



Arizona
Fruits and Veggies More Matters™
Class Evaluation

2008-2009

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Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Table of Contents

Executive Summary3

Introduction.....4

Methods.....4

Results5

Coconino County.....8

Maricopa County11

Mohave County14

Navajo County.....17

Washington Elementary School District.....20

Yuma County23

Appendix A26

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Executive Summary

- The overall goal of the Fruits and Veggies More Matters™ (FVMM) classes is to provide community and school-based nutrition services to low-income children and their families.
- The FVMM™ curriculum is targeted at 3rd grade students and teaches the importance of including fruits and vegetables in a well-balanced diet.
- During the 2008-2009 school year, a total of 5,369 students participated in the FVMM™ classes.
 - There was a 36% decrease in participation.
 - All of the participating schools surveyed had at least 50% of students receiving a free or reduced lunch through the National School Lunch Program.
 - Most (81.2%) students were in third grade.
- After completion of the FVMM™ classes, students were significantly:
 - More likely to have consumed vegetables on the previous day.
 - More likely to have consumed beans on the previous day.
 - More likely to report that they would pick low fat, fat free or skim milk
 - Less likely to have consumed white bread on the previous day.
 - Less likely to have consumed French fries or chips on the previous day.
 - Less likely to have consumed regular sodas or soft drinks on the previous day.

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Introduction

Since 1998 the Arizona Department of Health Services (ADHS) Community Nutrition Class has been providing funding to local agencies (Partners) to provide community and school-based nutrition services to low-income children and their families. The Arizona Department of Health Services has evaluated this class by administering pre- and post-surveys each year since 1999. From 1999 to 2008, the surveys measured the improvement in knowledge produced by this school-based class. For the 2008-2009 school year, a new survey instrument measuring changes in eating behaviors was used. For the 2008-2009 school year, budget restrictions resulted in the funding for this class to be cut. Partners were still able to utilize the Fruits and Veggies More Matters™ curriculum by utilizing funding from the previous school year. For Fiscal Year 2010, partners will be able to continue to utilize the curriculum by incorporating the costs into their LIA budget.

Class Objectives

Pre-survey data in first through fourth grade classrooms of qualifying schools was collected prior to the presentation of a four part curriculum. The survey contains questions regarding a student's eating behaviors on the previous day.

The objectives of the lesson plan were to provide information on:

- 1) Identify the recommended amount of fruits and vegetables to eat every day.
- 2) Identify the benefits of meeting these recommendations.
- 3) The benefits and types of foods that contain fiber.
- 4) The benefits and types of foods that contain vitamins A and C.
- 5) Recognize where in the grocery store fruits and vegetables are located.
- 6) How to make a snack with fruits or vegetables.
- 7) Identify at least two fruits and or/vegetables on their school cafeteria menu or the Fruits and Veggies More Matters™ Café menu.

Lesson plans also include a produce field trip to a local grocery store, or a grocery store tour video. Following the completion of the Fruits and Veggies More Matters™ (FVMM™) classes, students were given a post-survey. The questions were identical on pre- and post-surveys.

Methods

A weighted random sample of classrooms receiving the FVMM™ classes was selected based on the number of students served by each Partner during the previous school year. All students in the randomly selected classrooms were asked to complete a pre-survey prior to the first session, and a post-survey upon completion of the class series. The surveys were not matched, as no identifying information regarding the respondent was collected on the survey. The survey contained questions regarding a student's eating behaviors on the previous day. An example of the survey is provided in Appendix A. For questions related to frequency of eating certain foods, an independent t-test was run to

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

compare the mean amount of foods eaten between pre- and post-surveys. For questions related to type of milk and if the student ate breakfast, odds ratios were calculated in order to determine if there was a statistically significant change in behavior from pre- to post-survey. The odds ratios can be interpreted as the student was x times more likely to engage in the desired behavior on the post-survey after attending the FVMM™ lessons. Odds ratios less than one indicate that a student was less likely to have engaged in the desired behavior on the post-survey. P-values based on the statistical tests were calculated and were considered statistically significant at the <0.05 level. All surveys were submitted to the Arizona Nutrition Network in the Bureau of USDA Nutrition Programs at the Arizona Department of Health Services. The surveys were entered into Microsoft Access and analyzed using SPSS 16.0. As this is the first year of data collection utilizing this new survey, results from this year should not be compared to results from previous years.

Results

Table 1. Characteristics of Arizona Students Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009		
Characteristic	Number of Students	Percent of Total
Total Number of Students Participating in the FVMM Classes	5,369	
Survey		
Pre-survey	1,399	50.1
Post-survey	1,396	49.9
Participating Schools	46	
Income Schools with more than 50% of students receiving a free or reduced lunch	46	100%
Grade*		
2 nd grade	273	19.5%
3 rd grade	1,126	80.5%
Gender*		
Boy	701	50.1
Girl	678	48.5
Undefined	20	1.4
Total Pre-/Post-Surveys Received	2,795	

*Descriptive statistics are based on the highest number of students who took the pre- or post-survey.

During the 2008-2009 school year 2,795 pre- and post-surveys were completed. This breaks down to 1,399 pre-surveys and 1,396 post-surveys. A total of 5,369 students participated in the FVMM™ classes, reaching approximately 2,965 less students than the 2007-2008 school year. This translates into a 36% decrease in participation. All participating schools surveyed had at least 50% of students receiving a free or reduced cost lunch through the National School Lunch Program. Most (80.5%) students were in third grade, but the curriculum was also provided to some second grade students (19.5%).

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Tables 2 and 3 show Arizona student's eating behaviors before and after participating in the FVMM™ classes. The average age of a student participating in the class was 8.47 on pre-survey and 8.55 on post-survey. Five questions showed a statistically significant change from pre- to post-survey. Students were significantly less likely to have eaten white bread on the previous day, with students eating white bread 1.12 times on the pre-survey, decreasing to 1.02 times on the post-survey ($p < 0.05$). Students were significantly less likely to have eaten French fries or chips on the previous day, with students eating French fries or chips 0.89 times on the pre-survey, decreasing to 0.77 times on the post-survey ($p < 0.05$). Students were also significantly less likely to have consumed regular sodas or soft drinks on the previous day, with students consuming regular sodas or soft drinks 0.89 times on the pre-survey, decreasing to 0.75 times on the post-survey ($p < 0.05$). Students were significantly more likely to have consumed vegetables on the previous day, with students consuming vegetables 1.49 times on the pre-survey, increasing to 1.58 times on the post-survey ($p < 0.05$). Students were also more likely to have consumed beans on the previous day, with students consuming beans 0.61 times on the pre-survey, increasing to 0.72 times on the post-survey ($p < 0.05$).

Question	Pre-survey n=1,399			Post-survey n=1,396			Change from Pre- to Post-survey
	Range			Range			P-value
	Mean	Min	Max	Mean	Min	Max	
How old are you?	8.47	6	12	8.55	6	12	
Yesterday, did you drink any kind of milk?	1.51	0	3	1.48	0	3	0.41
Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?	1.12	0	3	1.02	0	3	<0.05
Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?	0.87	0	3	0.88	0	3	0.70
Yesterday, did you eat French fries or chips?	0.89	0	3	0.77	0	3	<0.05
Yesterday, did you eat any vegetables?	1.49	0	3	1.58	0	3	<0.05
Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?	0.61	0	3	0.72	0	3	<0.05
Yesterday, did you eat fruit?	1.67	0	3	1.72	0	3	0.16
Yesterday, did you drink fruit juice?	1.26	0	3	1.20	0	3	0.22
Yesterday, did you drink any punch, Kool-Aid®, sports drinks or other fruit-flavored drinks?	1.13	0	3	1.05	0	3	0.36
Yesterday, did you drink any regular (not diet) sodas or soft drinks?	0.89	0	3	0.75	0	3	<0.05
Yesterday, how many meals did you eat?	2.10	0	3	2.16	0	3	0.35
Yesterday, did you have a snack?	1.30	0	3	1.30	0	3	0.99
Yesterday, how many times did you eat food from any type of restaurant?	1.11	0	3	1.06	0	3	0.10
Answer range: No, 1 time yesterday, 2 times yesterday, 3 or more times yesterday. Bolded P-values are significant at the <0.05 level.							

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Students were asked to report what type of milk they would pick to drink, with three options available: low fat, fat free or skim milk, or regular milk. Students were significantly more likely to report that they would drink low fat, fat free or skim milk after participating in the FVMM™ classes ($p < 0.05$). There was no change in the percentage of students who reported eating breakfast on the previous day, with 87.1% reporting eating breakfast on pre-survey and 87.8% on post-survey. Students were also asked if they like to try new foods. Over 90% of students reported that they sometimes, almost always or always liked to try new foods. There was no statistically significant increase between pre- and post-surveys.

Table 3. Arizona Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009						
Question	Pre-survey n=1,399		Post-survey n=1,396		Change from Pre- to Post-survey	
	n	%	n	%	Odds Ratio	P-value
Which would you pick to drink? (Regular milk or <u>Low fat, skim or fat free milk</u>)	554	39.6	690	49.4	1.49	<0.05
Yesterday, did you eat breakfast? (yes responses)	1,219	87.1	1,226	87.8	1.07	0.58
I like to try new foods. (Almost never or never, <u>Sometimes, Almost always or always</u>)	1,270	90.8	1,269	90.9	1.02	0.91
Bolded P-values are significant at the <0.05 level.						

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Coconino County

Table 4. Characteristics of Coconino County Students Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009		
Characteristic	Number of Students	Percent of Total
Total Number of Students Participating in the FVMM Classes	606	
Survey		
Pre-survey	105	53.6
Post-survey	91	46.4
Participating Schools	4	
Income Schools with more than 50% of students receiving a free or reduced lunch	4	100.0
Grade*		
3 rd grade	105	100.0
Gender*		
Boy	51	48.6
Girl	47	44.8
Undefined	7	6.7
Total Pre-/Post-Surveys Received	196	

*Descriptive statistics are based on the highest number of students who took the pre- or post-survey.

During the 2008-2009 school year 196 pre- and post-surveys were completed. This breaks down to 105 pre-surveys and 91 post-surveys. A total of 606 students participated in the FVMM™ classes, reaching approximately 84 less students than the 2007-2008 school year. This translates into a 12% decrease in participation. All participating schools surveyed had at least 50% of students receiving a free or reduced cost lunch through the National School Lunch Program. All participating students were in third grade.

Tables 5 and 6 show Coconino County student's eating behaviors before and after participating in the FVMM™ classes. The average age of a student participating in the class was 8.66 on pre-survey and 8.72 on post-survey. Two questions showed a statistically significant change from pre- to post-survey. Students were significantly less likely to have eaten food from a restaurant on the previous day, with students eating from a fast food restaurant 0.93 times on the pre-survey, decreasing to 0.61 times on the post-survey ($p < 0.05$). Students were significantly more likely to have consumed beans on the previous day, with students consuming beans 0.48 times on the pre-survey, increasing to 0.79 on the post-survey ($p < 0.05$).

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Table 5. Coconino County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009							
	Pre-survey n=105			Post-survey n=91			Change from Pre- to Post-survey
	Range			Range			
Question	Mean	Min	Max	Mean	Min	Max	P-value
How old are you?	8.66	7	10	8.72	8	12	
Yesterday, did you drink any kind of milk?	1.12	0	3	1.21	0	3	0.51
Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?	1.07	0	3	1.14	0	3	0.61
Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?	0.83	0	3	1.02	0	3	0.13
Yesterday, did you eat french fries or chips?	0.76	0	3	0.65	0	3	0.38
Yesterday, did you eat any vegetables?	1.56	0	3	1.55	0	3	0.94
Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?	0.48	0	3	0.79	0	3	<0.05
Yesterday, did you eat fruit?	1.64	0	3	1.63	0	3	0.97
Yesterday, did you drink fruit juice?	1.00	0	3	1.15	0	3	0.27
Yesterday, did you drink any punch, Kool-Aid®, sports drinks or other fruit-flavored drinks?	0.97	0	3	0.95	0	3	0.90
Yesterday, did you drink any regular (not diet) sodas or soft drinks?	0.68	0	3	0.57	0	3	0.42
Yesterday, how many meals did you eat?	2.14	0	3	2.38	0	3	0.08
Yesterday, did you have a snack?	1.30	0	3	1.18	0	3	0.38
Yesterday, how many times did you eat food from any type of restaurant?	0.93	0	3	0.61	0	3	<0.05
Answer range: No, 1 time yesterday, 2 times yesterday, 3 or more times yesterday. Bolded P-values are significant at the <0.05 level.							

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Students were asked to report what type of milk they would pick to drink, with three options available: low fat, fat free or skim milk, or regular milk. Students were also asked if they ate breakfast on the previous day, as well as if they liked to try new foods. There was no statistically significant change in the type of milk they would pick to drink, if they ate breakfast or if they like to try new foods from pre-survey to post-survey.

Table 6. Coconino County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009						
Question	Pre-survey n=105		Post-survey n=91		Change from Pre- to Post-survey	
	n	%	n	%	Odds Ratio	P-value
Which would you pick to drink? (Regular milk or <u>Low fat, skim or fat free milk</u>)	31	29.5	35	38.5	1.5	0.192
Yesterday, did you eat breakfast? (yes responses)	86	81.9	70	76.9	1.4	0.395
I like to try new foods. (Almost never or never, <u>Sometimes, Almost always or always</u>)	88	83.8	73	80.2	0.8	0.519
Bolded P-values are significant at the <0.05 level.						

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Maricopa County

Table 7. Characteristics of Maricopa County Students Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009		
Characteristic	Number of Students	Percent of Total
Total Number of Students Participating in the FVMM Classes	356	
Survey		
Pre-survey	316	50.7
Post-survey	307	49.3
Participating Schools	7	
Income Schools with more than 50% of students receiving a free or reduced lunch	7	100
Grade*		
3 rd grade	316	100.0
Gender*		
Boy	165	52.2
Girl	147	46.5
Undefined	4	1.3
Total Pre-/Post-Surveys Received	623	

*Descriptive statistics are based on the highest number of students who took the pre- or post-survey.

During the 2008-2009 school year 623 pre- and post-surveys were completed. This breaks down to 316 pre-surveys and 307 post-surveys. An estimated 356 students participated in the FVMM™ classes, reaching approximately 113 less students than the 2007-2008 school year. This translates into a 24% decrease in participation. All participating schools surveyed had at least 50% of students receiving a free or reduced cost lunch through the National School Lunch Program. All participating students were in third grade.

Tables 8 and 9 show Maricopa County student's eating behaviors before and after participating in the FVMM™ classes. The average age of a student participating in the class was 8.88 on pre-survey and 8.93 on post-survey. Three questions showed a statistically significant change from pre- to post-survey. Students were significantly less likely to have eaten French fries or chips on the previous day, with students eating french fries or chips 0.91 times on the pre-survey, decreasing to 0.67 times on the post-survey ($p < 0.05$). Students were significantly less likely to have consumed regular sodas or soft drinks on the previous day, with students consuming regular sodas or soft drinks 0.95 times on the pre-survey, decreasing to 0.74 times on the post-survey ($p < 0.05$). Students were also significantly less likely to have eaten food from a restaurant on the previous day, with students eating from a fast food restaurant 0.96 times on the pre-survey, decreasing to 0.79 times on the post-survey ($p < 0.05$).

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Table 8. Maricopa County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009							
Question	Pre-survey n=316			Post-survey n=307			Change from Pre- to Post-survey
	Mean	Range		Mean	Range		
		Min	Max		Min	Max	P-value
How old are you?	8.88	8	11	8.93	7	11	
Yesterday, did you drink any kind of milk?	1.61	0	3	1.53	0	3	0.31
Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?	1.07	0	3	0.95	0	3	0.11
Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?	0.78	0	3	0.87	0	3	0.23
Yesterday, did you eat french fries or chips?	0.91	0	3	0.67	0	3	<0.05
Yesterday, did you eat any vegetables?	1.43	0	3	1.51	0	3	0.38
Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?	0.48	0	3	0.53	0	3	0.52
Yesterday, did you eat fruit?	1.76	0	3	1.72	0	3	0.63
Yesterday, did you drink fruit juice?	1.23	0	3	1.10	0	3	0.15
Yesterday, did you drink any punch, Kool-Aid®, sports drinks or other fruit-flavored drinks?	1.17	0	3	1.04	0	3	0.16
Yesterday, did you drink any regular (not diet) sodas or soft drinks?	0.95	0	3	0.74	0	3	<0.05
Yesterday, how many meals did you eat?	2.03	0	3	2.07	0	3	0.63
Yesterday, did you have a snack?	1.24	0	3	1.18	0	3	0.40
Yesterday, how many times did you eat food from any type of restaurant?	0.96	0	3	0.79	0	3	<0.05
Answer range: No, 1 time yesterday, 2 times yesterday, 3 or more times yesterday. Bolded P-values are significant at the <0.05 level.							

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Students were asked to report what type of milk they would pick to drink, with three options available: low fat, fat free or skim milk, or regular milk. Students were also asked if they ate breakfast on the previous day, as well as if they liked to try new foods. There was no statistically significant change in the type of milk they would pick to drink, if they ate breakfast or if they like to try new foods from pre-survey to post-survey.

Question	Pre-survey n=316		Post-survey n=307		Change from Pre- to Post-survey	
	n	%	n	%	Odds Ratio	P-value
Which would you pick to drink? (Regular milk or <u>Low fat, skim or fat free milk</u>)	147	46.5	164	53.4	1.3	0.09
Yesterday, did you eat breakfast? (yes responses)	265	83.9	258	84.0	1.0	0.95
I like to try new foods. (Almost never or never, <u>Sometimes, Almost always or always</u>)	286	90.5	284	92.5	1.3	0.38
Bolded P-values are significant at the <0.05 level.						

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Mohave County

Table 10. Characteristics of Mohave County Students Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009		
Characteristic	Number of Students	Percent of Total
Total Number of Students Participating in the FVMM Classes	363	
Survey		
Pre-survey	72	49.7
Post-survey	73	50.3
Participating Schools	3	
Income Schools with more than 50% of students receiving a free or reduced lunch	3	100.0
Grade*		
3 rd grade	73	100.0
Gender*		
Boy	35	47.9
Girl	38	52.1
Total Pre-/Post-Surveys Received	145	

*Descriptive statistics are based on the highest number of students who took the pre- or post-survey.

During the 2008-2009 school year 145 pre- and post-surveys were completed. This breaks down to 72 pre-surveys and 73 post-surveys. A total of 363 students participated in the FVMM™ classes, reaching approximately 296 less students than the 2007-2008 school year. This translates into a 45% decrease in participation. All participating schools surveyed had at least 50% of students receiving a free or reduced cost lunch through the National School Lunch Program. All participating students were in third grade.

Tables 11 and 12 show Mohave County student's eating behaviors before and after participating in the FVMM™ classes. The average age of a student participating in the class was 8.58 on pre-survey and 8.62 on post-survey. Three questions showed a statistically significant change from pre- to post-survey. Students were significantly less likely to have eaten white bread on the previous day, with students eating white bread 1.31 times on the pre-survey, decreasing to 0.73 times on the post-survey ($p < 0.05$). Additionally, students were significantly less likely to have consumed whole wheat bread on the previous day, with students consuming whole wheat bread 0.97 times on the pre-survey, decreasing to 0.64 times on the post-survey ($p < 0.05$). Students were significantly more likely to have consumed beans on the previous day, with students consuming beans 0.38 times on the pre-survey, increasing to 1.68 times on the post-survey ($p < 0.05$).

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Table 11. Mohave County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009							
	Pre-survey n=72			Post-survey n=73			Change from Pre- to Post-survey
	Range			Range			
Question	Mean	Min	Max	Mean	Min	Max	P-value
How old are you?	8.58	7	10	8.62	7	12	
Yesterday, did you drink any kind of milk?	1.56	0	3	1.35	0	3	0.24
Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?	1.31	0	3	0.73	0	3	<0.05
Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?	0.97	0	3	0.64	0	3	<0.05
Yesterday, did you eat french fries or chips?	1.14	0	3	0.88	0	3	0.13
Yesterday, did you eat any vegetables?	1.65	0	3	1.44	0	3	0.26
Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?	0.38	0	3	1.68	0	3	<0.05
Yesterday, did you eat fruit?	1.54	0	3	1.22	0	3	0.08
Yesterday, did you drink fruit juice?	1.31	0	3	1.10	0	3	0.27
Yesterday, did you drink any punch, Kool-Aid®, sports drinks or other fruit-flavored drinks?	1.21	0	3	1.30	0	3	0.65
Yesterday, did you drink any regular (not diet) sodas or soft drinks?	1.11	0	3	1.09	0	3	0.89
Yesterday, how many meals did you eat?	2.60	0	3	2.49	0	3	0.44
Yesterday, did you have a snack?	1.80	0	3	1.60	0	3	0.24
Yesterday, how many times did you eat food from any type of restaurant?	0.83	0	3	0.94	0	3	0.53
Answer range: No, 1 time yesterday, 2 times yesterday, 3 or more times yesterday. Bolded P-values are significant at the <0.05 level.							

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Students were asked to report what type of milk they would pick to drink, with three options available: low fat, fat free or skim milk, or regular milk. Students were also asked if they ate breakfast on the previous day, as well as if they liked to try new foods. There was no statistically significant change in the type of milk they would pick to drink, if they ate breakfast or if they like to try new foods from pre-survey to post-survey.

Table 12. Mohave County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009						
Question	Pre-survey n=72		Post-survey n=73		Change from Pre- to Post-survey	
	n	%	n	%	Odds Ratio	P-value
Which would you pick to drink? (Regular milk or <u>Low fat, skim or fat free milk</u>)	36	50.0	46	63.0	1.7	0.12
Yesterday, did you eat breakfast? (yes responses)	63	87.5	61	83.6	0.7	0.51
I like to try new foods. (Almost never or never, <u>Sometimes, Almost always or always</u>)	67	93.1	67	91.8	0.8	0.78
Bolded P-values are significant at the <0.05 level.						

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Navajo County

Table 13. Characteristics of Navajo County Students Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009		
Characteristic	Number of Students	Percent of Total
Total Number of Students Participating in the FVMM Classes	1,032	
Survey		
Pre-survey	273	51.1
Post-survey	261	48.9
Participating Schools	10	
Income Schools with more than 50% of students receiving a free or reduced lunch	10	100%
Grade*		
2 nd grade	273	100%
Gender*		
Boy	121	44.3
Girl	149	54.6
Undefined	3	1.1
Total Pre-/Post-Surveys Received	534	

*Descriptive statistics are based on the highest number of students who took the pre- or post-survey.

During the 2008-2009 school year 534 pre- and post-surveys were completed. This breaks down to 273 pre-surveys and 261 post-surveys. An estimated 1,032 students participated in the FVMM™ classes, reaching approximately 41 more students than the 2007-2008 school year. This translates into a 4% increase in participation. All participating schools surveyed had at least 50% of students receiving a free or reduced cost lunch through the National School Lunch Program. All participating students were in second grade.

Tables 14 and 15 show Navajo County student's eating behaviors before and after participating in the FVMM™ classes. The average age of a student participating in the class was 7.77 on pre-survey and 7.89 on post-survey. There were no statistically significant changes in eating behaviors of students participating in the FVMM™ classes from pre- to post-survey.

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Table 14. Navajo County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009							
	Pre-survey n=273			Post-survey n=261			Change from Pre- to Post-survey
	Range			Range			
Question	Mean	Min	Max	Mean	Min	Max	P-value
How old are you?	7.77	6	12	7.89	7	12	
Yesterday, did you drink any kind of milk?	1.53	0	3	1.61	0	3	0.40
Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?	1.14	0	3	1.25	0	3	0.22
Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?	1.01	0	3	1.08	0	3	0.48
Yesterday, did you eat French fries or chips?	1.03	0	3	0.95	0	3	0.45
Yesterday, did you eat any vegetables?	1.81	0	3	1.90	0	3	0.34
Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?	0.94	0	3	1.02	0	3	0.45
Yesterday, did you eat fruit?	1.83	0	3	1.99	0	3	0.11
Yesterday, did you drink fruit juice?	1.45	0	3	1.58	0	3	0.18
Yesterday, did you drink any punch, Kool-Aid®, sports drinks or other fruit-flavored drinks?	1.37	0	3	1.37	0	3	0.99
Yesterday, did you drink any regular (not diet) sodas or soft drinks?	0.93	0	3	0.86	0	3	0.51
Yesterday, how many meals did you eat?	1.97	0	3	2.05	0	3	0.37
Yesterday, did you have a snack?	1.41	0	3	1.46	0	3	0.58
Yesterday, how many times did you eat food from any type of restaurant?	1.64	0	3	1.48	0	3	0.11
Answer range: No, 1 time yesterday, 2 times yesterday, 3 or more times yesterday. Bolded P-values are significant at the <0.05 level.							

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Students were asked to report what type of milk they would pick to drink, with three options available: low fat, fat free or skim milk, or regular milk. Students were significantly more likely to report that they would pick low fat or fat free milk to drink after completion of the FVMM™ classes ($p < 0.05$). Students were also asked if they ate breakfast on the previous day, as well as if they liked to try new foods. There was no statistically significant change in if they ate breakfast or if they like to try new foods from pre-survey to post-survey.

Table 15. Navajo County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009						
Question	Pre-survey n=273		Post-survey n=261		Change from Pre- to Post-survey	
	n	%	n	%	Odds Ratio	P-value
Which would you pick to drink? (Regular milk or <u>Low fat, skim or fat free milk</u>)	70	25.6	101	38.7	1.8	<0.05
Yesterday, did you eat breakfast? (yes responses)	237	86.8	233	89.3	1.3	0.39
I like to try new foods. (Almost never or never, <u>Sometimes, Almost always or always</u>)	246	90.1	231	88.5	0.8	0.55

Bolded P-values are significant at the <0.05 level.

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Washington Elementary School District (WESD)

Table 16. Characteristics of WESD Students Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009		
Characteristic	Number of Students	Percent of Total
Total Number of Students Participating in the FVMM Classes	933	
Survey		
Pre-survey	210	48.3
Post-survey	225	51.7
Participating Schools	5	
Income Schools with more than 50% of students receiving a free or reduced lunch	5	100.0
Grade*		
3 rd grade	225	100.0
Gender*		
Boy	114	50.7
Girl	111	49.3
Total Pre-/Post-Surveys Received	435	

*Descriptive statistics are based on the highest number of students who took the pre- or post-survey.

During the 2008-2009 school year 435 pre- and post-surveys were completed. This breaks down to 210 pre-surveys and 225 post-surveys. A total of 933 students participated in the FVMM™ classes, reaching approximately 101 less students than the 2007-2008 school year. This translates into a 10% decrease in participation. All participating schools surveyed had at least 50% of students receiving a free or reduced cost lunch through the National School Lunch Program. All participating students were in third grade.

Tables 17 and 18 show Washington Elementary School District student's eating behaviors before and after participating in the FVMM™ classes. The average age of a student participating in the class was 8.44 on pre-survey and 8.52 on post-survey. Four questions showed a statistically significant change from pre- to post-survey. Students were significantly less likely to have eaten white bread on the previous day, with students eating white bread 1.25 times on the pre-survey, decreasing to 1.07 times on the post-survey ($p < 0.05$). Students were less likely to have consumed French fries or chips on the previous day, with students consuming French fries or chips 0.97 times on the previous day, decreasing to 0.78 times on the post-survey ($p < 0.05$). Additionally, students were significantly less likely to have consumed regular soda on the previous day, with students consuming regular soda 0.99 times on the pre-survey, decreasing to 0.70 times on the post-survey ($p < 0.05$). Students were significantly more likely to have consumed a snack on the previous day, with students consuming a snack 1.23 times on the pre-survey, increasing to 1.49 times on the post-survey ($p < 0.05$).

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Table 17. WESD Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009							
	Pre-survey n=210			Post-survey n=225			Change from Pre- to Post-survey
	Range			Range			
Question	Mean	Min	Max	Mean	Min	Max	P-value
How old are you?	8.44	7	10	8.52	8	10	
Yesterday, did you drink any kind of milk?	1.57	0	3	1.60	0	3	0.75
Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?	1.25	0	3	1.07	0	3	<0.05
Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?	1.0	0	3	1.00	0	3	0.99
Yesterday, did you eat French fries or chips?	0.97	0	3	0.78	0	3	<0.05
Yesterday, did you eat any vegetables?	1.76	0	3	1.78	0	3	0.85
Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?	0.56	0	3	0.69	0	3	0.18
Yesterday, did you eat fruit?	1.77	0	3	1.93	0	3	0.13
Yesterday, did you drink fruit juice?	1.37	0	3	1.38	0	3	0.89
Yesterday, did you drink any punch, Kool-Aid®, sports drinks or other fruit-flavored drinks?	1.11	0	3	1.09	0	3	0.880
Yesterday, did you drink any regular (not diet) sodas or soft drinks?	0.99	0	3	0.70	0	3	<0.05
Yesterday, how many meals did you eat?	2.26	0	3	2.38	0	3	0.17
Yesterday, did you have a snack?	1.23	0	3	1.49	0	3	<0.05
Yesterday, how many times did you eat food from any type of restaurant?	0.87	0	3	0.98	0	3	0.25
Answer range: No, 1 time yesterday, 2 times yesterday, 3 or more times yesterday. Bolded P-values are significant at the <0.05 level.							

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Students were asked to report what type of milk they would pick to drink, with three options available: low fat, fat free or skim milk, or regular milk. Students were significantly more likely to report that they would pick low fat or fat free milk to drink after completion of the FVMM™ classes ($p < 0.05$). Students were also asked if they ate breakfast on the previous day, as well as if they liked to try new foods. There was no statistically significant change in if they ate breakfast or if they like to try new foods from pre-survey to post-survey.

Table 18. WESD Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009						
Question	Pre-survey n=210		Post-survey n=225		Change from Pre- to Post-survey	
	n	%	n	%	Odds Ratio	P-value
Which would you pick to drink? (Regular milk or <u>Low fat, skim or fat free milk</u>)	90	42.9	121	53.8	1.5	<0.05
Yesterday, did you eat breakfast?	192	91.4	213	94.7	1.6	0.19
I like to try new foods. (Almost never or never, <u>Sometimes, Almost always or always</u>)	196	93.3	206	91.5	0.8	0.49
Bolded P-values are significant at the <0.05 level.						

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Yuma County

Table 18. Characteristics of Yuma County Students Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009		
Characteristic	Number of Students	Percent of Total
Total Number of Students Participating in the FVMM Classes	2,079	
Survey		
Pre-survey	423	49.1
Post-survey	439	50.9
Participating Schools	16	
Income Schools with more than 50% of students receiving a free or reduced lunch	16	100%
Grade*		
3 rd grade	439	100.0
Gender*		
Boy	237	54.0
Girl	196	44.6
Undefined	6	1.4
Total Pre-/Post-Surveys Received	862	

*Descriptive statistics are based on the highest number of students who took the pre- or post-survey.

During the 2008-2009 school year 862 pre- and post-surveys were completed. This breaks down to 423 pre-surveys and 439 post-surveys. A total of 2,079 students participated in the FVMM™ classes, reaching approximately 26 less students than the 2007-2008 school year. This translates into a 1% decrease in participation. All participating schools surveyed had at least 50% of students receiving a free or reduced cost lunch through the National School Lunch Program. All participating students were in third grade.

Tables 20 and 21 show Yuma County student's eating behaviors before and after participating in the FVMM™ classes. The average age of a student participating in the class was 8.55 on pre-survey and 8.63 on post-survey. Two questions showed a statistically significant change from pre- to post-survey. Students were significantly less likely to have eaten white bread on the previous day, with students eating white bread 1.04 times on the pre-survey, decreasing to 0.92 times on the post-survey ($p < 0.05$). Additionally, students were significantly less likely to have consumed fruit juice on the previous day, with students consuming fruit juice 1.16 times on the pre-survey, decreasing to 0.97 times on the post-survey ($p < 0.05$).

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Table 20. Yuma County Students' Eating Behaviors Before and After Participating in the Fruits and Veggies More Matters™ Classes, 2008-2009							
	Pre-survey n=423			Post-survey n=439			Change from Pre- to Post-survey
	Range			Range			
Question	Mean	Min	Max	Mean	Min	Max	P-value
How old are you?	8.55	7	11	8.63	6	11	
Yesterday, did you drink any kind of milk?	1.48	0	3	1.40	0	3	0.10
Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?	1.04	0	3	0.92	0	3	<0.05
Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?	0.77	0	3	0.74	0	3	0.24
Yesterday, did you eat French fries or chips?	0.75	0	3	0.74	0	3	0.68
Yesterday, did you eat any vegetables?	1.15	0	3	1.36	0	3	0.07
Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?	0.57	0	3	0.51	0	3	0.27
Yesterday, did you eat fruit?	1.46	0	3	1.55	0	3	0.42
Yesterday, did you drink fruit juice?	1.16	0	3	0.97	0	3	<0.05
Yesterday, did you drink any punch, Kool-Aid®, sports drinks or other fruit-flavored drinks?	0.98	0	3	0.83	0	3	0.29
Yesterday, did you drink any regular (not diet) sodas or soft drinks?	0.78	0	3	0.69	0	3	0.32
Yesterday, how many meals did you eat?	2.05	0	3	2.06	0	3	0.26
Yesterday, did you have a snack?	1.24	0	3	1.18	0	3	0.18
Yesterday, how many times did you eat food from any type of restaurant?	1.09	0	3	1.14	0	3	0.83
Answer range: No, 1 time yesterday, 2 times yesterday, 3 or more times yesterday. Bolded P-values are significant at the <0.05 level.							

Arizona Fruits and Veggies More Matters™ Class Evaluation
2008-2009 School Year

Students were asked to report what type of milk they would pick to drink, with three options available: low fat, fat free or skim milk, or regular milk. Students were significantly more likely to report that they would pick low fat or fat free milk to drink after completion of the FVMM™ classes ($p < 0.05$). Students were also asked if they ate breakfast on the previous day, as well as if they liked to try new foods. There was no statistically significant change in if they ate breakfast or if they like to try new foods from pre-survey to post-survey.

Question	Pre-survey n=423		Post-survey n=439		Change from Pre- to Post-survey	
	n	%	n	%	Odds Ratio	P-value
Which would you pick to drink? (Regular milk or <u>Low fat, skim or fat free milk</u>)	180	42.6	223	50.8	1.4	<0.05
Yesterday, did you eat breakfast? (yes responses)	376	88.9	391	89.1	1.0	0.93
I like to try new foods. (Almost never or never, <u>Sometimes, Almost always or always</u>)	387	91.4	408	92.9	0.8	0.43

Bolded P-values are significant at the <0.05 level.

Appendix A
Sample Survey
2008-2009 School Year

1. How old are you? 6 7 8 9 10 11 12

2. Are you a boy or a girl? Boy Girl

3. Yesterday, did you drink any kind of milk? Count chocolate or other flavored milk, milk on cereal, or drinks made with milk.



No, I didn't drink any milk yesterday.
 Yes, I drank milk 1 time yesterday.

Yes, I drank milk 2 times yesterday.
 Yes, I drank milk 3 or more times yesterday.

4. Which would you pick to drink?



Regular milk

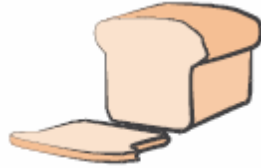
Low fat, skim or fat free milk

5. Yesterday, did you eat any white bread, buns, bagels, tortillas, or rolls?



No, I didn't eat any of the foods listed above yesterday.
 Yes, I ate one of these foods 1 time yesterday.
 Yes, I ate one of these foods 2 times yesterday.
 Yes, I ate one of these foods 3 or more times yesterday.

6. Yesterday, did you eat any whole wheat or dark bread, buns, bagels, tortillas, or rolls?



- No, I didn't eat any of the foods listed above yesterday.
- Yes, I ate one of these foods 1 time yesterday.
- Yes, I ate one of these foods 2 times yesterday.
- Yes, I ate one of these foods 3 or more times yesterday.

7. Yesterday, did you eat French fries or chips?

Chips are potato chips, tortilla chips, Cheetos[®], corn chips, or other snack chips.



- No, I didn't eat any French fries or chips yesterday.
- Yes, I ate French fries or chips 1 time yesterday.
- Yes, I ate French fries or chips 2 times yesterday.
- Yes, I ate French fries or chips 3 or more times yesterday.

8. Yesterday, did you eat any vegetables?

Vegetables are all cooked and uncooked vegetables; salads; and boiled, baked and mashed potatoes.

Do not count French fries or chips.



- No, I didn't eat any vegetables yesterday.
- Yes, I ate vegetables 1 time yesterday.
- Yes, I ate vegetables 2 times yesterday.
- Yes, I ate vegetables 3 or more times yesterday.

9. Yesterday, did you eat beans such as pinto beans, baked beans, kidney beans, refried beans, or pork and beans?

Do not count green beans.



- No, I didn't eat any beans yesterday.
- Yes, I ate beans 1 time yesterday.
- Yes, I ate beans 2 times yesterday.
- Yes, I ate beans 3 or more times yesterday.

10. Yesterday, did you eat fruit?

Do not count fruit juice.



- No, I didn't eat any fruit yesterday.
- Yes, I ate fruit 1 time yesterday.
- Yes, I ate fruit 2 times yesterday.
- Yes, I ate fruit 3 or more times yesterday.

11. Yesterday, did you drink fruit juice?

Fruit juice is a drink, which is 100% juice, like orange juice, apple juice, or grape juice.

Do not count punch, Kool-Aid[®], sports drinks or other fruit-flavored drinks.



- No, I didn't drink any fruit juice yesterday.
- Yes, I drank fruit juice 1 time yesterday.
- Yes, I drank fruit juice 2 times yesterday.
- Yes, I drank fruit juice 3 or more times yesterday.

12. Yesterday, did you drink any punch, Kool-Aid[®], sports drinks or other fruit-flavored drinks?

Do not count fruit juice.



- No, I didn't drink any of these drinks yesterday.
- Yes, I drank one of these drinks 1 time yesterday.
- Yes, I drank one of these drinks 2 times yesterday.
- Yes, I drank one of these drinks 3 or more times yesterday.

13. Yesterday, did you drink any regular (not diet) sodas or soft drinks?



- No, I didn't drink any regular (not diet) sodas or soft drinks yesterday.
- Yes, I drank regular (not diet) sodas or soft drinks 1 time yesterday.
- Yes, I drank regular (not diet) sodas or soft drinks 2 times yesterday.
- Yes, I drank regular (not diet) sodas or soft drinks 3 or more times yesterday.

14. Yesterday, did you eat breakfast?

- Yes
- No

15. Yesterday, how many meals did you eat?

- I didn't have any meals yesterday.
- I had 1 meal yesterday.
- I had 2 meals yesterday.
- I had 3 or more meals yesterday.

16. Yesterday, did you have a snack? A snack is food or drink that you eat or drink before, after or between meals.

- No, I didn't have any snacks yesterday.
- Yes, I had a snack 1 time yesterday.
- Yes, I had a snack 2 times yesterday.
- Yes, I had a snack 3 or more times yesterday.

17. Yesterday, how many times did you eat food from any type of restaurant? (Restaurants include fast food, sit down restaurants, pizza places, and cafeterias.)

- None
- 1 time
- 2 times
- 3 or more times

18. I like to try new foods.

- Almost always or always
- Sometimes
- Almost never or never

This questionnaire was adapted from the SPAN student survey developed by the University of Texas, College of Public Health.