

Running Head: LUNCH NUTRITION

Discovering The Effectiveness of School Lunch Program Towards Educating Students on
Nutrition

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Research Report

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Abstract

A Northern Marianas College student describes an original 10-week study highlighting how well Saipan Southern High School's (SSHS) lunch program is educating students about nutrition. Pangelinan wanted to inform the readers of the influence the high school lunch program has on high school students' health and nutrition while also highlighting the opinions of the high school students on whether the influences have been effective. All scheduled interviews and conducted surveys have been recorded to collect a necessary amount of data. Observations of Saipan Southern High School's lunch period and results collected from a survey conducted with SSHS students indicated that the lunch program did not verbally educate students of the nutrition-enriched meals. There were indications that students are aware that school lunches have to be nutritional for their benefit but not into concise details. The study is important because it qualitatively illustrates the lack of education students should receive regarding the nutritional value of the lunch meals being served to them.

Discovering The Effectiveness of School Lunch Program Towards Educating Students on
Nutrition

High school students are being taught about having and maintaining a healthy body from their required health classes or from public presentations. Unfortunately, students lack that type of education and influence from the main source: the school lunch program. This study was undertaken to discover the type of nutritional influences do the Saipan Southern High School lunch program have among the high school students. The primary research is based upon the primary question, is the Saipan Southern High School lunch program effectively educating students on nutrition and healthy diets? From the research on this question, it can be assumed that the lunch program is not being as effective as it should be at educating students of the nutritional and health benefits of school lunches. The lunch program, which involves catering businesses, are the main point of contact with students and their lunch meals. The likelihood of student developing healthier meal choices are dependent on the initial influence during this meal exchange. Because the interaction between the students and the servers do not usually involve discussing the nutritional value of the meals, students are not aware of benefits they can get from meals. The interactions between student and other individuals are usually successful through personal conversation and because of this posters and pictures might not be as appealing.

If the students are not aware of things that can be good for them then the tendency to avoid healthier options may occur. Lack of influence to the students through lunch servers can be a major factor in their meal choices for school lunches and also a healthy lifestyle overall. In consideration of the research study based on the lunch program influences amongst Saipan Southern High School students, elements that directly relate to the hypothesis and theories are

essential. These elements include factors present during the point of contact with students and their school lunch program as well as the interactions that occur. In order to avoid broadening or generalizing the research theories or assumptions, elements such as alternative catering services or alternative services beyond school hours may be relevant to the intended information offered in this research. Other factors beyond the control of the school lunch program as well as the school authority might be considered outside the interest of the research and can potentially affect the validity of the theories as well as the data collected to validate them. The information gathered from this research offers an insight into the potential influences surrounding the development of a healthy lifestyle within students attending Saipan Southern High School. The noticeable trends with students and the lunch program can be used to further enhance or change current conditions in order to reach the intended educational health awareness. This understanding will contribute to the effort to promote an overall wellbeing within an student as well our community as a whole.

Literature Review

On May 23, 2019, a broad search was conducted using Google Scholar. The search using the keywords “school lunch and nutrition” came back with 140,000 hits. A broad search was conducted on May 23, 2019, using google scholar on the keywords of “school lunch and nutrition” and came back with 140,000 hits. A majority of the results contained articles looking at the impact of nutrition on students’ academics. The first significant section of the results contained articles looking at the impact of nutrition on improving students’ test scores and academic performance. The second section of the results contained articles that relate to the nutritional benefits of school lunches. Narrowing the scope of the review to literature in the

Pacific islands and the number of published articles narrowed to 20,400. Interestingly, this search provided the student researcher with a number of academic publications that focused on nutrition and obesity. The literature research of this specific topic showcases the importance and benefits of school lunches and obesity in the Marianas.

In support of the importance and benefits of school lunches, the student researcher has located a few academic works of literature discussing childhood obesity, health goals, and having locally grown produce served at the schools. An article published by Saipan Tribune, *NMPASI: Rates of childhood obesity in CNMI on the rise*, provide information regarding health concerns with the youth as well as tips for to parents be more involved with the health of their child or children (Release, 2016). An article published in 2016, obesity rates of students in the CNMI have gone down “but those rates are once again beginning to rise” (Release, 2016. Para. 1). “The Youth Risk Behavior Survey done with CNMI High School students over a 10-year period had shown a decrease in the rates of obesity, but those rates are once again beginning to rise” (Release, 2016. Para. 1). In addition to parents getting involved in the health of their child or children, an article, *Health and fitness goals*, also published by Saipan Tribune, include direct quotes from people of the Marianas and their goals to improving their health. “My fitness goal for 2018 is to continue to race motocross with my 15-year-old son, Blaze. He keeps me doing physical activities that I really love and have been doing for years. A positive attitude and a good sense of humor, I believe, is the secret” (Cabrera, 2018. Para. 2). Lastly, another article, *PSS food & nutrition service to work with local farmers*, published by Saipan Tribune explains how the CNMI’s public school system nutritionist is working to have more locally grown produce served at the schools in the CNMI. According to PSS’s nutritionist, “the USDA school meal standards

has dramatically changed... school meal standards now mandate variety for the students”

(Todeno, 2012. Para. 1). The articles gathered provide insights into the sort of health concerns, practices, and prevention methods that the community of Saipan should be aware of in regards to their child or children’s health. To gather more appropriate and credible information, the student researcher has collected academic articles discussing the health of the youth in the Marianas.

The search conducted using scholarly websites provided the student researcher with academic literature relating to the topic with credible information. Of the many works of literature gathered from the search, one of academic literatures focused on the health of the youth in the Marianas. The first literature is from the World Health Organization titled *WHO profile on mental health in development (WHO propMIND): Commonwealth of the Northern Mariana Islands*. This literature includes details of the non-communicable disease status on the Pacific Islands. “The Pacific Island Health Officers Association declared a regional state of health emergency in May 2010 due to an epidemic of non-communicable diseases (NCDs) in the United States Affiliated Pacific Islands” (Arriola, Buettner, Diminic, Drew, Funk, Price, & Sugiura, 2013). The other academic literature found mainly discussed the importance of school lunch programs, the efforts to improve school meals to be more nutritious, and the school food environment and policies. An article published on the Proactive Health Labs website discusses the importance of school lunches. “When parents and faculty start to chime in and advocate for the return of healthier foods in schools, it is more likely that they can effectuate positive change” (Stephenson, 2018. Para. 3).

Another literature found was a report from the Pew Charitable Trusts and the Robert Wood Johnson Foundation. The report focuses on School meal programs across the nation as the schools implement the standards and regulations made by the U.S. Department of Agriculture (USDA) for healthier food and drinks for students (*School Meal Programs Innovate to Improve Student Nutrition*, 2016). However, it is not just the school meals that have been changed, it is also the “vending machine options, a la carte lines, food-based fundraising practices, and more are being improved to meet the updated school nutrition rules” (“School Meal Programs Innovate to Improve Student Nutrition”, 2016. P. 1). Finally, the last literature found is a journal from the International Journal of Obesity published in 1999. The journal focuses on enlightening readers of the actions schools have been taking in order to treat and/or prevent childhood obesity (Story, 1999). These academic articles would provided the student researcher with credible information needed to showcase how much the school meals, snacks, and lunch environment and policies positively impact students’ perception on nutritious eating.

A study was conducted to examine high school students’ lunch pattern, vending machine purchases, and the school’s food environment and policies (Sztainer, D., Hannan, P., Story, M., & Fulkerson, J., 2005). A journal published to the Bio-Medical Central: International Journal of Behavioral Nutrition and Physical Activity aimed to enlighten readers of statistics gathered from 1088 students from 20 different high schools regarding the reason mentioned previously.

“Clearly factors other than eating practices at school are associated with the overall quality of dietary intake and health outcomes of youth... eating practices at school are likely to be making a significant contribution” (Sztainer, D., Hannan, P., Story, M., & Fulkerson, J., 2005, P. 7). The

student researcher is studying how well the Saipan Southern High School lunch program is educating students of their nutrition. With the information provided by both the academic and non-academic literature, the student researcher can discuss whether the information is useful towards the student participants of this research. The CNMI public school system implements the food policies and regulations set by the USDA to ensure students at different grade levels are receiving their appropriate nutritional intake. In addition to that, the schools also implement healthier alternatives to snacks that are being sold for fundraisers. The student researcher, however, aims to recommend and possibly influence the lunch providers at Saipan Southern High School to begin educating students of the nutritional value in the meals being served.

Primary and Secondary Research Questions

Primary: Does the Saipan Southern High School lunch program effectively educate students on Nutrition?

Secondary: What affects students' choice to eat the lunch meal provided by the lunch program?

Methodology

The student researcher collected data through two surveys that were distributed to 33 NMC students. The first survey was a 10-question pilot survey intended to test data collecting with the instructor and peers. The pilot survey contained demographic questions and questions specific to the student's research question. Student's peers were asked to take the survey and give feedback on a google doc's page. The pilot survey was designed using long answer, matrix, "yes/no" and linear scale questions. The pilot survey received feedback from the instructor and 10 peers.

Feedback included suggestions to rephrase questions, add more demographic questions, and

change types of answers from a long answer to a matrix. After revisions were made, the student researcher uploaded a new survey link for the final survey on the same shared Google Docs page four days later.

The final survey was posted May 6th, 2019, and has been available for an additional three-week period. On May 9th, the survey had been taken by one female participant (age 19) and a suggestion was made to combine two questions that would receive similar answers. Within May 10-12, approximately eight more participants completed the survey (male and female between the ages of 19-22). A suggestion was made to lessen the number of questions asked however the number of questions created by the student researcher was necessary to gather the intended data. In addition to the survey, the student researcher issued out formal letters to nutritionists on- and off-island as well as to Saipan Southern High School's lunch program director.

Formal letters were emailed to five on- and off-island nutrition and health experts by the student researcher. The letter was drafted to provide a brief background of the student researcher, background on the intended research, and asks if the student researcher, granted access, can conduct an interview regarding the intended research. With the assistance of the instructor, the student researcher was able to keep the letter brief and formal for the intended receiver. The student researcher also included a series of interview questions for the receiver to answer in the event that he or she is unable to attend a scheduled interview. After finalizing the formal letters, the student researcher e-mailed the letters to nutrition experts on- and off-island on May 17th, 2019 (Appendix C). While waiting for responses, the student researcher conducted surveys with SSHS students and the SSHS lunch program director.

The student researcher conducted formal interviews with the SSHS lunch program director, local nutritionist and an informal interview with the instructor. The informal conducted with the instructor, Dr. Bunts-Anderson, provided information in regards to the survey mentioned earlier based on the high school she attended in Arizona. According to Dr. Bunts-Anderson, “they [cafeteria cooks] actually cooked the food there in the cafeteria” (May 7th, 2019, 9:15 am). The student researcher was also able to gather useful tips to suggest to the school lunch provider from Dr. Bunts-Anderson. Tips such as making the senior class prepare food one day, make the sophomores prepare the food another day, and so on (Anderson, May 7th, 2019, 9:28 am).

The student researcher also conducted surveys similar to the survey conducted with the NMC students. The survey had been taken by approximately 26 SSHS students by male and female students from ninth to 12th grade. Many of the questions asked are based on the lunch portion size, taste, how often they eat the provided lunch, if they eat more than one serving, and if they finish a whole serving. There are questions that ask do they think the provided lunch has the necessary nutrients needed, whether they know the nutritional value of their food, as well as if they have been influenced by any of the actions taken to promote healthy eating habits. The results of this survey have shown how much the lunch provider has educated students on the food they are eating. The results also show how much of the 26 SSHS actually eat the food that is provided by the lunch program. With all the assistance of the many forms of data collecting, the student researcher has collected a sufficient amount of data to be analyzed for a final report.

Within a two-week period, the student researcher received a handful of replies in regards to the letter. All replies were very helpful since it gave nutritional facts on portion size, flavor,

cooking-style, and many great tips on how the school lunch would be more appealing to students. Some experts gave honest opinions as to why students would rather eat anything else than the provided school lunch. Some experts even mentioned that they have never taken the time to visit a school cafeteria to see students during their lunch period. The student researcher noticed that, though the nutritionists knew of what was healthy and preferable for students, however, many did not witness first hand how students react to the provided lunch.

Data analysis

The participants involved in this study are variations of teens and adults. Participants include Saipan Southern High School students, NMC students, NMC instructors, nutritionists on-island, and nutritionists off-island. Since this study highlights the nutritional influence in a high school-based cafeteria, the target participants are mainly current high school students between the ages 14-19 but also high school alumnis ages 19 and above. As part of this study, locating expert nutritionists provides the extra assistance necessary to understand the importance of students' nutrition in a more detailed fashion. Among the many attempts to gather data regarding students' knowledge of nutrition, surveys were most successful in collecting information since it came from direct sources. The anonymity of the surveys provided students the confidence to be more truthful and expressive with their opinions. As for the experts, they were provided a brief questionnaire attached to the email that describes the study, its intentions, and possible outcomes with their assistance. Before beginning the study, the student researcher had to fully understand the independent and dependent variables. High school students spend a majority of their day in school. Without given permission to leave campus, the only source of

food is provided by their lunch program. Therefore, the students rely on the lunch program to provide food to satisfy their hunger throughout the day.

After following a precise schedule (Appendix F), the student researcher has gathered a sufficient amount of data. Though not a great amount, the data collected illustrates the ineffective actions the lunch programs have taken to promote healthy eating and nutrition. Looking at the responses from NMC students, most of the participants answered the question of how their lunch program has promoted healthy eating by stating what was being served. Pulling from all the responses two participants' answers were very insightful towards to question. One participant stated "I felt like they were focusing on making the students full rather than giving nutritional food." Another interesting response was from participant number 13 who stated "They made a salad bar and forced students to get the whole package lunch." Looking at the responses to the last question, a majority of the responses stated that what they know about nutrition came from a college level health course rather than their lunch program. As participant 7 stated "all the things I've learned about nutrition and importance about a healthy diet came from college."

Analyzing the responses from the survey that were distributed to SSHS students, the responses were not very different. Answering question number 15 (Appendix B), almost all participants stated that the lunch programs would hang up posters or decorate the walls with healthy food choices. An interesting response that was similar to a response from an NMC student was forcing. SSHS participant number 21 stated "They haven't really promoted eating healthy. It was more of them forcing us to take every part of what is being offered." As for question number 16 (Appendix B), a little over half of the participants stated that they have not learned much about nutrition or healthy eating. The rest of the participants stated they would be

told to take a fruit along with their meal. It was unsettling to discover the high school students have not learned much from the influence of their lunch program. What was quite interesting was after analyzing the responses from expert nutritionists, one respondent stated it was the duty of the students' parents to be the main source of influence when it comes to healthy eating and nutrition (Appendix L). As stated by Mrs. Lee, "children's first contact with food is at home." According to Dr. Wendy Wolfe, "if students lack education in the classroom... they will not know how to be concerned." Nutritionists seem to believe there are other factors to what influences students to eat more healthy and be aware of their nutrition. Although there are many factors, this study focuses on primarily the students' source of food on campus: the lunch program.

Conclusion

Based on the research compiled, my findings show that the lunch program has not taken effective actions to educate students of eating healthy as well as the nutritional benefits of the meals being served. After analyzing the responses from the survey distributed to NMC students, a lot of what they have learned about nutrition was acquired during their time in college not in high school. Compared to the Saipan Southern High School students, a great amount have responded by stating they did not learn much from the influences of their lunch program. Gathering the responses from the few nutritionists, their focus is on all possible factors that influence students' eating habits. It is apparent that if students have the knowledge of what is nutritional for them, they would be more accepting of the lunch provided. In addition to that, students could be initiating conversation with the lunch provider about their meals to be aware of

what they are being fed. Overall, more knowledge was gained throughout this study although the focus was on the primary question.

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Appendices

Ruth Liah F. Pangelinan

Northern Marianas College

Appendix A

1. Age
2. Gender
3. If you have not graduated from high school, when will you be graduating?
4. What high school did you attend? (Check all that apply)
 - a. Saipan Southern High School/Marianas High School/Kagman High School/Other
5. What lunch provider was serving throughout your high school? (e.g. Barney's Pizza, Kalayaan, LSG, etc.) (Check all that apply)
 - a. Kalayaan (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - b. Barney's Pizza (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - c. Hermans bakery (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - d. LSG (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - e. Other (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - f. I don't know (1 year/2 years/3 years/ 4 years/I don't know/Never)
6. During your high school years, did you receive free lunch?
 - a. Yes/No
7. If you have not received free lunch, how much did it cost?
8. How often did you eat the lunch provided by the lunch program?
 - a. Once a week/ Twice a week/ Three times a week/ Four times a week/ Everyday
9. How would you rate the nutritional value of the food prepared by the lunch program?
 - a. 1 to 5 (1 being not nutritional at all. 5 being Nutritional.)

10. Have you ever brought food from home?
 - a. Yes/No
11. Provide a few examples of the food prepared at home.
12. How would you rate the nutritional value of the food prepared at home?
 - a. 1 to 5 (1 being not nutritional at all. 5 being Nutritional.)
13. Have you ever bought pre-made lunch? (fast food, bento, store-bought, etc.)?
 - a. Yes/No
14. How would you rate the nutritional value of the pre-made food?
 - a. 1 to 5 (1 being not nutritional at all. 5 being Nutritional.)
15. What are some ways the high school lunch program has attempted to promote healthy eating? (List all)
16. With the influence of your lunch program, what are some information you have learned regarding nutrition?

Appendix B

1. Gender
2. Age
3. Grade
4. Have you ever taken a physical education/health class?
 - a. Yes/No
5. What lunch provider has been serving throughout your time in high school? (Check all that apply)
 - a. Kalayaan (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - b. Barney's Pizza (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - c. Hermans bakery (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - d. LSG (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - e. Other (1 year/2 years/3 years/ 4 years/I don't know/Never)
 - f. I don't know (1 year/2 years/3 years/ 4 years/I don't know/Never)
6. Throughout your years in high school, have you been receiving free meals? (Check all that apply)
 - a. Yes/No/ONLY 9th grade/ONLY 10th grade/ONLY 11th grade/ONLY 12th grade
7. If you do not receive free meals, how much do the meals cost?
 - a. Short answer question
8. How often do you eat the meals provided by the lunch program? (choose one)
 - a. Once a week/ Twice a week/ Three times a week/ Four times a week/ Everyday
9. How would you rate the nutritional value of the lunch provided?
 - a. 1 to 5

10. Have you ever brought food from home?
 - a. Yes/No
11. Provide a few examples of the food prepared at home
 - a. Short answer question
12. How would you rate the nutritional value at home?
 - a. 1 to 5
13. Have you ever bought pre-made food? (fast food, bento, store-bought)
 - a. Yes/No
14. How would you rate the nutritional value of the pre-made food?
 - a. 1 to 5
15. What are some ways the high school lunch program has attempted to promote healthy eating? (List all)
 - a. Long answer question
16. With the influence of your school lunch program, what are some information you have learned regarding nutrition.
 - a. Long answer question

Appendix C

Experts on-island

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Experts off-island

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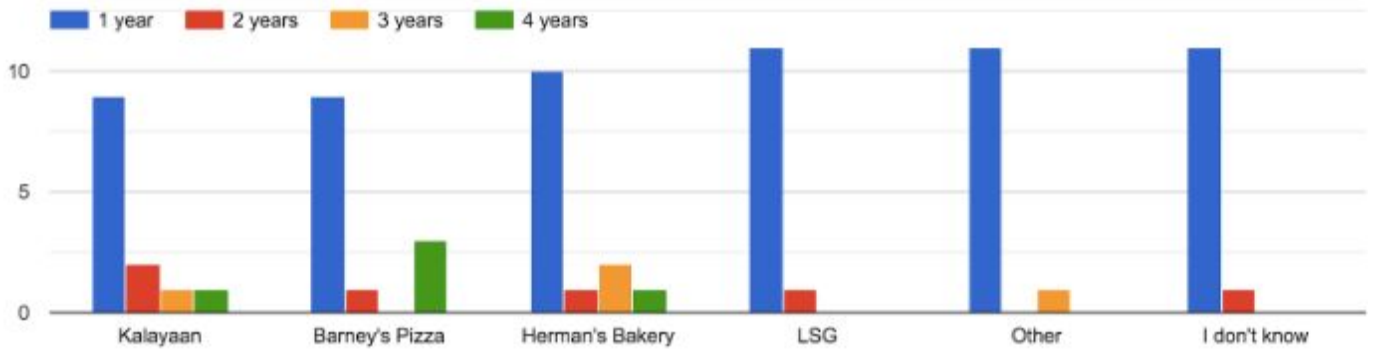
Mary Story mary.story@duke.edu

Questionnaire:

1. In your opinion, do you think high school lunch programs are educating students on the food they are preparing and serving?
2. Do you believe the lunch programs focus specifically on portion size, nutritional value, or overall presentation when preparing and serving food?
3. Have you ever been a part of a school's lunch break to witness, first hand, students' lunch routines, and interactions? If yes, do you think the students are concerned about the nutritional value of their meals?
4. What are some tips you could provide lunch providers in order to educate and influence students to be more aware of their nutritional intake and overall knowledge of healthy lifestyles?

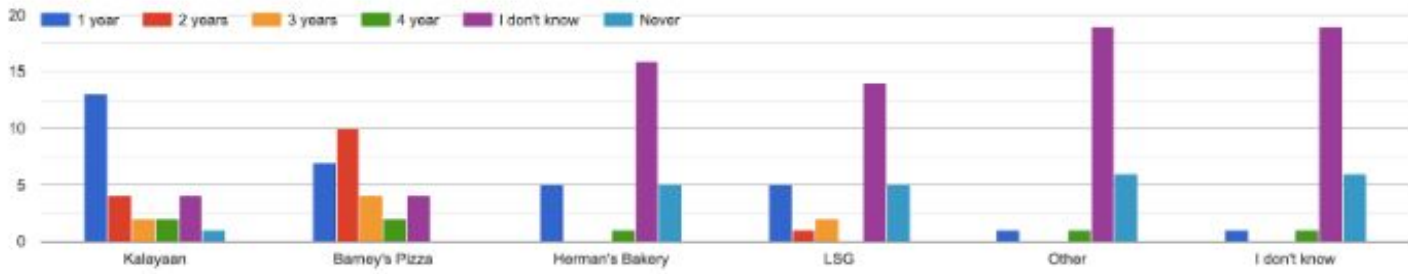
Appendix D

What lunch provider (e.g. Barney's Pizza, Kalayaan, Herman's Bakery, other.) was serving throughout your high school? (List for how many years)



Appendix E

What lunch provider has been serving throughout your time in high school? For how many years?



Appendix H

Week 1 (4/29-5/3/19)	Week 2 (5/6-10/19)	Week 3 (5/13-17/19)	Week 4 (5/20-24/19)	Week 5 (5/27-6/2/19)	Week 6 (6/3-7/19)	Week 7 (6/10-14/19)
Survey College students. Do further research (to pass on to high school interviewees)	Survey 15 Saipan Southern High School students	Survey the same 11 SSHS students. Begin analyzing data.	Gather all data & information found and analyzed. Begin drafting final report.	Continue drafting report. Observe SSHS cafeteria (relay info found).	Begin putting everything together.	Finalize Report. Put together E-portfolio. Prepare to present findings.

Appendix I

- In your opinion, do you think high school lunch programs are educating students on the food they are preparing and serving?

This is difficult to answer because while lunch programs are designed to show students what proper meal should be composed of, the actual nutrition lessons must come from within the classroom and from the homes. It is important that the high schools, and not just high schools, adopt and implement nutrition education as part of their core curriculum along with health education. It is crucial that this type of education be implemented if we want to see the community's health to improve. Most health classes across the US are being cut short to accommodate STEM courses.

Appendix J

- Do you believe the lunch programs focus specifically on portion size, nutritional value, or overall presentation when preparing and serving food?

Yes. In the CNMI and the US mainland, the food portions and the types of foods, such as different colored vegetables, whole grains, etc, are required to be served by the grantee, USDA. Portions for each food group are dictated by the grant for age groups. Overall presentation really depends on who is preparing the food. Depending on the kitchen's efforts and interest, food can look drastically different. In order to increase school food participation, all kitchen staff must be trained how to properly cook and present meals so that the foods will be aesthetically pleasing to the participants.

Appendix K

- Have you ever been a part of a school's lunch break to witness, first hand, students' lunch routines, and interactions? If yes, do you think the students are concerned about the nutritional value of their meals?

Yes, I have. And most students are not, sadly. This again goes to the point made in #1. If students lack education in the classroom, and more importantly at home, they will not know how to be concerned.

Appendix L

- What are some tips you could provide lunch providers in order to educate and influence students to be more aware of their nutritional intake and overall knowledge of healthy lifestyles?

I believe, the responsibility goes to the parents and then to the schools. Children's first contact with food is at home. Their habits are built based on what they eat at home. Home is where everything starts. Then when they get older, schools are where they spend most of their time, especially inside the classroom. In the cafeteria, they have maybe about 15-20 minutes and contact with the food vendor is a few seconds. So having said that, classrooms are the next best place for the student to learn.

With the lunch providers, they can be taught out to cook properly with less salt, sugar, and fat; how to cook vegetables properly to retain nutrients better; and how to present the food in order to make it look appetizing. And this kind of training is provided to the lunch providers at CNMI PSS on a regular basis.