

The School District of Philadelphia
Office of Research and Evaluation

EAT.RIGHT.NOW.
FY 2012 Evaluation
Report



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The School District of Philadelphia
EAT.RIGHT.NOW.
FY 12 Evaluation Report

Prepared for:

Office of Academic Enrichment and Support

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I. Introduction

Overview

EAT.RIGHT.NOW. (ERN) is the nutrition education program of the Pennsylvania Nutrition Education Tracks (PA TRACKS) initiative, which seeks to improve food choices and encourage physical activity among school-age children in the state. In Philadelphia, the program is implemented by the following community partners: The School District of Philadelphia (SDP), Drexel University (DU), Health Promotion Council (HPC), Albert Einstein Medical Center (AE), The Food Trust (TFT), and the Urban Nutrition Initiative (UNI). The PA TRACKS initiative is funded by the U.S. Department of Agriculture (USDA) Food and Nutrition Service (FNS), with matching state and local support, and is managed by Pennsylvania State University, College of Health and Human Development (referred hereafter as the “management entity” or ME).¹ ERN operates in approximately 250 Philadelphia public and charter schools in grades K through 12. To be eligible for ERN programming, schools must have 50% or more of the population qualify for free or reduced meals. This is the thirteenth year of operations for ERN in The School District of Philadelphia.

The evaluation activities detailed herein were conducted by The School District of Philadelphia, Office of Research and Evaluation. For the 2011-2012 school year, evaluation activities were conducted and managed by Michael Imburgia, MA.Ed., HD. Starting in June 2012, at the end of the FY 2012 grant period, Gregory D. Benjamin, Ph.D., assumed responsibility of completing this evaluation report, as well as all future grant evaluation activities for FY 2013.

Program Description

The program operates through the above-mentioned partners, employing over 70 professional nutrition educators. These educators reach their audience through a variety of formats including classroom lessons, after-school programs, newsletters, health fairs, parent workshops, and assembly programs. Implementation in 2011-12 focused on an evidence-based curriculum for 7th and 8th grade students, implementation of the 4th grade Vegetable Core program, and a snack choice experiment for grades 3–5 and 8.

Literature Review

Nutrition and nutrition education have been at the forefront of local and national arenas, especially in light of the Child Nutrition Re-authorization Act, 2010. Tracy Fox, president of the Society for Nutrition Education (SNE) stated, “Nutrition education and promotion have never been more important or had a greater role in the national debate as they do now. The time is now to focus our efforts on how to position nutrition education and promotion for the years and decades to come.”²

Several studies identified different factors that contributed to the intake of fruits and vegetables for children grades K through 12. While it was beneficial to include nutrition lessons in the formal student curriculum, it was even more effective when coupled with system-level changes to the social and familial environments. A study done in England suggested that the “...modeling of appropriate eating behavior, repeated exposure to foods, providing encouraging and supportive environments for eating

¹ Pennsylvania State University College of Health and Human Development is the Management Entity (ME) for the statewide implementation of the Pennsylvania Nutrition Education Tracks (TRACKS) initiative,

² Fox, T. (2011). Rethinking nutrition education and promotion. *Journal of Nutrition Education and Behavior*. 43(1): 1.

and practical activities which help children become familiar with foods may help adolescents overcome their fears of new foods.”³ Not only were lessons about nutrition taught in formal settings, but nutrition educators across the US and England initiated hands-on activities for children that allowed them to grow their own fruits and vegetables which they can in turn cook and consume. The coupling of education and harvesting of vegetables and fruits has been spearheaded by the First Lady, Michelle Obama and the Let’s Move! campaign. By teaching young students nutritional habits while in school, it will more than likely carry with them into adulthood, thus creating a healthier future for them.

Creating the foundation for good nutrition is important, especially in young children. The Supplemental Nutrition Assistance Program (SNAP), a program from the US Department of Agriculture (USDA) provides food stamp benefits to low-income families in an attempt to raise their level of nutrition. In a survey of dietary knowledge and attitudes among participating adults, the USDA found further evidenced on why it is so critical to provide nutrition education in the early stages. While it was evident that both high- and low income adults place value on eating right, it was also clear how little low-income adults actually knew about nutritional facts (USDA, 2012). This could be related to the idea that nutritional education was not as prevalent and essential then, as it is today.

Moreover, parents play a vital role in children’s nutrition, mainly because they provide the foods that children consume when not at school, as well as the packed lunches they send with their children.⁴ In order to reinforce the nutrition education and promotion students receive in school, parents must have the skills and knowledge themselves on the benefits of nutrition. The same study in England found that “...where parents were actively involved in school initiatives to promote fruits and vegetables, children’s intake of vegetables was higher.”⁵ Moreover, they found it was vital for parents, school administrators, teachers and counselors work in a team to promote healthy habits—thereby contributing to positive results in several aspects (e.g., academic, social, emotional, and physical) of students’ lives.⁶ This is consistent with the social ecological model of health, where children receive similar messages and nutrition education from all sectors of life: where they live, learn, play, and receive care.⁷

Part of a well-rounded nutrition education program also involves the importance and benefits of physical education and activity. There is considerable evidence linking physical activity to health outcomes⁸ as well as studies demonstrating the positive effects of physical education and physical activity on school performance.⁹ For example, several studies stated that providing increased time for physical activity led to better student concentration, reduced disruptive behaviors, and increased test scores in reading, math and writing.¹⁰ Unfortunately physical education programs in elementary and

³ Ransley, J.K. et al. (2010). Does nutrition education in primary schools make a difference to children’s fruit and vegetable consumption? *Public Health Nutrition*. 13(11): 1898-1904.

⁴ Ransley, J.K. et al. (2010). Does nutrition education in primary schools make a difference to children’s fruit and vegetable consumption? *Public Health Nutrition*. 13(11): 1898-1904.

⁵ Ibid

⁶ Omizo, M.M. et al. (1992). Promoting wellness among elementary school children. *Journal of Counseling and Development*. 71(2): 194-

⁷ Stokols, D. (1996). Translating social ecological theory into guidelines for community health promotion. *American Journal of Health Promotion*. 10(4): 282-292.

⁸ Paffenbarger, R.S., Hyde, R.T., Wing, A.L. and Hsieh, C. (1986). Physical activity, all-cause mortality, and longevity of college alumni. *New England Journal of Medicine*, 314: 605-613.

⁹ Taras, H. (2005) Physical Activity and Student Performance at School. *Journal of School Health*. (75)(6) 214-218.

¹⁰ Satcher, D. (2005). Healthy and Ready to Learn: Research shows that nutrition and physical activity affect student academic achievement. *Educational Leadership* (63)26: 33

secondary schools have slowly been eroded during the past two decades.¹¹ Many legislators, administrators and even some educators and parents believe that spending time during school hours on physical activity is time that would be better spent on academic pursuits.¹² These beliefs are contrary to research. In fact, a recent review concluded that academic learning per unit of class time is actually enhanced in physically active students.¹³

There is also a growing evidence base on the effectiveness of nutrition education on student academic achievement. Shilts et al (2010) found that those 6th grade students who participated in a comprehensive nutrition education program, called *EatFit*, had significantly higher scores in the Math and English sections of California’s standardized testing achievement, when compared to those student who did not receive the EatFit curriculum.¹⁴ The change in test scores for one English state standard ($p<0.01$) and for two mathematics state standards ($p<0.05$, $p<0.001$) were significantly greater for the students who received the nutrition education curriculum compared to those who did not.

II. Evaluation Design and Methods

The 2011–12 evaluation conducted by SDP’s Office of Research and Evaluation (ORE) sought to assess the effects of the ERN core curriculum¹⁵ on achieving PA TRACKS goals and associated objectives. In addition, the evaluation delineated the strengths and weaknesses of the ERN core curriculum and identified obstacles that have hindered optimal implementation. The evaluation focused on several key aspects of the program: the 4th grade Vegetable Core, the 8th grade Choice, Control, and Change (C3) curriculum, and the sustained impact of nutrition education on students. In addition to these programmatic components, the evaluation examined the potential effect of nutrition education on students’ snack choices in grades 3–5. The methods used to examine each component of the program are described in Table 1.

¹¹ Tremblay, M. and Williams, J.D. (1999). *The need to increase physical activity during the elementary and middle school years* (No. 7). Retrieved from <http://www.unb.ca/crisp/pdf/pbrief7.pdf>

¹² Tremblay, M., Pella. T. & Taylor, K (1996). The quality and quantity of school based physical education: A growing concern. *Physical Health Education Journal*, 62(4): 4-7.

¹³ Tremblay, M. S., Inman, J. W., & Williams, J. D. (2000). The relationship between physical activity, self-esteem, and academic achievement in 12-year-old children. *Pediatric Exercise Science*. 12: 312-324.

¹⁴ Shilts, M.K., et al. (2010). Pilot study: EatFit Impacts sixth graders’ academic performance on achievement of mathematics and English education standards. *Journal of Nutrition and Education Behavior*. 41(2): 127-131.

¹⁵ The ERN core curriculum refers to the lessons in the 4th grade Vegetable Core and 8th Grade C3 intervention.

Table 1. Evaluation Components, Data Sources, and Analyses

Component	Sources of Data	Analyses
Overall Programming Reach and Dose	<ul style="list-style-type: none"> ○ Data from STARtracks 	<ul style="list-style-type: none"> ○ Descriptive statistics
4 th Grade Vegetable Core	<ul style="list-style-type: none"> ○ Pre- and post- surveys^{&} ○ Fidelity of implementation observations ○ Student engagement observations 	<ul style="list-style-type: none"> ○ Descriptive statistics ○ Inferential statistics (<i>t</i>-tests)
8 th Grade C3 Intervention	<ul style="list-style-type: none"> ○ Pre- and post- survey with modified YRBS ○ Focus groups with 8th grade students who received C3 curriculum (n=4) 	<ul style="list-style-type: none"> ○ Descriptive statistics ○ Inferential statistics (correlations, chi-Square tests, independent and paired samples <i>t</i>-tests, one-way and repeated measures ANOVAs) ○ Summary of qualitative findings
Snack Choice Study (3 rd -5 th grade; 8 th grade)	<ul style="list-style-type: none"> ○ Survey (3rd-5th only) ○ Student Snack Orders ○ Student Snack Selections 	<ul style="list-style-type: none"> ○ Descriptive statistics ○ Test-retest analysis ○ Inferential statistics (correlations, independent and paired samples <i>t</i>-tests, one-way and repeated measures ANOVAs)

[&]The ME administered and analyzed pre- and post- surveys.

Overall Programming Reach and Dose

The overall extent of programmatic offerings for ERN was tracked through STARtracks,¹⁶ an online database managed by the ME that records the number of program events that occur in each grade level and for each content objective.¹⁷ Every time an individual classroom received some form of nutrition education it was counted as one event. For example, if a single nutrition educator administered one lesson to one classroom it counted as one event, and if an assembly was presented to twenty different classes simultaneously, it counted as twenty events. Data in this report refer to all program activities that occurred in the first three quarters of the 2011–12 school year (i.e., October 2011 through June 2012); quarter four data are not reported, as students are not in school during this time period.

4th Grade Vegetable Core

The 4th grade Vegetable Core was a four-lesson intervention designed to increase students' knowledge about the nutritional benefits of vegetables.¹⁸ The lessons exposed students to various vegetables by providing them with the opportunity to sample food after they had received the associated lessons. The primary method used to determine outcomes for the Vegetable Core was analysis of pre-to-post changes in surveys, which were administered by the nutrition educator who delivered the lessons (See

¹⁶ STARtracks is the statewide reporting system for all PA TRACKS programs and is maintained by Pennsylvania State University.

¹⁷ All approved ERN lessons are categorized into one of 10 content objectives. The list of objectives is detailed in a later section of this report.

¹⁸ Wall, D.E., Least, C., Gromis, J. & Lohse, B. (2012). Nutrition education intervention improves vegetable-related attitude, self-efficacy, preference, and knowledge of fourth-grade students." *Journal of School Health*. 82(1): 37-43.

Appendix A). A pre-survey consisting of four separate categories (attitude toward vegetables, self-efficacy, preference for specific vegetables, and knowledge about vegetables) was administered before the intervention. Nutrition educators then delivered the four vegetable lessons one day per week for four weeks. After the final lesson was delivered, the students completed the same survey they had filled out prior to the Vegetable Core lessons. In addition, fidelity of lesson implementation (Appendix B) and student engagement (Appendix C) measures were collected and analyzed by ORE. All other Vegetable Core evaluation activities were done by nutrition educators and analyzed by the Management Entity.¹⁹

As seen in Table 2, 25 fourth grade classrooms were included in the evaluation. Students who responded to one or more items on the pre-survey were included in the baseline sample. The baseline sample (n=599) was 50.4% female, and the mean age was 9.42 years.

Table 2. 4th Grade Vegetable Core Schools by Community Partner

Community Partner	Assigned Schools
The School District of Philadelphia	Add B. Anderson, George W. Sharswood, T.M. Pierce, A.S. Jenks, Louis H. Farrell, Thomas Mifflin
Drexel University	Dunbar Academics Plus, Laura W. Waring, Blaine Academics Plus, Samuel Gompers
Health Promotion Council	Penrose, Allen M. Stearne, S. Weir Mitchell, J.W. Catharine
The Food Trust	J. Hampton Moore, William H. Loesche, Stephen Decatur, Richmond Academics Plus, Mary Bethune, Eleanor C. Emlen
Urban Nutrition Initiative	Samuel B. Huey, Charles R. Drew
Albert Einstein	Samuel W. Pennypacker, Prince Hall

In order to measure instructors' fidelity to the Vegetable Core lesson plans and the level of student engagement in the classes, ORE conducted observations of the 4th grade Vegetable Core lessons. A total of eight observations were conducted, one observation each for Lessons 1 and 2, and three observations each for Lessons 3 and 4. Observations were done between November 2011 through the beginning of January 2012. Fidelity to the lesson plan was defined as the instructor completely covering all of the major objectives (e.g. key information, activities, etc.) that were listed in the lesson plan. To measure fidelity, observers recorded whether and to what extent the actual lesson covered each of the listed objectives. Each objective was rated on a three-point scale (0=did not cover, 1=somewhat covered, 2=completely covered) and the points were summed to determine a total fidelity score. The total score was then divided by the total possible points (two points for each listed objective) in order to determine the percentage of the lesson content covered.

Student engagement in the lesson was defined as any instance in which the student was looking at the teacher, writing or asking a question related to the activities of the class, or otherwise following the teacher instructions. To measure student engagement, observers used momentary time samples to record snapshots at two-minute intervals. The number of students engaged in a given lesson was recorded every two minutes over a 20-minute period, resulting in a total of 10 intervals per observation. Student engagement was averaged over the 10 intervals to obtain both the mean number and the mean percentage of students engaged over the course of the lesson.

¹⁹ Pennsylvania State is tasked with conducting the statewide evaluation of PA TRACKS.

8th Grade *Choice, Control, & Change (C3)* Curriculum

The original *Choice, Control & Change (C3)* lessons²⁰ were designed for classes lasting at least one hour, which is longer than the forty-five minutes typically allotted to nutrition educators in the District. To address the reduction in available classroom time, the creators of the original curriculum worked with the District to estimate the time required for each section of the lesson, as well as to trim portions of the lessons that were less content-dense. Four lessons from the C3 were chosen with input from the community partners, and a fifth introductory lesson was developed with the author of the curriculum to introduce any key concepts that students may not have encountered previously. Nutrition educators were provided the revised lessons, as well as the estimated time required to complete each activity.

A quasi-experimental design was employed to assess whether the curriculum accomplished its goal of increasing student knowledge and changing health-related behaviors. All eligible schools with more than one 8th grade classroom were stratified by community partner; the partners were then randomly assigned to implement the C3 curriculum in two 8th grade classrooms that had been assigned to the intervention. Comparison classrooms did not receive the C3 intervention. Ultimately, twelve intervention schools and twelve comparison schools were included in the study. (See Table 3.)

Table 3. C3 Schools by Partner, 2011–2012

Community Partner	Group	Assigned Schools
Albert Einstein	Comparison	E. Steel, G. Washington
	Intervention	D.B. Birney, F.D. Pastorius
Drexel University	Comparison	J. Cooke, W.H. Hunter
	Intervention	W.H. Harrison, R. Conwell
Health Promotion Council	Comparison	Potter-Thomas, E.M. Stanton
	Intervention	G.W. Childs, J. DeBurgos
The School District of Philadelphia	Comparison	A.J. Morrison, J.H. Taggart
	Intervention	F. Hopkinson, G.A. McCall
The Food Trust	Comparison	T. Duckrey, G. Clymer
	Intervention	J. Barry, A. Hamilton
Urban Nutrition Initiative	Comparison	W.C. Bryant, A. Locke
	Intervention	A.H. Shaw, H.C. Lea

The C3 curriculum was implemented throughout the year with the first classroom receiving the pre-survey on December 8, 2011 and the last class receiving the post-survey on June 7, 2012. Pre-tests were administered prior to the start of lessons and post-survey were scheduled to take place within two weeks of the final lessons.

ORE was responsible for administering both the pre- and post-surveys in all classrooms. The instrument (Appendix D) consisted of thirty-nine items. Eleven of the items were taken from the *Diet and Physical Activity* portion of the Youth Risk Behavior Surveillance System (YRBS).²¹ Two of the non-YRBS items asked about the amount of time students spent in physical activity each day, and the remaining twenty-

²⁰ Koch, P.A., Contento, I.R., & Barton, A.C. (2010). *Choice, control, and change: Using science to make food and activity decisions*. New York, NY: Teachers College Columbia University.

²¹ The full Youth Risk Behavior Surveillance System asks questions about both risk and protective behaviors, including drug use, sexual activity, diet, and physical activity. It is administered biennially by the Center for Disease Control (CDC) to a national sample of high school students.

six items asked about the content covered in the C3 lessons. Of those 26 items, 16 questions were used to calculate a “C3 health knowledge score.” These questions yielded a score ranging from 0 to 16, with a higher score indicating greater mastery of the C3 content. (See Appendix E for the sixteen survey items that were used to create the C3 health knowledge score.)

The questions taken from the YRBS were used to gauge the physical activity levels, fruit consumption, and vegetable consumption of the students receiving the C3 intervention. If a student indicated that they consumed a food item “1 time per day,” “2 times per day,” or “3 times per day,” it was counted as one, two, or three times per day, respectively. If a student indicated that they consumed a food item “4 or more times per day,” it was counted as four times per day. If a student reported consuming a food item at any rate lower than once per day, it was counted as zero times per day. The number of times per day that students reported consuming fruit and 100% fruit juice were then combined to obtain an overall level of fruit consumption. Students were split into two groups: (1) those who consumed fruit and/or fruit juice twice per day or more; and (2) those who did not. Similarly, the number of times per day that students consumed green salad, potatoes, carrots, and other vegetables were summed to obtain an overall level of vegetable consumption. The students were then split into two categories, similar to the above-mentioned fruit consumption categories. Finally, the number of times per day that students reported eating fruit and the number of times per day they reported eating vegetables were summed to obtain an overall level of fruit and vegetable consumption. This number was then used to split students into two groups: (1) those who ate fruits and vegetables five or more times per day;²² and (2) those who did not.

A total of 871 students took either the pre- or post-survey. Of these, 279 (32%) were in the comparison group and 592 (68%) were in the intervention group. Out of the 871 students, 773 students reported their gender, with 380 males (49.2%) and 393 females (50.8%). The mean age of the students was 13.6 years (SD=0.65); they ranged from 11 to 16 years of age. As seen in Table 4, 747 students out of the 871 total students reported their race/ethnicity, with the largest proportion of students being black or African American for both comparison and intervention groups.

Table 4. Ethnicity of C3 Comparison and Intervention Participants (n=747)

Race/ethnicity	Overall (%)	Comparison (%)	Intervention (%)
Black or African American	43.5	43.9	43.8
White	7.1	2.4	9.4
Hispanic/Latino	25.7	26.2	25.5
Asian	8.8	11.7	7.4
American Indian or Alaska Native	0.8	0.8	0.8
Native Hawaiian or Pacific Islander	0.0	0.6	0.4
Identified as more than 1 ethnicity	13.4	15.3	12.4

²² The U.S. Department of Agriculture, 2005 Dietary Guidelines for Americans suggests a minimum of 5 fruits and vegetables per day.

Student Snack Choice Experiment

ORE conducted a snack choice experiment based on the study detailed in Matvienko (2007).²³ This was the second year for this study. The overall purpose of the study was to measure the potential effect of the *EAT.RIGHT.NOW.* nutrition education lessons on students' snack choices over time. For the 2011–12 school year, in addition to grades 3–5, ORE added 8th grade to the experiment.

The study compared students in grades 3–5, who received nutrition education lessons from the community partners. A total of eight schools were included for grades 3–5 (Table 5). Due to difficulty with getting buy-in from schools to do the experiment, some partners only have one school, while others have more.

Additionally, the snack choice experiment compared 8th grade students who received the C3 intervention to 8th grade students who did not receive the C3 intervention. This was done to see if the C3 intervention had any impact on their snack choices. As seen in Table 5, the 8th grade component of the experiment took place in six schools. For the entire 8th grade sample, all three trials were not completed to due to scheduling and internal school factors. In addition, student demographics were not collected for those 8th grade students who completed the snack choice experiment. (Student demographics were collected for the overall C3 population. See Table 4.)

Table 5. Snack Choice Experiment Schools by Community Partner

Community Partner	Group	Schools
Albert Einstein	3 rd -5 th grade	J Marshall
	8 th grade	--
Drexel University	3 rd -5 th grade	L.W. Waring
	8 th grade	W.H. Hunter
Health Promotion Council	3 rd -5 th grade	A.M. Stearne, J. Catharine
	8 th grade	G.W. Childs*, J. DeBurgos*, Potter-Thomas
The School District of Philadelphia	3 rd -5 th grade	F.A. Bregy, A.S. Jenks
	8 th grade	--
The Food Trust	3 rd -5 th grade	G. Cleveland
	8 th grade	J. Barry*, T. Duckery
Urban Nutrition Initiative	3 rd -5 th grade	C.R. Drew
	8 th grade	--

-- =snack choice did not occur; *=C3 intervention school

There were a total of 594 students in grades 3–5, of which 150 were in the 3rd grade, 280 were in the 4th grade, and 164 were in the 5th grade. Out of the 594 students in grades 3–5, 488 reported their age. The mean age of these students was 9.44 years (SD=0.970), ranging from 8 to 12 years of age. As depicted in Table 6, the majority of students for each grade was African American. Among the 8th grade sample, there were a total of 325 students.

²³ Matvienko, O. (2007). Impact of a nutrition education curriculum on snack choices of children ages six and seven years. *Journal of Nutrition Education and Behavior*, 39, 281-5. doi: 10.1016/j.jned.2007.01.004

Table 6. Race/Ethnicity of Snack Choice Experiment Sample Grades 3–5 (n=421)

Race/ethnicity	3 rd (%)	4 th (%)	5 th (%)	Total (%)
Black or African American	56.3	53.1	55	54.4
White	14.6	18.7	6.4	14.5
Hispanic/Latino	6.8	9.1	13.8	9.7
Asian	7.8	6.2	7.3	6.9
American Indian or Alaska Native	6.8	4.8	3.7	5
Native Hawaiian or Pacific Islander	1.9	0.5	0	0.7
Identified as more than 1 ethnicity	5.8	7.7	13.8	8.8

The study took place on four separate days, and all students who were present on those days had the opportunity to participate in the study. The first two visits, which occurred approximately one week apart, were used to collect pre-test data. The third visit, which occurred approximately six weeks after the second visit, was used to collect post-test data, and the final visit, which occurred approximately four weeks after the third visit, was used to collect follow-up data. For the 8th grade, due to issues with accessing the classrooms and scheduling with school administrators, no follow-up data were collected.

On the initial visit, the study was briefly explained to the potential participants and all were told that they could opt-out of the study if they did not wish to participate. In order to gain passive parental consent, a form was sent home with all of the students with additional forms left for any students who were absent on the first day. The form briefly explained the study and informed parents that if they did not wish for their child to participate they had to sign and return the form to the child's classroom teacher.

After the study was explained, students were given a snack choice survey (See Appendix F). The snack survey consisted of 11 items and was created specifically for this study. The survey (given only to 3rd, 4th, and 5th graders) asked for participants' demographic information and also asked questions about participants' snack preferences, their snacking habits, and their knowledge about the healthfulness of particular snacks. A "snack choice health knowledge" score was developed from a series of survey items. Students were asked to indicate if seven snacks and three drinks were "healthy" or "unhealthy", with a max score of 10 (meaning they got all of them correct) and minimum score of 0.

For the younger grades, ORE researchers read the questions and response options aloud to the class to ensure that all of the participants could complete the survey regardless of their reading level. In the process of reading the survey, the researcher also clarified some of the terminology used. For instance, the term "healthy snacks" was explained as snacks that "are full of vitamins and nutrients" and that "are good for your body." The term "salty snacks" was explained as "snacks such as pretzels, potato chips, and crackers," and the term "sweet snacks" was explained as "snacks such as cookies, candy, or cakes."

After participants completed the survey, they were given a snack pre-order form that also had been created for this study (See Appendix G). It listed seven food items (baby carrots, fruit snacks [NOT dried fruit], crackers [NOT whole wheat], whole wheat crackers, potato chips, apple slices, and low-fat string cheese) and three drink items (water, a fruit drink [NOT 100% fruit juice], and skim [fat-free] milk). Each item was accompanied by a color picture of that item.

The food and drink choices were chosen because of their previous use by Matvienko (2007). As in Matvienko's study, the snacks were categorized as either "healthy" (a category that included baby carrots, whole wheat crackers, apple slices, low-fat string cheese, water, and skim [fat-free] milk) or "unhealthy" (a category that included fruit snacks [NOT dried fruit], crackers [NOT whole wheat], potato chips, and a fruit drink [NOT 100% fruit juice]). Healthy snacks were scored as one point and unhealthy snacks were scored as zero points. The number of points that each student received was then summed to obtain an overall "snack choice behavior score" that could range from 0–3, with higher scores indicating healthier snack choices.

After students had completed the snack survey, the researcher instructed the students to indicate two food items and one drink that they would like the researchers to bring for them when they returned in one week. The researcher clarified that the snacks would be provided free of charge and also stated that all of the snacks would be about the same size, in an attempt to prevent students from choosing snacks based upon the amount they expected to receive. Although the participants' choices were later assigned health scores, the participants were not explicitly informed that their snack choices were being monitored. The total amount of time required for this portion of the study was approximately 20 to 25 minutes per class.

The second school visit occurred about one week later. During this visit individual participants were called out into the hallway one at a time to visit a snack table. The snack table was set-up in the hallway so that the participants could not see it until they left the classroom. One of each snack was arranged randomly on the table and labeled with the same term that had been used on the pre-order survey. The arrangement of the snacks was kept the same across classrooms to reduce the chance that different groups of students would be systematically influenced by changes in the snacks' placement. When a participant initially approached the table, one of the researchers recited the following:

"A week ago you ordered some snacks. Today we brought extra of every snack, so you do not have to choose what you ordered a week ago. However, you are free to keep the same snack choices or change them. What two snacks and one drink would you like for today?"

After a participant had indicated his or her actual snack selections, the chosen snacks were placed in a brown paper bag and given to the participant. The researcher recorded the participant's actual choices and then recited a second prompt, which stated: "Remember not to take your snacks out of the bag and not to tell your classmates what you have chosen until everyone in the class has finished choosing their snacks." After all of the participants had been called out to choose their snacks, they were permitted to open the bags and eat their snacks. The snack selection portion of the study took approximately 20–25 minutes per class.

During the third visit, the participating students filled out the snack survey for a second time. As the class filled out the survey, individual students were called out into the hall to select their snacks. The procedure was identical to the procedure for the second visit. This portion of the study took approximately 20–25 minutes per class.

For the last visit, students were again called out into the hall individually to select snacks. The procedure remained consistent with the previous visits, and the follow-up visit took approximately 20 minutes per class.

III. Evaluation Results

Overall Programming Reach and Dose

Between October 2011 and June 2012, ERN educators conducted 237,543 nutrition events. This represents an 11% increase over the previous year. The number of events by type is reported in Table 7. A single class is a one-time class that the nutrition educator or teacher provides, while a series is more than one class. One-on-one refers to cost share staff engaging an individual student in conversation related to one of the nutrition education objectives. After-school single and series occur after the normal school day. The total number of assemblies provided by contracted vendors was 6,209; this represents the total number of assemblies for all eligible schools participating in the grant. Assembly follow-up refers to any follow-up led by the teacher or nutrition educator, which is directly related to the assemblies.

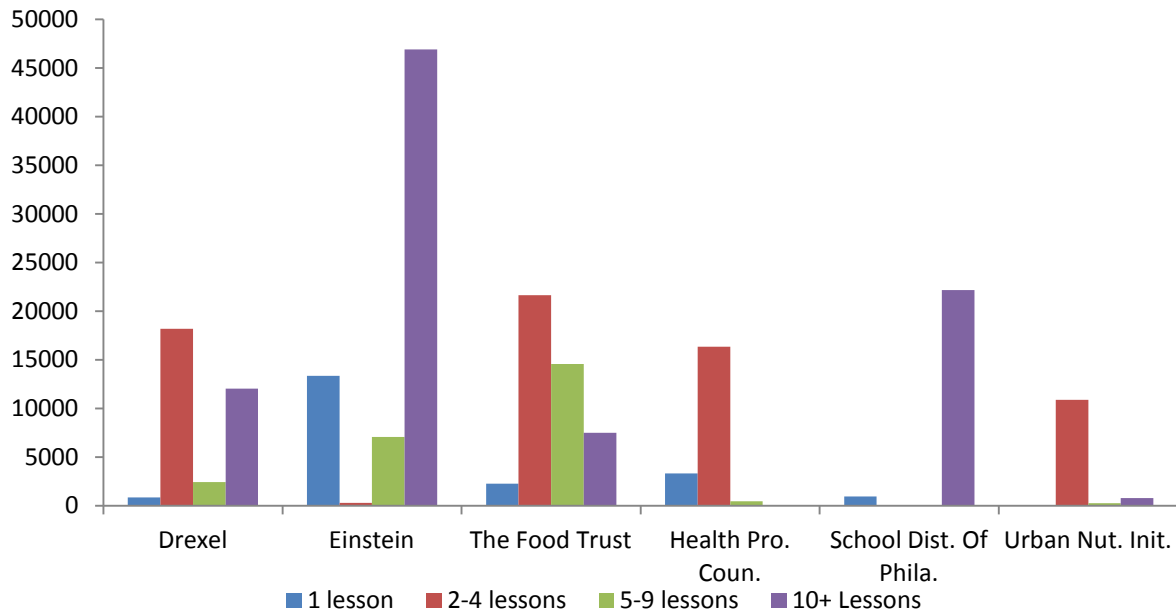
Table 7. Number of Nutrition Education Events by Type, 2011–12

Type	Total Number
Single class	20,778
Series classes	
2-4	67,412
5-9	24,810
10 or more	89,444
One-on-one	3,344
After-school single class	22
After-school series classes	525
Assembly	6,209
Assembly follow-up	24,808
Other	191
Total	237,543

Notes: ^A one-on-one event refers to cost-share staff engaging an individual student in conversation related to one of the ten objectives.

As evidenced in Figure 1, each community partner varied in the number of lesson series completed. For instance, nutrition educators from The School District of Philadelphia (SDP) almost exclusively did 5-9 lesson series, while the Urban Nutrition Initiative (UNI) almost exclusively provided 2-4 lesson series. On the other hand, Einstein did over 45,000 10+ lesson series for the school year—the greatest among all community partners.

Figure 1. The Number of Nutrition Lesson Series Done by Community Partner, 2011–2012



The total number of events conducted by each community partner is reported in Table 8. Also, a comparison by community partner for number of nutrition education events is made between the 2011 and 2012 school years. For the 2012 school year, Albert Einstein had the highest number of nutrition education-based events followed by SDP, whose total number of events also included nutrition assembly programs for all SNAP-Ed eligible schools in the district who elected to have an assembly in their school. Comparing between last school year (2011) and the most recent school year (2012), Drexel, HPC, TFT, and Albert Einstein increased their number of events, with the latter having the greatest increase (56.9%). SDP and UNI had decreases in the number and percentage of events from FY 2011 to FY 2012.

Table 8. Total Number of Events by Community Partner, 2011–12

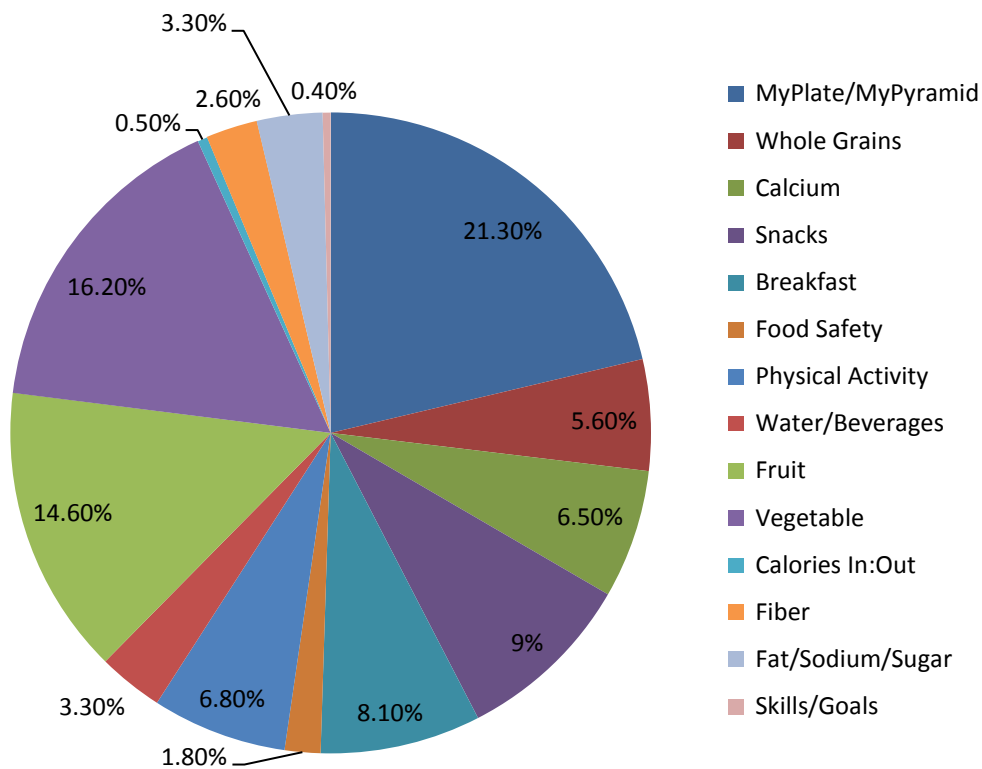
Community Partner	Total Number of Events 2011–12	Percentage of All Events (%)	Total Number of Events 2010–11	Percentage of All Events (%)	Percentage Change (%): 2011 and 2012
The School District of Philadelphia (SDP)	54,226*	22.8	60,741	28.4	-10.7
Drexel University	34,663	15.0	34,448	16.1	+3.5
Health Promotion Council (HPC)	21,455	9.0	20,334	9.5	+5.5
The Food Trust (TFT)	46,392	19.5	42,793	20.0	+8.4
Urban Nutrition Initiative (UNI)	12,160	5.1	12,310	5.8	-1.2
Albert Einstein	64,647	28.5	43,126	20.2	+56.9
Total	237,543	100.0	213,752	100.0	+11.1

*Includes assembly programs

Content Areas

Single classes were defined as individual nutrition lessons administered by nutrition educators to a single classroom. Series classes were the same as single classes, except that they were part of a larger “series” of lessons (e.g., a lesson on “soda” that is part of a larger series of lessons on “beverages”). Researchers gathered data on nutrition education lessons by the following grade levels: K, 1st, 2nd, 3rd, 4th, 5th, 6-8th, and 9-12th) and in the following content areas: fruit, MyPyramid/MyPlate,²⁴ vegetables, breakfast, snacks, calcium, whole grains, physical activity, beverages, and calories in:out.²⁵ Each content area was defined as the “objective.” As depicted in Figure 2, 21.3% of all nutrition lessons were MyPyramid/MyPlate, followed by vegetables (16.2%) and fruit (14.6%). The two content areas that composed the smallest percentages (less than 1% when combined) were calories in:out, and skills and goal-setting.

Figure 2. 2011–2012 Nutrition Education Objectives for Students K–12



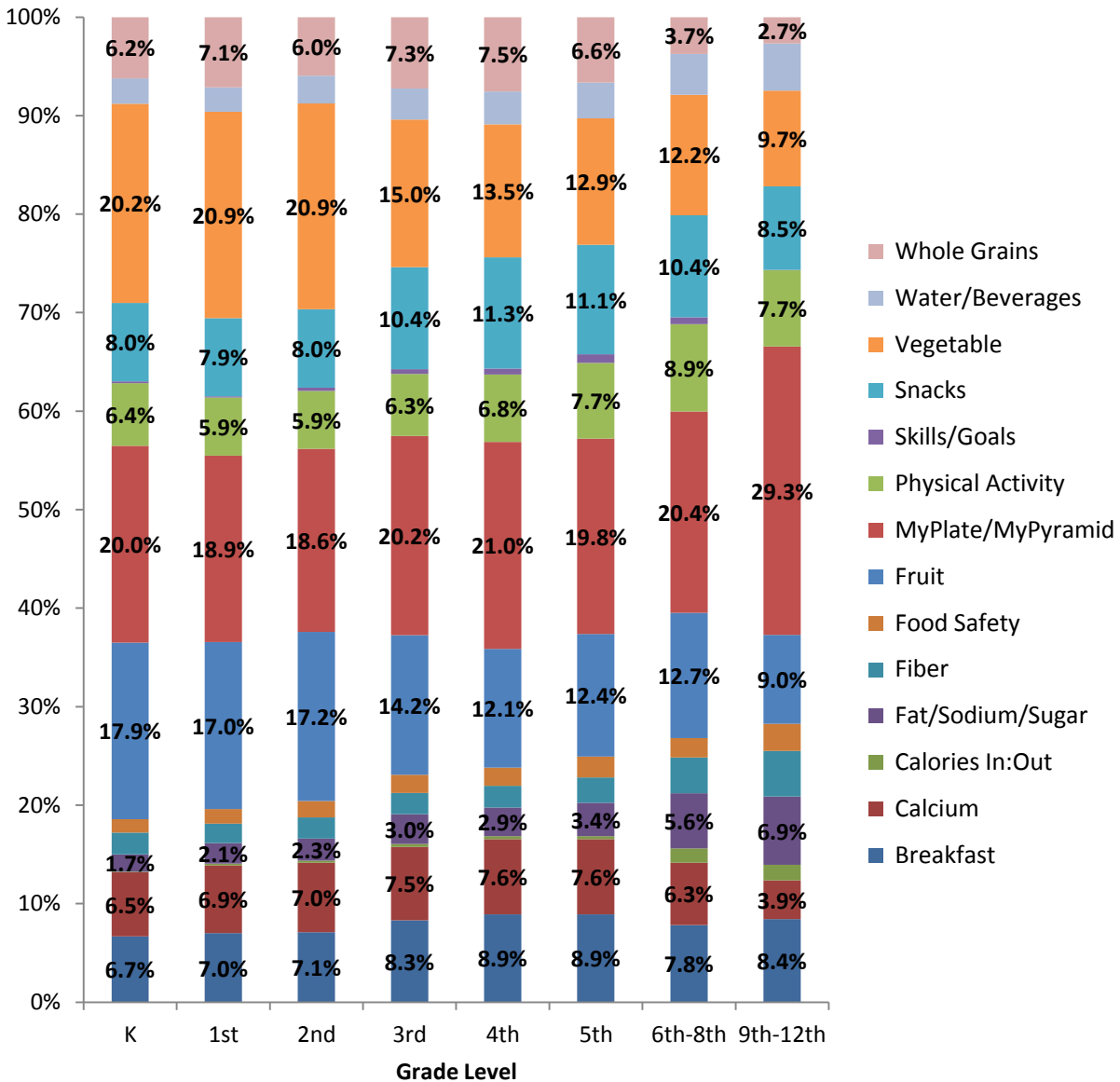
In addition to exploring the overall distribution of main nutrition education objectives for all students, nutrition education objectives by grade level were also examined. As seen in Figure 3, the majority of lessons were *MyPlate/MyPyramid*, followed by vegetables (for grades K–5 and 9–12) and fruits (grades

²⁴ Lessons related to the federal nutrition guidelines

²⁵ Lessons regarding balancing caloric intake with physical activity

6–8)²⁶. Interestingly, there were two nutrition objectives that were almost never recorded by nutrition educators: *Calories in:out* was reported less than 1% of the time for grades K-5, and less than 2% of the time for grades 6–8 and 9–12. A similar trend held true for the nutrition objective, *Skills/goals*, where for each grade less than 1% of the time for this objective was recorded by nutrition educators.

Figure 3. 2011–2012 Nutrition Education Objectives by Grade Level,

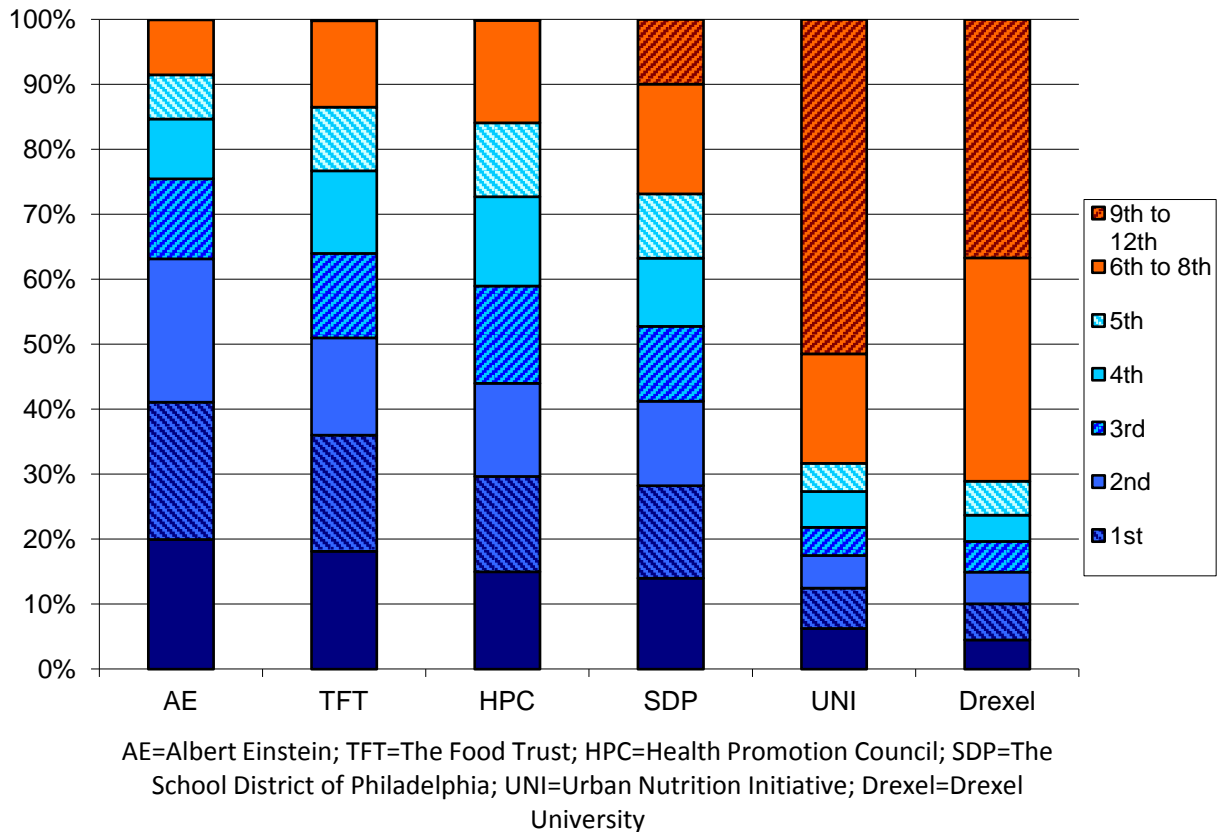


²⁶ ORE was told by a few of the nutrition educators that many will select “MyPlate/MyPyramid” as the default learning objective when they struggle to “fit” a program into one of the pre-populated learning objectives. This could be the reason why this objective is most common for all grades.

Partner and Grade Level Focus

The percentages of each partner’s nutrition lessons used with each grade level were calculated. The results were then compared among partners to discern whether any notable differences occurred (see Figure 4). Overall, SDP conducted 50,530 lessons (23.3% of the total); The Food Trust conducted 43,901 (20.2%); Health Promotion Council (HPC) conducted 18,987 (9.74%); Drexel conducted 32,034 (14.8%); Einstein conducted 59,639 (27.5%); and Urban Nutrition Initiative (UNI) conducted 12,054 (5.55%). Drexel and UNI focused the majority of their education on students in grades 6–8 and 9–12, while the other community partners focused on the younger students (e.g., students in grades K–5).

Figure 4. Percentage of Lessons by Grade by Community Partner, 2011–2012



4th Grade Vegetable Core

Pre-Post Survey Results

For the 4th Grade Vegetable Core, the Management Entity calculated mean pre- and post-survey scores for four variables (attitude, self efficacy, preference, and knowledge). Only students who completed a pre- and post-survey within approximately 3-5 weeks (or 17-39 days) were included in these results (n=494). As seen in Table 9, post-survey scores were significantly improved (p<0.05) for each of the four

Table 9. 4th Grade Vegetable Core: Changes in Student Attitude, Self-Efficacy, Preference, and Knowledge Improvement, Pre- to Post-Survey Changes, 2011–12

Survey (n)	Pre-test Mean Total Score (SD)	Post-test Mean Total Score (SD)	Mean Total Score Change	<i>p</i> -value
Attitude (483)	7.83 (2.05)	8.01 (2.10)	0.18	0.038
Self-efficacy (482)	7.67 (2.27)	7.89 (2.24)	0.22	0.016
Preference (439)	36.24 (7.93)	37.53 (8.18)	1.29	<0.001
Knowledge (437)	2.70 (1.14)	3.81 (1.11)	1.11	<0.001

Fidelity and Student Engagement Results

The 4th Grade Vegetable Core included four lessons. Because only one observation was done for both Lessons 1 and 2, comparisons in content fidelity were not possible for those two lessons. As for Lessons 3 and 4, there was 100% content fidelity for the lessons. Moreover, there was 100% consistency (inter-rater reliability) between the two raters for these lessons.

During Lesson 1, at least 90% of students were engaged at each two-minute interval. The teacher led instruction in seven of the ten intervals, while students were engaged in small group instruction during the other three observed intervals. For Lesson 2, at least 90% or more of the class was engaged at each two minute interval; and all of the momentary times were teacher-led. For Lesson 3, the class was less than 90% engaged a quarter of the time; for 74% of the momentary time lapses, the students were at least 90% or more engaged. On average, instructional practices observed were whole-class, teacher-led (63% of the time), while the remainder was independent student work time. Finally, for Lesson 4 of the curriculum, at least 90% of students were engaged at all of the two minute intervals. As for the type of instruction, on average, for 74% of the momentary time lapses, students were engaged in whole class, teacher-led instruction; 16.7% of the times were large group, peer collaboration; 5.55% of the times were small group, peer collaboration; and 4.2% of the times were independent student work.

8th Grade Choice, Control, & Change (C3) Curriculum

The evaluation of the C3 initiative involved several different measures. Lesson fidelity and student engagement were measured through classroom observations; acquisition of content knowledge was measured using pre-to-post survey responses; and behavior change was measured with both pre-to-post survey responses and responses to a modified YRBS survey. All analyses were conducted using IBM SPSS[®] 19, and an *a priori* alpha level of 0.05 was used to determine statistical significance. The specifics of each outcome measure are detailed in the relevant sections below.

Pre-Post Survey Results

A total of 281 students completed both the pre- and post-surveys, along with answering at least thirteen out of sixteen C3 health knowledge questions, which composed the C3 health knowledge score. Answers between both surveys were matched. Of these, 170 (60.5%) were in the comparison group and 111 (39.5%) were in the intervention group.²⁷ The mean age of the students was 13.6 (SD=.63) and ranged from 12 to 16 years old. Male students comprised 51.4% of the sample.

²⁷ This large difference in the conditions' sample size may be due to intervention classrooms having more students than the comparison group classrooms.

In order to determine if there was a significant difference in C3 health knowledge scores between the gender groups, an Independent samples *t*-test and a repeated-measures ANOVA (RM-ANOVA) were conducted. In terms of the pre-test, there was not a significant difference in C3 health knowledge scores for males ($M=7.46$, $SD=3.04$) and females ($M=7.88$, $SD=2.70$); $t(278)=-1.21$, $p=0.28$. Because there was not a statistically significant difference, a RM-ANOVA was performed to determine if the two groups differed from pre- to post-survey. The RM-ANOVA indicated that there was no within subjects effect of time $F(1,278)=0.165$, $p=0.685$, and that there was not a significant interaction between the groups $F(1,278)=0.252$, $p=0.616$. This indicated that gender did not have an effect on C3 health knowledge scores.

An independent samples *t*-test and a RM-ANOVA were conducted in order to determine if there was a significant difference pre-to-post intervention in C3 health knowledge scores between those who received C3 lessons from nutrition educators and those who did not. Since gender did not have a significant effect on C3 health knowledge scores, it was not used as a covariate in the remaining tests. The Independent samples *t*-test determined that there was not a significant difference in content knowledge on the pre-survey for the intervention group ($M=7.77$, $SD=2.80$) and the comparison group ($M=7.61$, $SD=2.94$); $t(279)=-0.46$, $p=0.65$. Because this difference was not statistically significant, a RM-ANOVA was performed to determine if the two groups differed from pre- to post-survey.

The RM-ANOVA indicated that there was no within subjects effect of time $F(1,279)=0.031$, $p=0.860$ and that there was a significant interaction between the groups $F(1,279)=5.085$, $p=0.025$. This indicated that the growth from pre- to post-survey was significant for those students who received the C3 curriculum compared to those who did not. Moreover, the C3 students had a descriptive, but insignificant, increase in health knowledge, whereas the comparison students' knowledge decreased.

A two-tailed Pearson correlation was used to determine whether being in the intervention or comparison group was associated with higher reports of weekday and weekend physical activity on the post-test. Students were grouped into a dichotomous variable (control=0, intervention=1), which was correlated with the number of minutes a student reported being active on either the weekday or weekend.

The test for both weekday and weekend physical activity indicated that there was a non-significant correlation between condition and amount of time a student reported being physically active, (weekday: $r=0.50$, $p=0.332$; weekend: $r=0.049$, $p=0.337$). Another two-tailed Pearson correlation was used to determine whether higher C3 health knowledge scores on the post-test were associated with higher reports of weekday and weekend physical activity. The test for weekday physical activity indicated a weak, but statistically significant positive correlation between weekday physical activity and C3 health knowledge score, $r=0.150$, $p=0.014$, indicating that as students health knowledge increased, so did their reported weekday physical activity. However, the test for weekend physical activity was not significant, $r=0.068$, $p=0.270$.

Among students receiving the C3 intervention, a two-tailed Pearson correlation was used to determine whether higher C3 health knowledge scores were associated with higher reports of weekday physical activity. The test indicated that there was a significant and positive correlation between C3 health knowledge scores for those students who received the curriculum and weekday physical activity, $r=0.426$, $p<0.001$. This signifies that students who answered more C3 health knowledge questions correctly also reported engaging in higher levels of physical activity during the week. The two-tailed

Pearson correlation was also used to determine whether higher C3 health knowledge scores were associated with higher reports of physical weekday activity in the students who did not receive the C3 curriculum (comparison group). The test indicated that there was a non-significant correlation between C3 health knowledge scores for students in the comparison group and weekday physical activity, $r=-0.016$, $p=0.837$.

Using pre- and post-survey data, RM-ANOVAs were used to determine whether C3 and comparison students differed from each other over time. Results indicated no statistical significance between C3 intervention students and the comparison group in regards to behavior items such as, physical activity and food intake, between the pre-and post-survey. Detailed results are located in Appendix H.

Nutrition and Physical Activity (Modified YRBS) Results

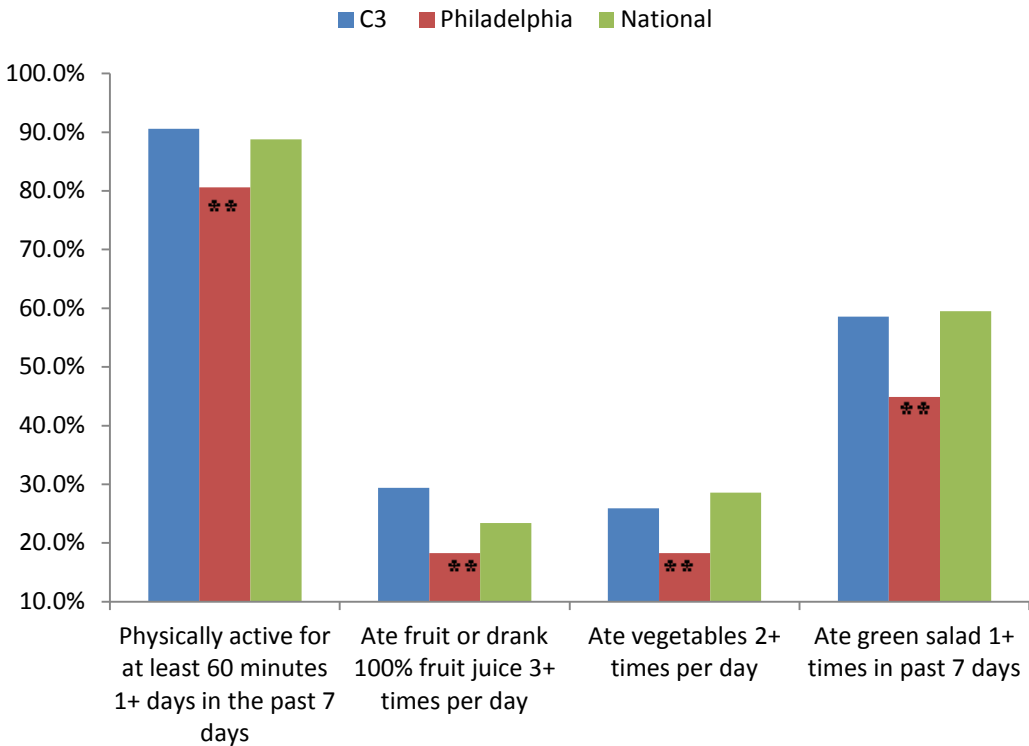
Chi-square tests were used to determine whether there were statistically significant differences in food and physical activity behaviors, among those SDP students who received the evidence-based C3 curriculum ($n=170$), as measured by their post-survey results, compared to a representative sample of students who did not receive the C3 curriculum. In addition, representative data for 9th grade students²⁸ both in Philadelphia ($n=432$) and the nation ($n=4,257$) were obtained from The Centers for Disease Control and Prevention's 2011 Youth Risk Behavior Surveillance System (YRBS).²⁹ The students were categorized based upon the number of times they ate particular food items, drank soda, or engaged in physical activity over the previous seven days. Appendix I contains a detailed table depicting all results for the chi-square analyses.

Moreover, as depicted in Figure 5, there were statistically significant differences between those 8th grade students who received the C3 curriculum and 9th grade Philadelphia students for the following variables: physically active for at least 60 minutes one or more days within the last week; ate fruit or drank 100% fruit juice three or more times per day. However, there were no statistically significant differences between those 8th grade students who received the C3 curriculum and a representative sample of national students.

²⁸ Data from 9th grade had to be used because Pennsylvania does not participate in the Middle School YRBS. As an approximation, we used the High School YRBS 9th grade student data on nutrition and physical activity knowledge and behaviors.

²⁹ Centers for Disease Control and Prevention (2011). Youth Risk Behavior Surveillance System. Available at www.cdc.gov/yrbs

Figure 5. YRBS Comparisons among 8th Grade C3 Students, 9th Grade Philadelphia Students, and National Sample, 2011–2012



Note: **Statistically significant difference from 8th grade C3 students (chi square); Source: The Centers for Disease Control and Prevention. *Youth Risk Behavior Surveillance System (YRBS)*. Accessed on August 3, 2012, from: <http://www.cdc.gov/HealthyYouth/yrbs/index.htm>

Student Snack Choice Experiment

The overall purpose of the Snack Choice Experiment was to measure the potential effect of the *EAT.RIGHT.NOW* nutrition education lessons on students’ snack choices over time. For the 2011–12 school year, in addition to grades 3–5, 8th grade was added to the experiment. ORE evaluators coordinated with the nutrition educator and the school principal, and were able to execute the experiment during times that classroom teachers had already set aside for lessons with the nutrition educator. The following sections highlight findings in grades 3–5 and grade 8.

Grades 3–5 Snack Choice Sample

As detailed earlier in this report, because there was contamination of the comparison group, there were no true comparison and intervention groups for the 3rd through 5th grade sample. An Independent samples *t*-test was used to determine if there were significant differences among the initially selected comparison and intervention groups and the number of lessons each group received. The test determined that there was a non-significant difference in how many lessons the original comparison group received ($M=191.67, SD=55.22$) and how many lessons the original intervention group received ($M=211.40, SD=79.44$); $t(6)=-0.374, p=0.721$. This means that the amount of lessons the various participants received were not different enough to make a statistical comparison.

In additional analyses, student samples were grouped by community partner. In order to determine if there was a significant difference in snack choice behavior scores among students served by the various community partners, a RM-ANOVA was conducted for the pre-and post-snack choice tests. The RM-ANOVA indicated that there was a significant within subjects effect of time; $F(1,344)=2.36, p=0.04$. However, there was not a significant interaction between the groups; $F(1,344)=0.228, p=0.95$. These results signify that each group of students sorted by partner, when looked at individually, had a significant change in their snack choices from the pre- to post-test. However, this change was negative, meaning students chose significantly less healthy snacks after their nutrition lessons. The fact that there was no statistically significant interaction among the groups of students by community partners demonstrates that students' snack choices were not influenced by which partner provided the nutrition lessons.

A two-tailed Pearson correlation was used to determine whether there was a relationship between students' frequency of thinking about a healthy food option before eating a snack and their snack choice behavior score before the experiment. There was a very weak, non-significant correlation between the variables [$r=0.085, n=419, p=0.08$]. The same test was run using the student's post-experiment snack choice. The same trend held true: there was an even weaker, non-significant correlation between the variables [$r=0.002, n=365, p=0.98$]. These non-significant correlations demonstrate that how often students think about the healthfulness of a snack is not associated with the food choices they make.

In addition, those students in grades 3 through 5 were asked to determine whether several snacks were "healthy" or "unhealthy." Then, they were asked to rate their level of confidence in their knowledge of whether or not the snack was healthy. Table 10 depicts the number of students who indicated a snack was unhealthy on the post-test, yet still chose that snack, and the number of students who indicated a snack was healthy at the post-test and chose not to eat that snack during the experiment.

Results showed that for many of the snack items, such as carrots, string cheese, apples, water, and skim milk, students identified them as being "healthy," but did not choose to eat them, opting instead for a more unhealthy snack. For example, almost all students (95.1%) knew that carrots were a healthy snack, yet they chose a different snack. Moreover, many students knew that a snack was "unhealthy" and still selected it. For instance 37.6% of the students in the experiment stated on their post-survey that potato chips were unhealthy and still decided to choose them as their snack—signifying that regardless of their knowledge, their behavior is driven by other factors, such as enjoying the salty taste or due to familiarity of seeing potato chips at home or in stores.

These results also showed that a large percentage of students thought that certain items that are not categorized as healthy, were in fact healthy, such as fruit-flavored snacks (NOT dried fruit), fruit-flavored drinks (NOT 100% fruit juice), and crackers (NOT whole wheat). These snack items may confuse students as to whether or not they are healthy. For example, students may see the word "fruit" when they are presented with the choice of "fruit-flavored drink" even though it says "NOT 100% fruit juice," and believe it to be healthy. The word "fruit" may hold a positive connotation in the student's mind. More research needs to be done to better understand this phenomenon.

Table 10. Students' Knowledge of Healthfulness of Snacks and Selection during Snack Choice Experiment, Grades 3 through 5, 2011–12 School Year

Snack Item	N=	Said it was "unhealthy" on post-survey and chose the item	Said it was "healthy" on post-survey and did NOT choose item	χ^2, p (2-sided)
Potato Chips	338	127 (37.6%)	37 (10.9%)	2.76, 0.12
Carrots	349	0 (0%)	332 (95.1%)	0.21, 1.00
Fruit Flavored Snacks (NOT dried fruit)	327	113 (34.6%)	60 (18.3%)	0.51, 0.49
Whole Wheat Crackers	337	0 (0%)	272 (80.7%)	3.73, 0.056 [#]
Apples	350	2 (0.6%)	258 (73.7%)	0.05, 1.00
Low-fat String Cheese	334	9 (2.7%)	198 (59.3%)	1.53, 0.27
Crackers (NOT Whole Wheat)	331	17 (5.1%)	109 (39.2%)	7.24, 0.01*
Water	349	2 (0.6%)	248 (71.1%)	0.35, 0.62
Fruit-Flavored Drink (NOT 100% Fruit Juice)	334	113 (33.8%)	63 (18.9%)	1.14, 0.30
Skim (Fat-Free) Milk	336	2 (0.6%)	284 (84.5%)	0.00, 1.00

[#]=marginally significant; *=significant at the $p < 0.05$ value

A two-tailed Pearson correlation was used to determine if there was a relationship between the extent to which a student was confident a snack was healthy and if they correctly identified the snack item as being healthy. Students were tested on all snack items, as listed in Table 10. (To see the correlations between how sure students were of their answer of "healthy" or "unhealthy" for all ten snack items, see Appendix J.)

Out of 332 students, 44.6% were "very sure" that potato chips were unhealthy, and 22% were "a little sure" that they were unhealthy. There was a weak but significant correlation ($r=0.125, p=0.02$) between a student's confidence level and ability to identify potato chips as unhealthy. In addition, for fruit-flavored snacks (NOT dried fruit), 27.8% of 320 students were "very sure" that fruit-flavored snacks are unhealthy. Many students were only "a little sure" that they were unhealthy (22.2%) and 17.8% of students were "very sure" that fruit-flavored snacks were healthy. There was a very weak, non-statistically significant correlation between students feeling sure about their answer and answering correctly, that fruit-flavored snacks are unhealthy, $r=0.045, p=0.42$.

For crackers (NOT whole wheat), 20.5% of 317 students were "very sure" that non-whole wheat crackers were healthy and 12.6% were "a little sure" that they were healthy. Only 27.8% reported being "very sure" that non-whole wheat crackers were unhealthy. There was a weak but statistically significant, negative correlation between students feeling sure about their answer and answering correctly, $r=-0.173, p=0.002$. This negative correlation shows that many students are still confused about or unaware of the nutritional benefits of whole-wheat snacks. To see the correlations between how sure students were of their answer of "healthy" or "unhealthy" for all ten snack items, see Appendix J.

A one-way ANOVA was run to see if there was a difference in students' snack choice health knowledge score on the pre-test and the students' current grade level in school. Results showed that there was no statistical significance between the scores students received on the pre-test and the students' grade

level, $F(2,477)=2.37, p=0.095$. An RM-ANOVA was conducted to determine if there was a significant difference in pre- to post-test snack choice health knowledge scores, among the students' grade levels. Results showed that there was no within subjects effect of time, $F(1,358)=0.665, p=0.415$. However, there was a statistically significant interaction between subjects, $F(2,358)=3.597, p=0.028$. Post-hoc analysis using the Tukey range test was performed and indicated that the significant interaction was between 3rd grade ($M=7.18, SD=0.185$) and 5th grade ($M=7.88, SD=0.199$). These results show that for each of the grade levels the development of pre- to post-snack choice health knowledge scores did not demonstrate significant changes. However, when comparing the direction of 3rd grade pre- to post-scores and the direction of 5th grade pre- to post-scores, there was significance. This finding indicated that the content knowledge of the 3rd grade students increased at a significant rate when compared to the rate of change in content knowledge for 5th grade students.

8th Grade Snack Choice Sample

For the 2011-12 school year, in addition to grades 3 through 5, ORE added 8th grade to the experiment. The study compared 8th grade students who received the C3 intervention to 8th grade students who did not receive the evidence-based intervention. In order to determine if there were significant differences in the snack choice behavior scores between these two groups, an Independent samples *t*-test was conducted. Results showed there was a significant difference in snack choice behavior scores on the pre-test for the intervention group ($M=1.38, SD=0.939$) and the comparison group ($M=1.14, SD=0.079$); $t(247)=-2.076, p=0.039$. Because there was a statistically significant difference in pre-snack choice behavior scores, a one-way analysis of covariance (ANCOVA) was conducted. A preliminary analysis evaluating the homogeneity-of-regression indicated that the relationship between the covariate and the dependent variable did not differ significantly as a function of the independent variable, $F(1,111)=0.011, p=0.918$. There was a significant difference in the snack choices between the students who received the C3 intervention and those who did not, even after taking into account their differences in knowledge at the pre-test, $F(1,112)=5.51, p=.021$. In other words, the snack choices of the C3 intervention group improved at the post-test, when compared to those students who did not receive the C3 intervention.

IV. Discussion

***EAT.RIGHT.NOW.* Administration**

In terms of reach and dose, for the 2011–12 FY, there was an 11.1% increase in the total nutrition education-related events delivered to students through the *EAT.RIGHT.NOW.* program. This increase is mainly due to Albert Einstein's substantial increase in events from 43,126 in FY 11 to 67,647 in FY 12—attributable to more increased education in grades K through 3. For the remaining community partners, there were relatively minor changes when comparing nutrition education events last year to this year (anywhere from a 10% decrease for SDP to an 8% increase for TFT). As for the nutrition education content being taught by educators, similar to FY 11, the largest percentage was MyPyramid/MyPlate, followed by lessons on fruits and vegetables. From reviewing the 2012 FY data, possible areas for improvement in nutrition education would be around skills and goals, which were taught less than 1% of the time for each of the grades. These are important components in students' decision around food choices and behaviors. Moreover, more sequencing of curricula over the grades would be desirable, to ensure that all children are exposed to all areas of nutrition education.

A substantial portion of the success of this program is attributed to the leadership. Each community partner has had stable leadership and all meet at least monthly to collaboratively address and overcome

barriers, while creating strategies that will translate to positive student outcomes. All community partners have been engaged in the evaluation process and contributed input and assistance when needed.

4th Grade

The 4th grade Vegetable Core lessons were implemented with a high level of fidelity and also demonstrated high levels of student engagement. However, due to the fact that the observations were limited for some of the lessons, results should be interpreted with caution.

From comparing mean scores pre- to post-, there were significant gains in knowledge, vegetable preference, self-efficacy, and attitude. Most notably for questions around knowledge, there was a mean increase in scores, with students averaging 2.7 and 3.8 out of 5 questions correctly answered from pre to post-test, respectively. This trend is consistent with the previous year, and reinforces the impact that this research-based curriculum has on students' nutrition knowledge and behaviors.

8th Grade

This was the second year the *Choice, Control & Change* ("C3") curriculum was used with 8th grade students. Accompanying the curriculum were a pre- and post-survey, which attempted to measure changes in knowledge and behaviors around nutrition and physical activity. A total of 16 questions, ranging from energy balance to properly identifying nutritional and physical activity recommendations (See Appendix E), made up the "C3 health knowledge score." There were no differences in the overall C3 health knowledge score for male versus female 8th grade students who received the curriculum, and there were not significant changes from pre-to-post for either group. Interestingly, when comparing the students' health knowledge scores between those who received the C3 curriculum and those who did not, there was an overall significant increase in growth from pre to post-survey. In other words, those students who did receive the evidence-based intervention had a better understanding of nutrition and physical activity knowledge, when compared to their non-C3 counterparts.

Students were also asked about their physical activity behaviors. Results indicated that the C3 curriculum did not have an effect on students' physical activity, regardless of weekend or weekday activity. Interestingly, when comparing those students' scores on the C3 health knowledge score and physical activity, there was only a significant relationship between weekday physical activity and health knowledge. In other words, those students who did better on the C3 health knowledge portion of the survey had small increases in weekday-only physical activity. This is a small, promising trend that needs to be further monitored.

Nutrition and physical activity behaviors for those students who completed the C3 intervention were compared to a national sample of 9th grade City of Philadelphia student, using the Centers for Disease Control & Prevention's YRBS data.³⁰ In general, C3 students performed higher than other Philadelphia students for behaviors such as eating green salads, fruit consumption three times or more, being physically active for at least 60 minutes for more than one day a week, and vegetable consumption more than one time per week. However, C3 students did worse compared to the nation on other measures, such as being physically active for at least 60 minutes five or more days a week, and fruit consumption one time or more.

³⁰ Data from 9th grade had to be used because Pennsylvania does not participate in the Middle School YRBS. As an approximation, we used the High School YRBS 9th grade student data on nutrition and physical activity knowledge and behaviors.

In general, the C3 curriculum showed some positive gains for 8th grade students at SDP. Students who were enrolled in the curriculum did better in some above-mentioned knowledge and behavior questions. In FY 13, the C3 curriculum will be expanded to 7th grade as well, accompanied by similar evaluation methods.

Snack Choice Experiment

This was the first year of the snack choice experiment, following last year's pilot. As a result of lessons learned from the pilot, modifications were made to the experiment, including

- not displaying brands of snacks;
- for fruit-flavored snacks, instructing students to not count dried fruit as a snack; and
- assessing students' level of confidence (e.g., "how sure are you?"), after indicating whether a snack was healthy or not.

One of the major findings from the snack experiment was that regardless of students' knowledge of a snack being unhealthy, it did not preclude them from selecting the same unhealthy snack during the experiment. Reasons for this could be the over-riding desire to want the food, regardless of it being healthy or not; having the food before at school, after-school, or at home; recognizing that the food was "popular" in advertisement or among their peers (e.g., Gushers-like fruit snacks). Further research needs to be done to delve deeper into this phenomenon.

Another interesting finding was that there seemed to be confusion about the healthfulness of fruit-flavored snacks. One hypothesis is that students were under the assumption that because the snack name includes the word "fruit" in it, that it is automatically healthy. This finding is important as educators can tailor their instruction to educate students on the differences between fruit and fruit-flavored or fruit-like snacks and drinks. In addition, it is important to note that there was a significant difference in snack selection for those students who received the C3 curriculum and those who did not. The snack choices of the C3 group improved over time, when compared to those students who did not receive the C3 intervention. This provides evidence that the evidence-based curriculum had some effect on students' snacking behaviors. It should be noted that for this study, the C3 results are only applicable to students in 8th grade, and may not be representative to younger age students.

Another consideration for this study that was not controlled for was the time of day the experiment took place. In general, researchers tried to conduct the experiment sometime before lunch. However there was variation in the time, which could have impacted students' selection of snacks. Some experiments occurred closer to lunch time, when students would be hungrier, than if the experiment occurred after breakfast.

Study Limitations

There were several limitations to this evaluation. Firstly, there was known contamination of the comparison group for the C3 study and Snack Choice Experiment. By using the PA TRACKS STARtracks online database, researchers were able to determine that some students who were not supposed to get intervention materials did, in fact, receive them. Greater efforts for FY 13 will be taken to help educators understand the importance of having a true comparison group.

Moreover, ORE intended to conduct 8th grade student focus groups to determine student perceptions about nutrition, and the priority students place on healthy eating and nutrition in general. After

conducting four focus groups, it was determined that there were not sufficient data to report on students' perceptions and behaviors.

In terms of the Snack Choice Experiment, a follow-up survey was not completed with 8th graders. In addition, ORE planned to include six 4th grade classrooms in the sample, in order to draw comparisons between those students in the experiment who received the 4th Grade Vegetable Core and those who did not. The sample included fewer than 20 students, which made it impossible to test for differences in students who received the 4th Grade Vegetable Core and those who did not. Moreover, ORE did not complete two classroom observations per lesson or conduct a lesson plan review.

As for the assembly programming, ORE was not able to complete any post-assembly follow-up lessons or classroom observations. Also, ORE did not conduct any student focus groups to measure for effectiveness of the assembly programming. Lastly, surveys were not administered to teachers and staff at schools where assemblies occurred.

As a result of these lessons learned, for the 2012-2013 school year, an evaluation will be conducted of nutrition assembly programming, including administering a survey to the students who attend assemblies. Also, focus groups will be conducted to determine strengths and weaknesses of assemblies and to measure any knowledge retention. Lastly, surveys will be administered to teachers and staff, including school nurses, at schools where assemblies occur.

A final limitation was that only two focus groups were done with high school students. While ORE did not state the exact number of focus groups to be completed, we were unable to gain a representative sample.

V. Conclusion

For FY13, SDP will continue to evaluate the PA TRACKS grant, including checking for sustainability of vegetable knowledge and healthy nutrition behaviors of 5th grade students who participated in the Vegetable Core as 4th graders in FY 12. Moreover, a three year impact study will begin in FY 13, tracking 3rd graders as they matriculate into 4th grade and then 5th grade. The purpose of this longitudinal impact study is to determine nutrition and physical activity knowledge and behavior and measure trends over the next three years. As for the C3 curriculum, ORE will be evaluating changes in student knowledge and behaviors for both 7th and 8th grades, as the curriculum is expanding to include 7th grade. Lastly, the assembly programming will be evaluated for effectiveness. Several methods will be employed, including focus groups with students, surveying teachers and staff, and student surveys.

Appendix A

PENNSYLVANIA NUTRITION EDUCATION TRACKS
4th Grade Survey

YOUR NAME: _____

TODAY'S DATE: _____

YOUR SCHOOL: _____

YOUR TEACHER'S NAME: _____

YOUR GRADE: _____

- Today you will be asked to answer a few questions about vegetables and healthy eating.
- No one at school or at home will see your answers.
- Taking part in this project is up to you. Your choice about taking part will not affect your grades in school or your ability to take part in any school activities.
- If you do not want to answer a question, you can skip it.
- You may stop answering questions at any time.
- You will be asked to answer these questions on two different days.
- Your name will not be used with your answers.

Please fill in the circle to mark your answer.

1. I am a: Girl Boy

2. How old are you today? 8 9 10 11 12

3. Do you make food with your family? Yes No

4. A snack is any food that you eat or drink before, after, or between meals. How often do you choose your own snacks?
 - I **almost always** choose my own snacks.
 - I **usually** choose my own snacks.
 - I **sometimes** choose my own snacks.
 - I **hardly ever** or **never** choose my own snacks.

5. How do you feel about the taste of vegetables?
 - I **really like** the taste of vegetables.
 - I **kind of like** the taste of vegetables.
 - I **don't like** the taste of vegetables.
 - I **really don't like** the taste of vegetables.
 - I'm **not sure if I like** the taste of vegetables.

6. How do you feel about making snacks with vegetables?
 - I **really like** to make snacks with vegetables.
 - I **kind of like** to make snacks with vegetables.
 - I **don't like** to make snacks with vegetables.
 - I **really don't like** to make snacks with vegetables.
 - I'm **not sure if I like** to make snacks with vegetables.





























































7. I can make a snack with vegetables.

<input type="radio"/> YES!	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NO!	<input type="radio"/> Not sure
-----------------------------------	----------------------------------	---------------------------------	----------------------------------	---------------------------------------

8. I can eat many kinds of vegetables each week.

<input type="radio"/> YES!	<input type="radio"/> Yes	<input type="radio"/> No	<input type="radio"/> NO!	<input type="radio"/> Not sure
-----------------------------------	----------------------------------	---------------------------------	----------------------------------	---------------------------------------

For each food pictured fill in the circle under the one face that reflects how you feel about that food.

	I really like it.	I like it.	I don't like it.	I really don't like it.	I don't know if I like it.
Romaine Lettuce 					
Celery 					
Carrots 					
Black Beans 					
Tomato 					
Peppers 					
Corn 					
Broccoli 					
Peas 					
Spinach 					

Please fill in the circle to mark your answer. If you are not sure of the correct answer, make your best guess.

9. Broccoli has vitamin C which helps keep my gums and teeth healthy.

- True
- False

10. Carrots and corn are in the same vegetable subgroup.

- True
- False

11. Vegetables help keep me from getting sick.

- True
- False

12. Beans are high in fiber.

- True
- False

13. What amount of vegetables is best for me to eat each day?

- Amounts that equal **4 ½ cups**
- Amounts that equal **1 cup**
- Amounts that equal **2 ½ cups**
- Amounts that equal **6 cups**

Do not write inside this box					
ME Use Only					
<input type="text"/>	-	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**TRACKS
Partner Code**

<input type="text"/>	<input type="text"/>	<input type="text"/>
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Appendix B

ERN FIDELITY ASSESSMENT FORM

Subcontractor:	School Name:
Nutrition Educator:	Grade: 4
Date:	# Students on Role:
Time Started:	# Students Present:
Time Stopped:	Name of Lesson: Lesson 1: Surprising Veggies
Evaluator:	Lesson Objective: Demonstrating knowledge and behavior consistent with USDA guidance.

EAT.RIGHT.NOW. 2010-2011 Lesson Plan Content

Lesson Plan Content	Did not cover	Somewhat covered	Completely Covered
1. Before all else, educator should conduct pre-test. Educator tells students to pretend educator is from a far away land in an attempt to get students involved in explaining what they know or remember about <i>MyPyramid</i> .			
2. Post <i>MyPyramid for Kids</i> poster in front of the room.			
3. Ask students a series of leading questions about <i>MyPyramid for Kids</i> . Educator should give the correct answers if students say incorrect answers.			
4. Vegetable Identification Activity. Green felt should be displayed and explained.			
5. Students grouped in pairs or triads.			
6. Packets of 2-3 vegetable food model cards passed out to each group. Students are instructed to select the cards they think are in the vegetable group.			
7. Educator has one student from each group to place only their veg. cards on the green felt. After all the cards are placed on the felt briefly describe the veg. if students are not familiar.			
8. Ask students to show other cards left and ask if any should be placed in veg. group why/why not. Announce all cards belong in vegetable group.			
9. Extension Activity: Explain that the veg. group is wider at the bottom and narrower at the top. Foods with little or no added sugar or fat are placed at the bottom and veg. with more added fat and sugar are placed at the top.			
10. In pairs students help re-arrange the food cards so foods with little added sugars and fats are at the bottom. Emphasize to students to eat veg. they like and to eat from all different levels of the veg. group.			
11. Summarize information. Ex. Beans are part of veg. group			

Lesson Plan Content	Did not cover	Somewhat covered	Completely Covered
12. Food-tasting: Sugar Snap Peas (2 baby carrots).			
13. Remind students that sugar snap peas make a good snack.			

Performance Standard	-			+
Educator used effective time management to cover all lesson content				
Educator used positive classroom management skills to keep students engaged and on task.				
Educator was effective in delivering content and emphasizing the lesson objective.				
Teacher was supportive in classroom management and lesson delivery.				

1. Note any information omitted from the lesson.

Note the reason for omission.

2. Note anything that was added to the lesson.

Note the reason for the addition.

3. Additional Comments

ERN FIDELITY ASSESSMENT FORM

Subcontractor:	School Name:
Nutrition Educator:	Grade: 4
Date:	# Students on Role:
Time Started:	# Students Present:
Time Stopped:	Name of Lesson: Lesson 2: Veggie Math
Evaluator:	Lesson Objective: Students can state recommended daily vegetable consumption.

EAT.RIGHT.NOW. 2010-2011 Lesson Plan Content

Lesson Plan Content	Did not cover	Somewhat covered	Completely Covered
1. Hang <i>MyPyramid for Kids</i> poster, introduce topic (vegetables) and review <i>MyPyramid for Kids</i> .			
2. Tell students they need 2 ½ cups of vegetables each day and then demonstrate to students what 2 ½ cups of vegetables looks like by making a simple salad of Romaine lettuce, green peas, and tomatoes.			
3. Explain how it takes more of certain types of vegetables to make 1 cup and explain what vegetables consist of.			
4. Ask students if they think they eat 2 ½ cups a days and remind them that the demonstration represents a whole day, not 1 salad.			
5. Food tasting: Colorful Crunch Salad (1/2 cup of salad).			
6. Remind students that a salad is a quick and easy and vegetables help keep us from getting sick.			
7. .Have students clean hands, then select 3 to help make salad			
8. Hand out <i>Food Math</i> worksheet and have students work in pairs to complete it. Review that ½ cup + ½ cup = 1 whole cup			
9. Review worksheet when students are finished. Have some students share their answers and then if time allows, have some students share their favorite vegetables.			

Performance Standard	-			+
Educator used effective time management to cover all lesson content				
Educator used positive classroom management skills to keep students engaged and on task.				
Educator was effective in delivering content and emphasizing the lesson objective.				
Teacher was supportive in classroom management and lesson delivery.				

1. Note any information omitted from the lesson.

Note the reason for omission.

2. Note anything that was added to the lesson.

Note the reason for the addition.

3. Additional Comments

ERN FIDELITY ASSESSMENT FORM

Subcontractor:	School Name:
Nutrition Educator:	Grade: 4
Date:	# Students on Role:
Time Started:	# Students Present:
Time Stopped:	Name of Lesson: Lesson 3: The Veggie Subgroups
Evaluator:	Lesson Objective: Students can identify health benefits of vegetables from different subgroups.

EAT.RIGHT.NOW. 2010-2011 Lesson Plan Content

Lesson Plan Content	Did not cover	Somewhat covered	Completely Covered
1. Review <i>MyPyramid for Kids</i> recommendation of 2 ½ cups of vegetables per day.			
2. Ask students if it is acceptable to eat 2 ½ cups of just one kind of vegetable each day. Why not?			
3. Tell students that each vegetable has a subgroup based on their nutrients and/or color. 5 subgroups.			
4. Hand out <i>The Veggie Subgroups</i> handout. Have students complete by circling vegetables on the sheet that match those on the board. Review each subgroup, their benefits and the importance of eating a variety of vegetables each day. Use food model cards to show examples of each subgroup. Discuss fiber.			
5. Divide students into small groups and pass out the <i>Vegetable Detectives</i> handout to each group. Have the students complete one worksheet per group. Review the correct answers with the class when the students are finished.			
6. While preparing food tasting, ask students which vegetable subgroups are represented in the salsa.			
7. Food tasting: Southwestern-style Salsa (small portions w/ tortilla chips).			
8. Remind students that adding beans and corn to salsa is quick and easy, that beans are vegetables but are so nutritious that they fall into both the vegetable group and the meat and beans group. Remind that beans are great sources of fiber and protein.			

Performance Standard	-			+
Educator used effective time management to cover all lesson content				
Educator used positive classroom management skills to keep students engaged and on task.				
Educator was effective in delivering content and emphasizing the lesson objective.				
Teacher was supportive in classroom management and lesson delivery.				

1. Note any information omitted from the lesson.

Note the reason for omission.

2. Note anything that was added to the lesson.

Note the reason for the addition.

3. Additional Comments

ERN FIDELITY ASSESSMENT FORM

Subcontractor:	School Name:
Nutrition Educator:	Grade: 4
Date:	# Students on Role:
Time Started:	# Students Present:
Time Stopped:	Name of Lesson: Lesson 4: Vary Your Veggies
Evaluator:	Lesson Objective: Students can identify at least two health benefits of eating vegetables.

EAT.RIGHT.NOW. 2010-2011 Lesson Plan Content

Lesson Plan Content	Did not cover	Somewhat covered	Completely Covered
1. Review key messages. Eat 2.5 cups of veggies. Vegetables have 5 subgroups.			
2. Remind students that orange vegetables are high in vitamin A. Vitamin A keeps our eyes and skin healthy, and keeps us from getting sick.			
3. Ask students if they remember which vegetable subgroup carrots and sweet potatoes belong to (orange subgroup).			
4. Divide students into pairs. Ask students to look on the back of their cards and locate the line with vitamin A.			
5. Have students identify the number listed next to vitamin A. Explain that a vegetable that lists 70% has more vitamin A than a vegetable with 20%.			
6. Tell students they are going to rank order the vegetables from highest to lowest for vitamin A.			
7. The student with the sweet potato card goes to the side of the room to be the top rank. The student with the celery card goes to the other side of the room and is the bottom of the rank.			
8. Ask all other students to quickly and silently fill in the rest of the line according to the vitamin A number on their card.			
9. Any card that states "Not a significant source of vitamin A" will be at the lowest end of the line. In addition, the students with baked potatoes etc. will also be at the lowest end because values for vitamin A are too small.			
10. Discuss the results. Ask students what surprised them.			
11. Extension of Rank Order: Using the same cards repeat the process for rank ordering the vitamin C content.			

12. Remind students some veggies have more vitamin A than others. Eating a variety of vegetables will get you 100% of all the nutrients you need for a healthy body.			
13. Pass out the handout <i>What counts as one cup of vegetables?</i>			
14. Ask students to name one dark green or orange vegetable from the handout that they would e willing to eat more often.			
15. Food Tasting: Colorful Crudites (small pieces of raw vegetables) Review during tasting that orange and green vegetables are rich in vitamin A etc.			
16. Before leaving, educator should conduct post-test.			

Performance Standard	-			+
Educator used effective time management to cover all lesson content				
Educator used positive classroom management skills to keep students engaged and on task.				
Educator was effective in delivering content and emphasizing the lesson objective.				
Teacher was supportive in classroom management and lesson delivery.				

1. Note any information omitted from the lesson.

Note the reason for omission.

2. Note anything that was added to the lesson.

Note the reason for the addition.

3. Additional Comments

Appendix C

Student Engagement and Instructional Technique

Purpose: The purpose of this observation tool is to provide data on the lesson formats used and the student responses to the lesson.

Method: A momentary time sample was used to record snapshots of lesson formats used by the teacher and student responses. Momentary time sample cannot be interpreted as "percent of time", rather as "percent of intervals observed". It is not an ideal method for behavior data collection, but provides a more practical alternative for document ongoing behaviors (those that cannot be measured as frequency) that is fairly reliable to record.

Definitions:

Student Engagement: student is looking at the teacher, writing or asking something related to the activities of class, or otherwise following teacher instructions. Student engagement includes raising hand, answering a question, taking notes, doing assignment, preparing work materials (taking out book, sharpening pencil). Student engagement does not include talking to a peer socially, asking questions not related to the lesson, looking away from teacher, head down on desk, playing with work materials.

Instructional codes

WC	Whole-class teacher-led	teacher is providing material to students, students are seated
SG	Small group teacher-led	teacher is working with a small group of students, other students are working at desk
II	Individual instruction	teacher is working one-on-one with a student
ID	Independent work at desk	students are working at own pace at desks
PT	Peer-tutoring	students are paired with peers, a helper peer and a learner peer
PS	Peer small group collaboration	two or three students are working together
PL	Peer large group collaboration	more than three students working together

2 – minute Momentary Time Sample: Student Engagement with Lesson Format Code

	< 50%	<75%	<90%	≥90%	Lesson Format	Notes	Percent	
#							< 50%	
1							<75%	
2							<90%	
3							≥90%	
4								
5								
6							WC	Total
7							SG	%
8							II	
9							ID	
10							PT	
11							PS	
12							PL	
13								
14							Comments:	
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

Appendix D

Eat. Right. Now. C3 Survey 2011-2012

This survey asks some questions about nutrition and physical activity. The questions are part of a study to learn how to teach students about health. By answering the questions, you are agreeing to participate in this study. Completing this survey is voluntary and you may stop at any time. If you do not feel comfortable answering a question, just leave it blank. Your answers will not affect your school grades. All your answers will be kept private. Any questions about your background will only be used to describe the students completing this survey. Some of the questions on this survey ask about material you have not learned yet. It is expected that you will not know the answers to these questions, so do not be concerned if you are unsure of an answer. If you do not know the correct answer to any question, just take your best guess and move on to the next question.

Name: _____

Homeroom Teacher: _____

Today's Date: _____

School: _____

Read each question and fill in the bubble to indicate your answer.

Example:

What grade are you in?

- 5th
- 6th
- 7th
- 8th

What is your age?

- 11 years old
- 12 years old
- 13 years old
- 14 years old
- 15 years old
- 16 years old

What is your gender?

- Male
- Female

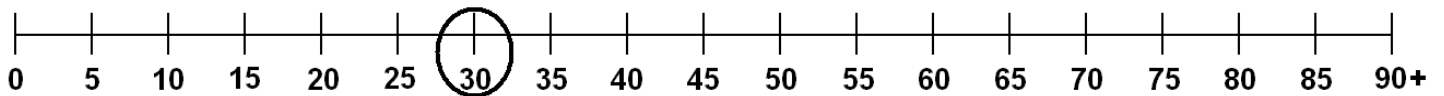
What is your ethnicity? (You may select more than one.)

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or Pacific Islander
- White

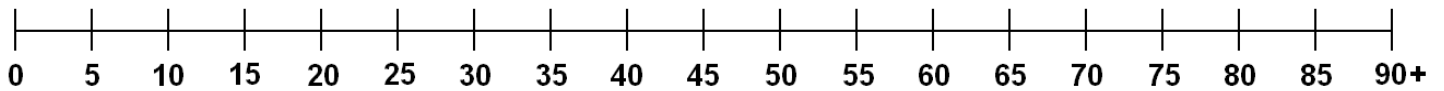
Read each question and circle a number to indicate your answer. For the following section, please select ONLY ONE answer for each question

Example:

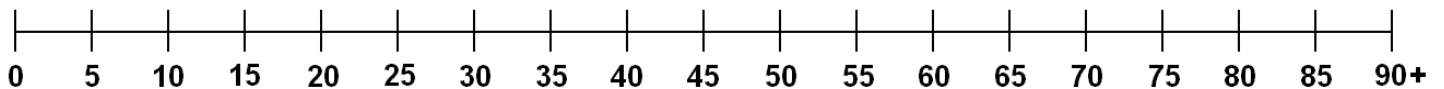
On an average weekday, how many minutes do you spend watching TV each day?
Please round to the nearest 5 minutes and circle the closest answer below.



-
1. On an average weekday, about how many minutes are you physically active (walking, biking, running, playing a sport, or any similar activity) each day?
Please round to the nearest 5 minutes and circle the closest answer below.



2. On an average weekend, about how many minutes are you physically active (walking, biking, running, playing a sport, or any similar activity) each day?
Please round to the nearest 5 minutes and circle the closest answer below.



Read each question and fill in the bubble to indicate your answer. The following section asks about your physical activity and what you ate and drank during the past 7 days. For the following section, please select ONLY ONE answer for each question

Example:

During the past 7 days, how many TV shows did you watch?

- I did not watch any TV shows during the past 7 days
 - 1 TV show
 - 2 TV shows
 - 3 or more TV shows
-

3. During the past 7 days, how many times did you drink 100% fruit juices such as orange juice, apple juice, or grape juice? (Do NOT count punch, Kool-Aid, sports drinks, or other fruit-flavored drinks.)

- I did not drink 100% fruit juice during the past 7 days
- 1 to 3 times during the past 7 days
- 4 to 6 times during the past 7 days
- 1 time per day
- 2 times per day
- 3 times per day
- 4 or more times per day

4. During the past 7 days, how many times did you eat fruit? (Do NOT count fruit juice.)

- I did not eat fruit during the past 7 days
- 1 to 3 times during the past 7 days
- 4 to 6 times during the past 7 days
- 1 time per day
- 2 times per day
- 3 times per day
- 4 or more times per day

5. During the past 7 days, how many times did you eat green salad?

- I did not eat green salad during the past 7 days
- 1 to 3 times during the past 7 days
- 4 to 6 times during the past 7 days
- 1 time per day
- 2 times per day
- 3 times per day
- 4 or more times per day

6. During the past 7 days, how many times did you eat potatoes? (Do NOT count French fries, fried potatoes, or potato chips.)
- I did not eat potatoes during the past 7 days
 - 1 to 3 times during the past 7 days
 - 4 to 6 times during the past 7 days
 - 1 time per day
 - 2 times per day
 - 3 times per day
 - 4 or more times per day
7. During the past 7 days, how many times did you eat carrots?
- I did not eat carrots during the past 7 days
 - 1 to 3 times during the past 7 days
 - 4 to 6 times during the past 7 days
 - 1 time per day
 - 2 times per day
 - 3 times per day
 - 4 or more times per day
8. During the past 7 days, how many times did you eat other vegetables? (Do NOT count green salad, potatoes, or carrots.)
- I did not eat other vegetables during the past 7 days
 - 1 to 3 times during the past 7 days
 - 4 to 6 times during the past 7 days
 - 1 time per day
 - 2 times per day
 - 3 times per day
 - 4 or more times per day
9. During the past 7 days, how many times did you drink a can, bottle, or glass of soda or pop, such as Coke, Pepsi, or Sprite? (Do NOT count diet soda or diet pop.)
- I did not drink soda or pop during the past 7 days
 - 1 to 3 times during the past 7 days
 - 4 to 6 times during the past 7 days
 - 1 time per day
 - 2 times per day
 - 3 times per day
 - 4 or more times per day

10. During the past 7 days, how many glasses of milk did you drink? (Count the milk you drank in a glass or cup, from a carton, or with cereal. Count the half pint of milk served at school as equal to one glass.)
- I did not drink milk during the past 7 days
 - 1 to 3 glasses during the past 7 days
 - 4 to 6 glasses during the past 7 days
 - 1 glass per day
 - 2 glasses per day
 - 3 glasses per day
 - 4 or more glasses per day
11. During the past 7 days, on how many days did you eat breakfast?
- 0 days
 - 1 day
 - 2 days
 - 3 days
 - 4 days
 - 5 days
 - 6 days
 - 7 days
12. During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day? (Add up all the time you spent in any kind of physical activity that increased your heart rate and made you breathe hard some of the time.)
- 0 days
 - 1 day
 - 2 days
 - 3 days
 - 4 days
 - 5 days
 - 6 days
 - 7 days

13. During the past 7 days, on how many days did you do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting?
- 0 days
 - 1 day
 - 2 days
 - 3 days
 - 4 days
 - 5 days
 - 6 days
 - 7 days

Read each question and fill in the bubble to indicate your answer. If you do not know the answer to a question, just take your best guess. For the following section, please select ONLY ONE answer for each question

Example:

What state do you live in?

- Ohio
- New York
- New Jersey
- Pennsylvania

-
14. What is energy balance?
- Making sure that the amount of energy going into your body is greater than the amount of energy your body is using
 - Making sure that the amount of energy going into your body is the same as the amount of energy your body is using
 - Making sure that the amount of energy going into your body is less than the amount of energy your body is using
15. What does it mean to say that the energy you take in should equal the energy you use?
- The amount of time you spend eating should match the amount of time you spend exercising
 - The number of calories you eat should match the number of calories your body uses
 - The number of hours you sleep should match the number of hours you are awake
 - The amount of exercise you get should match the amount of sleep you get
16. What happens if you take in more energy than you use?
- Your body may gain excess fat
 - You will need more sleep
 - You will need less sleep
 - You will lose weight

17. What happens if you take in less energy than you use?
- Your body may gain excess fat
 - You will feel more energetic and need less sleep
 - Your body will use stored energy and you may feel less energetic
 - Your body will gain muscle
18. What is true of most people's current food and activity environment?
- It is much easier to take in energy than to use energy
 - It is much easier to use energy than to take in energy
 - It is very difficult to take in energy and very difficult to use energy
 - It is very easy to take in energy and very easy to use energy
19. How can a person achieve energy balance?
- By being less physically active and eating more foods that are high in fat and sugar
 - By being more physically active and eating more foods that are high in fat and sugar
 - By being less physically active and eating fewer foods that are high in fat and sugar
 - By being more physically active and eating fewer foods that are high in fat and sugar
20. A serving of vegetables is about the size of what?
- A marble
 - A golf ball
 - A baseball
 - A football
21. A serving size of processed snacks (snacks that are made from refined ingredients rather than whole foods) is usually
- Less than one whole package
 - One whole package
 - More than one whole package
22. Which of the following is true of processed snacks (snacks that are made from refined ingredients rather than whole foods)?
- They often have many vitamins in them
 - They are often high in fat and sugar
 - They are often high in protein and fiber
 - They are often healthier than non-processed snacks

23. Non-diet soda is high in:

- Vitamins
- Sugar
- Protein
- Fat

24. How many calories should the average adult eat in a day?

- 1,000 calories
- 2,000 calories
- 3,000 calories
- 4,000 calories

25. This is part of a nutrition label on a snack. If you were to eat the whole package, how many calories would you be eating?

- 100 calories
- 200 calories
- 300 calories
- 400 calories
- 500 calories

Nutrition Facts	
Serving Size 1 cup (150g)	
Servings Per Container 2	
Amount Per Serving	
Calories 200	Calories from Fat 50

26. How long should you be physically active each day?

- 10 minutes
- 30 minutes
- 60 minutes
- 90 minutes

27. How many steps should you try to take each day?

- 1,000 steps
- 5,000 steps
- 10,000 steps
- 20,000 steps

28. According to MyPlate (the new federal nutrition guidelines), fruits and vegetables combined should make up how much of your plate?

- One quarter
- One third
- One half
- Two thirds

29. MyPlate (the new federal nutrition guidelines) states that the majority of your food should:

- Come from plant sources
- Come from animal sources
- Be processed
- Contain added fats and sugars

Read each question and fill in the bubble to indicate your answer. If you do not know the answer to a question, just take your best guess. For the following section, you may select MORE THAN ONE answer for each question.

Example:

Which of the following types of movies do you enjoy? (You may select more than one answer.)

- Action
- Comedy
- Horror
- Thriller
- Romance
- Science Fiction
- Drama

30. Which of the following are examples of taking energy in? (You may select more than one answer.)

- Walking
- Eating a candy bar
- Sleeping
- Watching TV
- Biking
- Eating an apple

31. Which of the following are examples of using energy? (You may select more than one answer.)

- Walking
- Eating a candy bar
- Sleeping
- Watching TV
- Biking
- Eating an apple

32. Which of the following are processed snacks (snacks that are made from refined ingredients rather than whole foods)? **(You may select more than one answer.)**
- Apples
 - Chips
 - Candy
 - Cheese
 - Cookies
 - Almonds
33. Fruits and vegetables are high in: **(You may select more than one answer.)**
- Vitamins
 - Fiber
 - Saturated fat
 - Sodium
34. Which of the following should you try to eat less of? **(You may select more than one answer.)**
- Sugar
 - Fiber
 - Protein
 - Vitamins
 - Saturated fat
35. Which of the following should you try to eat more of? **(You may select more than one answer.)**
- Sugar
 - Fiber
 - Protein
 - Vitamins
 - Saturated fat
36. What happens if you are physically active on a regular basis? **(You may select more than one answer.)**
- Your heart gets stronger and can pump out more blood
 - You lose bone mass and your bones become weaker
 - Your lungs get stronger and can take in more oxygen
 - You build bone mass and your bones become stronger
 - It is harder to control your weight
 - It is easier to control your weight
 - You have difficulty sleeping
 - You are more likely to be in a bad mood
 - You have more energy

37. To stay healthy, you should: **(You may select more than one answer.)**

- Eat more fruits and vegetables
- Eat more processed snacks
- Eat more frequently at fast food places
- Drink fewer sweetened beverages
- Drink more water
- Walk more
- Avoid taking the stairs
- Sleep less
- Eat fewer processed snacks
- Eat less frequently at fast food places

38. Which of the following are food groups on MyPlate? **(You may select more than one answer.)**

- Fruit
- Fats
- Water
- Protein
- Meat
- Vegetables
- Sodium
- Dairy
- Grains
- Sugars

39. Which of the following are healthy food and drink choices? **(You may select more than one answer.)**

- Apples
- Water
- Donuts
- Carrots
- Fried chicken
- Sodas (NOT diet)
- Potato chips
- Milkshakes
- Whole grain bread
- Salsa
- Cookies
- Skim (fat-free) milk
- French fries
- Fruit-flavored drinks (NOT 100% fruit juice)

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Appendix E

Survey Questions Used to Create the “C3 Health Knowledge Score”

1. What is energy balance?
 - Making sure that the amount of energy going into your body is greater than the amount of energy your body is using
 - Making sure that the amount of energy going into your body is the same as the amount of energy your body is using
 - Making sure that the amount of energy going into your body is less than the amount of energy your body is using
2. What does it mean to say that the energy you take in should equal the energy you use?
 - The amount of time you spend eating should match the amount of time you spend exercising
 - The number of calories you eat should match the number of calories your body uses
 - The number of hours you sleep should match the number of hours you are awake
 - The amount of exercise you get should match the amount of sleep you get
3. What happens if you take in more energy than you use?
 - Your body may gain excess fat
 - You will need more sleep
 - You will need less sleep
 - You will lose weight
4. What happens if you take in less energy than you use?
 - Your body may gain excess fat
 - You will feel more energetic and need less sleep
 - Your body will use stored energy and you may feel less energetic
 - Your body will gain muscle
5. What is true of most people’s current food and activity environment?
 - It is much easier to take in energy than to use it
 - It is much easier to use energy than to take in energy
 - It is very difficult to take in energy and very difficult to use energy
 - It is very easy to take in energy and very easy to use energy
6. How can a person achieve energy balance?
 - By being less physically active and eating more foods that are high in fat and sugar
 - By being more physically active and eating more foods that are high in fat and sugar
 - By being less physically active and eating fewer foods that are high in fat and sugar
 - By being more physically active and eating fewer foods that are high in fat and sugar
7. A serving of vegetables is about the size of what?
 - A marble
 - A golf ball
 - A baseball
 - A football

8. A serving size of processed snacks (snacks that are made from refined ingredients rather than whole foods) is usually
- Less than one whole package
 - One whole package
 - More than one whole package

Nutrition Facts	
Serving Size 1 cup (150g)	
Servings Per Container 2	
Amount Per Serving	
Calories 200	Calories from Fat 50

9. Which of the following is true of processed snacks (snacks that are made from refined ingredients rather than whole foods)?
- They often have many vitamins in them
 - They are often high in fat and sugar
 - They are often high in protein and fiber
 - They are often healthier than non-processed snacks

10. Non-diet soda is high in:

- Vitamins
- Sugar
- Protein
- Fat

11. How many calories should the average adult eat in a day?

- 1,000 calories
- 2,000 calories
- 3,000 calories
- 4,000 calories

12. This is part of a nutrition label on a snack. If you were to eat the whole package, how many calories would you be eating?

- 100 calories
- 200 calories
- 300 calories
- 400 calories
- 500 calories

13. How long should you be physically active each day?

- 10 minutes
- 30 minutes
- 60 minutes
- 90 minutes

14. How many steps should you try to take each day?

- 1,000 steps

- 5,000 steps
- 10,000 steps
- 20,000 steps

15. According to MyPlate (the new federal nutrition guidelines), fruits and vegetables combined should make up how much of your plate?

- One quarter
- One third
- One half
- Two thirds

16. MyPlate (the new federal nutrition guidelines) states that the majority of your food should:

- Come from plant sources
- Come from animal sources
- Be processed
- Contain added fats and sugars

Appendix F

Snack Choice Survey 2011-2012

This survey asks questions about the kinds of snacks you eat and how you feel about certain snacks. The questions are part of a research study to learn about students' snack choices. If you answer these questions, you are agreeing to be part of the study. This survey is voluntary. This means that you can stop at any time. If you do not want to answer a question, you can leave it blank. Your answers to the questions will not affect your school grades. Your answers will be kept private. This means that only the researchers involved in the study will see your answers. Questions about your background will only be used to describe the students who took this survey.

Name _____	Today's Date _____
Teacher's Name _____	Grade 3 4 5 <input type="radio"/> <input type="radio"/> <input type="radio"/>

Read each question. Fill in the circles completely to choose your answers.

How old are you today?

- 8 years old
- 9 years old
- 10 years old
- 11 years old
- 12 years old

What is your ethnicity? **(You may mark more than one.)**

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- Native Hawaiian or Pacific Islander
- White

What is your gender?






- Male
- Female

**These questions ask about the snacks you eat and how you feel about certain snacks.
Please choose the answer that best fits you.**

**The term "healthy snacks" means snacks that are full of vitamins and nutrients.
"Healthy snacks" are snacks that are good for your body.**

**"Salty snacks" are snacks such as pretzels, potato chips, and crackers.
"Sweet snacks" are snacks such as cookies, candy, or cakes.**

1) How much do you like the following snacks?

					
Vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salty snacks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sweet snacks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

2) Currently, how often do you eat the following as snacks?

	Never	Rarely/ less than once a week	1-3 times a a week	4-6 times a week	Every day
Vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salty snacks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sweet snacks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

3) How often does your family have the following snacks available at home?

	Never	Rarely	Sometimes	Often	Always
Vegetables	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fruits	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salty snacks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Sweet snacks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

4) How important do you think it is for you to choose healthy snacks?

- Not at all important
- Slightly important
- Moderately important
- Very important
- Extremely important

**REMEMBER: The term "healthy snacks" means snacks that are full of vitamins and nutrients.
"Healthy snacks" are snacks that are good for your body.**

5) How often do you think about how healthy a snack is before you eat it?

Never Rarely Sometimes Often Always

6) When you are at home, who decides what kinds of snacks you eat?

- I decide and my parents/caregivers have no say
- My parents/caregivers and I decide together, but I have more say
- My parents/caregivers and I decide together and we all have equal say
- My parents/caregivers and I decide together, but they have more say
- My parents/caregivers decide and I have no say

7) When your parents/caregivers go grocery shopping, how often do you go with them?

Never Rarely Sometimes Often Always

8) How often do you eat snacks:

	Never	Rarely/ less than once a week	1-3 times a a week	4-6 times a week	Every day
With your family?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
With your friends?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

9) Do your friends try to choose healthy snacks?

- No, never
- Yes, sometimes
- Yes, often
- I don't know

10) How would you describe the kinds of snacks that you currently eat?

Never healthy Rarely healthy Sometimes healthy Often healthy Always healthy

**REMEMBER: The term "healthy snacks" means snacks that are full of vitamins and nutrients.
"Healthy snacks" are snacks that are good for your body.**

- 11) Are the following snacks healthy or unhealthy? How sure are you of your answer?
Please mark TWO answers for each item - one indicating whether you think the item is healthy or unhealthy and a second indicating how sure you are of your answer.

Potato chips	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Carrots	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Fruit-flavored snacks (NOT dried fruit)	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Whole wheat crackers	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Apples	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Low-fat string cheese	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Crackers (NOT whole wheat)	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Water	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

**REMEMBER: The term "healthy snacks" means snacks that are full of vitamins and nutrients.
"Healthy snacks" are snacks that are good for your body.**

- 11) Are the following snacks healthy or unhealthy? How confident are you in your answer?
Please mark TWO answers for each item - one indicating whether you think the item is healthy or unhealthy and a second indicating how sure you are of your answer.

	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
Fruit-flavored drink (NOT 100% fruit juice)	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

	<input type="radio"/> Unhealthy	<input type="radio"/> Healthy		
Skim (fat-free) milk	<input type="radio"/> Not at all sure	<input type="radio"/> A little sure	<input type="radio"/> Very sure	

Appendix G

Today's Date _____

Snack Order Form 2011-2012

The School District of Philadelphia
Office of Research and Evaluation

Name _____

Teacher's Name _____

Grade

3

4

5

8

In a week we will be coming in with two snacks and a drink for you. All three items will be free. This is part of a project about students' snack choices. By choosing snacks, you are agreeing to participate in this project.

**Please choose TWO food items and ONE drink that you would like to have.
To choose an item, fill in the circle below its picture.**

Please select TWO (2) of the following food items:



Baby carrots



Fruit-flavored snacks
(NOT dried fruit)



Crackers
(NOT whole wheat)



Whole wheat crackers



Potato chips



Apple slices



Low-fat string cheese

Please select ONE (1) of the following drinks:



Water



Fruit-flavored drink
(NOT 100% fruit juice)



Skim (fat-free) milk

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CRRT	FRSN	CRKR	WWCR	PCHP	APPL	CHSE	WATR	FRDR	SMLK
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Appendix H

RM-ANOVA Results for C3 and Comparison from Pre- to Post-Test, 2011-2012

Dependent Variable	Main Effect of Time	Main Effect of Condition	Interaction	Significance
Daily intake of soda	F(1,344)=7.87, p=0.005	F(1,344)=4.64, p=0.032	F(1,344)=6.97, p=0.009	Compassion group had a statistically significant decrease in soda intake while C3 group remained stable
Daily intake of milk	F(1,347)=0.34, p=0.559	F(1,347)=3.74, p=0.054	<i>F(1,347)=0.34, p=0.559</i>	No statistical significance
Days per week student ate breakfast	F(1,347)=0.57, p=0.449	F(1,347)=7.27, p=.007	F(1,347)=0.34, p=0.560	Main effect of condition significant
Days per week physically active for 60+ minutes	F(1,326)=0.09, p=0.767	F(1,326)=0.02, p=0.889	F(1,326)=0.54, p=0.456	No statistical significance
Days per week spent strengthening muscles	F(1,326)=0.09, p=0.767	F(1,326)=0.02, p=0.889	F(1,326)=0.54, p=0.456	No statistical significance
Knowing that you need 60 minutes of physical activity per day	F(1,259)=0.00, p=0.959	F(1,259)=15.45, p<.001	F(1,295)=0.01, p=0.815	Main effect of condition was statistically significant
Weekday daily minutes of physical activity	F(1,318)=0.17, p=0.680	F(1,318)=2.07, p=0.151	F(1,318)=0.69, p=0.408	No statistical significance
Daily intake of all fruit as dependent variable	F(1,355)=1.35, p=0.245	F(1,355)=0.01, p=0.913	F(1,355)=0.91, p=0.341	No statistical significance (although C3 students did increase their fruit intake while comparison students decreased their fruit intake)
Daily intake of all vegetables	F(1,341)=0.08, p=0.773	F(1,341)=2.99, p=0.085	F(1,341)=1.11, p=0.292	No statistical significance (although C3 students did increase their veggies intake while comparison students decreased their vegetable intake)
Daily intake of all fruits and vegetables	F(1,340)=0.23, p=0.636	F(1,340)=1.39, p=0.240	F(1,340)=1.35, p=0.247	No statistical significance (although C3 students did increase their intake of fruits and veggies while comparison students decreased their intake)

Appendix I

YRBS Item	C3 at Post-test		Philadelphia C3 Comparison				National C3 Comparison				Comparison Group at Post-test						
	Percent	n	Percent	n	Chi-square	p	Percent	n	Chi-square	p	Percent	n	Chi-square	p			
Drank 100% fruit juice 1+ times in past 7 days	84.7	170	82.9	432	No difference	0.3	0.586	79.5	4257	No difference	2.75	0.098	86	236	No difference	0.14	0.711
Ate fruit 1+ times in past 7 days	80.6	170	77.3	432	No difference	0.77	0.381	87.2	4257	C3 performed worse	6.29	0.012	83.1	236	No difference	0.41	0.524
Ate green salad 1+ times in past 7 days	58.6	169	44.9	432	C3 performed better	9.09	0.003	59.5	4257	No difference	0.06	0.811	44.5	236	C3 performed better	7.82	0.005
Ate potatoes 1+ times in past 7 days	59.1	164	56.5	432	No difference	0.35	0.557	67.7	4257	C3 performed worse	5.26	0.022	57.5	233	No difference	0.11	0.745
Ate carrots 1+ times in past 7 days	41.5	164	40	432	No difference	0.1	0.753	44.9	4257	No difference	0.75	0.386	34.1	232	No difference	2.26	0.133
Ate other vegetables 1+ times in past 7 days	84.8	164	76.9	432	C3 performed better	4.48	0.034	81.5	4257	No difference	1.12	0.289	78.4	232	No difference	2.49	0.115
Drank soda 1+ times in past 7 days	84.7	163	84.3	432	No difference	0.02	0.903	82.4	4257	No difference	0.55	0.457	83.6	232	No difference	0.08	0.78
Drank soda 1+ times per day	35	163	27.8	432	No difference	2.93	0.087	29.7	4257	No difference	2.07	0.149	37.5	232	No difference	0.27	0.607
Drank soda 2+ times per day	27.6	163	19	432	C3 performed worse	5.25	0.022	20.3	4257	C3 performed worse	5.14	0.023	28.4	232	No difference	0.03	0.854
Drank soda 3+ times per day	14.7	163	11.8	432	No difference	0.92	0.339	12.5	4257	No difference	0.71	0.4	18.1	232	No difference	0.79	0.375
Ate fruit or drank 100% fruit juice 1+ times in past 7 days	92.9	170	92.1	432	No difference	0.11	0.736	94.7	4257	No difference	0.98	0.321	95.3	236	No difference	1.06	0.303
Ate fruit or drank 100% fruit juice 1+ times per day	50	170	53	432	No difference	0.44	0.506	63.3	4257	C3 performed worse	12.39	< .001	44.9	236	No difference	1.03	0.311
Ate fruit or drank 100% fruit juice 2+ times per day	41.2	170	24.3	432	C3 performed better	16.84	< .001	35.1	4257	No difference	2.65	0.104	36.4	236	No difference	0.94	0.333
Ate fruit or drank 100% fruit juice 3+ times per day	29.4	170	18.3	432	C3 performed better	8.97	0.003	23.4	4257	No difference	3.28	0.07	22.5	236	No difference	2.52	0.112
Ate vegetables 1+ times in the past 7 days	95.1	162	90.3	432	No difference	3.5	0.061	93.4	4257	No difference	0.71	0.401	89.7	232	No difference	3.74	0.053
Ate vegetables 1+ times per day	42.6	162	48.4	432	No difference	1.59	0.208	60.8	4257	C3 performed worse	21.57	< .001	43.5	232	No difference	0.03	0.854
Ate vegetables 2+ times per day	25.9	162	18.3	432	C3 performed better	4.24	0.04	28.6	4257	No difference	0.55	0.458	26.3	232	No difference	0.01	0.933
Ate vegetables 3+ times per day	14.8	162	12.7	432	No difference	0.44	0.506	16.3	4257	No difference	0.25	0.614	18.1	232	No difference	0.74	0.39
Physically active for at least 60 minutes 1+ days in the past 7 days	90.6	160	80.6	432	C3 performed better	8.5	0.004	88.8	4257	No difference	0.52	0.47	92.3	234	No difference	0.35	0.554
Physically active for at least 60 minutes 5+ days in the past 7 days	43.8	160	37.5	432	No difference	1.91	0.167	52.9	4257	C3 performed worse	5.18	0.023	43.6	234	No difference	0	0.975
Physically active for at least 60 minutes all 7 of the past 7 days	25	160	19	432	No difference	2.59	0.108	30.7	4257	No difference	2.37	0.124	23.9	234	No difference	0.06	0.808

Appendix J

Correlations between Student Knowledge of Snack Healthiness and Confidence in Selecting Correct Answer, Snack Choice Experiment, 2011–2012

Variables being tested	<i>r</i> and <i>p</i> values	Crosstabs	Explanation
Are potato chips healthy? x How sure are you? (n=332)	<i>r</i> =0.125, <i>p</i> =0.023	44.6% were very sure chips are unhealthy 22% were a little sure chips are unhealthy 5.7% were not sure at all chips are unhealthy 12.3% were very sure chips are healthy 13% were a little sure chips are healthy 2.4% were not at all sure chips are healthy	Weak but statistically significant, positive correlation between if student got answer correct and how sure student was of answer; more students seem to be sure or a little sure that potato chips are unhealthy
Are carrots healthy? x How sure are you? (n=322)	<i>r</i> =0.382, <i>p</i> <0.001	92.2% were very sure carrots are healthy 3.4% were a little sure carrots are healthy 1.9% were not at all sure carrots are healthy 0.9% were very sure carrots are unhealthy 0.6% were a little sure carrots are unhealthy 0.9% were not sure at all carrots are unhealthy	Weak but statistically significant, positive correlation between if student got answer correct and how sure student was of answer; a majority of the students were very sure carrots are healthy
Are fruit-flavored snacks (not dried fruit) healthy? x How sure are you? (n=320)	<i>r</i> =0.045, <i>p</i> =0.418	27.8% were very sure ff snacks are unhealthy 22.2% were a little sure ff snacks are unhealthy 7.8% were not sure at all ff snacks are unhealthy 17.8% were very sure ff snacks are healthy 18.4% were a little sure ff snacks are healthy 5.9% were not at all sure ff snacks are healthy	Non-statistically significant positive correlation between if student got answer correct and how sure student was of answer; these mixed answers show that many students may still be confused about the nutritional value of fruit-flavored snacks
Are whole wheat crackers healthy? x How sure are you? (n=321)	<i>r</i> =0.253, <i>p</i> <0.001	67.6% were very sure ww crackers are healthy 22.7% were a little sure ww crackers are healthy 2.8% were not at all sure ww crackers are healthy 2.5% were very sure ww crackers are unhealthy 2.8% were a little sure ww crackers are unhealthy 1.6% were not sure at all ww crackers are unhealthy	Weak but statistically significant, positive correlation between if students got answer correct and how sure student was of answer; majority of students were very or a little sure that whole wheat cracks are healthy; this demonstrates many students know the nutritional benefit of whole wheat products
Are apples healthy? x How sure are you? (n=327)	<i>r</i> =0.305, <i>p</i> <0.001	91.7% were very sure apples are healthy 5.5% were a little sure apples are healthy 0.9% were not at all sure apples are healthy 0.9% were very sure apples are unhealthy 0.3% were a little sure apples are unhealthy 0.5% were not sure at all apples are unhealthy	Weak but statistically significant, positive correlation between if students got answer correct and how sure student was of answer; the majority of students were very sure that apples are healthy, demonstrating that students know the nutritional benefit of apples
Is low-fat string cheese healthy? x How sure are you? (n=323)	<i>r</i> =0.295, <i>p</i> <0.001	52% were very sure lf string cheese is healthy 31% were a little sure lf string cheese is healthy 5.6% were not at all sure lf string cheese is healthy 2.5% were very sure lf string cheese is unhealthy 5.6% were a little sure lf string cheese is unhealthy 3.4% were not sure at all lf string cheese is unhealthy	Weak but statistically significant, positive correlation between if students got answer correct and how sure student was of answer; many students were very sure or a little sure that low-fat string cheese is healthy

Are non-whole wheat crackers healthy? x How sure are you? (n=317)	$r=-0.173$, $p=0.002$	27.8% were very sure non-ww crackers are healthy 24.6% were a little sure non-ww crackers are healthy 12% were not at all sure non-ww crackers are healthy 20.5% were very sure non-ww crackers are unhealthy 12.6% were a little sure non-ww crackers are unhealthy 2.5% were not sure at all non-ww crackers are unhealthy	Weak but statistically significant, negative correlation between if students got answer correct and how sure student was of answer; the more sure a student was of their answer was not related to if they got it correct or not; this demonstrates that students are confused about the non-whole wheat products
Is water healthy? x How sure are you? (n=326)	$r=0.464$, $p<0.001$	96% were very sure water is healthy 2.5% were a little sure water is healthy 0.6% were not at all sure water is healthy 0.3% were very sure water is unhealthy 0% were a little sure water is unhealthy 0.6% were not sure at all water is unhealthy	Moderate, statistically significant, positive correlation between if students got answer correct and how sure student was of answer; the majority of students were very sure that water is healthy, demonstrating that students know the nutritional importance of water
Are fruit-flavored drinks (not 100% fruit juice) healthy? x How sure are you? (n=324)	$r=-0.038$, $p=0.499$	29.6% were very sure ff drink is unhealthy 21.3% were a little sure ff drink is unhealthy 5.6% were not sure at all ff drink is unhealthy 23.5% were very sure ff drink is healthy 17.3% were a little sure ff drink is healthy 2.8% were not at all sure ff drink is healthy	Non-statistically significant negative correlation between if student got answer correct and how sure student was of answer; these mixed answers show that many students may still be confused about the nutritional value of fruit-flavored drink (not 100% fruit juice)
Is skim (fat-free) milk healthy? x How sure are you? (n=325)	$r=-0.196$, $p<0.001$	60% were very sure skim milk is healthy 22.2% were a little sure skim milk is healthy 7.1% were not at all sure skim milk is healthy 4.6% were very sure skim milk unhealthy 3.4% were a little sure skim milk is unhealthy 2.8% were not sure at all skim milk is unhealthy	Weak but statistically significant, positive correlation between if student got answer correct and how sure student was of answer; many students were very sure or a little sure that skim (fat-free) milk is healthy, demonstrating that most students know the nutritional benefit of skim milk