# REF 770 Evaluation Proposal:

# Farm to School Program

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**Background**

The National Farm to School Network (F2S) was officially established in 2007, after a year-long collaboration involving more than 30 organizations from across the United States (Azuma & Fisher, 2001). The school-based program, whose main goal is to promote healthy children, farms, and communities in order to combat childhood obesity, was developed to better help schools provide students with fresh, locally grown fruits and vegetables as food options. In order to improve student nutrition, F2S connects K-12 schools with locally-based farmers (Taylor & Johnson, 2013). Besides providing students with fresh, healthier food options, F2S programs provide students with opportunities to participate in many different activities whereby they may learn about agriculture, proper nutrition, and the importance of living a healthy lifestyle. Some of these activities include taste tests, school gardens, farm tours, agricultural-related lectures given by farmers in the classroom, culinary education, and visits to farmers' markets. The program also provides activities to parents and community members in the form of educational sessions on proper nutrition and healthy eating (Azuma & Fisher, 2001).

The F2S can trace its roots back to the late 1990s, when a small group of pilot programs arose in California and Florida (Scherr, Cox, Feenstra, & Zidenberg-Cherr, 2013). Due to today's heightened awareness of the childhood obesity epidemic, popularity and support for F2S has increased drastically since its early beginnings (Scherr et al., 2013; Taylor & Johnson, 2013). Today, more than 2,500 school districts encompassing over 12,500 schools from all 50 U.S. states have adopted a F2S program (Taylor & Johnson, 2013; Tuck, Haynes, King, & Pesch, 2010). In addition to growing in popularity, funding for F2S has also increased significantly

since the organization's establishment nearly a decade ago. In order to allow for the expansion of fresh fruit and vegetable programs like F2S in schools across the nation, the 2008 Farm Bill amended the National School Lunch Act and increased funding from $9 million to $70 million per year (Colasanti, Matts, & Hamm, 2012). The Bill also relaxed bidding restrictions for school districts who seek to purchase locally grown produce. Furthermore, as part of the *Healthy, Hunger-Free Kids Act of 2010*, the United States Department of Agriculture (USDA) committed to provide $40 million in funding for F2S programs over the next several years (Taylor & Johnson, 2013).

Because children spend so much of their time in school, schools have the potential to play a fundamental role in helping children learn to adopt lifelong healthy behaviors (Schneider, Chriqui, Nicholson, Turner, Gourdet, & Chaloupka, 2012). Since children often eat two of their three daily meals at school, it has been suggested that schools have much influence on students' eating habits (Schneider et al., 2012). Thereby, this evaluation will examine the effectiveness of a F2S program implementation in a small, rural school district in southeast Mississippi over the course of three years—focusing on the success of the program as based on expected outcomes and feedback from students, parents/guardians, teachers, administrators, and cafeteria staff.

**Purpose**

The purpose of this evaluation is to examine whether or not the implementation of a F2S program in a small, rural school district in southeast Mississippi helps to increase fruit and vegetable (F/V) intake and decrease unhealthy food consumption in elementary students ranging from grades 3 – 5. The evaluation will also examine the sustainability of the program's outcomes. The results of the evaluation will be used to help district level administrators, including the child nutrition program director for the district, decide how to improve the program

in terms of getting students to adopt healthier eating habits both in and out of the school setting. Since the cost of purchasing certain locally-grown produce from local farms is not expected to exceed the cost of purchasing the same food items from a major distributor, locally grown F/V will continue to be purchased and served in the district's school cafeterias regardless of the outcome of this evaluation due to the health benefits for students and faculty that are associated with serving fresh produce. However, the results will help determine which F2S program activities are used in conjunction with serving fresh, locally grown F/V.

Research has shown that F2S can be very beneficial to students, the community, schools, and farmers (Azuma & Fisher, 2001). In addition to promoting and providing education on adopting a healthier diet and living a healthier lifestyle, the program has also been shown to increase F/V consumption in children, which is important considering that greater consumption of F/V has been linked to reductions in the risks of chronic diseases like cardiovascular disease and some forms of cancer (Azuma & Fisher, 2001; Scherr et al., 2013; Taylor & Johnson, 2013). The importance of increasing F/V intake in U.S. children is emphasized even further when considering that children between the ages of 5 – 19 do not consume the recommended daily amounts of F/V. According to the Center for Disease Control's (CDC) 2010 Youth Risk Behavior Survey, less than 20 percent of high school students eat the USDA's recommended amount of F/V each day; less than 25 percent of children in the U.S. aged 9 – 18 consume the USDA's recommended daily intake of fruit; and only 5 percent of children in the same age group consume the recommended daily intake of vegetables (Taylor & Johnson, 2013). In addition to not meeting the recommended daily intake of F/V, children are consuming too much junk food. As of 2010, the CDC estimated that 31.7 percent of children aged 2 – 19 are overweight, and another 16.9 percent of children in the same age group are obese (Scherr et al., 2013). Therefore,

due to schools' influential role in the lives of school-aged children, it is important that schools seek to educate students on the importance of proper nutrition, and use programs like F2S to help do so.

The evaluation will be based on a combination of several different evaluation approaches including consumer-oriented, participant-oriented, program-oriented, and decision-oriented approaches. While an external team of F2S program experts will be largely responsible for planning, orchestrating, and overseeing the evaluation, the team's judgement or input will not be included in any part of the evaluation's results. The evaluation will be highly dependent upon consumers (students) (i.e. consumer-oriented approach) and other stakeholders (teachers, parents/guardians, administrators, cafeteria staff) (i.e. participant-oriented approach). Evaluation results will be used for further program planning and development (i.e. decision-oriented approach) and for determining if the program's objectives are being achieved (i.e. program-oriented approach).

An external team consisting of three local university graduate students and two faculty will conduct the evaluation, including collecting and analyzing all data and presenting the results. University students and faculty will possess expertise in F2S program procedures as well as school foodservice and child nutrition. The evaluation, which will be carried out over the course of three academic years starting in August 2016 and ending in May 2019, will use both qualitative and quantitative methods, as well as both formative and summative methods. Furthermore, the evaluation will seek descriptive information. Data will be collected from stakeholders using paper-based questionnaires, focus group discussions, and plate waste observations. The results of the study will not be used for the purposes of making a decision about the continuation or discontinuation of the F2S program. On the contrary, the results will

be used to help make improvements to the program where needed in order to increase students' F/V intake. Whereas the future of the overall program may not be at stake, certain aspects of the current program (i.e. certain activities, food service processes, etc.) may be discontinued in order to allow for new and more effective techniques to be implemented into the program. At the end of the evaluation process, all results will be analyzed accordingly, and results will be presented to stakeholders appropriately.

**Evaluation Questions**

The goal of this evaluation is to assess the effectiveness of a F2S program implementation at increasing F/V intake and decreasing unhealthy food consumption in the students of a small, rural elementary school. The evaluation also aims to examine the sustainability of the F2S program's outcomes. In order to effectively conduct this assessment, the following questions will be addressed:

1. How have students' consumption of F/V and unhealthy foods (i.e. junk food, fast food, etc.) changed during lunchtime at school since the implementation of the program?
2. How have students' overall consumption of F/V and unhealthy foods changed outside of school since the implementation of the program?
3. How have students' attitudes about F/V and unhealthy foods changed since the implementation of the program?
4. To what extent have current F2S program activities been manageable in terms of planning and orchestrating events and activities and not creating disruptions in everyday school functions, classroom instructional time, and other daily activities?
5. To what extent have F2S program outcomes been sustainable?

**Stakeholders**

Stakeholders in this evaluation include students, parents/guardians, teachers, administrators, and cafeteria staff. In addition to providing insight into students' changed dietary behaviors regarding F/V and unhealthy food intake, students will provide insight into their attitudes regarding these dietary behavioral changes. Furthermore, parents/guardians, teachers, and cafeteria staff can provide information about students' dietary behavioral changes and attitudes. Information obtained from parents/guardians can help the evaluation team assess whether or not students' eating habits in school mirror their eating habits outside of school. Teachers as well as administrators can provide information regarding the program's effect on classroom instructional time and other daily activities. The cafeteria staff can also provide information on the manageability of F2S program activities. Obtaining information from representatives of all stakeholder groups will enable the evaluation team to better assess the current program's effectiveness at helping students to positively change their eating habits—much more so than could possibly be gleaned from surveying only certain groups of stakeholders. Furthermore, by including representatives from all stakeholder groups, the evaluators stand to obtain more accurate and reliable data by cross-checking and comparing responses across stakeholder groups.

**Design**

This evaluation will consist of a mixed-method design, whereby both qualitative and quantitative data will be collected by various different means according to each specific evaluation question. All data will be original. Obtaining quantitative data from a larger sample will provide the evaluation team with more reliable data. The qualitative data obtained in this

evaluation will provide the evaluation team with more detailed, specific information that could be important beyond data analysis and useful when planning for improvements to the program.

**Question 1: How have students' consumption of F/V and unhealthy foods changed during lunchtime at school?**

***Data sources, collection method, and participants.*** In order to assess this question, both qualitative and quantitative data will be obtained and analyzed. At the start of the evaluation period (before the F2S program is implemented), students, cafeteria staff, and teachers will be asked to complete a questionnaire concerning students' F/V intake and unhealthy food intake at lunchtime prior to the implementation of F2S. The questionnaire will also include questions concerning student's expressed attitudes about F/V prior to the implementation of F2S. Midway through the evaluation (1.5 years after the implementation of the F2S program) and then again at the end of the evaluation period (after the F2S program has been implemented and in use for three years), students, cafeteria staff, and teachers will be asked once again to complete the same questionnaire concerning students' F/V intake amounts at lunchtime and attitudes about F/V after F2S was implemented. Due to time constraints and limited resources, the questionnaire will be short (approximately 15 – 20 questions) and administered in a paper-based format to all parties.

In order to reduce bias in the results of the evaluation, incoming third grade students during subsequent years of the evaluation process will be excluded from the study. In other words, only those students who were enrolled in grades 3 – 5 at the elementary school during the time that the F2S program was implemented (August 2016) will be studied for the purposes of this evaluation. Whereas K – 2 grade students in the school district will have the opportunity to participate in F2S program activities, the evaluation team has chosen to omit data regarding these students from the evaluation analysis. Evaluation data cannot be properly and accurately

obtained from children so young due to their limited verbal and reading skills. Furthermore, surveying these students as they matriculate into third grade and beyond could introduce additional error into the evaluation's results as these students would have been exposed to F2S at much younger ages, and therefore could potentially exhibit dietary habits that are biased in favor of positive F2S outcomes.

Quantitative data will also be obtained through the use of plate waste observations. Prior to the implementation of the F2S program, the evaluation team will conduct plate waste observations whereby students' cafeteria trays are photographed before and after they have consumed lunch. These before and after photographs will be compared in order to determine an estimation of how much of each food group (i.e. fruit, vegetable, junk food) students consume during lunch. Whereas this method calls for much estimation, it can provide some information regarding students' consumption amounts. Due to time constraints, these plate waste observations will not be done for every student in grades 3-5. Instead, two classes from each grade will be randomly selected to undergo plate waste observations. These observations will take place during all data collection points throughout the evaluation process.

In addition to obtaining quantitative data through the use of questionnaires, qualitative data will also be obtained through the use of focus groups. Two focus group sessions will be held on school grounds on three different occasions throughout the evaluation process: one with teachers and one with cafeteria staff. Each focus group session will consist of about 4-6 members from each occupational group, and group sessions will last for approximately 30 minutes. Focus group members will be selected using convenience sampling techniques. Focus group sessions will be held either during school hours or immediately after school, and will be held at the start of the evaluation process, midway through the evaluation (1.5 years after the

implementation of the F2S program), and at the end of the evaluation process. Topics discussed in focus group sessions will include teachers' and cafeteria staff's observations of students' F/V and junk food intake during lunchtime prior to and after the implementation of the F2S program. During these sessions, participants will have an opportunity to voice their concerns and suggestions regarding students' nutrition. Only those parties who provide written consent to participate in the evaluation will complete the questionnaire and/or participate in the focus groups. Participation in the evaluation will be voluntary. Consent for students will be obtained from parents/guardians.

***Instruments, administration, and time frame.*** The evaluation will be carried out over the course of three academic years, starting in August of 2016, and ending in May of 2019. The questionnaires will be developed by the evaluators prior to the start of the evaluation (Appendix B). There will be a questionnaire developed specifically for each group (i.e. teachers, students, parents/guardians, and cafeteria staff). Because the school and its surrounding area has limited computer and internet access, the questionnaires will administered by the evaluation team in a paper-based format. Data will be collected at three different periods during the evaluation: at the start, midway through, and at the end. At each of these three periods or stages, both quantitative (questionnaire and plate waste) data and qualitative (focus group) data will be collected. Participants will have two weeks to complete questionnaires before they are collected by the evaluation team at each data collection stage of the evaluation process. Individuals participating in the focus groups are subject to change at each data collection period, and convenience sampling techniques will be used to select participants from a pool of willing individuals. Focus groups will be led by the evaluation team. The focus group discussions will be semi-unstructured, with only a short list of questions used to guide the discussion.

***Data analysis and expected results.*** Analysis of quantitative data will consist of an ANOVA, whereby the mean scores for each topic (i.e. daily fruit consumption, daily vegetable consumption, daily junk food consumption, etc.) will be determined for each data collection stage and compared to the mean score of its corresponding topic during each of the other two data collection stages in order to look for differences in students' intake levels before F2S implementation, one and half years into the program implementation, and three years into the program's implementation. Data plots and Cohen's d will also be examined in order to look for correlations, trends, and differences in students' intake at each data collection stage. Analysis of qualitative data will consist of transcribing recorded focus group sessions, creating a coding scheme, looking for themes in participants' comments, and noting concerns and suggestions regarding students' observed eating habits during lunchtime at school.

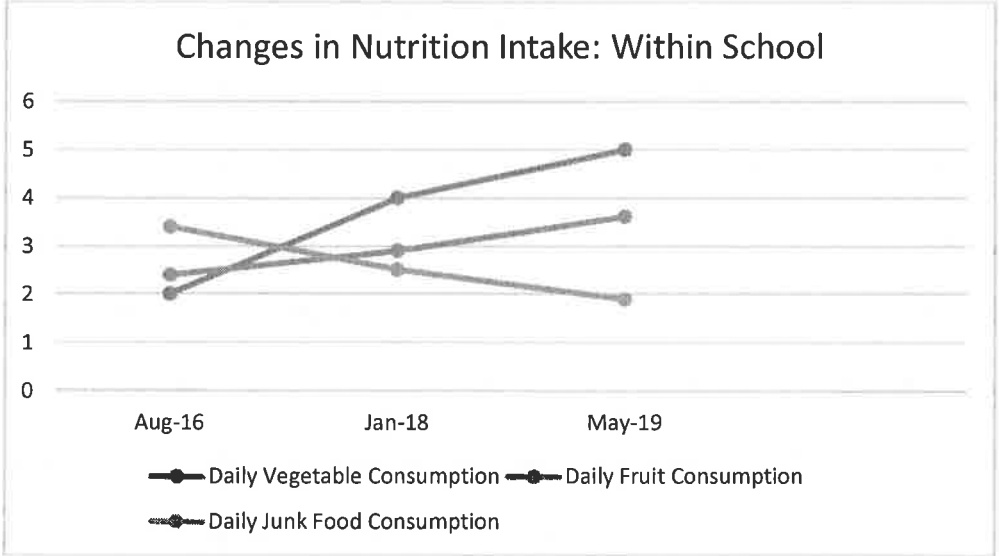



*Figure 1. Example of expected results for question 1*

**Question 2: How have students' overall consumption of F/V and unhealthy foods changed outside of school?**

***Data sources, collection method, and participants.*** This question will be assessed in the same way as Question 1, using both qualitative and quantitative methods. However, because this question assesses student's eating habits outside of school, this part of the evaluation will include parents/guardians and students as participants, instead of cafeteria staff and teachers. Data will be collected from parents/guardians and students in the same manner as it will be collected from the participant groups for Question 1. Parents/guardians will be asked to complete questionnaires at three different checkpoints during the evaluation process, and parents will be asked to volunteer to participate in parent-centered focus groups at each stage of the evaluation process. Parent/guardian-centered focus group participants are subject to change at each stage of the evaluation, and will be selected using convenience sampling. Topics discussed in the focus group sessions will include parents' observations of their children's F/V and junk food intake at home prior to and after the implementation of the F2S program. During these sessions, parents/guardians will have an opportunity to voice their concerns and suggestions regarding their children's nutrition. During the last two years of the evaluation, there will be two focus group sessions held for parents/guardians: one at the elementary school and one at the middle school. This will be done for convenience in location purposes since students who have matriculated to middle school will continue to be included in the evaluation during the last two years of the process. Only those parties who provide written consent to participate in the evaluation will complete the questionnaire and/or participate in the focus groups.

***Instruments, administration, and time frame.*** As stated earlier, the evaluation will be carried out in three different stages over the course of three academic years. Because the school

is located in a rural area, it is expected that some households may have limited availability to internet access. Therefore, the questionnaire for parents/guardians will be sent home in a paper-based format by students. Parent/guardian participants will have two weeks to complete questionnaires and return them to school at each data collection stage of the evaluation. All focus group sessions will be held on school grounds either during school hours or immediately after school.

***Data analysis and expected results.*** Analysis of quantitative data will consist of an ANOVA, whereby the mean scores for each topic (i.e. daily fruit consumption, daily vegetable consumption, daily junk food consumption, etc.) will be determined at each data collection stage and compared to the mean score of its corresponding topic during each of the other two data collection stages in order to look for differences in students' food intake levels outside of school before F2S implementation, one and half years into the program implementation, and three years into the program's implementation. Data plots and Cohen's d will also be examined in order to look for correlations, trends, and differences in students' intake at each data collection stage. Analysis of qualitative data will consist of transcribing recorded focus group sessions, creating a coding scheme, looking for themes in participants' comments, and noting concerns and suggestions regarding students' observed eating habits outside of school. In addition to examining the changes in students' eating habits outside of school over the course of the evaluation, changes in students' out of school eating habits will be compared to students' in-school eating habits in order to assess the program's ability to influence changes in eating habits beyond the school setting.

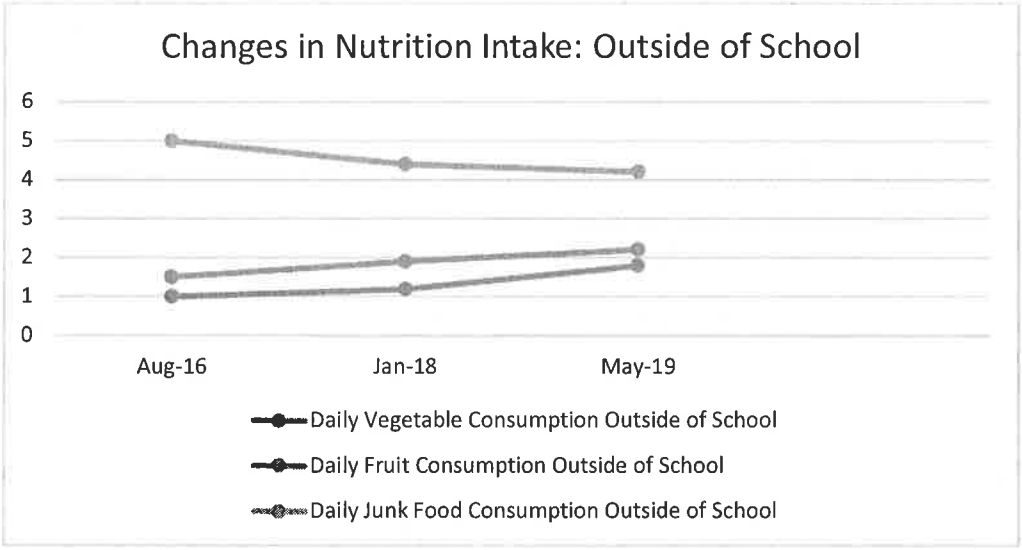



*Figure 2. Example of expected results for question 2*

**Question 3: How have students' attitudes about F/V and unhealthy foods changed?**

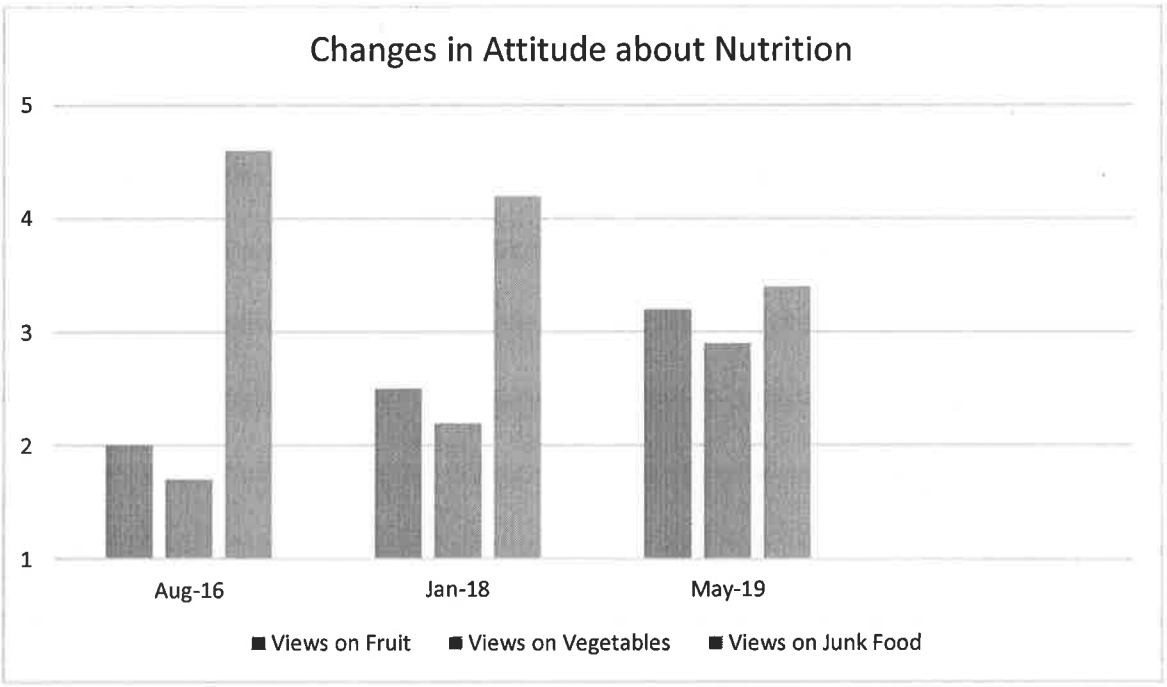
***Data sources, collection method, and participants.*** Similar to Questions 1 and 2, this question will be assessed using both quantitative and qualitative data obtained from students, parents/guardians, cafeteria staff, and teachers. This question will be addressed, along with Questions 1 and 2, on the questionnaire administered to students, parents/guardians, cafeteria staff, and teachers. This question will also be addressed during focus groups with teachers, parents/guardians, and cafeteria staff, during which time Questions 1 and 2 will also be addressed. However, for this Question 3, student-centered focus groups will also be conducted in order to gain first-hand, in-depth information concerning students' attitudes about F/V and unhealthy foods. The focus group procedure for students will be the same as that for other participant groups. Four to six students will be selected based on convenience and availability from the pool of students whose parents/guardians provide consent for their children to participate in the evaluation data collection process. The focus group session will be led by a member of the evaluation team, and held on school grounds either during school hours or

immediately after school. Student-centered focus group sessions will be held at three different periods during the evaluation process, and each will last for approximately 30 minutes.

Whereas student-centered focus groups will not be used to collect data from students in regard to Questions 1 and 2, the evaluation team deems it beneficial to use such measure for addressing Question 3. Concerning Questions 1 and 2, students may feel pressured or expected to report positive behavioral changes in regard to their dietary habits due to their knowledge of certain foods (i.e. F/V) being more favored by adults than certain other foods (i.e. unhealthy foods). Therefore, while students may feel more comfortable reporting their dietary intake in an anonymous survey, they may not be so forthcoming with accurate information if questioned about their dietary habits face-to-face. Concerning Question 3, however, students may feel more comfortable expressing their thoughts and feelings about F/V in a face-to-face setting because it is simply their opinion. Therefore, by using student-centered focus groups, the evaluation team stands to gain more in-depth information regarding students' nutrition attitudes than might be obtained from student questionnaires alone.

***Instruments, administration, and time frame.*** The same instruments and protocol used for data collection concerning Questions 1 and 2 will be used for data collection regarding Question 3. However, during the last two years of the evaluation, there will be two focus group sessions held for both parents/guardians and students: one at the elementary school and one at the middle school. This will be done for convenience in location purposes since students who have matriculated to middle school will continue to be included in the evaluation during the last two years of the process. Still, focus group sessions will be held on school grounds either during or immediately after school hours.

***Data analysis and expected results.*** Analysis of Question 3 data will coincide with the analysis of data collected in regard to Questions 1 and 2. ANOVA, data plots, and Cohen's d will be used to analyze quantitative data, and analysis of qualitative data will be done using a coding scheme in order to look for themes in participants' comments.




*** *1 = Least Favorable, 5 = Most Favorable*

*Figure 3. Example of expected results for question 3*

**Question 4: To what extent have current F2S program activities been manageable in terms of planning and orchestrating events and activities and not creating disruptions in everyday school functions, classroom instructional time, and other daily activities?**

***Data sources, collection method, and participants.*** In order to access this question, qualitative and quantitative data will be obtained from teachers. This question will be addressed on the questionnaire administered to teachers along with Questions 1 and 3, as well as during the teacher-centered focus groups. In addition to collecting data from teachers, qualitative data will

be obtained from school administrators/principals. The school's vice principal and/or principal will be interviewed one-on-one by a member of the evaluation team in order to gain his/her perspective on the F2S program in regard to whether or not the program has caused any distractions to the school's everyday routines and procedures.

***Instruments, administration, and time frame.*** The same instruments and protocol used for data collection involving the first three questions of the evaluation will be used for data collection regarding Question 4, with a few additions and changes. Survey questions regarding the manageability of the program will not be included on questionnaires during the first evaluation phase. Because the program will not have been implemented at that time, it would be impossible for teachers to answer questions concerning the effects of the program on classroom and other school activities and functions. Therefore, questions regarding the program's manageability will only be included on teacher questionnaires during the second and third data college stages of the evaluation.

In addition, school principal(s) will be interviewed one-on-one using similar techniques as those used during focus groups. An evaluation team member will use a set of guiding questions to gain information from the administrator(s) regarding his/her views about the F2S program's benefits, drawbacks, potential, and manageability in terms of planning and orchestrating program activities in the school's everyday routines and functions. Administrator(s) will be interviewed during each of the last two stages of the evaluation process. Interviews will be held on school grounds either before school, during school, or immediately after school at the convenience of the administrator(s). Interviewing sessions, which will last for approximately 30 minutes, will be done during the second and third data collection stages of the evaluation process but not during the first. As stated earlier, it would be impossible for

stakeholders to answer questions regarding the program's manageability before the program has been implemented. No quantitative data will be collected from the administrator(s).

***Data analysis and expected results.*** Analysis of quantitative data obtained from teacher questionnaires will be analyzed using ANOVA, data plots, and Cohen's d. Qualitative data will be analyzed using a coding scheme method whereby themes in participants' comments are determined and evaluated.

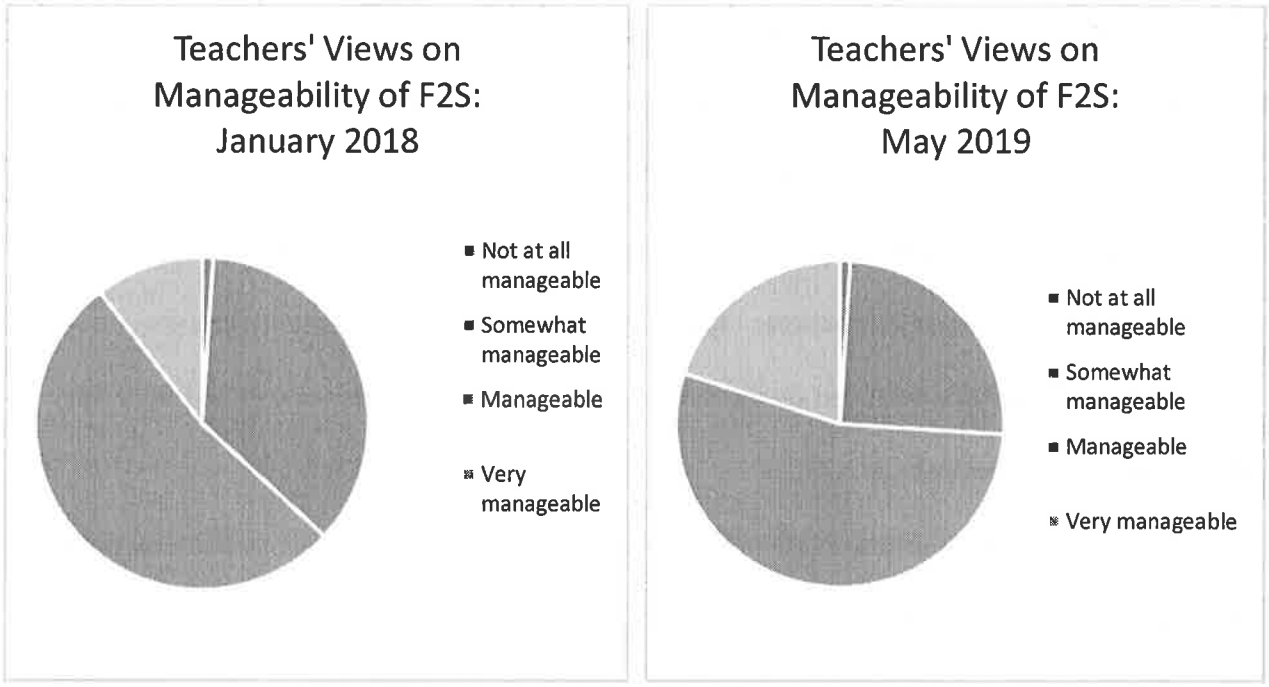



*Figure 4. Example of expected results for question 4*

**Question 5: To what extent have F2S program outcomes been sustainable?**

***Data sources, collection method, and participants.*** In order to assess this question, both qualitative and quantitative data will be obtained from students and parents/guardians. Students who matriculate from the elementary school and move on to middle school during the evaluation process will continue to be followed and studied in order to determine if the program's outcomes are long lasting and if students' dietary behavioral changes continue even as they get older and

are no longer involved in F2S activities. In other words, students who are in fifth grade at the start of the evaluation will continue to be studied until they are in seventh grade; students who are in fourth grade at the start of the evaluation will continue to be studied until they are in sixth grade; and students who are in third grade will continue to be studied until they are in fifth grade. Therefore, only data on students who were in grades 4 and 5 at the start of the evaluation will be used to address this question. Whereas the same individual students are not expected to participate in focus groups and complete questionnaires at each stage of the evaluation process, it is expected that students representing each cohort will participate. While all schools in the district will serve fresh, locally grown produce, which is a major component of F2S, only the school district's elementary schools (grades K – 5) will participate in F2S activities, such as going on farm tours, planting school gardens, and obtaining nutrition education during physical education and/or health class, due to the district's financial constraints and research suggesting that early nutrition intervention is the most effective.

Students, whose parents have consented for them to participate in the evaluation, will be administered the same questionnaire at each of the three data collection stages of the evaluation. The same data collection procedures for Questions 1 – 3 will be followed for obtaining data for Question 5. Likewise, parents/guardians will be asked to complete questionnaires as discussed for Questions 2 – 3. Furthermore, parents/guardians will be selected to participate in parent-centered focus groups at each evaluation stage as discussed for Questions 2 – 3. Teachers, administrators, and cafeteria staff of matriculated middle school students will not be surveyed.

***Instruments, administration, and time frame.*** The same procedures for administering questionnaires and conducting focus groups will be used for assessment of this question. Individuals participating in the focus groups are subject to change at each data collection period.

During the last two years of the evaluation, there will be two focus group sessions held for both parents/guardians and students: one at the elementary school and one at the middle school. This will be done for convenience in location purposes since students who have matriculated to middle school will continue to be included in the evaluation during the last two years of the process. However, focus group sessions will still be held on school grounds either during or immediately after school hours.

***Data analysis and expected results.*** Analysis of data will coincide with the analysis process discussed for previous questions. However, analysis of data addressing this question will strictly look at the dietary intake of students who have matriculated out of the F2S program (i.e. those students who were fourth and fifth graders when the evaluation process began).

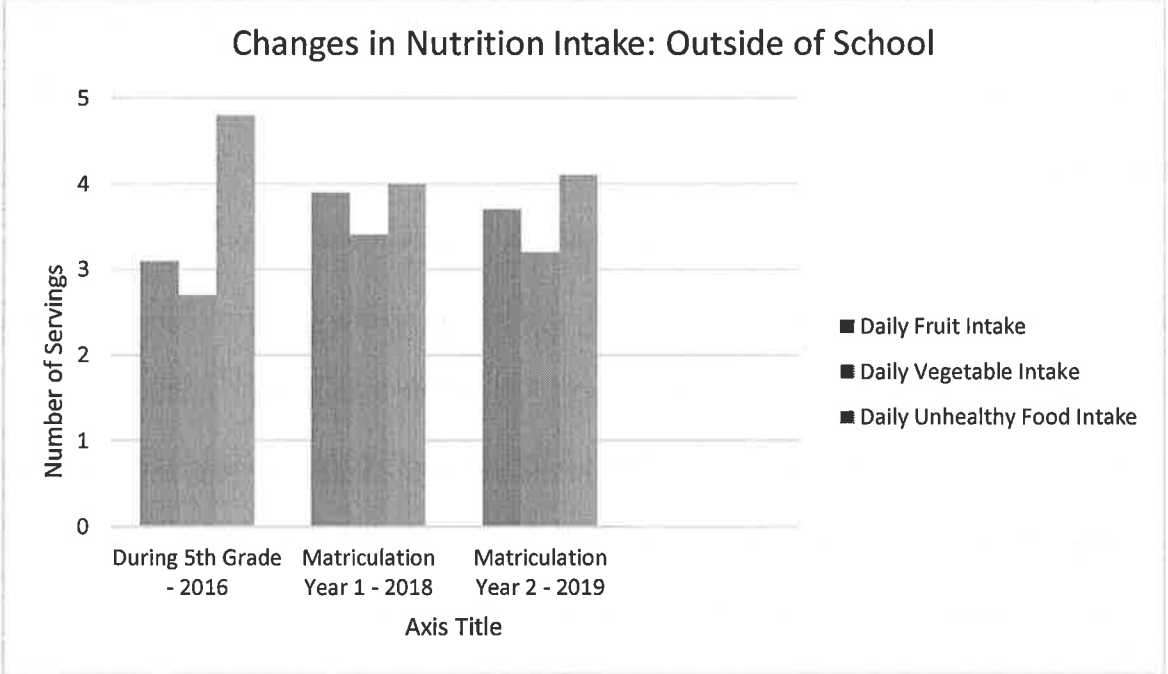



*Figure 5. Example of expected results for question 5*

**Discussion**

At the conclusion of the three-year evaluation period, all data will be analyzed in accordance with each evaluation question. Results will be presented to stakeholders in several different ways. A full, written report format will be presented to the Child Nutrition Director and administrators, and it will be available for viewing by anyone else upon request only. A presentation format of the evaluation results will also be presented to the Child Nutrition Director and cafeteria staff during an already scheduled, mandatory meeting for these individuals. A presentation format will be presented to school and district administrators as well as teachers during an already scheduled, mandatory teacher/administrator meeting. Parents/guardians will be made aware of the evaluation results using a presentation format to be presented during a PTA meeting. Also, a letter and/or flyer format will be presented to teachers, parents/guardians, and cafeteria staff. It will be sent home to parents by students and distributed to teachers and cafeteria staff at school. Students will not be made directly aware of the results of the evaluation.

There are expected barriers to the evaluation. These barriers include participant attrition, social desirability bias, and time/curriculum. The flow of students into and out of the school due to students and families moving about during the evaluation process could lead to inconsistencies in the results. For instance, students who begin the F2S program may move away during the evaluation process—meaning that data concerning their progress in the program would not be collected. Conversely, students may move into the school system after the evaluation process has begun—meaning that baseline information for these students will not have been collected and their exposure to the F2S program will not have been as long as that of other students. Furthermore, some participants may answer survey questions based on what they believe are

acceptable answers instead of answering the questions based on their own personal views and experiences. Moreover, due to other curriculum requirements and limited time, some teachers may not actively engage in F2S activities with students to the extent to which the program suggests for optimal benefits. This reduced engagement in program activities could diminish the impact of the program.

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References

Azuma, A. M., & Fisher, A. (2001). *Healthy farms, healthy kids: Evaluating the barriers and opportunities for farm-to-school programs*. Informally published manuscript, Sustainable Agriculture Research and Education Program, University of California, Venice, CA, Retrieved from http://mda.maryland.gov/farm_to_school/Documents/HealthyFarmsHealthyKids.pdf

Cirignano, S. S., Ensle, K. K., Morgan, K. K., Fisher-Maltese, C. C., Grenci, A. A., & Hughes, L. L. (2012). Identifying implementation of farm-to-school practices to promote interest and availability of local produce in schools. *Journal of the Academy Of Nutrition & Dietetics*, *112*A82. doi:10.1016/j.jand.2012.06.295

Colasanti, K. A., Matts, C., & Hamm, M. W. (2012). Results from the 2009 Michigan farm to school survey: Participation grows from 2004. *Journal of Nutrition Education & Behavior*, *44*(4), 343-349. doi:10.1016/j.jneb.2011.12.003

Scherr, R. E., Cox, R. J., Feenstra, G., & Zidenberg-Cherr, S. (2013). Integrating local agriculture into nutrition programs can benefit children's health. *California Agriculture*, *67*(1), 30-37. doi:10.3733/ca.v067n01p30

Schneider, L., Chriqui, J., Nicholson, L., Turner, L., Gourdet, C., & Chaloupka, F. (2012). Are farm-to-school programs more common in states with farm-to-school-related laws?. *Journal of School Health*, *82*(5), 210-216. doi:10.1111/j.1746-1561.2012.00689.x

Taylor, J. C., & Johnson, R. K. (2013). Farm to school as a strategy to increase children's fruit and vegetable consumption in the united states: Research and recommendations. *Nutrition Bulletin*, *38*(1), 70-79. doi:10.1111/nbu.12009

Tuck, B., Haynes, M., King, R., & Pesch, R. (2010). *The economic impact of farm-to-school*

*lunch programs: A central Minnesota example*. Manuscript submitted for publication, Department of Applied Economics, University of Minnesota, Minneapolis, MN, Retrieved from http://www.misa.umn.edu/prod/groups/cfans/@pub/@cfans/@misa/documents/asset/cfans_asset_289518.pdf

Appendix A

*Table 1*
*Summary of evaluation plan*

| | Question 1 | Question 2 | Question 3 | Question 4 | Question 5 |
|---|---|---|---|---|---|
| **Participants/ Information Source** | Students<br>Cafeteria Staff<br>Teachers | Students<br>Parents/Guardians | Students<br>Parents/Guardians<br>Teachers<br>Cafeteria Staff | Teachers<br>Administrators | Students<br>Parents/Guardians |
| **Sampling** | Convenience | Convenience | Convenience | Convenience | Convenience |
| **Design** | Time Series; Descriptive | Time Series; Descriptive | Time Series; Descriptive | Time Series; Descriptive | Time Series; Descriptive |
| **Data Collection Methods/ Instruments** | Questionnaire for Students, Cafeteria Staff, and Teachers; Focus Groups for Cafeteria Staff and Teachers | Questionnaire for Students and Parents/Guardians; Focus Group for Parents/Guardians | Questionnaire for Students, Parents/Guardians, Teachers, and Cafeteria Staff; Focus Groups for All (including Students) | Questionnaire for Teachers; Focus Group for Teachers; One-on-one Interview for Administrator(s) | Questionnaire for Parents/Guardians and Students; Focus Groups for Parents/Guardians and Students |
| **Data Collection Instrument Content/ Information Required** | Students' consumption of F/V and unhealthy foods during lunchtime | Students' consumption of F/V and unhealthy foods outside of school | Students' attitudes about F/V and unhealthy foods | Manageability in terms of planning and orchestrating F2S events and activities | Students' consumption of F/V and unhealthy foods outside of school |
| **Data Collection Procedure** | Evaluation team conducts focus groups; disseminates questionnaires to school(s) and collects them | Evaluation team conducts focus groups; disseminates questionnaires to school(s) and collects them | Evaluation team conducts focus groups; disseminates questionnaires to school(s) and collects them | Evaluation team conducts focus groups; disseminates questionnaires to school(s) and collects them | Evaluation team conducts focus groups; disseminates questionnaires to school(s) and collects them |
| **Time Frame** | August 2016<br>January 2018<br>May 2019 | August 2016<br>January 2018<br>May 2019 | August 2016<br>January 2018<br>May 2019 | January 2018<br>May 2019 | August 2016<br>January 2018<br>May 2019 |
| **Data Analysis** | ANOVA<br>Data Plotting<br>Cohen's d | ANOVA<br>Data Plotting<br>Cohen's d | ANOVA<br>Data Plotting<br>Cohen's d | ANOVA<br>Data Plotting<br>Cohen's d | ANOVA<br>Data Plotting<br>Cohen's d |
| **Audience** | Parents;<br>Child Nutrition Program Director;<br>School and District Administrators | Parents;<br>Child Nutrition Program Director;<br>School and District Administrators | Parents;<br>Child Nutrition Program Director;<br>School and District Administrators | School and District Administrators;<br>Child Nutrition Program Director | Parents;<br>Child Nutrition Program Director;<br>School and District Administrators |

Appendix B

Farm-to-School Student Questionnaire

**Eating At School**

1. Do you eat fruit at school?

No Yes

2. How much fruit do you eat at school each day?

1 piece 2 pieces 3 pieces 4 pieces 5 or more pieces

3. List all the fruits you eat at school.

4. Do you eat vegetables at school?

No Yes

5. How many vegetables do you eat at school each day?

½ cup 1 cup 1-1/2 cups 2 cups More than 2 cups

6. List all the vegetables you eat at school.

7. Circle the following foods you eat at school each day.

Chips Candy Soda Pizza

Cookies Ice Cream Cake French Fries

**Eating at Home**

1. Do you eat fruit at home?

No Yes

2. How much fruit do you eat at home each day?

1 piece 2 pieces 3 pieces 4 pieces 5 or more pieces

3. List all the fruits you eat at home.

4. Do you eat vegetables at home?

No Yes

5. How many vegetables do you eat at home each day?

½ cup 1 cup 1-1/2 cups 2 cups More than 2 cups

6. List all the vegetables you eat at home.

7. Circle the following foods you eat at home each day.

| | | | |
|---|---|---|---|
| Chips | Candy | Soda | Pizza |
| Cookies | Ice Cream | Cake | French Fries |

8. On a scale of 1 – 10, how much do you like fruit?

1 2 3 4 5 6 7 8 9 10

9. On a scale of 1 – 10, how much do you like vegetables?

1 2 3 4 5 6 7 8 9 10

10. On a scale of 1 – 10, how much do you like junk food?

1 2 3 4 5 6 7 8 9 10

Farm-to-School

Parent Focus Group Question Guide

1. Do you think that your child eats healthy when they are at home?

2. Do you have a difficult time getting your child to eat vegetables and fruits?

3. Do you think that your child eats enough vegetables and fruits?

4. How do you feel about your child's junk food consumption?

5. Do you try to limit your child's junk food consumption? How?

6. How do you try to get your child to eat vegetables and fruits?

7. Are you concerned about your child's eating habits?

8. How much influence do you think the school has or should have on getting your child to eat healthier?

9. Did you know that your school was adopting a Farm to School Program?

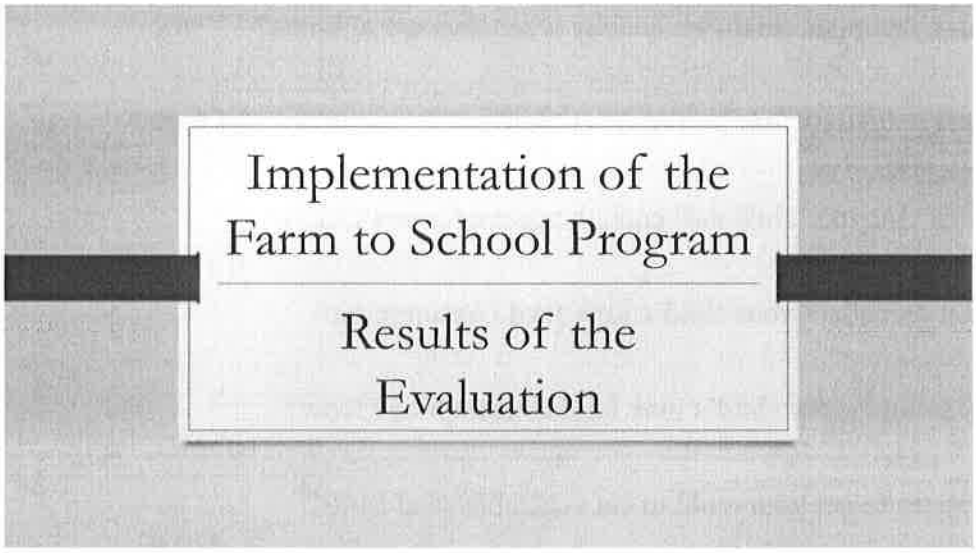
10. Do you know what the Farm to School Program is?

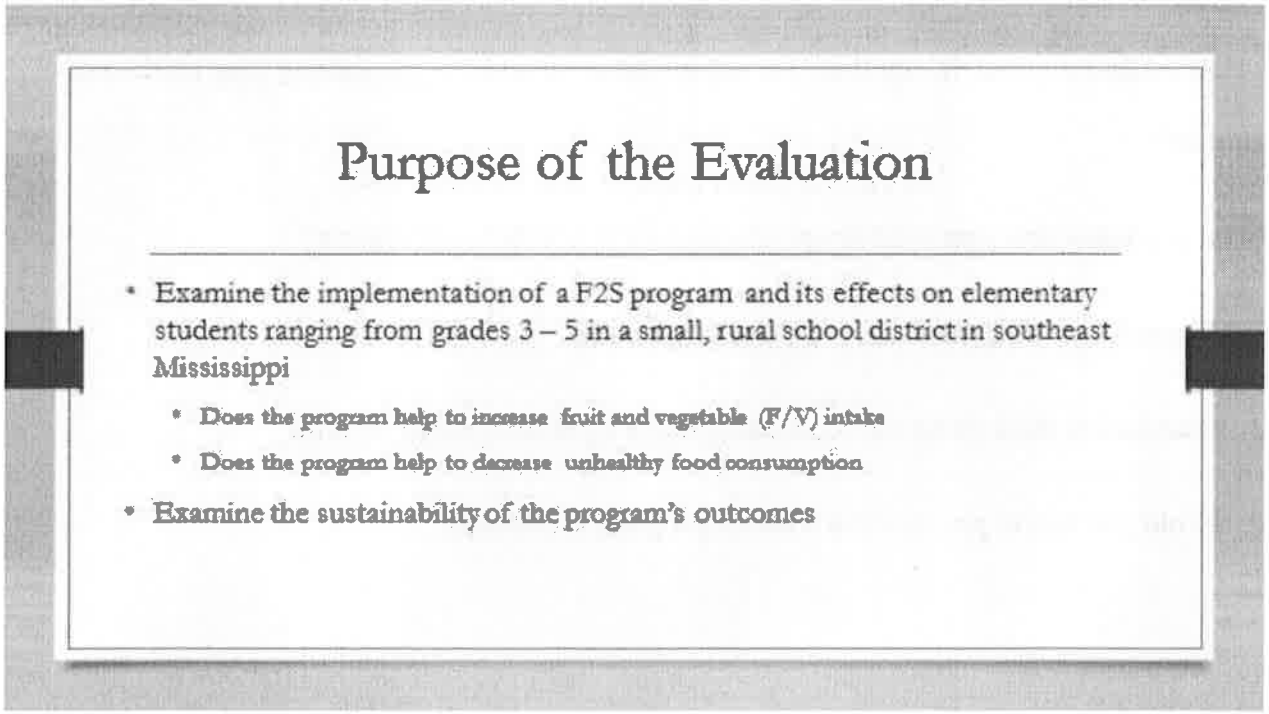
11. What do you think about the school adopting a Farm to School Program?

12. Would you like to get involved with the program somehow?

Appendix C

Example of Dissemination of Results



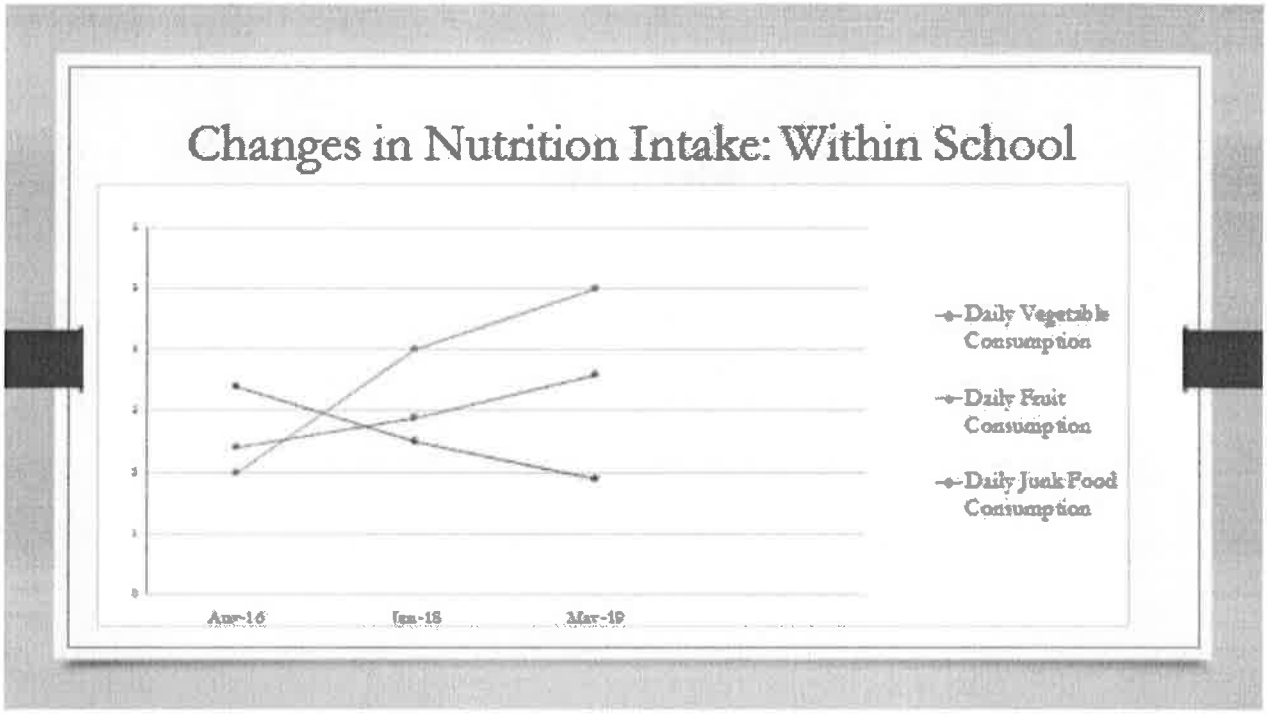



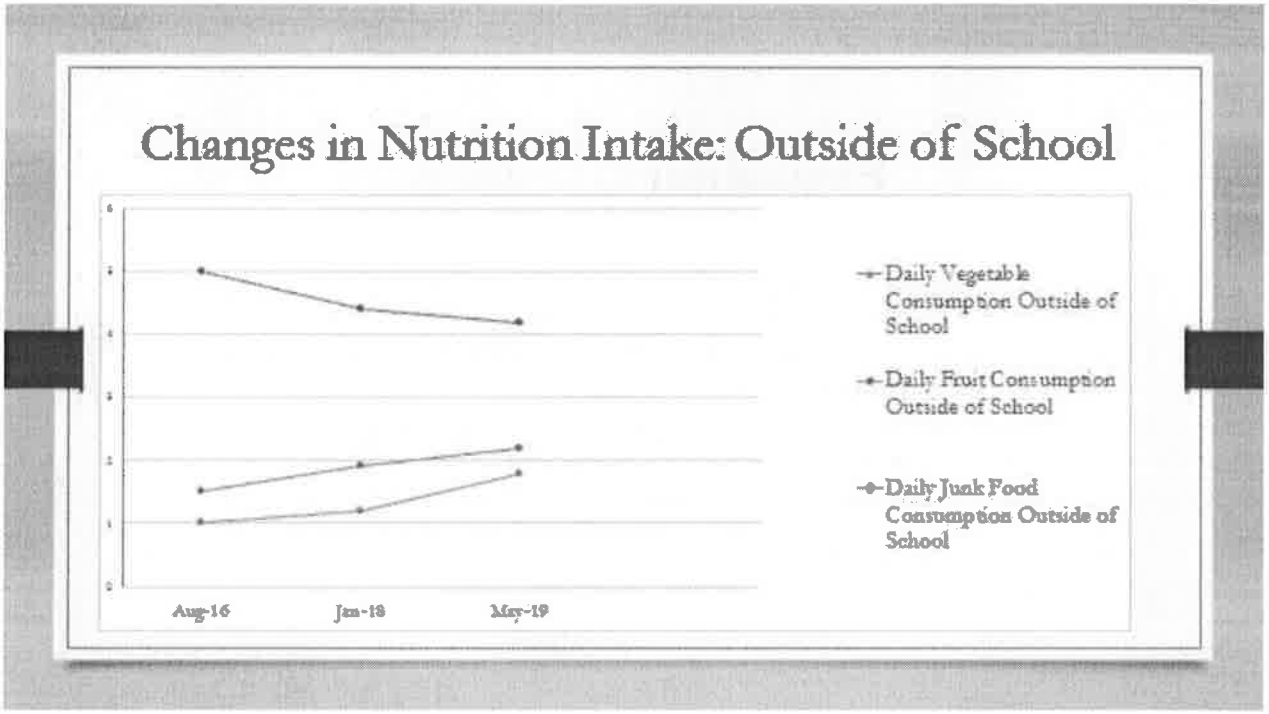
## Methods

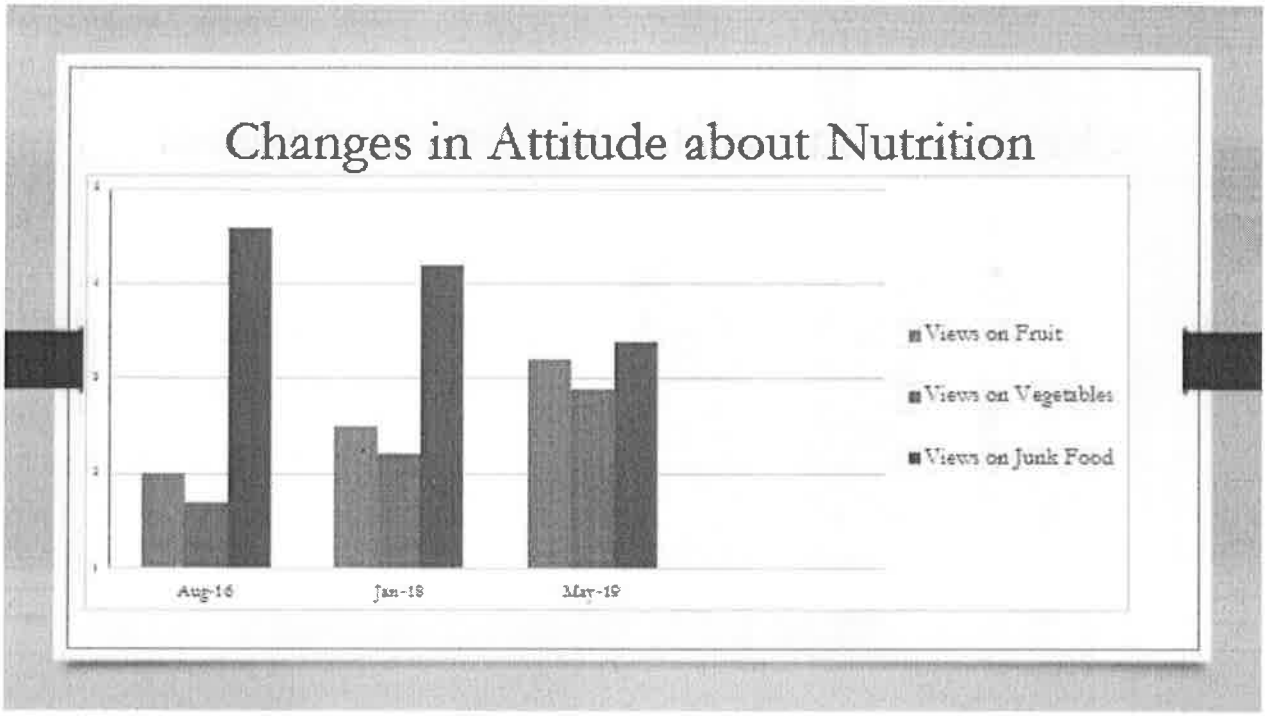
- **Evaluation Team – 3 local university graduate students and 2 faculty members collected and analyzed all data as well as presented all results**
- **Time Frame - Carried out over the course of three academic years**
  - **August 2016 - May 2019**
- **Both qualitative (focus groups) and quantitative (paper-based questionnaires) data collection methods used**
- **Participants – Students, parents/guardians, teachers, cafeteria staff, administrators**

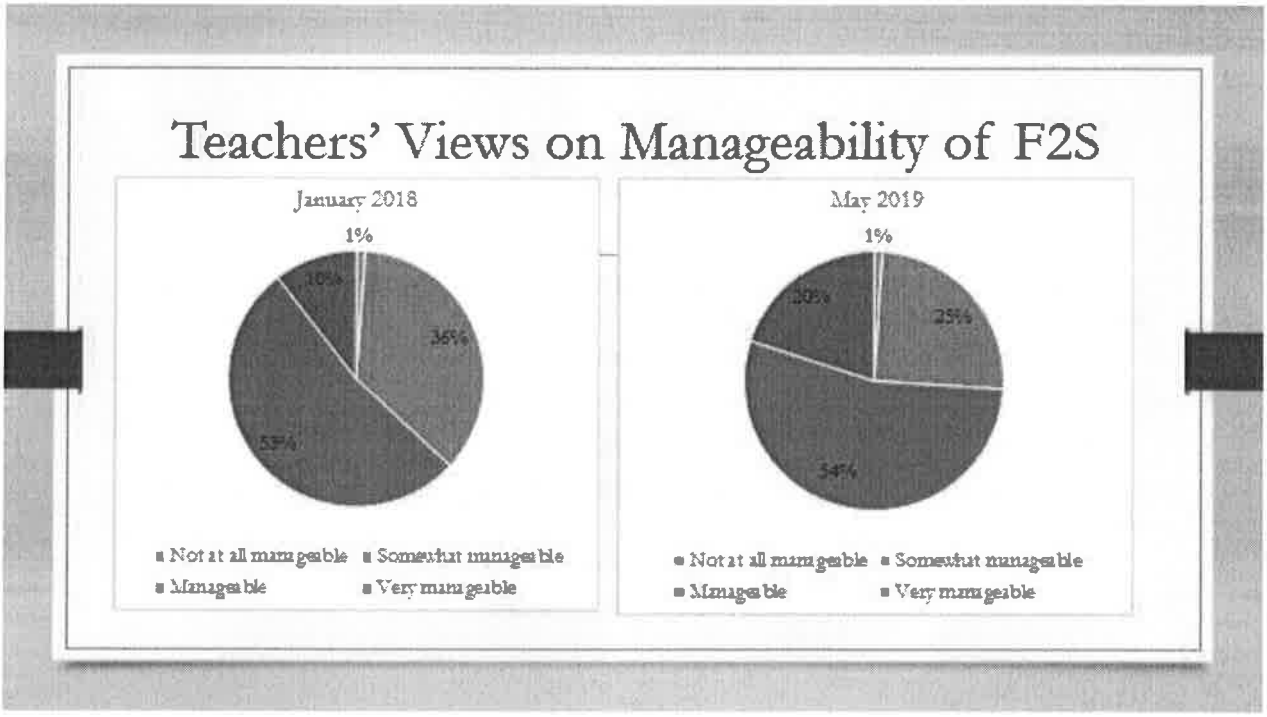
## Evaluation Questions

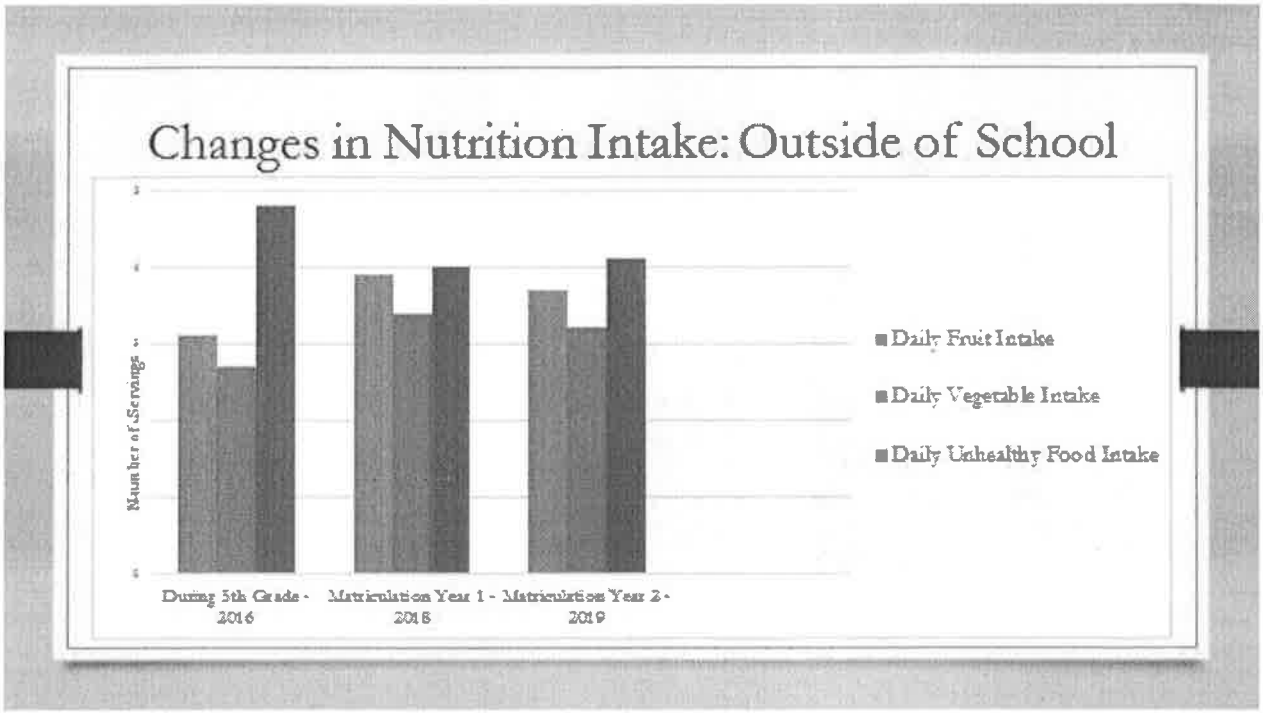
- How have students' consumption of F/V and unhealthy foods (i.e. junk food, fast food, etc.) changed during lunchtime at school since the implementation of the program?
- How have students' overall consumption of F/V and unhealthy foods changed outside of school since the implementation of the program?
- How have students' attitudes about F/V and unhealthy foods changed since the implementation of the program?
- To what extent have current F2S program activities been manageable in terms of planning and orchestrating events and activities and not creating disruptions in everyday school functions, classroom instructional time, and other daily activities?
- To **what extent have** F2S program outcomes been **sustainable**?


Changes in Nutrition Intake: Within School
Daily Vegetable Consumption
Daily Fruit Consumption
Daily Junk Food Consumption
Aug-16
Jan-18
May-19


Changes in Nutrition Intake: Outside of School
Daily Vegetable Consumption Outside of School
Daily Fruit Consumption Outside of School
Daily Junk Food Consumption Outside of School
Aug-16
Jan-18
May-19


Changes in Attitude about Nutrition
Aug-16
Jan-18
May-19
Views on Fruit
Views on Vegetables
Views on Junk Food


Teachers' Views on Manageability of F2S
January 2018
1%
10%
36%
53%
May 2019
1%
20%
25%
54%
Not at all manageable
Somewhat manageable
Manageable
Very manageable




## Conclusions

- An increase in fruit and vegetable consumption was observed among students following the implementation of the F2S program
  - Both within and outside of the school environment
- A decrease in junk food consumption was also observed
  - Both within and outside of the school environment
- Changes in dietary habits were observed beyond matriculation out of the program (with some exception)
  - Positive improvements to dietary habits continued beyond matriculation
- Program activities were found to be manageable to teachers