3.5	3.7*
sometimes friendly	31	13.7 ± 2.7		40	12.7 ± 3.0	
often crabby	22	11.5 ± 2.4		46	12.7 ± 3.0	

<sup>1</sup>Mean and standard deviation

<sup>2</sup>Frequent: students who eat lunch 3 or more times per week.  
 Infrequent: students who eat lunch fewer than 3 times per week.

\*Significant at or beyond the 0.05 level

\*\*Significant at or beyond the 0.01 level

\*\*\*Significant at or beyond the 0.001 level

as friendly had significantly higher attitude scores than students who viewed the cooks as often crabby. The number of students viewing the cooks as often crabby had significantly lower food scores in the control period than those who perceived the cooks as friendly (Table 10). In addition to the effect on attitude scores, it was notable that fewer students viewed the cooks as usually friendly during the experimental period. Most of the change was reflected in the increased number of students reporting they believed the cooks were often crabby.

A change score also was computed to study the difference in the overall attitude score between the control and experimental periods. To derive the change score, a constant (30) was added to the difference in the experimental period score minus the control period score. The constant was added to avoid negative values. School 1 had a significantly positive change; whereas, schools 2 and 3 recorded slightly negative changes. In relation to perception of cooks' attitudes, there was a significant difference between those who viewed the cooks as friendly and those who perceived the cooks as crabby. Students with positive perceptions of cooks' attitudes had slightly positive change scores.

Table 11: Relationship of change score<sup>1</sup> to frequency of school lunch participation, place of school attendance and perception of cooks' attitudes

	N	mean score <sup>2</sup>	F-ratio
frequency of participation:			
frequent	139	29.8 ± 4.6	n.s.
infrequent	61	29.4 ± 4.1	
school:			
1	11	33.5 ± 4.4	6.05**
2	41	28.3 ± 4.1  *	
3	151	29.7 ± 4.4	
perception of cooks' attitudes:			
usually friendly	118	30.4 ± 4.6	7.16***
sometimes friendly	40	29.6 ± 4.4  *	
often crabby	46	27.6 ± 3.4	

<sup>1</sup>Change Score = (30 + Experimental Period Score - Control Period Score). Scores below 30 indicate a negative change.

<sup>2</sup>Mean and standard deviation

\*\*Significant at or beyond the 0.01 level

\*\*\*Significant at or beyond the 0.001 level

To study the interactions of school, frequency of participation, and perceptions of cooks' attitudes and the independent effects of the variables with the effects of pre-assessments as covariants, results were examined with unequal subclass analysis of variance and determination of least significant differences for comparisons between group means (Table 12). The overall attitude and nonfood scores were adjusted to delete the weight of the item related to perception of cooks' attitudes. Independent effects of school, frequency of participation and perceived cooks' attitudes were found. When variances for other factors were excluded, the mean attitude score for school 1 continued to be significantly higher, with the difference attributable to the food-related component of the score.

The significantly positive impacts of frequent participation and favorable impressions of cooks' attitudes on students' reactions to the school lunch program were substantiated more firmly with this analysis. The main effect of participation was on the nonfood score, with frequent participants rating the program more favorably than infrequent participants. Students perceiving the cooks as usually friendly had significantly higher scores than those viewing the cooks as often crabby, and also, those who perceived the cooks as friendly only sometimes.

#### Analysis of Attitude Items

In addition to the analysis of attitude scores, food and non-food related items were analyzed individually using the chi square test of independence. The food related items were concerned with serving size, temperature and flavor of the food, acceptance of meat, vegetables and dessert menu items and perception of usual amount of food consumed (Appendix K). The non-food related items pertained to lunchroom noise and cleanliness, cooks' attitudes,

Table 12: Analysis of variance for attitude scores

school	adjusted attitude score <sup>1</sup>			food score			nonfood score <sup>1</sup>		
	mean	standard error	F <sup>2</sup>	mean	standard error	F <sup>2</sup>	mean	standard error	F <sup>2</sup>
1	27.0	1.25		15.9	0.95		11.1	0.62	
2	26.4*	0.69		14.7*	0.53		11.7	0.35	
3	23.0	0.39	13.3***	11.9*	0.30	18.5***	11.1	0.20	1.1n.s.
frequency of participation									
frequent	26.3	0.52		14.6	0.40		11.6	0.26	
infrequent	24.7*	0.64	6.6*	13.7	0.49	3.7n.s.	10.9*	0.32	5.0*
perception of cooks' attitudes									
usually friendly	29.3	0.56		15.5	0.42		13.8	0.28	
sometimes friendly	25.4*	0.74		13.8	0.57		11.5*	0.37	
often crabby	21.8	0.72	45.1***	13.2	0.55	8.3***	8.6	0.36	85.3***

<sup>1</sup>Adjusted mean scores; weight of item related to cooks' attitudes was deleted in computing scores.

<sup>2</sup>Unequal subclass analysis of variance; least significant differences were computed to study differences between means.

required student behavior and seating arrangement, lunchroom atmosphere and perception of time allowed for lunch (Appendix L).

Food Related Items. Correct serving size is vital to the success of a school lunch program. From the administration point of view portion control is important for controlling cost and for meeting the USDA Type A lunch standards. For the student, size of serving means an adequate or inadequate lunch. Students from school 1 had significantly more favorable impressions of serving size than schools 2 and 3 in the post-assessment (Item 9).

Students' attitude toward temperature of food (Item 10) revealed changes in the pre- and post-assessments. Fewer thought the food was cold in the experimental period in school 1. In schools 2 and 3 more students indicated the food was usually cold in the post-assessment.

The food acceptance of children at all ages is a prime concern of those responsible for child feeding. Students' food acceptance usually varies from school to school within a district or from class to class within a building. Item 15 responses indicated attitudes of students in school 1 changed drastically after the experimental period. In this school, students worked two days in the kitchen; apparently the extensive involvement in the foodservice had a strongly positive impact.

The students' attitudes toward main dish entrees (Item 16) showed a significant positive change from control to experimental period in school 1 and a smaller positive change in school 3. A slight negative change resulted in school 2; although the attitude of those who participated frequently in the school lunch were much more positive than those who were infrequent participants.

Students' attitudes toward vegetables (Item 17) showed little change from control to experimental periods. This was interesting in view of plate waste

data that indicated improved acceptability of vegetables after the experimental period.

In both study periods, dessert items were generally well received with frequent participants having more favorable attitudes than infrequent participants (Item 18). Since desserts were a favorite of most children, nutritive value should be a major factor in selecting dessert items for menus to enhance nutrient consumption.

In the study of reported consumption of school lunch food (Item 20) in the post-assessment more school 1 students indicated they ate most of their food. Students at schools 2 and 3 reported little change. Also, those students who are frequent participants in the program reportedly consumed more of their food than those who were infrequent participants. This was true for both periods.

Non-food Related Items. Students' attitudes toward several items were studied to determine perception of the school lunch program generally. School 1 recorded the greatest change in attitude toward lunch room noise (Item 7) while schools 2 and 3 had less change from control to experimental period. The highly significant change in school 1 may be attributed to the extensive involvement of the sixth grade during the experimental period resulting in a better understanding of the school lunch program.

There was a significant positive change in school 2 students' perceptions of lunchroom cleanliness from control to experimental period (Item 8). All three project schools recorded increased awareness of the conditions of the lunchroom for the experimental period. The greatest change was recorded in school 2. During the school year the principal in school 2 had worked closely with the custodian to improve standards.

The school lunch cooks' attitudes as perceived by students was a highly significant factor in reactions to the program (Item 11). Schools 1 and 3 had little change from control to experimental period; whereas, school 2 had a highly negative change. In the post-assessment almost 60 per cent of the students viewed the cooks as often crabby. As discussed in other sections of this report personnel problems arose prior to and during the experimental period in school 2.

Perceptions of required lunchroom behavior were significantly different among the three schools in both periods (Item 12). School 1 reported more restrictions in the experimental period than the control periods; school 2 results indicated the least restrictions, and school 3 was essentially unchanged for both periods.

Analysis of perceptions of seating requirements in the lunchroom (Item 13) indicated a positive change at school 1. More students indicated they were permitted to sit with friends in the experimental period. School 2 had a highly significant negative change with students reporting less freedom to select seating arrangement; whereas school 3 reported little change from control to experimental period.

Students were asked to evaluate the cheerfulness of the lunchroom atmosphere (Item 14). Schools 2 and 3 reported little change from control to experimental period while school 1 reports were more positive after the test period.

Students' perception of time allowed for eating lunch indicated a significant difference among schools in both periods (Item 19). School 1 reported having more time in the experimental period. A majority of students in school 2 felt rushed much of the time in both assessments. In school 3, only about half of the students reported being rushed.

## SUMMARY AND CONCLUSIONS

### Summary

Increasing participation in the school lunch program and decreasing plate waste are two primary concerns of school foodservice directors and managers. Today's society, with greater numbers of working mothers and greater distances to travel to school, makes it increasingly necessary that the nutritional needs of many students be met at school. A pilot project indicated student involvement in menu planning can have a positive impact on student reaction to the school lunch program. A number of studies have been concerned with student involvement and food preferences; however, few studies have focused on elementary student involvement in planning cycle menus suited to a particular school.

The objective of this research was to study the influence of student-selected menus on school lunch participation, plate waste, and attitudes toward school foodservice of sixth grade students in three North Kansas City, Missouri, Elementary Schools. Data were collected during the 1973-74 school year; in the fall for the control period and again in the spring during and following the experimental period.

When selecting the schools, consideration was given to the socio-economic characteristics of the neighborhoods and to the size of the schools. Three schools were selected to provide a cross-section of the district's twenty-nine elementary schools. School 1 had a mean enrollment of eighty four; school 2, 293; and school 3, 633. Prior to implementation of the study, school principals, teachers, school lunch managers and other personnel were oriented to the study.



The menu cycle for the control period was a district-wide sixteen day manager-planned menu. During this period the manager at each project school recorded all school and sixth grade attendance, enrollment and participation, plate waste and most discarded foods for the sixth grade.

After this period the initial student contact at each school was made; sessions were scheduled with all of the sixth grade students at each school. Students were asked to complete a twenty-one item instrument. Seven items were biographical or informational for use in analysis. The other fourteen items related to attitudes toward food and non-food factors. An attitude score, a food score, and nonfood score were computed.

Also, at this session, the requirements of the Type A lunch were outlined. The contribution of the school lunch to the basic four and to the nutrient requirements of a six to ten year old were discussed.

During a second meeting all sixth grade students at schools 1 and 2 and forty-five (of 151) students at school 3 were given a list of 161 items regularly served on school lunch menus in the district. Students were asked to rate each food using the following scale: (a) like a lot, (b) like, (c) dislike, and (d) do not know. Results were used to plan seventy-two menus from among foods ranked as most preferred. Three menus were constructed for each of twenty-four popular entree items with different selections of vegetables and/or salads, breads and desserts.

The seventy-two menus were presented to the same group of students who had completed the food preference instrument, and they were asked to rate each menu using the scale constructed for that instrument. Results were used to compile a sixteen day cycle menu plan. The cycle contained fifteen days of students' choice and one day of manager's choice. The menu cycles were

individualized for each school according to the differing preferences of the students.

Prior to service of the student-selected menus, a publicity campaign was conducted in each school. Participation, plate waste, and students' attitudes again were measured.

Average daily per cent participation increased significantly during the experimental period for the overall sample and in each of the three project schools. Both the all school participation (Grade 1-6) and the sixth grade participation were higher than during the control period. The percentage increase in all school participation was 9.1; the sixth grade increase was 10.9 per cent.

Total ounces of plate waste decreased in schools 1 and 2 during the experimental period. School 3 had a small increase. To provide a standard base of comparison, plate waste data were analyzed in relation to ounces of plate waste per meal per student participating in the school lunch. Mean ounces of plate waste per student decreased significantly during the experimental period in both schools 1 and 2. Ounces of plate waste per student increased slightly in school 3. The number of days for which no plate waste was recorded was greater during the experimental period. Vegetables and salads were observed to be the most discarded foods less often during the experimental period than during the control period.

The students were asked to select their usual place for eating lunch on the attitude instrument. The reported participation was greater during the experimental period; these data were compatible with the actual participation results. The change in school lunch participation was reflected in a decrease in number of students indicating they brought sack lunches.

Those students who were regular participants in the school lunch program were asked to indicate reasons for eating lunch at school. Over 75 per cent indicated they liked the food. "The price is low," "my friends eat there" and "my parents want me to" also were strong influences on school lunch participation.

In school 1 the score derived from the attitude instrument was significantly higher after the experimental period when compared with data compiled following the control period. The attitude score of school 2 decreased significantly after the experimental period. Personnel problems occurred during the spring in this school which may have influenced the data. The pre- and post-assessment scores were essentially the same for school 3 and the overall sample.

School 1 recorded a significant increase in the food score from control to experimental period. Scores for schools 2 and 3 and the overall sample were essentially the same for both periods. The nonfood score decreased significantly during the experimental period. Data indicated the decrease was recorded for school 2. The personnel problem mentioned above was perhaps a key factor in this negative change.

Data yielded an interesting picture of the relationship of students' perception of foodservice employees' attitudes and students' opinions of the program. During both study periods students who viewed the cooks as friendly had significantly higher attitude scores than the students who viewed the cooks as crabby. Also, students who were frequent participants in the school lunch program had significantly more favorable attitudes.

### Conclusions and Recommendations

Involvement of students in menu planning and individualizing the program to the preferences of the children in particular schools had a beneficial effect on participation. Also upper elementary students who have the ability and maturity to take part in this type of project may exert a positive influence on younger students' participation. Data are inconclusive, but it appears plate waste can be reduced in some instances by fitting menus to students' preferences.

Results indicate the change in attitude toward school foodservice was most notable among students in the smallest of the three schools in the study. Perhaps the friendly more personal environment possible in small schools may enhance student interest and involvement in projects of this type. Data suggests that the approach of foodservice personnel to the children influences students' reactions to the food and to the program.

An overall recommendation of the study is that increased two way communication with students and involvement of students, faculty and administration in the program presents a viable approach to enhancing the image of school foodservice. This may lead to further development of the educational value of the program, rather than emphasis on the service function only. Also, involvement of elementary students in the program is believed to be particularly important as a means of positively influencing these children at an early stage when behavior change is less difficult.

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## APPENDIXES



## APPENDIX A

### Manager Planned Menus for the Control Period

# North Kansas City Elementary School Menus<sup>1</sup>

- |   |  |  |
|---|--|--|
| 1. School Boy Sandwich<br>French Fries<br>Cole Slaw<br>Cake                                     | 2. Tacos<br>Peas<br>Grapes<br>Bread and Butter<br>Sugar Cookie                                   | 3. Chili w/Crackers<br>Combination<br>Vegetable Salad<br>Petit Banana<br>Cinnamon Roll                   |
| 4. Pigs-in-a-blanket<br>Buttered Potato<br>Tossed Salad<br>Peanut Butter<br>Cookie              | 5. Tuna Salad w/Lettuce<br>Leaf<br>Mixed Vegetables<br>Applesauce<br>Hot Rolls w/Butter          | 6. Spaghetti Red<br>Tossed Salad<br>1/2 Deviled Egg<br>Fruit Cobbler<br>French Bread w/Butter            |
| 7. Dagwood Sandwich<br>Buttered Peas<br>Potato Chips<br>Cottage Pudding                         | 8. Macaroni and Cheese<br>w/Fish Stick<br>Buttered Green Beans<br>Cinnamon Roll<br>Jello w/Fruit | 9. Fried Chicken<br>French Fries<br>Cole Slaw<br>Hot Rolls w/Butter                                      |
| 10. Grilled Cheese Sand-<br>wich w/Pickle<br>Spinach w/Egg<br>Fresh Fruit                       | 11. School Boy Sandwich<br>Peas and Carrots<br>Combination Salad<br>Chocolate Cake               | 12. Ham and Beans<br>Cole Slaw<br>Corn Bread and Butter<br>Fruit   |
| 13. Bar-B-Q Beef on<br>a Bun<br>Buttered Corn<br>Popeye Salad<br>Yellow Cake w/<br>Cherry Sauce | 14. Pizza<br>Tossed Green Salad<br>1/2 Apple<br>Chocolate Chip<br>Cookie                         | 15. Chicken Fried Steak<br>Mashed Potato<br>w/Gravy<br>Vegetable Stick<br>Hot Biscuits w/Butter<br>Fruit |
| 16. School Boy Sandwich<br>Tri-taters<br>Cole Slaw<br>Cake                                      |  |  |

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<sup>1</sup>One-half pint milk served at each meal. Orange juice was added to menu when another Vitamin C-rich food was not served.

## APPENDIX B

### Participation and Plate Waste Record

## PARTICIPATION OF STUDENTS

SCHOOL \_\_\_\_\_ DATE \_\_\_\_\_

SIXTH GRADE ENROLLMENT \_\_\_\_\_

	TOTAL SCHOOL	6TH GRADE ONLY
ENROLLMENT TODAY	_____	_____
NUMBER ABSENT	_____	_____
NUMBER PARTICIPATING	_____	_____
ATTENDANCE TODAY	_____	_____
% PARTICIPATION	_____	_____

LIST THE MENU OF THE DAY

## PLATE WASTE OF 6TH GRADE STUDENTS

\_\_\_\_\_ TOTAL POUNDS (from 6th grade trays). Food only, do not include milk.

OBSERVATION OF MOST DISCARDED FOOD(S) 1. \_\_\_\_\_  
 2. \_\_\_\_\_

APPENDIX C  
Attitude Instrument

## RATING SHEET

I. D. NUMBER \_\_\_\_\_

NAME OF SCHOOL \_\_\_\_\_

INSTRUCTIONS: Read each question carefully. Then select your answer and check in the space provided.

1. I am a:

- ☐ A. Boy  
☐ B. Girl

2. I was a student here last year:

- ☐ A. Yes  
☐ B. No

3. I usually:

- ☐ A. Eat school lunch.  
☐ B. Eat school lunch 3 or 4 times a week.  
☐ C. Eat school lunch 1 or 2 times a week or less.  
☐ D. Eat at home.  
☐ E. Bring a sack lunch.

4. If you checked A, B, or C in Question 3 (usually eat school lunch) check as many of the following as you feel are correct for you.

- ☐ A. I usually like the food.  
☐ B. My friends eat there.  
☐ C. My mother works.  
☐ D. My parents want me to eat the school lunch.  
☐ E. The price of the school lunch is low.

5. If you checked D in Question 3 (eat at home) check as many of the following as you feel are correct for you.

- ☐ A. I don't like the food served at school.  
☐ B. My friends don't eat at school.  
☐ C. My parents want me to come home.  
☐ D. It's cheaper to eat at home.  
☐ E. I have allergies and can eat only certain foods.

6. If you checked E in Question 3 (bring a sack lunch) check as many of the following as you feel are correct for you.

- ☐ A. I don't like the food served at school.  
☐ B. My friends bring sack lunches.  
☐ C. It's cheaper to bring a sack lunch.  
☐ D. I have allergies.  
☐ E. I like sack lunches.

PLEASE RATE THE SCHOOL LUNCH PROGRAM IN YOUR SCHOOL, CHECK THE ONE ANSWER THAT  
BEST DESCRIBES YOUR FEELINGS:

7. The school lunch room is too noisy:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. The noise doesn't bother me.
8. The lunch room is clean:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. I don't really notice.
9. The size of the servings is about right:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Are too large.
  - ☐ D. I don't get enough to eat.
10. The food in the school lunch is:
  - ☐ A. Usually the right temperature.
  - ☐ B. Usually cold.
11. The cooks in the school lunch are:
  - ☐ A. Usually friendly.
  - ☐ B. Friendly sometimes.
  - ☐ C. Often crabby.
12. We have to be quiet during lunch period:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Usually not restricted.
13. We can sit with our friends:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Usually not at all.
14. The lunch room is cheerful:
  - ☐ A. Yes
  - ☐ B. No
15. The food in the school lunch is:
  - ☐ A. Almost always good.
  - ☐ B. Usually not very good.
  - ☐ C. Good only some of the time.
16. I like the meat dishes:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Not very often.
17. I like the vegetables:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Not very often.
18. I like the desserts:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Not very often.
19. We are too rushed eating lunch:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Not really.
20. When I eat school lunch:
  - ☐ A. I usually eat most of my food.
  - ☐ B. I usually leave a lot of my food.
  - ☐ C. I usually eat about half of my food.
21. I eat breakfast:
  - ☐ A. Most of the time.
  - ☐ B. Some of the time.
  - ☐ C. Hardly ever.

## APPENDIX D

### Scoring of Attitude Instrument



## Scoring of Items on Instrument

Item Score		Item Score	
	7. The school lunch room is too noisy:		14. The lunch room is cheerful:
1	<input type="checkbox"/> A. Most of the time.	2	<input type="checkbox"/> A. Yes
2	<input type="checkbox"/> B. Some of the time.	1	<input type="checkbox"/> B. No
3	<input type="checkbox"/> C. The noise doesn't really bother me.		15. The food in the school lunch is:
	8. The lunch room is clean:	3	<input type="checkbox"/> A. Almost always good.
3	<input type="checkbox"/> A. Most of the time.	2	<input type="checkbox"/> B. Usually not very good.
2	<input type="checkbox"/> B. Some of the time.	1	<input type="checkbox"/> C. Good only some of the time.
1	<input type="checkbox"/> C. I don't really notice.		16. I like the meat dishes:
	9. The size of the servings is about right:	3	<input type="checkbox"/> A. Most of the time.
3	<input type="checkbox"/> A. Most of the time.	2	<input type="checkbox"/> B. Some of the time.
2	<input type="checkbox"/> B. Some of the time.	1	<input type="checkbox"/> C. Not very often.
1	<input type="checkbox"/> C. Are too large.		17. I like the vegetables:
	<input type="checkbox"/> D. I don't get enough to eat.	3	<input type="checkbox"/> A. Most of the time.
	10. The food in the school lunch is:	2	<input type="checkbox"/> B. Some of the time.
2	<input type="checkbox"/> A. Usually the right temperature.	1	<input type="checkbox"/> C. Not very often.
1	<input type="checkbox"/> B. Usually cold.		18. I like the desserts:
	11. The cooks in the school lunch are:	3	<input type="checkbox"/> A. Most of the time.
3	<input type="checkbox"/> A. Usually friendly.	2	<input type="checkbox"/> B. Some of the time.
2	<input type="checkbox"/> B. Friendly sometimes.	1	<input type="checkbox"/> C. Not very often.
1	<input type="checkbox"/> C. Often crabby.		19. We are too rushed eating lunch:
	12. We have to be quiet during lunch period:	1	<input type="checkbox"/> A. Most of the time.
1	<input type="checkbox"/> A. Most of the time.	2	<input type="checkbox"/> B. Some of the time.
2	<input type="checkbox"/> B. Some of the time.	3	<input type="checkbox"/> C. Not really.
3	<input type="checkbox"/> C. Usually not restricted.		20. When I eat school lunch:
	13. We can sit with our friends:	3	<input type="checkbox"/> A. I usually eat most of my food.
3	<input type="checkbox"/> A. Most of the time.	2	<input type="checkbox"/> B. I usually leave a lot of my food.
2	<input type="checkbox"/> B. Some of the time.	1	<input type="checkbox"/> C. I usually eat about half of my food.
1	<input type="checkbox"/> C. Usually not at all.		

### Computation of Scores

#### Overall Score

The overall score is the sum of scores for items 7-20  
(Maximum Score = 40).

#### Food Score

The food score is the sum of scores for items 9, 10, 15, 16-18, 20  
(Maximum Score = 20).

#### Nonfood Score

The nonfood score is the sum of items 7, 8, 11-14, 19  
(Maximum Score = 20).

## APPENDIX E

### Food Preference Rating Sheet

## FOOD PREFERENCE RATING SHEET

CHECK A, B, C, OR D ON THE ANSWER CARD.

(A) LIKE A LOT      (B) LIKE      (C) DISLIKE      (D) DO NOT KNOW

MAIN DISH

- |   |   |
|---|---|
| 1. SCHOOL BOY SANDWICH                        | 40. TOASTED CHEESE AND BOLOGNA SANDWICH |
| 2. MEAT LOAF                                  | 41. HAM SALAD ON A BUN                  |
| 3. SPAGHETTI RED                              | 42. HAM SALAD ON SHREDDED LETTUCE       |
| 4. PORK AND GRAVY                             | 43. BEANS AND HAM                       |
| 5. TUNA NOODLE CASSEROLE                      | 44. HAMBURGER                           |
| 6. CHICKEN AND NOODLES                        | 45. CHAR-BURGER                         |
| 7. CHEESE BURGER                              | 46. HOT DOG ON A BUN                    |
| 8. COUNTRY FRIED STEAK                        | 47. WIENER WINKS                        |
| 9. SPAGHETTI WITH MEAT SAUCE                  | 48. PIGS-IN-A-BLANKET                   |
| 10. TACOS                                     | 49. TACO CRUNCH                         |
| 11. FISH WITH TARTAR SAUCE                    | 50. HOAGIE SANDWICH                     |
| 12. MACARONI AND CHEESE WITH FISH STICK       | 51. SWISS STEAK                         |
| 13. MACARONI AND CHEESE                       | 52. JOHN MARSETTI                       |
| 14. MACARONI AND CHEESE WITH 1/2 DEVEILED EGG | 53. SPANISH RICE                        |
| 15. DEVEILED EGG                              | 54. PIZZA BURGER ON A BUN               |
| 16. ROAST BEEF SANDWICH                       | 55. BEEF AND NOODLES                    |
| 17. SWISS STEAK PATTIE                        | 56. BAKED BEANS                         |
| 18. CHILI WITH CRACKERS                       |   |
| 19. CHILI WITH BREAD STICKS                   |   |
| 20. PIZZA                                     |   |
| 21. PIZZA LOAF                                |   |
| 22. TACO SALAD                                |   |
| 23. BARBECUED BEEF ON A BUN                   |   |
| 24. PORK FRITTER ON A BUN                     |   |
| 25. CREAMED CHICKEN OVER POTATOES             |   |
| 26. TUNA SALAD ON LETTUCE LEAF                |   |
| 27. CHEFS SALAD OR MEAL-IN-ONE                |   |
| 28. CHICKEN SALAD ON SHREDDED LETTUCE         |   |
| 29. DO-IT-YOURSELF SANDWICH PLATE             |   |
| 30. TOMATO SOUP WITH ASSORTED MEAT SANDWICH   |   |
| 31. FRUIT PLATE WITH COTTAGE CHEESE           |   |
| 32. COTTAGE CHEESE                            |   |
| 33. OVEN FRIED CHICKEN                        |   |
| 34. BEEF AND VEGETABLE SOUP                   |   |
| 35. CHEESE BURGER                             |   |
| 36. CHILI DOGS                                |   |
| 37. SLICED TURKEY AND DRESSING                |   |
| 38. REUBEN SANDWICH                           |   |
| 39. TOASTED CHEESE SANDWICH                   |   |

CHECK A, B, C, OR D ON THE ANSWER CARD.

(A) LIKE A LOT    (B) LIKE    (C) DISLIKE    (D) DO NOT KNOW

SALADS AND VEGETABLES

- |  |   |
|--|---|
| 57. TRI-TATERS   | 86. LETTUCE WEDGE WITH THOUSAND ISLAND DRESSING |
| 58. FRESH TOMATO WEDGE                                   | 87. LETTUCE WEDGE WITH CHOICE OF DRESSING       |
| 59. BUTTERED GREEN PEAS                                  | 88. CABBAGE WEDGE                               |
| 60. PARSLEY BUTTERED POTATOES                            | 89. BUTTERED POTATO CHUNKS                      |
| 61. CELERY STICKS  | 90. BAKED POTATO WITH BUTTER                    |
| 62. CARROT STICKS OR COINS                               | 91. SPANISH GREEN BEANS                         |
| 63. CELERY STUFFED WITH CHEESE                           | 92. BUTTERED CARROTS                            |
| 64. CELERY STUFFED WITH PEANUT BUTTER                    | 93. BUTTERED SPINACH                            |
| 65. FRENCH FRIES   | 94. CHILLED TOMATOES (CANNED)                   |
| 66. BUTTERED CORN  | 95. COLE SLAW WITH PINEAPPLE                    |
| 67. BUTTERED GREEN BEANS                                 | 96. CANDIED SWEET POTATOES                      |
| 68. CREAMED PEAS   | 97. GREEN PEPPER SLICES                         |
| 69. CREAMED CORN   | 98. CAULIFLOWER WITH CHEESE SAUCE               |
| 70. TOSSED SALAD (LETTUCE AND TOMATO)                    | 99. POTATO SALAD                                |
| 71. TOSSED SALAD (LETTUCE, TOMATO, AND GREEN ONIONS)     | 100. CAULIFLOWER                                |
| 72. TOSSED SALAD (CABBAGE, TOMATO, LETTUCE, AND SPINACH) |   |
| 73. CABBAGE AND GREEN PEPPER SALAD                       |   |
| 74. MIXED VEGETABLES                                     |   |
| 75. FRESH SPINACH SALAD (LETTUCE AND SPINACH)            |   |
| 76. MASHED POTATOES                                      |   |
| 77. SCALLOPED POTATOES WITH CHEESE                       |   |
| 78. SCALLOPED POTATOES                                   |   |
| 79. HASH BROWN POTATOES                                  |   |
| 80. BUTTERED PEAS  |   |
| 81. HARVARD BEETS  |   |
| 82. PICKLED BEETS  |   |
| 83. SEASONED GREEN BEANS WITH BACON BITS                 |   |
| 84. BUTTERED PEAS AND CARROTS                            |   |
| 85. COLE SLAW  |   |

GO TO YOUR SECOND CARD. START ON THE SIDE MARKED FRONT.

1. BROCCOLI
2. BROCCOLI WITH CHEESE SAUCE
3. WALDORF SALAD (APPLE, RAISIN, CELERY)
4. STEWED TOMATOES -
5. APPLESauce WITH RED HOTS
6. APPLESauce
7. BUTTERED ASPARAGUS

CHECK A, B, C, OR D ON THE ANSWER CARD.

(A) LIKE A LOT      (B) LIKE      (C) DISLIKE      (D) DO NOT KNOW

DESSERTS

- |   |                           |
|---|---------------------------|
| 8. APPLE CRUNCH                                   | 40. SUGAR COOKIE          |
| 9. PEACH CRUNCH                                   | 41. DREAM COOKIE          |
| 10. APPLE COBBLER                                 | 42. BANANA PUDDING        |
| 11. CHERRY CRUNCH                                 | 43. CHOCOLATE BROWNIES    |
| 12. FRESH APPLE WEDGE                             | 44. APPLE PIE             |
| 13. FRESH ORANGE SLICES                           | 45. RAISIN PIE            |
| 14. FRESH BLUE PLUMS                              | 46. CHOCOLATE CHIP COOKIE |
| 15. FRUIT CUP (FRUIT COCKTAIL)                    |                           |
| 16. FRUIT CUP (ORANGES, BANANAS,<br>STRAWBERRIES) |                           |
| 17. FRUIT CUP (APRICOTS AND BANANAS)              |                           |
| 18. FRUIT CUP (PEACHES AND PEARS)                 |                           |
| 19. BLUE PLUMS (CANNED)                           |                           |
| 20. PINEAPPLE UPSIDE DOWN CAKE                    |                           |
| 21. COTTAGE PUDDING (CAKE WITH<br>FRUIT TOPPING)  |                           |
| 22. STRAWBERRY SHORTCAKE                          |                           |
| 23. WHITE CAKE WITH ICING                         |                           |
| 24. CINNAMON ROLLS                                |                           |
| 25. APRICOTS (CANNED)                             |                           |
| 26. PEACHES (CANNED)                              |                           |
| 27. CHERRY UPSIDE DOWN CAKE                       |                           |
| 28. CHOCOLATE PUDDING                             |                           |
| 29. VANILLA PUDDING                               |                           |
| 30. BUTTERSCOTCH PUDDING                          |                           |
| 31. SPICE CAKE                                    |                           |
| 32. JELLO WITH NO FRUIT ADDED                     |                           |
| 33. JELLO WITH FRUIT COCKTAIL                     |                           |
| 34. JELLO WITH FRESH APPLES AND<br>BANANAS        |                           |
| 35. JELLO WITH MANDARIN ORANGES                   |                           |
| 36. JELLO WITH CARROTS AND PINEAPPLE              |                           |
| 37. KOLACHE (FRUIT ROLL)                          |                           |
| 38. CHERRY PIE                                    |                           |
| 39. PUMPKIN PIE                                   |                           |

BREADS

- |                     |                                    |
|---------------------|------------------------------------|
| 47. TEXAS TOAST     | 54. HOT CORN MEAL ROLLS            |
| 48. GARLIC BREADS   | 55. WHOLE WHEAT ROLLS              |
| 49. FRESH HOT ROLLS | 56. FRESH WHITE BREAD              |
| 50. FRENCH BREAD    | 57. CHEESE BISCUITS                |
| 51. MUFFINS         | 58. WHITE BREAD (BREAD AND BUTTER) |
| 52. BREAD STICKS    | 59. ALABAMA BISCUITS               |
| 53. BISCUITS        | 60. D'AUGUSTINO BREAD              |
|                     | 61. BLUEBERRY MUFFINS              |

APPENDIX F  
Results of Food Preference Rating

# Food preference selection by school<sup>1</sup>

Main dish <sup>2</sup>	School 1			don't know %	School 2			don't know %	School 3			don't know %
	N	like %	dislike %		N	like %	dislike %		N	like %	dislike %	
1. school boy sandwich	12	75.0	25.0		45	77.8	20.0	2.2	47	68.1	31.9	
2. meat loaf	12	66.7	33.3		44	50.0	40.9	9.1	47	46.8	51.1	2.1
3. spaghetti red	12	66.7	25.0	8.3	44	68.2	29.5	2.3	48	58.3	39.6	2.1
4. pork and gravy	11	45.5	45.5	9.1	43	41.9	41.9	16.3	48	60.4	29.2	10.4
5. tuna noodle												
6. casserole	12	58.3	41.7		45	64.4	26.7	8.9	47	51.1	40.4	8.5
7. chicken and noodles	12	83.3	16.7		45	77.8	20.0	2.2	48	77.1	20.8	2.1
8. cheese burger	12	100.0			44	95.5	4.5		48	77.1	18.8	4.2
9. country fried steak	12	91.7	8.3		45	68.9	26.7	4.4	48	81.3	16.7	2.1
10. spaghetti w/meat sauce	12	100.0			44	65.2	24.8	10.0	48	66.5	29.3	4.2
11. tacos	12	100.0			45	88.9	8.9	2.2	47	85.1	12.8	2.1
12. fish w/tartar sauce	12	91.7	8.3		44	77.3	22.7		48	81.3	14.6	4.2
13. macaroni and cheese w/fish	12	100.0			44	65.9	31.8	2.3	47	74.5	21.3	4.3
14. macaroni and cheese	12	100.0			45	71.1	24.4	4.4	48	66.7	29.2	4.2
15. macaroni and cheese w/deviled egg	11	81.8	18.2		43	53.5	32.6	14.0	46	54.3	41.3	4.3
16. deviled egg	11	81.8	18.2		45	71.1	17.8	11.1	47	55.3	40.4	4.3
17. roast beef sandwich	12	66.7	33.3		45	71.1	22.2	6.7	47	68.1	29.8	2.1
18. swiss steak pattie	12	75.0	16.7	8.3	42	47.6	26.2	26.2	48	68.8	27.1	4.2
19. chili w/crackers	12	75.0	25.0		44	88.6	2.3	9.1	48	81.3	18.8	
20. chili w/bread sticks	12	75.0	25.0		44	75.0	9.1	15.9	48	75.0	25.0	
21. pizza	12	83.3	16.7		44	90.9	9.1		48	87.5	10.4	2.1
22. pizza loaf	11	63.6	27.3	9.1	43	48.8	20.9	30.2	48	52.1	39.6	8.3
23. taco salad	12	100.0			42	65.2	20.8	14.0	48	64.5	31.3	4.2

<sup>1</sup>% may not equal 100 because of a limited number of improperly marked responses on some items.

<sup>2</sup>Only those foods liked by 64% or more of the students in a school were considered for use in the menus to be used in preparing the menu selection by the students.



Food preference selection by school (cont.)

Main dish	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
23. Bar-B-Que'd Beef on bun	12	58.3	41.7		45	66.7	26.7	6.7	47	63.8	29.8	6.4
24. pork fritter on bun	12	66.7	16.7	16.7	41	36.3	26.8	36.6	48	52.1	39.6	8.3
25. creamed chicken over potatoes	12	58.3	33.3	8.3	45	48.9	28.9	20.0	48	39.6	50.0	10.4
26. tuna salad on lettuce	12	50.0	50.0		44	72.7	25.0	2.3	48	45.8	47.9	4.2
27. chef's salad or meal-in-one	12	66.7	25.0	8.3	42	35.7	23.8	40.5	48	39.6	43.8	16.7
28. chicken salad on shredded lettuce	12	50.0	41.7	8.3	45	48.9	22.2	28.9	48	33.3	58.3	8.3
29. do-it-yourself sandwich plate	12	100.0			42	69.0		31.0	48	72.9	18.8	8.3
30. tomato soup w/ assorted meat sandwich	12	83.3	16.7		45	65.6	17.8	14.4	48	68.3	31.7	
31. fruit plate w/ cottage cheese	12	66.7	33.3		43	48.8	27.9	23.3	47	29.8	66.0	4.3
32. cottage cheese	12	83.3	16.7		43	51.2	37.2	11.6	47	42.6	53.2	4.3
33. oven fried chicken	12	100.0			44	86.4	13.6		48	77.1	20.8	2.1
34. beef & vegetable soup	12	58.3	41.7		43	58.1	34.9	7.0	48	70.8	29.2	
35. cheese burger	12	100.0			44	97.7	2.3		47	78.7	17.0	4.3
36. chili dogs	12	91.7	8.3		42	83.3	11.9	4.8	48	75.0	22.9	2.1
37. sliced turkey and dressing	12	100.0			45	84.4	13.3	2.2	48	85.4	14.6	
38. reuben sandwich	12	33.3	58.3	8.3	44	36.4	22.7	40.9	47	34.0	48.9	17.0
39. toasted cheese sandwich	12	91.7	8.3		45	88.9	8.9	2.2	46	65.2	30.4	4.3
40. toasted cheese & bologna sandwich	12	100.0			44	69.1	11.4	19.5	47	65.3	26.2	8.5

Food preference selection by school (cont.)

Main dish	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
41. ham salad on bun	12	66.7	25.0	8.3	42	61.9	19.0	19.0	46	56.5	39.1	4.3
42. ham salad on lettuce	12	50.0	41.7	8.3	44	52.3	22.7	25.0	48	41.7	47.9	10.4
43. beans and ham	11	81.8	9.1	9.1	44	56.8	38.6	4.5	48	52.1	47.9	
44. hamburger	12	100.0			45	97.8	2.2		47	85.1	12.8	2.1
45. char-burger	12	75.0	16.7	8.3	44	88.6	2.3	9.1	47	61.7	27.7	10.6
46. hot dogs on bun	12	91.7	8.3		43	88.4	9.3	2.3	47	80.9	17.0	2.1
47. wiener winks	11	90.9	9.1		43	86.0	14.0		44	72.7	18.2	9.1
48. pigs-in-a-blanket	12	91.7	8.3		44	72.7	20.5	6.8	46	68.8	31.2	
49. taco crunch	12	100.0			45	64.4	17.8	17.8	48	64.2	21.3	14.6
50. hoagie sandwich	12	91.7	8.3		41	70.7	9.8	17.1	47	65.8	25.7	8.5
51. swiss steak	11	54.5	45.5		45	55.6	15.6	28.9	47	63.8	27.7	8.5
52. john marsetti	12	41.7	50.0	8.3	44	31.8	25.0	43.2	47	42.6	40.4	17.0
53. spanish rice	12	66.7	33.3		44	29.5	38.6	31.8	47	34.0	57.4	8.5
54. pizza burger	12	50.0	41.7	8.3	44	56.8	15.9	27.3	46	60.9	32.6	6.5
55. beef and noodles	12	83.3	16.7		43	44.2	34.9	20.9	48	52.1	39.6	8.3
56. baked beans	12	75.0	25.0		43	58.1	32.6	7.0	47	59.6	34.0	6.4
Salad & vegetables <sup>3</sup>												
57. tri-taters	12	100.0			45	86.7	6.7	6.7	48	79.2	14.6	6.3
58. fresh tomato wedge	12	50.0	50.0		44	45.5	38.6	15.9	48	35.4	58.3	6.3
59. buttered green peas	12	50.0	50.0		45	44.4	46.7	6.7	47	38.3	57.4	4.3
60. parsley buttered potatoes	12	75.0	25.0		45	46.7	40.0	13.3	47	51.1	40.4	8.5
61. celery sticks	12	83.3	16.7		45	77.8	11.1	11.1	48	62.5	31.3	6.3
62. carrot sticks or coins	12	75.0	25.0		45	84.4	13.3	2.2	47	76.6	19.1	4.3

<sup>3</sup>Only those foods liked by 43% or more of the students in a school were considered for use in the menus to be used in preparing the menu selection by the students.

Food preference selection by school (cont.)

Salad & vegetables	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
63. celery stuffed w/cheese	11	54.5	36.4	9.1	45	51.1	37.8	11.1	46	52.2	43.5	4.3
64. celery stuffed w/peanut butter	12	83.3	16.7		42	69.0	21.4	9.5	47	63.8	29.8	6.4
65. french fries	12	100.0			44	90.9	4.5	4.5	47	95.7	4.3	
66. buttered corn	12	100.0			44	81.8	13.6	4.5	44	72.7	25.0	2.3
67. buttered green beans	12	66.7	33.3		45	51.1	44.4	4.4	47	48.9	44.7	6.4
68. creamed peas	12	50.0	50.0		44	34.1	54.5	11.4	48	31.3	64.6	4.2
69. creamed corn	12	75.0	25.0		44	65.9	25.0	9.1	48	50.0	41.7	8.3
70. tossed salad												
71. (lettuce & tomatoes)	12	75.0	25.0		43	62.8	34.9	2.3	48	50.0	45.8	4.2
72. tossed salad (lettuce, tomato & green onions)	12	58.3	41.7		44	45.5	43.2	11.4	48	39.6	54.2	6.3
73. (cabbage, tomato, lettuce & spinach)	11	45.5	54.5		44	29.5	54.5	15.9	47	34.0	61.7	4.3
74. cabbage & green pepper salad	11	54.5	45.5		43	30.2	44.2	25.6	48	20.8	75.0	4.2
75. mixed vegetables	11	36.4	63.6		43	34.9	51.2	14.0	47	42.6	51.1	6.4
76. fresh spinach salad	11	36.4	63.6		41	26.8	53.7	19.5	45	31.1	66.7	2.2
77. mashed potatoes	12	91.7	8.3		45	84.4	13.3	2.2	45	75.6	22.2	2.2
78. scalloped potatoes w/cheese	12	100.0			45	35.6	51.1	13.3	47	66.0	31.9	2.1
79. hash brown potatoes	12	100.0			45	44.4	44.4	11.1	48	64.6	31.3	4.2
80. buttered peas	12	100.0			44	70.5	22.7	6.8	46	78.3	19.6	2.2
81. Harvard beets	12	50.0	50.0		44	38.6	54.5	6.8	48	43.8	52.1	4.2
82. pickled beets	12	16.7	75.0	8.3	45	28.9	60.0	11.1	47	38.3	57.4	4.3
83. seasoned green beans w/bacon bits	12	33.3	66.7		44	31.8	56.8	11.4	47	40.4	57.4	2.1
	12	41.7	50.0	8.3	43	48.8	41.9	9.3	46	52.2	43.5	4.3

Food preference selection by school (cont.)

Salad & vegetables	N	School 1			N	School 2			N	School 3		
		like	dislike	don't know		like	dislike	don't know		like	dislike	don't know
		%	%	%		%	%	%		%	%	%
84. buttered peas & carrots	12	25.0	66.7	8.3	44	22.7	68.2	9.1	46	37.0	58.7	4.3
85. cole slaw	12	50.0	50.0		44	47.7	43.2	9.1	47	48.9	51.1	
86. lettuce wedge w/thousand island dressing	11	72.7	27.3		43	46.5	37.2	16.3	48	56.3	41.7	2.1
87. lettuce wedge w/choice of dressing	11	90.9	9.1		45	48.9	31.1	20.0	47	57.4	40.4	2.1
88. cabbage wedge	12	66.7	33.3		45	31.1	51.1	17.8	47	44.7	51.1	4.3
89. buttered potato chunks	12	91.7	8.3		43	53.5	27.9	18.6	47	55.3	36.2	8.5
90. baked potato w/butter	12	100.0			43	69.8	18.6	11.6	48	68.8	25.0	6.3
91. spanish green beans	11	45.5	45.5	9.1	45	33.3	40.0	26.7	47	53.2	38.3	8.5
92. buttered carrots	11	36.4	63.6		45	26.7	48.9	24.4	47	40.4	55.3	4.3
93. buttered spinach	12	25.0	75.0		42	35.7	52.4	11.9	46	28.3	69.6	2.2
94. chilled tomatoes (canned)	12	41.7	58.3		44	31.8	43.2	25.0	47	23.4	70.2	6.4
95. cole slaw w/pineapple	11	45.5	54.5		45	33.3	51.1	15.6	46	50.0	47.8	2.2
96. candied sweet potatoes	12	25.0	75.0		44	36.4	43.2	20.5	45	28.9	66.7	4.4
97. green pepper slices	11	54.5	45.5		45	42.2	40.0	17.8	46	26.1	67.4	6.5
98. cauliflower w/cheese sauce	11	54.5	45.5		45	31.1	53.3	15.6	44	34.1	61.4	4.5
99. potato salad	12	83.3	16.7		45	43.2	39.0	17.8	47	44.7	48.9	6.4
100. cauliflower	10	50.0	50.0		45	24.4	57.8	17.8	47	25.5	68.1	6.4
1. broccoli	11	45.5	54.5		44	18.2	65.9	15.9	47	25.5	72.3	2.1
2. broccoli w/cheese sauce	12	33.3	66.7		43	20.9	65.1	14.0	46	21.7	76.1	2.2
3. waldorf salad (apple, raisin, celery)	12	50.0	50.0		42	31.0	42.9	26.2	47	29.8	63.8	6.4

Food preference selection by school (cont.)

Salad & vegetables	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
4. stewed tomatoes	12	41.7	58.3		41	29.3	51.2	19.5	46	15.2	80.4	4.3
5. applesauce w/red hots	12	58.3	41.7		44	81.8	15.9	2.3	48	50.0	45.8	4.2
6. applesauce	12	75.0	25.0		43	81.4	16.3	2.3	47	63.8	29.8	6.4
7. buttered asparagus	12	16.7	83.3		43	23.3	58.1	18.6	47	21.3	72.3	6.4
Dessert <sup>4</sup>												
8. apple crunch	12	66.7	33.3		44	84.1	9.1	6.8	46	80.4	19.6	
9. peach crunch	12	66.7	33.3		44	70.5	20.5	9.1	48	70.8	27.1	2.1
10. apple cobbler	12	66.7	33.3		43	81.4	14.0	2.3	47	85.1	14.9	
11. cherry crunch	11	72.7	27.3		44	75.0	15.9	9.1	45	82.2	17.8	
12. fresh apple wedge	12	91.7	8.3		43	76.7	11.6	11.6	48	68.8	25.0	6.3
13. fresh orange slice	12	75.0	25.0		44	84.1	13.6	2.3	48	79.2	20.8	
14. fresh blue plums	12	66.7	33.3		42	57.1	28.6	14.3	47	70.2	27.7	2.1
15. fruit cup (fruit cocktail)	12	75.0	25.0		43	88.4	9.3	2.3	46	76.1	23.9	
16. fruit cup (oranges, bananas, straw- berries)	12	75.0	25.0		44	84.1	11.4	4.5	48	83.3	12.5	4.2
17. fruit cup (apricots and bananas)	12	66.7	33.3		43	79.1	20.9		47	72.3	25.5	2.1
18. fruit cup (peaches and pears)	12	75.0	25.0		44	84.1	15.9		45	80.0	20.0	
19. blue plums (canned)	12	50.0	50.0		43	51.2	37.2	11.6	46	56.5	34.8	8.7
20. pineapple upside down cake	12	75.0	25.0		44	70.5	20.5	9.1	46	69.6	23.9	6.5

<sup>4</sup>Only those foods liked by 66% or more of the students in a school were considered for use in the menus to be used in preparing the menu selection by the students.

Food preference selection by school (cont.)

Dessert	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
21. cottage pudding (cake w/fruit topping)	12	50.0	50.0		43	69.8	11.6	18.6	47	51.1	42.6	6.4
22. strawberry shortcake	11	72.7	27.3		44	93.2	6.8		47	83.0	12.8	4.3
23. white cake w/icing	12	91.7	8.3		43	93.0	4.7		45	93.3	4.4	2.2
24. cinnamon roll	12	91.7	8.3		44	93.2	4.5	2.3	48	91.7	6.3	2.1
25. apricots (canned)	12	66.7	33.3		43	53.5	34.9	11.6	46	58.7	37.0	4.3
26. peaches (canned)	12	83.3	16.7		42	83.3	14.3	2.4	48	75.0	20.8	4.2
27. cherry upside down cake	12	66.7	33.3		43	79.1	16.3	4.7	46	82.6	15.2	2.2
28. chocolate pudding	12	91.7	8.3		44	90.9	6.8	2.3	44	65.9	34.1	
29. vanilla pudding	12	91.7	8.3		43	83.7	14.0	2.3	43	72.1	25.6	2.3
30. butterscotch pudding	10	80.0	20.0		42	69.0	23.8	7.1	48	70.8	27.1	2.1
31. spice cake	11	72.7	27.3		44	72.7	15.9	11.4	47	74.5	23.4	2.1
32. jello w/no fruit added	12	83.3	16.7		44	95.5	4.5		47	80.9	17.0	2.1
33. jello w/fruit cocktail	12	75.0	25.0		41	90.2	7.3	2.4	47	70.2	29.8	
34. jello w/fresh apples & bananas	12	83.3	16.7		43	90.7	9.3		47	78.7	17.0	4.3
35. jello w/mandarin oranges	11	81.8	18.2		42	83.3	14.3	2.4	47	70.2	23.4	6.4
36. jello w/carrots & pineapple	11	63.6	36.4		44	61.4	25.0	13.6	47	57.4	38.3	4.3
37. kolache (fruit roll)	12	75.0	25.0		43	67.4	11.6	20.9	46	65.2	26.1	8.7
38. cherry pie	12	83.3	16.7		44	88.6	6.8	4.5	46	78.3	19.6	2.2
39. pumpkin pie	12	66.7	33.3		42	81.0	19.0		47	78.7	19.1	2.1
40. sugar cookie	12	91.7	8.3		44	88.6	9.1	2.3	48	83.3	16.7	
41. dream cookie	12	91.7	8.3		44	90.9	4.5	4.5	48	91.7	8.3	
42. banana pudding	12	91.7	8.3		43	83.7	16.3		45	73.3	26.7	
43. chocolate brownies	12	91.7	8.3		42	100.0			48	91.7	8.3	

Food preference selection by school

Dessert	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
44. apple pie	11	81.8	18.2		42	83.3	16.7		45	84.4	15.6	
45. raisin pie	12	50.0	50.0		44	65.9	29.5	4.5	42	42.9	52.4	4.8
46. chocolate chip cookie	12	91.7	8.3		43	95.3	2.3	2.3	46	95.7	4.3	
Breads <sup>5</sup>												
47. Texas toast	12	83.3	16.7		42	83.3	16.7		45	66.7	28.9	4.4
48. garlic bread	12	58.3	41.7		44	79.5	18.2	2.3	45	80.0	17.8	2.2
49. fresh hot rolls	12	83.3	16.7		43	97.7	2.3		45	88.9	11.1	
50. french bread	12	83.3	16.7		43	86.0	9.3	4.7	45	71.7	26.7	2.2
51. muffins	10	90.0	10.0		45	77.8	15.6	6.7	48	70.8	27.1	2.1
52. bread sticks	11	81.8	18.2		43	69.8	11.6	18.6	47	70.2	23.4	6.4
53. biscuits	11	90.9	9.1		45	84.4	8.9	6.7	47	76.6	21.3	2.1
54. hot corneal rolls	11	72.7	27.3		40	70.0	22.5	7.5	47	55.3	40.4	4.3
55. whole wheat rolls	11	63.6	27.3	9.1	44	77.3	13.6	9.1	45	57.8	28.9	11.1
56. fresh white bread	11	81.8	18.2		43	81.4	11.6	7.0	46	82.6	15.2	2.2
57. cheese biscuits	11	81.8	9.1	9.1	45	57.8	20.0	22.2	46	50.0	39.1	10.9
58. white bread (bread and butter)	11	81.8	18.2		44	77.3	6.8	15.9	46	76.1	23.9	
59. Alabama biscuits	10	100.0			45	57.8	17.8	24.4	46	56.5	37.0	6.5
60. D' augustino bread	10	90.0	10.0		42	69.0	11.9	19.0	46	58.7	32.6	8.7
61. blueberry muffins	11	81.8	18.2		42	71.4	19.0	9.5	46	76.1	23.9	

<sup>5</sup>Only those foods liked by 69% of more of the students in a school were considered for use in the menus to be used in preparing the menu selection by the students.

APPENDIX G  
Menu Preference Rating Sheet



## MENU PREFERENCE RATING SHEET:

CHECK A, B, C, OR D ON THE ANSWER CARD.

(A) LIKE A LOT      (B) LIKE      (C) DISLIKE      (D) DO NOT KNOW

(1) SCHOOL BOY SANDWICH  
CARROT STICKS  
FRENCH FRIES  
DREAM COOKIE  
MILK

(2) SCHOOL BOY SANDWICH  
TRI TATERS  
CELERY STICKS  
APPLESAUCE  
MILK

(3) SCHOOL BOY SANDWICH  
TRI TATERS  
CABBAGE WEDGE  
VANILLA PUDDING  
MILK

(4) CHICKEN AND NOODLES  
LETTUCE WEDGE WITH  
DRESSING  
BUTTERED POTATOES  
JELLO (NO FRUIT ADDED)  
HOT ROLLS WITH BUTTER  
MILK

(5) CHICKEN AND NOODLES  
MASHED POTATOES  
BUTTERED GREEN BEANS  
JELLO WITH APPLES AND  
BANANAS  
FRESH BREAD WITH BUTTER  
MILK

(6) CHICKEN AND NOODLES  
CELERY STICKS  
SEASONED GREEN BEANS  
WITH BACON BITS  
JELLO WITH FRUIT COCKTAIL  
HOT ROLLS AND BUTTER  
MILK

(7) CHEESEBURGER  
POTATO SALAD  
CELERY STICKS  
JELLO WITH FRUIT COCKTAIL  
MILK

(8) CHEESEBURGER  
FRENCH FRIES  
STUFFED CELERY WITH  
PEANUT BUTTER  
CHILLED PEACHES  
MILK

(9) CHEESEBURGER  
FRENCH FRIES  
BUTTERED CORN  
FRESH APPLE WEDGE  
MILK

(10) SPAGHETTI AND MEAT  
SAUCE  
CABBAGE WEDGE  
BUTTERED CORN  
FRENCH BREAD  
SUGAR COOKIE  
MILK

(11) SPAGHETTI AND MEAT  
SAUCE  
TOSSED SALAD WITH  
LETTUCE AND TOMATO  
SEASONED GREEN BEANS  
FROSTY CINNAMON ROLL  
MILK

(12) SPAGHETTI AND MEAT  
SAUCE  
SEASONED GREEN BEANS  
FRENCH BREAD  
FRUIT CUP (COCKTAIL)  
MILK

(13) TACOS  
COLE SLAW  
PEACHES  
CINNAMON ROLL  
MILK

(14) TACOS  
BAKED BEANS  
COLE SLAW  
CINNAMON ROLL  
MILK

(15) TACOS  
CELERY AND CARROT STICKS  
BAKED BEANS  
FRESH ORANGE  
BREAD AND BUTTER  
MILK

(16) FISH WITH TARTAR  
SAUCE  
CELERY STUFFED WITH  
PEANUT BUTTER  
HASH BROWNS (POTATOES)  
PEACHES  
CINNAMON ROLL  
MILK

(17) FISH WITH TARTAR  
SAUCE  
BAKED BEANS  
TRI TATERS  
CHOCOLATE BROWNIE  
TEXAS TOAST  
MILK

(18) FISH WITH TARTAR  
SAUCE  
POTATO SALAD  
BUTTERED CORN  
FRENCH BREAD  
DREAM COOKIE  
MILK

(A) LIKE A LOT      (B) LIKE      (C) DISLIKE      (D) DO NOT KNOW

- |   |  |   |
|---|--|---|
| (19) MACARONI AND CHEESE<br>WITH FISH STICKS<br>CELERY STICKS<br>BUTTERED PEAS<br>APPLE COBBLER<br>MILK         | (20) MACARONI AND CHEESE<br>WITH FISH STICKS<br>BUTTERED GREEN BEANS<br>JELLO WITH FRUIT<br>KOLACHE (FRUIT ROLL)<br>MILK             | (21) MACARONI AND CHEESE<br>WITH FISH STICKS<br>TATER TOTS<br>JELLO WITH FRUIT<br>CINNAMON ROLL<br>MILK   |
| (22) PIZZA<br>TRI TATERS<br>CARROT COINS<br>APPLESAUCE<br>MILK  | (23) PIZZA<br>BUTTERED CORN<br>TOSSED SALAD (LETTUCE<br>AND TOMATO)<br>CHOCOLATE CAKE<br>MILK  | (24) PIZZA<br>LETTUCE WEDGE<br>BUTTERED CORN<br>CHOCOLATE PUDDING<br>MILK   |
| (25) TACO SALAD<br>TRI TATERS<br>BUTTERED GREEN BEANS<br>HOT ROLLS WITH BUTTER<br>MILK                          | (26) TACO SALAD<br>BUTTERED CORN<br>FRUIT CUP<br>TEXAS TOAST<br>MILK   | (27) TACO SALAD<br>CELERY STICKS<br>CREAMED CORN<br>BROWNIES<br>MILK  |
| (28) CHILI WITH BREAD<br>STICKS<br>TOSSED SALAD (LETTUCE<br>AND TOMATO)<br>BANANA<br>BROWNIES<br>MILK           | (29) CHILI WITH BREAD<br>STICKS<br>CABBAGE WEDGE<br>FRESH APPLE<br>SUGAR COOKIE<br>MILK  | (30) CHILI WITH BREAD<br>STICKS<br>CARROT AND CELERY STICKS<br>FRUIT JELLO<br>OATMEAL COOKIE<br>MILK  |
| (31) DO IT YOURSELF<br>SANDWICH PLATE<br>POTATO SALAD<br>CELERY STICK<br>VANILLA PUDDING<br>MILK                | (32) DO IT YOURSELF<br>SANDWICH PLATE<br>BUTTERED CORN<br>FRENCH FRIES<br>CHOCOLATE PUDDING<br>MILK                                  | (33) DO IT YOURSELF<br>SANDWICH PLATE<br>GREEN BEANS<br>HASH BROWNS<br>SNICKER DOODLES<br>MILK  |
| (34) OVEN FRIED CHICKEN<br>BAKED POTATO WITH BUTTER<br>BAKED BEANS<br>FRENCH BREAD<br>JELLO (NO FRUIT)<br>MILK  | (35) OVEN FRIED CHICKEN<br>POTATO SALAD<br>BUTTERED PEAS<br>JELLO WITH FRESH APPLES<br>AND BANANAS<br>FRESH BREAD AND BUTTER<br>MILK | (36) OVEN FRIED CHICKEN<br>MASHED POTATOES WITH<br>GRAVY<br>SEASONED GREEN BEANS<br>WITH BACON BITS<br>FRESH ORANGE<br>BISCUITS WITH BUTTER<br>MILK |
| (37) TURKEY AND DRESSING<br>BUTTERED PEAS<br>VEGETABLE CHUNKS<br>HOT ROLLS AND BUTTER<br>BANANA PUDDING<br>MILK | (38) TURKEY AND DRESSING<br>SCALLOPED POTATO<br>GREEN BEANS<br>FRENCH BREAD<br>CHOCOLATE PUDDING<br>MILK                             | (39) TURKEY AND DRESSING<br>MASHED POTATO WITH GRAVY<br>VEGETABLE CHUNKS<br>HOT ROLLS AND BUTTER<br>STRAWBERRY SHORTCAKE<br>MILK                    |

(A) LIKE A LOT      (B) LIKE      (C) DISLIKE      (D) DO NOT KNOW

(40) TOASTED CHEESE AND  
BOLOGNA SANDWICH  
TOMATO SOUP  
POTATO SALAD  
CARROT STICKS  
MILK

(43) HAMBURGER  
POTATO SALAD  
CARROT STICKS  
JELLO WITH APPLES AND  
BANANAS  
MILK

(46) TACO CRUNCH  
BUTTERED PEAS  
FRENCH BREAD  
BANANA  
MILK

(49) COUNTRY FRIED STEAK  
HASH BROWNS  
LETTUCE WEDGE  
WHOLE WHEAT ROLLS  
SUGAR COOKIE  
MILK

(52) TOMATO SOUP WITH  
MEAT SANDWICH  
FRENCH FRIES  
JELLO WITH APPLES AND  
BANANAS  
MILK

(55) CHILI DOGS  
HASH BROWNS  
BUTTERED GREEN BEANS  
RED JELLO  
MILK

(58) TOASTED CHEESE  
SANDWICH  
HASH BROWNS  
CELERY STUFFED WITH  
PEANUT BUTTER  
STRAWBERRY SHORTCAKE  
MILK

(41) TOASTED CHEESE AND  
BOLOGNA SANDWICH  
TOMATO SOUP  
CELERY STICKS  
ORANGE SLICES  
MILK

(44) HAMBURGER  
HASH BROWNS  
CELERY STICKS  
APPLE WEDGE  
MILK

(47) TACO CRUNCH  
BUTTERED CORN  
TEXAS TOAST  
BANANA PUDDING  
MILK

(50) COUNTRY FRIED STEAK  
BAKED POTATO WITH BUTTER  
BROCCOLI  
BISCUITS WITH BUTTER  
BANANA PUDDING  
MILK

(53) TOMATO SOUP WITH  
MEAT SANDWICH  
LETTUCE WEDGE  
BUTTERED PEAS  
BANANA PUDDING  
MILK

(56) CHILI DOGS  
FRENCH FRIES  
CELERY STICKS  
COTTAGE PUDDING (CAKE  
WITH FRUIT TOPPING)  
MILK

(59) TOASTED CHEESE  
SANDWICH  
TOMATO SOUP  
TOSSED SALAD  
1/2 DEVILED EGG  
SUGAR COOKIE  
MILK

(42) TOASTED CHEESE AND  
BOLOGNA SANDWICH  
CARROT COINS (RAW)  
FRENCH FRIES  
JELLO WITH FRUIT COCKTAIL  
MILK

(45) HAMBURGER  
BUTTERED POTATOES  
CABBAGE WEDGE  
ORANGE SLICES  
MILK

(48) TACO CRUNCH  
GREEN BEANS  
HOT ROLLS  
JELLO WITH FRUIT COCKTAIL  
MILK

(51) COUNTRY FRIED STEAK  
SCALLOPED POTATO  
VEGETABLE CHUNKS  
HOT ROLLS AND BUTTER  
JELLO (NO FRUIT ADDED)  
MILK

(54) TOMATO SOUP WITH  
MEAT SANDWICH  
SCALLOPED POTATOES  
CABBAGE WEDGE  
CHOCOLATE CAKE  
MILK

(57) CHILI DOGS  
TOSSED SALAD WITH LETTUCE  
AND TOMATO  
TRI TATERS  
DREAM COOKIE  
MILK

(60) TOASTED CHEESE  
SANDWICH  
TOMATO SOUP  
STUFFED CELERY WITH  
PEANUT BUTTER  
FRUIT CUP (APRICOTS AND  
BANANAS)  
MILK

(A) LIKE A LOT      (B) LIKE      (C) DISLIKE      (D) DO NOT KNOW

(61) HOT DOG ON A BUN  
CREAMED CORN  
CELERY STICKS  
JELLO WITH FRUIT  
COCKTAIL  
MILK

(62) HOT DOG ON A BUN  
FRENCH FRIES  
APPLESAUCE  
CHOCOLATE CHIP COOKIE  
MILK

(63) HOT DOG ON A BUN  
BUTTERED CORN  
TOSSED SALAD WITH TOMATO  
AND LETTUCE  
PEACHES  
MILK

(64) PIGS IN A BLANKET  
CREAMED CORN  
LETTUCE WEDGE  
APPLE PIE  
MILK

(65) PIGS IN A BLANKET  
HASH BROWNS  
TOSSED SALAD WITH  
LETTUCE AND TOMATO  
BANANA PUDDING  
MILK

(66) PIGS IN A BLANKET  
BUTTERED POTATOES  
CELERY STICKS  
STRAWBERRY SHORTCAKE  
MILK

(67) WIENER WINK  
BUTTERED CORN  
APPLE WEDGE  
OATMEAL COOKIE  
MILK

(68) WIENER WINK  
FRENCH FRIES  
APPLESAUCE  
CHOCOLATE COOKIE  
MILK

(69) WIENER WINK  
PARSLEY BUTTERED POTATOES  
CREAMED CORN  
CELERY STICKS  
CHOCOLATE BROWNIE  
MILK

(70) HOAGIE SANDWICH  
SCALLOPED POTATOES  
CABBAGE SLICE  
APPLE WEDGE  
MILK

(71) HOAGIE SANDWICH  
BUTTERED CORN  
HASH BROWNS  
CHOCOLATE PUDDING  
MILK

(72) HOAGIE SANDWICH  
TRI TATERS  
CARROT STICKS  
PEACHES  
MILK

## APPENDIX H

### Results of Menu Preference Rating

# Menu selection by school<sup>1</sup>

Menu	School 1				School 2				School 3			
	N	Like %	dislike %	don't know %	N	Like %	dislike %	don't know %	N	Like %	dislike %	don't know %
(1) SCHOOL BOY SANDWICH CARROT STICKS FRENCH FRIES DREAM COOKIE MILK	12	83.3	16.7		50	82.0	16.0	2.0	45	88.9*	6.7	4.4
(2) SCHOOL BOY SANDWICH TRI TATERS CELERY STICKS APPLESAUCE MILK	12	83.3	16.7		50	82.0*	14.0	4.0	44	77.3	18.2	4.5
(3) SCHOOL BOY SANDWICH TRI TATERS CABBAGE WEDGE VANILLA PUDDING MILK	12	91.7	8.3		50	80.0	20.0		45	73.3	15.6	11.1
(4) CHICKEN & NOODLES LETTUCE WEDGE WITH DRESSING BUTTERED POTATOES JELLO (NO FRUIT ADDED) HOT ROLLS WITH BUTTER MILK	12	83.3*	16.7		50	74.0	16.0	10.0	45	82.2*	11.1	6.7

<sup>1</sup>Only those menus liked by 80% or more of the students in a school were reconsidered for the cycle menu for the experimental period.

\*Menus selected for inclusion on cycle served during experimental period. Refer to menus for sequence of pattern.

Menu selection by school (cont.)

Menu	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(5) CHICKEN & NOODLES MASHED POTATOES BUTTERED GREEN BEANS JELLO WITH APPLES AND BANANAS FRESH BREAD WITH BUTTER MILK	12	83.3	16.7		50	80.0*	16.0	4.0	45	81.2	9.9	8.9
(6) CHICKEN & NOODLES CELERY STICKS SEASONED GREEN BEANS WITH BACON BITS JELLO WITH FRUIT COCKTAIL HOT ROLLS AND BUTTER	12	75.0	25.0		50	66.0	28.0	6.0	45	75.6	24.4	
(7) CHEESEBURGER POTATO SALAD CELERY STICKS JELLO WITH FRUIT COCKTAIL	12	83.3	16.7		50	86.0	14.0		45	66.7	28.9	4.4
(8) CHEESEBURGER FRENCH FRIES STUFFED CELERY WITH PEANUT BUTTER CHILLED PEACHES	12	100.0			50	100.0*			44	81.8	13.6	4.5
(9) CHEESEBURGER FRENCH FRIES BUTTERED CORN FRESH APPLE WEDGE	12	100.0*			50	96.0	2.0	2.0	45	82.2*	11.1	6.7

Menu selection by school (cont.)

Menu	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(10) SPAGHETTI AND MEAT SAUCE CABBAGE WEDGE BUTTERED CORN FRENCH BREAD SUGAR COOKIE	12	91.7	8.3		50	68.0	22.0	10.0	43	74.4	16.3	9.3
(11) SPAGHETTI AND MEAT SAUCE TOSSED SALAD WITH LETTUCE AND TOMATO SEASONED GREEN BEANS FROSTY CINNAMON ROLL	12	83.3	16.7		50	74.0	18.0	8.0	45	82.2*	8.9	8.9
(12) SPAGHETTI AND MEAT SAUCE CELERY STICKS SEASONED GREEN BEANS FRENCH BREAD FRUIT CUP (COCKTAIL)	12	75.0	25.0		50	74.0	24.0	2.0	44	68.2	25.0	6.8
(13) TACOS COLE SLAW PEACHES CINNAMON ROLL	12	91.7	8.3		50	96.0	4.0		45	84.4	11.1	4.4
(14) TACOS BAKED BEANS COLE SLAW CINNAMON ROLL	12	91.7	8.3		50	96.0	4.0		45	84.4	11.1	4.4



## Menu selection by school (cont.)

Menu	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(15) TACOS CELERY AND CARROT STICKS BAKED BEANS FRESH ORANGE BREAD AND BUTTER	12	100.0*			50	92.0	8.0		45	88.9	6.7	4.4
(16) FISH W/TARTAR SAUCE CELERY STUFFED WITH PEANUT BUTTER HASH BROWNS (POTATOES) PEACHES CINNAMON ROLL	12	100.0*			50	90.0*	6.0	4.0	45	80.0	11.1	8.9
(17) FISH W/TARTAR SAUCE BAKED BEANS TRI TATERS CHOCOLATE BROWNIE TEXAS TOAST	12	100.0			50	88.0	8.0	4.0	45	73.3	17.8	8.9
(18) FISH W/TARTAR SAUCE POTATO SALAD BUTTERED CORN FRENCH BREAD DREAM COOKIE	12	75.0	25.0		49	81.6	14.3	4.1	45	80.8*	10.3	8.9
(19) MACARONI AND CHEESE WITH FISH STICKS CELERY STICKS BUTTERED PEAS APPLE COBBLER	12	75.0	25.0		50	70.0	24.0	6.0	44	77.3	18.2	4.5

Menu selection by school (cont.)

Menu	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(20) MACARONI AND CHEESE WITH FISH STICKS BUTTERED GREEN BEANS JELLO WITH FRUIT KOLACHE (FRUIT ROLL)	12	83.3	8.3	8.3	49	71.4	14.3	14.3	43	83.7	11.6	4.7
(21) MACARONI AND CHEESE WITH FISH STICKS TATER TOTS JELLO WITH FRUIT CINNAMON ROLL	12	91.7	8.3		50	92.0*	6.0	2.0	44	81.8*	11.4	6.8
(22) PIZZA TRI TATERS CARROT COINS APPLESAUCE	12	83.3	16.7		50	88.0	10.0	2.0	45	91.1	6.7	2.2
(23) PIZZA BUTTERED CORN TOSSED SALAD (LETTUCE AND TOMATO) CHOCOLATE CAKE	12	83.3	16.7		49	93.9*	6.1		45	93.3*	6.7	
(24) PIZZA LETTUCE WEDGE BUTTERED CORN CHOCOLATE PUDDING	12	83.3*	16.7		49	85.7	14.3		43	90.7	4.7	4.7
(25) TACO SALAD TRI TATERS BUTTERED GREEN BEANS HOT ROLLS W/BUTTER	12	100.0			50	76.0	14.0	10.0	45	77.8	20.0	2.2

Menu selection by school (cont.)

Menu	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(26) TACO SALAD BUTTERED CORN FRUIT CUP TEXAS TOAST	12	100.0*			50	80.0	12.0	8.0	44	79.5	18.2	2.3
(27) TACO SALAD CELERY STICKS CREAMED CORN BROWNIES	12	100.0			49	71.4	20.4	8.2	45	77.8	17.8	4.4
(28) CHILI WITH BREAD STICKS TOSSED SALAD (LETTUCE AND TOMATO) BANANA BROWNIES	12	91.7*	8.3		50	86.0*	6.0	8.0	45	86.7*	8.9	4.4
(29) CHILI WITH BREAD STICKS CABBAGE WEDGE FRESH APPLE SUGAR COOKIE	12	83.3	16.7		50	82.0	12.0	6.0	45	86.7	11.1	2.2
(30) CHILI WITH BREAD STICKS CARROT & CELERY STICKS FRUIT JELLO OATMEAL COOKIE	12	83.3	16.7		50	84.0	10.0	6.0	45	86.7	11.1	2.2

Menu selection by school (cont.)

Menu	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(31) DO IT YOURSELF SANDWICH PLATE POTATO SALAD CELERY STICK VANILLA PUDDING	12	91.7	8.3		50	84.0	4.0	12.0	44	77.3	20.5	2.3
(32) DO IT YOURSELF SANDWICH PLATE BUTTERED CORN FRENCH FRIES CHOCOLATE PUDDING	12	100.0			50	92.0	8.0		44	81.8*	15.9	2.3
(33) DO IT YOURSELF SANDWICH PLATE GREEN BEANS HASH BROWNS SNICKER DOODLES	12	100.0*			50	80.0	6.0	14.0	43	79.1	16.3	4.7
(34) OVEN FRIED CHICKEN BAKED POTATO W/BUTTER BAKED BEANS FRENCH BREAD JELLO (NO FRUIT)	12	100.0*			50	82.0	16.0	2.0	45	80.0	13.3	6.7
(35) OVEN FRIED CHICKEN POTATO SALAD BUTTERED PEAS JELLO WITH FRESH APPLES AND BANANAS FRESH BREAD AND BUTTER	12	83.3	16.7		50	80.0	16.0	4.0	45	81.8	13.8	4.4

Menu selection by school (cont.)

Menu	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(36) OVEN FRIED CHICKEN MASHED POTATOES W/GRavy SEASONED GREEN BEANS WITH BACON BITS FRESH ORANGE BISCUITS WITH BUTTER	12	91.7	8.3		50	84.0*	12.0	4.0	45	80.0*	15.6	4.4
(37) TURKEY AND DRESSING BUTTERED PEAS VEGETABLE CHUNKS HOT ROLLS AND BUTTER BANANA PUDDING	12	83.3	16.7		49	85.7	12.2	2.0	45	82.2	13.3	4.4
(38) TURKEY AND DRESSING SCALLOPED POTATO GREEN BEANS FRENCH BREAD CHOCOLATE PUDDING	12	91.7	8.3		50	74.0	24.0	2.0	45	86.7	11.1	2.2
(39) TURKEY AND DRESSING MASHED POTATOES W/GRavy VEGETABLE CHUNKS HOT ROLLS AND BUTTER STRAWBERRY SHORTCAKE	12	91.7*	8.3		50	86.0	12.0	2.0	45	84.4*	13.3	2.2
(40) TOASTED CHEESE AND BOLOGNA SANDWICH TOMATO SOUP POTATO SALAD CARROT STICKS	12	83.3	16.7		50	68.0	28.0	4.0	45	68.9	26.7	4.4

Menu selection by school (cont.)

Menu	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(41) TOASTED CHEESE AND BOLOGNA SANDWICH TOMATO SOUP CELERY STICKS ORANGE SLICES	12	91.7	8.3		50	64.0	34.0	2.0	44	65.9	29.5	4.5
(42) TOASTED CHEESE AND BOLOGNA SANDWICH CARROT COINS (RAW) FRENCH FRIES JELLO W/FRUIT COCKTAIL	12	91.7*	8.3		50	62.0	30.0	8.0	45	71.1	24.4	4.4
(43) HAMBURGER POTATO SALAD CARROT STICKS JELLO WITH APPLES AND BANANAS	12	91.7	8.3		50	90.0	10.0		45	80.0	17.8	2.2
(44) HAMBURGER HASH BROWNS CELERY STICKS APPLE WEDGE	12	100.0*			50	94.0*	4.0	2.0	45	84.4	13.3	2.2
(45) HAMBURGER BUTTERED POTATOES CABBAGE WEDGE ORANGE SLICES	12	100.0			50	88.0	10.0	2.0	44	86.4	11.4	2.3
(46) TACO CRUNCH BUTTERED PEAS FRENCH BREAD BANANA	12	100.0			50	80.0	8.0	12.0	45	75.6	22.2	2.2

Menu selection by school (cont.)

Menu	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(47) TACO CRUNCH BUTTERED CORN TEXAS TOAST BANANA PUDDING	12	100.0			50	84.0*	10.0	6.0	45	80.0	15.6	4.4
(48) TACO CRUNCH GREEN BEANS HOT ROLLS JELLO W/FRUIT COCKTAIL	12	91.7	8.3		50	84.0	12.0	4.0	44	81.8*	15.9	2.3
(49) COUNTRY FRIED STEAK HASH BROWNS LETTUCE WEDGE WHOLE WHEAT ROLLS SUGAR COOKIE	12	100.0			50	78.0	16.0	6.0	45	77.8	20.0	2.2
(50) COUNTRY FRIED STEAK BAKED POTATO W/BUTTER BROCCOLI BISCUITS WITH BUTTER BANANA PUDDING	12	91.7*	8.3		49	75.5	18.4	6.1	45	75.6	22.2	2.2
(51) COUNTRY FRIED STEAK SCALLOPED POTATO VEGETABLE CHUNKS HOT ROLLS AND BUTTER JELLO WITH NO FRUIT	12	91.7	8.3		50	80.0*	12.0	8.0	45	80.0	17.8	2.2
(52) TOMATO SOUP WITH MEAT SANDWICH FRENCH FRIES JELLO W/APPLES & BANANAS	12	83.3	16.7		49	73.5	22.4	4.1	44	61.4	36.4	2.3

Menu selection by school (cont.)

Menu	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(53) TOMATO SOUP WITH MEAT SANDWICH LETTUCE WEDGE BUTTERED PEAS BANANA PUDDING	12	75.0	25.0		50	70.0	22.0	8.0	44	61.4	36.4	2.3
(54) TOMATO SOUP WITH MEAT SANDWICH SCALLOPED POTATOES CABBAGE WEDGE CHOCOLATE CAKE	12	83.3	16.7		50	74.0	20.0	6.0	44	61.4	36.4	2.3
(55) CHILI DOGS HASH BROWN'S BUTTERED GREEN BEANS RED JELLO	12	100.0			50	92.0*	6.0	2.0	45	86.7	8.9	4.4
(56) CHILI DOGS FRENCH FRIES CELERY STICKS COTTAGE PUDDING (CAKE W/FRUIT TOPPING)	12	100.0*			50	88.0	4.0	8.0	45	84.4	11.1	4.4
(57) CHILI DOGS TOSSED SALAD W/LETTUCE AND TOMATO TRI TATERS DREAM COOKIE	12	91.7	8.3		50	92.0	6.0	2.0	45	82.2	13.3	4.4



Menu selection by school (cont.)

Menu	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(58) TOASTED CHEESE SANDWICH HASH BROWNS CELERY STUFFED WITH PEANUT BUTTER STRAWBERRY SHORTCAKE	12	100.0			49	83.7*	12.2	4.1	44	81.5	16.2	2.3
(59) TOASTED CHEESE SANDWICH TOMATO SOUP TOSSED SALAD 1/2 DEVEILED EGG SUGAR COOKIE	12	83.3	16.7		50	82.0	18.0		44	75.0	25.0	
(60) TOASTED CHEESE SANDWICH TOMATO SOUP STUFFED CELERY WITH PEANUT BUTTER FRUIT CUP (APRICOTS AND BANANAS)	12	91.7	8.3		50	84.0	16.0		44	77.3	20.5	2.3
(61) HOT DOG ON A BUN CREAMED CORN CELERY STICKS JELLO W/FRUIT COCKTAIL	12	91.7	8.3		50	84.0*	14.0	2.0	44	81.8	18.2	
(62) HOT DOG ON A BUN FRENCH FRIES APPLESAUCE CHOCOLATE CHIP COOKIE	12	100.0*			50	84.0	14.0	2.0	44	88.6*	11.4	

Menu selection by school (cont.)

Menu	School 1				School 2				School 3			
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(63) HOT DOG ON A BUN BUTTERED CORN TOSSED SALAD W/TOMATO AND LETTUCE PEACHES	12	100.0			50	82.0	18.0		45	82.2	17.8	
(64) PIGS IN A BLANKET CREAMED CORN LETTUCE WEDGE APPLE PIE	12	91.7	8.3		50	74.0	24.0	2.0	44	79.5	18.2	2.3
(65) PIGS IN A BLANKET HASH BROWNS TOSSED SALAD W/LETTUCE AND TOMATO BANANA PUDDING	12	100.0			50	80.0*	20.0		45	84.4	15.6	
(66) PIGS IN A BLANKET BUTTERED POTATOES CELERY STICKS STRAWBERRY SHORTCAKE	12	91.7*	8.3		50	76.0	24.0		45	84.4	13.3	2.2
(67) WIENER WINK BUTTERED CORN APPLE WEDGE OATMEAL COOKIE	12	100.0			50	74.0	24.0	2.0	44	75.0	22.7	2.3
(68) WIENER WINK FRENCH FRIES APPLESAUCE CHOCOLATE COOKIE	12	100.0			50	78.0	18.0	4.0	45	82.2*	15.6	2.2

Menu selection by school (cont.)

Menu	School 1			School 2			School 3					
	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %	N	like %	dislike %	don't know %
(69) WIENER WINK PARSLEY BUTTERED POTATOES CREAMED CORN CELERY STICKS CHOCOLATE BROWNIE	12	100.0			50	74.0	22.0	4.0	45	73.3	24.4	2.2
(70) HOAGIE SANDWICH SCALLOPED POTATOES CABBAGE SLICE APPLE WEDGE	12	100.0			50	74.0	20.0	6.0	45	64.4	31.1	4.4
(71) HOAGIE SANDWICH BUTTERED CORN HASH BROWNS CHOCOLATE PUDDING	12	100.0			50	82.0	16.0	2.0	45	71.1	24.4	4.4
(72) HOAGIE SANDWICH TRI TATERS CARROT STICKS PEACHES	12	100.0			49	79.6	16.3	4.1	44	80.1*	15.6	4.3

## APPENDIX I

Student Selected Menus for Experimental Period

Student Selected Menus (School 1)<sup>1, 2</sup>

Day 1	Day 2	Day 3
Hamburger	Hot Dog on a Bun	Taco Salad
Hash Browns	French Fries	Buttered Corn
Celery Sticks	Applesauce	Fruit Cup
Apple Wedge	Chocolate Chip Cookie	Texas Toast
Day 4 <sup>*</sup>	Day 5	Day 6
Corn Dogs	Chicken and Noodles	Cheeseburger
Baked Beans	Lettuce Wedge and Dressing	French Fries
Cabbage Wedge	Buttered Potato	Buttered Corn
Bread and Butter	Jello	Fresh Apple
Fruit Cup	Hot Rolls and Butter	
Day 7 <sup>**</sup>	Day 8	Day 9
Chili w/Bread Stick	Oven Fried Chicken	Do-it-yourself Sandwich Plate
Tossed Salad	Baked Potato w/Butter	Green Beans
1/2 Fresh Orange	Baked Beans	Hash Browns
Cookie	French Bread	Snicker Doodles
	Jello (no fruit)	
Day 10	Day 11	Day 12
Pigs-in-a-Blanket	Pizza	Tacos
Buttered Potato	Lettuce Wedge	Celery and Carrot Sticks
Celery Sticks	Buttered Corn	Baked Beans
Strawberry Shortcake	Chocolate Pudding	Fresh Orange
		Bread and Butter
Day 13	Day 14	Day 15
Chili Dogs	Turkey and Dressing	Fish with Tartar Sauce
French Fries	Mashed Potato w/Gravy	Celery Stuffed w/Peanut Butter
Celery Sticks	Vegetable Chunks	Hash Browns
Cottage Pudding	Hot Rolls w/Butter	Peaches
	Strawberry Shortcake	Cinnamon Roll
Day 16	Day 17	
Toasted Cheese and Bologna Sandwich	Country Fried Steak	
Carrot Coins	Baked Potato w/Butter	
French Fries	Broccoli	
Jello w/Fruit	Biscuits	
	Banana Pudding	

\*A district planned menu scheduled to serve corn dogs.

\*\*Surprise day or manager planned menu.

<sup>1</sup>One-half pint milk served with each meal.

<sup>2</sup>Orange juice was served if menu did not include another Vitamin C-rich food. Some minor changes were necessary in menus as presented on Menu Preference Rating Sheet to avoid repetition.

Student Selected Menus (School 2)<sup>1, 2</sup>

Day 1	Day 2	Day 3
Taco Crunch	Hamburger	Oven Fried Chicken
Buttered Corn	Hash Browns	Mashed Potatoes and Gravy
Texas Toast	Celery	Seasoned Green Beans
Banana Pudding	Apple Wedge	Fresh Orange
		Biscuits and Butter
Day 4*	Day 5	Day 6
Corn Dog	Macaroni and Cheese	Chili Dogs
Baked Beans	w/Fish Stick	Hash Browns
Cabbage Wedge	Tater Tots	Buttered Green Beans
Bread and Butter	Jello w/Fruit	Red Jello
Fruit Cup	Cinnamon Roll	
Day 7	Day 8	Day 9
Chicken and Noodles	Pizza	Toasted Cheese Sandwich
Mashed Potatoes	Buttered Corn	Hash Browns
Lettuce Wedge	Tossed Salad	Celery Stuffed w/Peanut
w/Dressing	Chocolate Pudding	Butter
Jello w/Apples and		Fruit Cup (Apricots and
Bananas		Banana)
Fresh Bread and Butter		
Day 10	Day 11	Day 12
School Boy Sandwich	Country Fried Steak	Chili w/Bread Sticks
Tri Taters	Mashed Potatoes w/Gravy	Tossed Salad
Celery Sticks	Vegetable Chunks	Banana
Applesauce	Hot Rolls w/Butter	Brownie
	Jello	
Day 13	Day 14	Day 15
Fish w/Tartar Sauce	Hot Dog on a Bun	Cheese Burger
Celery Stuffed w/Peanut	Creamed Corn	French Fries
Butter	Celery Sticks	Carrot Sticks
Hash Browns	Jello w/Fruit Cocktail	Chilled Peaches
Peaches		
Cinnamon Roll		
Day 16		
Pigs-in-a-Blanket		
Buttered Hash Browns		
Tossed Salad		
Banana Pudding		

\*A district planned menu scheduled to serve corn dogs.

<sup>1</sup>One-half pint milk served with each meal.

<sup>2</sup>Orange juice was served if menu did not include another Vitamin C-rich food. Some minor changes were necessary in menus as presented on Menu Preference Rating Sheet to avoid repetition.

Day 1	Day 2	Day 3
Hot Dog on a Bun French Fries Applesauce Chocolate Chip Cookie	Spaghetti and Meat Sauce Tossed Salad Buttered Corn Cinnamon Roll	Oven Fried Chicken Mashed Potatoes w/Gravy Seasoned Green Beans Fresh Orange Biscuits w/Butter
Day 4*	Day 5	Day 6
Corn Dogs Baked Beans Cabbage Wedge Bread w/Butter Fruit Cup	Fish w/Tartar Sauce Potato Salad Buttered Corn Chocolate Brownies Texas Toast	Hoagie Sandwich Tri Taters Carrot Sticks Peaches
Day 7	Day 8	Day 9
School Boy Sandwich Carrot Sticks French Fries Dream Cookie	Pizza Buttered Corn Tossed Salad Chocolate Cake	Turkey and Dressing Mashed Potato w/Gravy Vegetable Chunks Hot Rolls and Butter Strawberry Shortcake
Day 10	Day 11	Day 12
Do-it-yourself Sandwich Plate Buttered Corn French Fries Chocolate Pudding	Chili w/Bread Sticks Tossed Salad Banana Brownie	Macaroni and Cheese w/Fish Stick Tater Tots Jello w/Fruit Cinnamon Roll
Day 13**	Day 14	Day 15
Chicken Pizza Hash Browns Tossed Salad 1/4 Apple Cookie	Taco Crunch Green Beans Hot Rolls Jello w/Fruit Cocktail	Chicken and Noodles Lettuce Wedge w/Dressing Buttered Potatoes Jello (no fruit) Hot Rolls w/Butter
Day 16	Day 17	
Cheese Burger French Fries Buttered Corn Fresh Apple Wedge	Wiener Wink Tater Tots Applesauce Green Beans Chocolate Cookie	

\*A district planned menu scheduled to serve corn dogs.

\*\*Surprise Day or manager planned menu.

<sup>1</sup>One-half pint milk served with each meal.

<sup>2</sup>Orange juice was served if menu did not include another Vitamin C-rich food. Some minor changes were necessary in menus as presented on Menu Preference Rating Sheet to avoid repetition.

## APPENDIX J

Publicity for Experimental Period



### Publicity for Experimental Period

Sixth grade students at each school were asked to participate in an advertising campaign to publicize the period for service of menus they planned. The extent of the campaign was decided by the students and their classroom teacher.

#### School 1

Posters were prepared by the sixth grade students and displayed on a large bulletin board at the entrance of the cafeteria. Ten posters were prepared with a center display of the menus. (A photograph follows in this appendix.)

The head teacher at school 1 encouraged further program interest by asking each student to work two non-consecutive days in the cafeteria (memorandum included in this appendix). After this project had been completed the students wrote a short description of their experience. (Examples follow.)



March 28, 1974

To: Patricia Garrett, Food Service Director  
From: Allen Stephens, Head Teacher, Faubion  
Re: Sixth Grade Lunch Project

In March of this year, 1974, Faubion School undertook an experiment to develop an awareness and an appreciation for our school cafeteria.

The sixth grade of Faubion has been working very closely with Mrs. Garrett and Mrs. Tillery, Faubion Cafeteria Manager, in selecting the school menus for Faubion.

Keeping this in mind, Mrs. Tillery and I decided to allow one student per day to participate in preparing, serving, and cleaning up in the cafeteria. It was hoped that an experience like this would help the student to better understand the operation and importance of the school cafeteria. Along with this it was also hoped that an appreciation for the food served could be developed.

Each student was allowed two separate days in the cafeteria experiencing as many different facets of the operation as possible. While there they observed all regulations and rules of work and health.

The experiment was deemed to be a success as the students asked many questions about food preparation.

We plan to continue the program next year if possible.

Reports of Cafeteria Experience Written  
by Sixth Grade Students at School 1

My Experience as a Cook

I liked working in the cafeteria because I learned how to make a lot of things that I didn't have the slightest idea as to how. I liked the way that they prepare the food. There are a lot of things that are so big and fast.

Take the dishwasher for instance. It can clean 20 to 25 trays in less than two minutes. There is also a pot that they make their soup, chili, chicken and noodles and all that kind of stuff. It's so big you can take a bath in it!

I liked working in the cafeteria. At my other school we didn't work in the cafeteria I guess because we had 8 six grades with about 39 children in each one.

The part I liked best was making hamburgers.

I always wondered what they did in the cafeteria because I had never seen inside a cafeteria. We would always get into trouble if we went in there.

I think it is very interesting to watch them use the big machines. I have never seen them being used before.

I liked it because it was very fun and it waste time during our class time. I learned how the machines work and how to cut noodles and make bread. I liked it especially because we got extra's.

I like working in the cafeteria because it is fun and interesting. I think I would like to work in a cafeteria when I get older. Since I have a little experience maybe I could make the job.

I liked working in the cafeteria because it was fun. I had never done anything like it before. And I liked the serving of the food. The best thing was you got extra food. The machines they used were pretty neat.

I liked working in the school cafeteria because it was fun to fix the food, run the dishwasher, and help dish out the food.

The first time I was in the kitchen we fixed hamburgers, hash browns, celery sticks, and 1/2 of an apple. I got to help with everything and even put red hots in apple sauce and measure out some things for chocolate chip cookies for the next day.

I liked it because it was very fun because the cooks are very nice. I learned some things about cooking. Like chicken you have to put flour on it and put bread in the bottom of the pan. One thing I did not mind the apron so much it was the hairnet. I saw and helped them cook the broccoli. I liked working the dishwasher all you had to do was put them on a tray and push a button. You got extras on just about everything if you wanted to.



### School 3

Publicity was limited to information in the school newsletter stating that the menus for March and April were prepared by the sixth grade and would not be the same as the district-wide menus. The menus also were printed in the newsletter that was sent home with each student.

## APPENDIX K

### Analysis of Food Related Ratings



## Item 9: Attitude toward serving size

size of the servings is about right

		N	most of time	some of time	are too large	don't get enough	$\chi^2$
			%	%	%	%	
total	control	198	13.6	29.8	0.5	56.1	2.39
	experimental	202	17.8	28.2	1.5	52.5	
control period							
	school 1	11	27.3	54.5	0.0	18.2	9.87
	2	36	16.7	36.1	0.0	47.2	
	3	150	12.0	26.0	0.7	61.3	
experimental period							
	school 1	11	54.5	45.5	0.0	0.0	19.09**
	2	42	21.4	31.0	0.0	47.6	
	3	149	14.1	26.2	2.0	57.7	
school by period							
	school 1-control	11	27.3	54.5	--	18.2	3.09
	experimental	11	54.5	45.5	--	0.0	
	school 2-control	36	16.7	36.1	--	47.2	0.38
	experimental	42	21.4	31.0	--	47.6	
	school 3-control	150	12.0	26.0	0.7	61.3	1.42
	experimental	149	14.1	26.2	2.0	57.7	
participation							
	control-frequent	130	13.1	30.0	0.0	56.9	2.05
	infrequent	68	14.7	29.4	1.5	54.4	
	experimental-frequent	139	15.8	33.1	2.2	48.9	6.50
	infrequent	60	23.3	18.3	0.0	58.3	
participation by school							
school 1							
	control-frequent	8	25.0	50.0		25.0	0.91
	infrequent	3	33.3	66.7		0.0	
	experimental-frequent	7	57.1	42.9			0.65
	infrequent	4	50.0	50.0			
school 2							
	control-frequent	32	12.5	37.5		50.0	3.62
	infrequent	4	50.0	25.0		25.0	
	experimental-frequent	38	18.4	31.6		50.0	2.20
	infrequent	4	50.0	25.0		25.0	
school 3							
	control-frequent	89	12.4	24.7	0.0	62.9	1.71
	infrequent	61	11.5	27.9	1.6	59.0	
	experimental-frequent	94	11.7	33.0	3.2	52.1	7.89*
	infrequent	52	19.2	15.4	0.0	65.4	

\*Significant at or beyond 0.05 level.

\*\*Significant at or beyond 0.01 level.



## Item 10: Attitude toward temperature of food

		the food in school lunch is usually			
		N	right temperature %	usually cold %	$\chi^2$
total	control	198	55.6	44.4	2.57
	experimental	202	47.0	53.0	
control period					
	school 1	11	63.6	36.4	18.42***
	2	40	85.0	15.0	
	3	146	47.3	52.7	
experimental period					
	school 1	11	81.8	18.2	18.12***
	2	42	69.0	31.0	
	3	149	38.3	61.7	
school by period					
	school 1-control	11	63.6	36.4	0.22
	experimental	11	81.8	18.2	
	school 2-control	40	85.0	15.0	2.10
	experimental	42	69.0	31.0	
	school 3-control	146	47.3	52.7	2.08
	experimental	149	38.3	61.7	
participation					
	control-frequent	128	61.7	38.3	4.88
	infrequent	70	44.3	55.7	
	experimental-frequent	139	48.9	51.1	0.12
	infrequent	60	45.0	55.0	
participation by school					
	school 1-control-frequent	8	62.5	37.5	
	infrequent	3	66.7	33.3	
	experimental-frequent	7	85.7	14.3	0.11
	infrequent	4	75.0	25.0	
	school 2-control-frequent	35	82.9	17.1	0.11
	infrequent	5	100.0	0.0	
	experimental-frequent	38	68.4	31.6	0.08
	infrequent	4	75.0	25.0	
	school 3-control-frequent	84	53.6	46.4	2.59
	infrequent	62	38.7	61.3	
	experimental-frequent	94	38.3	61.7	0.004
	infrequent	52	40.4	59.6	

\*\*\*Significant at or beyond 0.001 level.

## Item 15: Attitude toward taste of school lunch food

the food in the lunch room is--

		N	almost good	always good	not very good	good only sometimes	$\chi^2$
			%	%	%		
overall sample	control	202	28.7	22.8	48.5		
	experimental	199	30.7	23.6	45.7	0.32	
control period							
	school 1	11	27.3	9.1	63.6		
	2	40	42.5	0.0	57.5		
	3	150	25.3	30.0	44.7	18.26***	
experimental period							
	school 1	11	72.7	0.0	27.3		
	2	41	41.5	12.2	46.3		
	3	147	24.5	28.6	46.9	16.99***	
school by period							
	school 1-control	11	27.3	9.1	63.6		
	experimental	11	72.7	0.0	27.3	4.8	
	school 2-control	40	42.5	0.0	57.5		
	experimental	41	41.5	12.2	46.3	5.36	
	school 3-control	150	25.3	30.0	44.7		
	experimental	147	24.7	28.6	46.9	0.15	
participation							
	control-frequent	132	35.6	16.7	47.7		
	infrequent	70	15.7	34.3	50.0	12.58**	
	experimental-frequent	137	35.8	20.4	43.8		
	infrequent	58	20.7	31.0	48.3	5.08	
participation by school							
school 1							
	1-control-frequent	8	37.5	12.5	50.0		
	infrequent	3	0.0	0.0	100.0	2.35	
	experimental-frequent	7	85.7	--	14.3		
	infrequent	4	50.0	--	50.0	--	
school 2							
	2-control-frequent	35	40.0	--	60.0		
	infrequent	5	60.0	--	40.0	0.13	
	experimental-frequent	37	40.5	13.5	45.9		
	infrequent	4	50.0	0.0	50.0	0.63	
school 3							
	3-control-frequent	88	34.1	23.9	42.0		
	infrequent	62	12.9	38.7	48.4	9.44**	
	experimental-frequent	93	30.1	24.7	45.2		
	infrequent	50	16.0	36.0	48.0	4.06	

\*\*Significant at or beyond the 0.01 level.

\*\*\*Significant at or beyond the 0.001 level.

## Item 16: Attitude toward meat dishes

		I like the meat dishes				$\chi^2$
		N	most of the time	some of the time	not very often	
			%	%	%	
overall sample	control	202	36.1	28.7	35.1	
	experimental	202	41.1	30.7	28.2	2.3
control period						
	school 1	11	54.5	27.3	18.2	
	2	39	56.4	35.9	7.7	
	3	151	29.1	27.2	43.7	20.75***
experimental period						
	school 1	11	81.8	9.1	9.1	
	2	42	54.8	35.7	9.5	
	3	149	34.2	30.9	34.9	19.06***
school by period						
	school 1-control	11	54.5	27.3	18.2	
	experimental	11	81.8	9.1	9.1	1.93
	school 2-control	39	56.4	35.9	7.7	
	experimental	42	54.8	35.7	9.5	0.08
	school 3-control	151	29.1	27.2	43.7	
	experimental	149	34.2	30.9	34.9	2.45
participation						
	control-frequent	133	45.9	26.3	27.8	
	infrequent	69	17.4	33.3	49.3	16.92***
	experimental-frequent	138	50.0	27.5	22.5	
	infrequent	60	21.7	38.3	40.0	14.31***
participation by school						
school 1						
	1-control-frequent	8	50.0	37.5	12.5	
	infrequent	3	66.7	0.0	33.3	1.75
	experimental-frequent	7	100.0	0.0	0.0	
	infrequent	4	50.0	25.0	25.0	4.27
school 2						
	2-control-frequent	35	57.1	34.3	8.6	
	infrequent	4	50.0	50.0	0.0	0.62
	experimental-frequent	38	60.5	28.9	10.5	
	infrequent	4	0.0	100.0	0.0	7.95*
school 3						
	3-control-frequent	89	40.4	22.5	37.1	
	infrequent	62	12.9	33.9	53.2	13.44**
	experimental-frequent	93	41.9	29.0	29.0	
	infrequent	52	21.2	34.6	44.2	6.74*

\*Significant at or beyond the 0.05 level.

\*\*Significant at or beyond the 0.01 level.

\*\*\*Significant at or beyond the 0.001 level.

## Item 17: Attitude toward vegetables

		I like the vegetables				$\chi^2$
		N	most of the time	some of the time	not very often	
			%	%	%	
overall sample	control	200	16.0	29.5	54.5	0.33
	experimental	199	17.6	30.7	51.8	
control period						
	school 1	11	9.1	54.5	36.4	4.71
	2	39	17.9	33.3	48.7	
	3	149	16.1	26.2	57.7	
experimental period						
	school 1	11	45.5	27.3	5.5	11.97*
	2	39	12.8	46.2	41.0	
	3	149	16.8	26.8	56.4	
school by period						
	school 1-control	11	9.1	54.5	36.4	3.80
	experimental	11	45.5	27.3	27.3	
	school 2-control	39	17.9	33.3	48.7	1.39
	experimental	39	12.8	46.2	41.0	
	school 3-control	149	16.1	26.2	57.7	0.05
	experimental	149	16.8	26.8	56.4	
participation						
	control-frequent	132	16.7	31.8	51.5	1.44
	infrequent	68	14.7	25.0	60.3	
	experimental-frequent	135	19.3	34.8	45.9	6.35*
	infrequent	60	15.0	20.0	65.0	
participation by school						
	school 1-control-frequent	8	0.0	62.5	37.5	3.01
	infrequent	3	33.3	33.3	33.3	
	experimental-frequent	7	57.1	28.6	14.3	1.78
	infrequent	4	25.0	25.0	50.0	
	school 2-control-frequent	35	14.3	34.3	51.4	3.15
	infrequent	4	50.0	25.0	25.0	
	experimental-frequent	35	8.6	48.6	42.9	5.51
	infrequent	4	50.0	25.0	25.0	
	school 3-control-frequent	88	19.3	27.3	53.4	2.16
	infrequent	61	11.5	24.6	63.9	
	experimental-frequent	93	20.4	30.1	49.5	5.33
	infrequent	52	11.5	19.2	69.2	

\*Significant at or beyond the 0.05 level.

## Item 18: Attitude toward desserts

## I like the desserts

		N	most of the time	some of the time	not very often	$\chi^2$
			%	%	%	
overall sample	control	202	64.9	20.3	14.9	4.12
	experimental	202	55.0	26.2	18.8	
control period						
	school 1	11	72.7	9.1	18.2	15.81**
	2	39	89.7	10.3	0.0	
	3	151	57.6	23.8	18.5	
experimental period						
	school 1	11	81.8	9.1	9.1	13.14*
	2	42	73.8	19.0	7.1	
	3	149	47.7	29.5	22.8	
school by period						
	school 1-control	11	72.7	9.1	18.2	0.39
	experimental	11	81.8	9.1	9.1	
	school 2-control	39	89.7	10.3	0.0	4.47
	experimental	42	73.8	19.0	7.1	
	school 3-control	151	57.6	23.8	18.5	2.98
	experimental	149	47.7	29.5	22.8	
participation						
	control-frequent	133	71.4	19.5	9.0	11.61**
	infrequent	69	52.2	21.7	26.1	
	experimental-frequent	139	59.0	27.3	13.7	7.80*
	infrequent	59	45.8	23.7	30.5	
participation by school						
school 1						
	1-control-frequent	8	75.0	0.0	25.0	3.43
	infrequent	3	66.7	33.3	0.0	
	experimental-frequent	7	85.7	14.3	0.0	2.35
	infrequent	4	75.0	0.0	25.0	
school 2						
	2-control-frequent	35	88.6	11.4	--	1.56
	infrequent	4	100.0	0.0	--	
	experimental-frequent	38	71.1	21.1	7.9	1.56
	infrequent	4	100.0	0.0	0.0	
school 3						
	3-control-frequent	89	64.0	24.7	11.2	5.15*
	infrequent	62	48.4	22.6	29.0	
	experimental-frequent	94	52.1	30.9	17.0	5.15*
	infrequent	51	39.2	27.5	33.3	

\*Significant at or beyond the 0.05 level.

\*\*Significant at or beyond the 0.01 level.

## Item 20: Reported school lunch consumption

when I eat school lunch--

		N	eat most of food	leave lot of food	eat half of food	$\chi^2$
			%	%	%	
overall sample	control	202	68.8	8.9	22.3	
	experimental	204	64.7	14.7	20.7	3.27
control period						
	school 1	11	72.7	9.1	18.2	
	2	39	76.9	0.0	23.1	
	3	151	66.2	11.3	22.5	5.02
experimental period						
	school 1	11	90.9	9.1	0.0	
	2	42	71.4	4.8	23.8	
	3	151	60.9	17.9	21.2	8.39
school by period						
	school 1-control	11	72.7	9.1	18.2	
	experimental	11	90.9	9.1	0.0	2.22
	school 2-control	39	76.9	0.0	23.1	
	experimental	42	71.4	4.8	23.8	1.94
	school 3-control	151	66.2	11.3	22.5	
	experimental	151	60.9	17.9	21.2	2.66
participation						
	control-frequent	132	72.7	6.1	21.2	
	infrequent	70	61.4	14.3	24.3	4.51
	experimental-frequent	139	68.3	9.4	22.3	
	infrequent	61	55.7	26.2	18.0	9.74**
participation by school						
	school 1					
	1-control-frequent	8	75.0	0.0	25.0	
	infrequent	3	66.7	33.3	0.0	3.43
	experimental-frequent	7	100.0	0.0		
	infrequent	4	75.0	25.0		
	school 2					
	2-control-frequent	34	73.5		26.5	
	infrequent	5	100.0		0.0	0.55
	experimental-frequent	38	71.1	5.3	23.7	
	infrequent	4	75.0	0.0	25.0	
	school 3					
	3-control-frequent	89	71.9	9.0	19.1	
	infrequent	62	58.1	14.5	27.4	3.17
	experimental-frequent	94	64.9	11.7	23.4	
	infrequent	53	52.8	28.3	18.9	6.41*

\*Significant at or beyond the 0.05 level.

\*\*Significant at or beyond the 0.01 level.

## APPENDIX L

### Analysis of Non-Food Related Ratings

## Item 7: Attitudes towards lunch room noise

		lunch room is too noisy				$\chi^2$
		N	most of the time	some of the time	noise doesn't bother me	
			%	%	%	
total	control	204	12.7	5.9	81.4	2.99
	experimental	198	14.6	10.1	75.3	
control period						
	school 1	11	18.2	36.4	45.5	30.84***
	2	41	0.0	7.3	92.7	
	3	151	15.9	2.6	81.5	
experimental period						
	school 1	11	63.6	9.1	27.3	24.55***
	2	39	7.7	15.4	76.9	
	3	148	12.8	8.8	78.4	
school by period						
	school 1-control	11	18.2	36.4	45.4	5.07
	experimental	11	63.6	9.1	27.3	
	school 2-control	41	0.0	7.3	92.7	4.89
	experimental	39	7.7	15.4	76.9	
	school 3-control	151	15.9	2.6	81.5	5.52
	experimental	148	12.8	8.8	78.4	
participation						
	control-frequent	133	11.3	5.3	83.5	1.09
	infrequent	71	15.5	7.0	77.5	
	experimental-frequent	134	11.9	11.2	76.9	2.34
	infrequent	60	20.0	8.3	71.7	
participation by school						
	school 1					
	1-control-frequent	8	12.5	25.0	62.5	3.43
	infrequent	3	33.3	66.7	0.0	
	experimental-frequent	7	42.9	14.3	42.9	3.59
	infrequent	4	100.0	0.0	0.0	
	school 2					
	2-control-frequent	35		8.6	91.4	0.10
	infrequent	6		0.0	100.0	
	experimental-frequent	36	5.6	16.7	77.8	3.30
	infrequent	3	33.3	0.0	66.7	
	school 3					
	3-control-frequent	89	15.7	1.1	83.1	1.98
	infrequent	62	16.1	4.8	79.0	
	experimental-frequent	91	12.1	8.8	79.1	0.06
	infrequent	53	13.2	9.4	77.4	

\*\*\*Significant at or beyond the 0.001 level.



## Item 8: Attitude toward lunch room cleanliness

		lunch room is clean				$\chi^2$
		N	most of time	some of time	don't notice	
			%	%	%	
total	control	202	23.8	28.7	47.5	2.99
	experimental	199	30.2	30.2	39.7	
control period						
	school 1	11	18.2	18.2	63.6	1.45
	2	41	22.0	29.3	48.8	
	3	149	24.8	29.5	45.6	
experimental period						
	school 1	11	27.3	27.3	45.5	10.39*
	2	41	46.3	12.2	41.5	
	3	147	25.9	35.4	38.8	
school by period						
	school 1-control	11	18.2	18.2	63.6	0.73
	experimental	11	27.3	27.3	45.5	
	school 2-control	41	22.0	29.3	48.8	6.69*
	experimental	41	46.3	12.2	41.5	
	school 3-control	149	24.8	29.5	45.6	1.63
	experimental	147	25.9	35.4	38.8	
participation						
	control-frequent	132	24.2	26.5	49.2	0.91
	infrequent	70	22.9	32.9	44.3	
	experimental-frequent	135	34.8	25.2	40.0	5.35
	infrequent	61	21.3	39.3	39.3	
participation by school						
school 1						
	1-control-frequent	8	25.0	0.0	75.0	6.67*
	infrequent	3	0.0	66.7	33.3	
	experimental-frequent	7	28.6	14.3	57.1	1.78
	infrequent	4	25.0	50.0	25.0	
school 2						
	2-control-frequent	35	22.9	34.3	42.9	3.86
	infrequent	6	16.7	0.0	83.3	
	experimental-frequent	37	43.2	13.5	43.2	1.61
	infrequent	4	75.0	0.0	25.0	
school 3						
	3-control-frequent	88	25.0	26.1	48.9	1.33
	infrequent	61	24.6	34.4	41.0	
	experimental-frequent	91	31.9	30.8	37.4	4.07
	infrequent	53	17.0	41.5	41.5	

\*Significant at or beyond the 0.05 level.

## Item 11: Perception of school lunch cooks attitude

		the cooks in the school lunch are--				
		N	usually friendly	sometimes friendly	often crabby	$\chi^2$
			%	%	%	
total sample	control	204	74.0	15.2	10.8	13.65***
	experimental	204	57.8	19.6	22.5	
control period						
	school 1	11	90.9	9.1	0.0	35.26***
	2	41	43.9	43.9	12.2	
	3	151	80.8	7.9	11.3	
experimental period						
	school 1	11	100.0	0.0	0.0	61.22***
	2	42	9.5	31.0	59.5	
	3	151	68.2	17.9	13.9	
school by period						
	school 1-control	11	90.9	9.1	--	23.04***
	experimental	11	100.0	0.0	--	
	school 2-control	41	43.9	43.9	12.2	
	experimental	42	9.5	31.0	59.5	
	school 3-control	151	80.8	7.9	11.3	
	experimental	151	68.2	17.9	13.9	
participation						
	control-frequent	133	71.4	18.8	9.8	3.96
	infrequent	71	78.9	8.5	12.7	
	experimental-frequent	139	57.6	18.7	23.7	0.25
	infrequent	61	57.4	21.3	21.3	
participation by school						
school 1						
	1-control-frequent	8	87.5	12.5	--	0.97
	infrequent	3	100.0	0.0	--	
	experimental-frequent	7	100.0	--	--	
	infrequent	4	100.0	--	--	
school 2						
	2-control-frequent	35	42.9	42.9	14.3	0.97
	infrequent	6	50.0	50.0	0.0	
	experimental-frequent	38	10.5	28.9	60.9	1.00
	infrequent	4	0.0	50.0	50.0	
school 3						
	3-control-frequent	89	80.9	10.1	9.0	2.27
	infrequent	62	80.6	4.8	14.5	
	experimental-frequent	94	73.4	16.0	10.6	3.97
	infrequent	53	58.5	20.8	20.8	

\*\*\*Significant at or beyond the 0.001 level.

## Item 12: Perception of required lunchroom behavior

we have to be quiet during lunch period

		N	most of the time	some of the time	usually not restricted	$\chi^2$
			%	%	%	
overall sample	control	204	33.8	33.8	32.4	2.26
	experimental	203	27.1	36.0	36.9	
control period						
	school 1	11	63.6	18.2	18.2	16.30**
	2	41	9.8	46.3	43.9	
	3	151	38.4	31.1	30.5	
experimental period						
	school 1	11	45.5	45.5	9.1	19.50***
	2	42	7.1	31.0	61.9	
	3	150	31.3	36.7	32.0	
school by period						
	school 1-control	11	63.6	18.2	18.2	1.95
	experimental	11	45.5	45.5	9.1	
	school 2-control	41	9.8	46.3	43.9	2.71
	experimental	42	7.1	31.0	61.9	
	school 3-control	151	38.4	31.1	30.5	1.81
	experimental	150	31.3	36.7	32.0	
participation						
	control-frequent	133	35.3	33.1	31.6	0.39
	infrequent	71	31.0	35.2	33.8	
	experimental-frequent	138	22.5	36.2	41.3	6.24
	infrequent	61	37.7	36.1	26.2	
participation by school						
school 1						
	1-control-frequent	8	75.0	12.5	12.5	1.63
	infrequent	3	33.3	33.3	33.3	
	experimental-frequent	7	42.9	42.9	14.3	0.62
	infrequent	4	50.0	50.0	0.0	
school 2						
	2-control-frequent	35	11.4	45.7	42.9	0.76
	infrequent	6	0.0	50.0	50.0	
	experimental-frequent	38	5.3	31.6	63.2	2.12
	infrequent	4	25.0	25.0	50.0	
school 3						
	3-control-frequent	89	41.6	29.2	29.2	0.93
	infrequent	62	33.9	33.9	32.3	
	experimental-frequent	93	28.0	37.6	34.4	1.73
	infrequent	53	37.7	35.8	26.4	

\*\*Significant at or beyond the 0.01 level.

\*\*\*Significant at or beyond the 0.001 level.

## Item 13: Reported lunchroom seating requirements

		we can sit with friends				$\chi^2$
		N	most of time %	some of time %	usually not at all %	
overall sample	control	202	24.8	23.8	51.5	13.15***
	experimental	198	11.1	24.7	64.1	
control period						
	school 1	11	27.3	36.4	36.4	43.12***
	2	41	61.0	22.0	17.1	
	3	149	14.1	23.5	62.4	
experimental period						
	school 1	11	63.6	36.4	0.0	37.48***
	2	39	7.7	28.4	64.1	
	3	148	8.1	23.0	68.9	
school by period						
	school 1-control	11	27.3	36.4	36.4	5.60
	experimental	11	63.6	36.4	0.0	
	school 2-control	41	61.0	22.0	17.1	27.57***
	experimental	39	7.7	28.2	64.1	
	school 3-control	149	14.1	23.5	62.4	2.88
	experimental	148	8.1	23.0	68.9	
participation						
	control-frequent	131	24.4	23.7	51.9	0.03
	infrequent	71	25.4	23.9	50.7	
	experimental-frequent	135	11.9	25.2	63.0	0.27
	infrequent	60	10.0	23.3	66.7	
participation by school						
	school 1-control-frequent	8	37.5	25.0	37.5	2.17
	infrequent	3	0.0	66.7	33.3	
	experimental-frequent	7	71.4	28.6	--	
	infrequent	4				
	school 2-control-frequent	35	57.1	25.7	17.1	2.11
	infrequent	6	83.3	0.0	16.7	
	experimental-frequent	35	5.7	28.6	65.7	
	infrequent	4	25.0	25.0	50.0	1.89
	school 3-control-frequent	87	9.2	23.0	67.8	4.55
	infrequent	62	21.0	24.2	54.8	
	experimental-frequent	93	9.7	23.7	66.7	
	infrequent	52	5.8	21.2	73.1	0.90

\*\*\*Significant at or beyond the 0.001 level.

## Item 14: Attitude toward lunchroom atmosphere

		lunchroom is cheerful			
		N	No	Yes	$\chi^2$
			%	%	
overall sample	control	201	59.7	40.3	0.31
	experimental	202	56.4	43.6	
control period					
	school 1	11	81.8	18.2	28.24***
	2	41	92.7	7.3	
	3	148	48.6	51.4	
experimental period					
	school 1	11	54.5	45.5	18.64***
	2	42	85.7	14.3	
	3	149	48.3	51.7	
school by period					
	school 1-control	11	81.8	18.2	0.83
	experimental	11	54.5	45.5	
	school 2-control	41	92.7	7.3	0.44
	experimental	42	85.7	14.3	
	school 3-control	148	48.6	51.4	0.00
	experimental	149	48.3	51.7	
participation					
	control-frequent	130	63.8	36.2	2.16
	infrequent	71	52.1	47.9	
	experimental-frequent	138	62.3	37.7	3.57
	infrequent	60	46.7	53.3	
participation by school					
	school 1-control-frequent	8	87.5	12.5	--
	infrequent	3	66.7	33.3	
	experimental-frequent	7	57.1	42.9	--
	infrequent	4	50.0	50.0	
	school 2-control-frequent	35	94.3	5.7	0.01
	infrequent	6	83.3	16.7	
	experimental-frequent	38	84.2	15.8	0.01
	infrequent	4	100.0	0.0	
	school 3-control-frequent	86	48.8	51.2	0.01
	infrequent	62	48.4	51.6	
	experimental-frequent	93	53.8	46.2	1.32
	infrequent	52	42.3	57.7	

\*\*\*Significant at or beyond the 0.001 level.

## Item 19: Perception of time during lunch period

we are too rushed eating lunch

		N	most of the time	some of the time	not really	$\chi^2$
			%	%	%	
overall sample	control	203	39.4	20.7	39.9	
	experimental	201	32.8	23.9	43.3	1.94
control period						
	school 1	11	36.4	27.3	36.4	
	2	41	61.0	34.1	4.9	
	3	150	33.3	16.7	50.0	27.66***
experimental period						
	school 1	11	0.0	63.6	36.4	
	2	42	61.9	33.3	4.8	
	3	148	27.0	18.2	54.7	45.76***
school by period						
	school 1-control	11	36.4	27.3	36.4	
	experimental	11	0.0	63.6	36.4	5.60
	school 2-control	41	61.0	34.1	4.9	
	experimental	42	61.9	33.3	4.8	
	school 3-control	150	33.3	16.7	50.0	
	experimental	148	27.0	18.2	54.7	1.40
participation						
	control-frequent	132	37.1	22.7	40.2	
	infrequent	71	43.7	16.9	39.4	1.26
	experimental-frequent	137	28.5	27.7	43.8	
	infrequent	60	43.3	16.7	40.0	5.03
participation by school						
	school					
	1-control-frequent	8	37.5	12.5	50.0	
	infrequent	3	33.3	66.7	0.0	3.85
	experimental-frequent	7		57.1	42.9	
	infrequent	4		75.0	25.0	
	school					
	2-control-frequent	35	57.1	37.1	5.7	
	infrequent	6	83.3	16.7	0.0	1.54
	experimental-frequent	38	60.5	36.8	2.6	
	infrequent	4	75.0	0.0	25.0	5.39
	school					
	3-control-frequent	88	28.4	18.2	53.4	
	infrequent	62	40.3	14.5	45.2	2.33
	experimental-frequent	92	17.4	21.7	60.9	
	infrequent	52	44.2	13.5	42.3	12.16**

\*\*Significant at or beyond 0.01 level.

\*\*\*Significant at or beyond 0.001 level.

INFLUENCE OF STUDENT SELECTED MENUS ON STUDENTS' ATTITUDES,  
SCHOOL FOODSERVICE PARTICIPATION AND PLATE WASTE

by

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AN ABSTRACT OF A MASTER'S THESIS

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## ABSTRACT

Increasing participation in the school foodservice program and decreasing plate waste are two primary concerns of school foodservice directors and managers. The objective of this research was to study the influence of student-selected menus on school lunch participation, plate waste and attitudes toward school foodservice of sixth grade students in three North Kansas City, Missouri, elementary schools.

During a period of manager-planned menus baseline data were collected in the project schools. Three schools were selected that were representative of the twenty-nine elementary schools in the district. Following this period sixth grade students were asked to rate the school lunch program and to complete a food preference instrument consisting of a list of 161 items regularly served on the district's school lunch menus. Students were asked to rate each food using the following scale: (a) like a lot, (b) like, (c) dislike and (d) do not know.

Results of the food preference survey were used to compile seventy-two menus utilizing preferred foods; three menus were constructed for twenty-four of the most popular entree items. Other menu items selected were also from lists of foods liked by a majority of the students. The students were briefed concerning constraints on school foodservice menu planning and asked to rate each menu using the scale constructed for the food preference instrument. Menu preferences were tabulated and used to compile a sixteen day cycle menu that was served during March and April, 1974. Plate waste and participation were measured again during this experimental period when student-planned menus were served. Attitudes were measured at the end of this period.



Results indicate the average daily per cent participation in the school lunch program increased significantly during the experimental period for the entire school (9.1 per cent) and for the sixth graders (10.9 per cent). Per student ounces of plate waste decreased during the period of student-planned menus in two schools. Most frequent reasons for eating school lunch were: (a) I like the food, (b) My friends eat there, (c) My mother works, and (d) My parents want me to eat at school. The majority of the sixth grade students participated in the program (over three-fourths), less than one-fourth brought lunches and only a small number went home for lunch. Students who regularly brought sack lunches indicated that they didn't like the food served at school, that their friends brought lunches and/or that it was cheaper to bring food from home.

The change in attitude toward school foodservice was most notable among students in the smallest of the three schools in the study. The friendly, more personal environment possible in small schools may enhance student interest and involvement in projects of this type. Attitude scores also were significantly higher for children who participated frequently in school foodservice than for those who were infrequent participants. Data indicate that the approach of foodservice personnel to the children influences students' reactions to the food and the program.