Impact of Nutrition Education on Fruit and Vegetable Consumption in an Urban School District

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IMPACT OF NUTRITION EDUCATION ON FRUIT AND VEGETABLE CONSUMPTION IN AN URBAN SCHOOL DISTRICT

BY

PAULINE R. FALLON

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN NUTRITION AND FOOD SCIENCES

UNIVERSITY OF RHODE ISLAND

2016
MASTER OF SCIENCE THESIS

OF

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UNIVERSITY OF RHODE ISLAND
2016
ABSTRACT

Objective: The purpose of this study was to evaluate the impact of nutrition education on fruit and vegetable consumption when provided as an addition to the Fruit and Vegetable Program (FFVP). The secondary purpose was to compare fruit and vegetable consumption between students who received the FFVP and students who did not receive the FFVP.

Methods: This was a quasi-experimental study which involved three schools; one received both the FFVP and a nutrition education program, one received the FFVP only, and one received neither the FFVP nor nutrition education. Students in the intervention group received eight nutrition lessons. Students in each participating school completed a pre and post survey separated by eight weeks. The survey assessed daily fruit and vegetable consumption.

Results: A total of 230 students completed pre and post surveys, intervention group (n=87) and the two control groups FFVP (n=73) no-treatment (n= 70). There was a significant effect of group on change in fruit consumption (F=8.4, p<0.001) and vegetable consumption (F=4.6, p=0.01) in repeated measures analysis of variance with the intervention group differing from the two control groups (p<.05) for both fruit and vegetables. In addition, the intervention group increased fruit by 0.89±1.75 pieces/day (p<0.001) and vegetables by 0.81±1.8 times/day (p<0.001) in within group analyses (paired t-tests). There was no change from pre to post for either fruit or vegetable in either control school. There was no effect of FFVP on fruit or vegetable consumption at baseline.
Applications: This study found that nutrition education in addition to participation in the FFVP increased fruit and vegetable consumption more than participation in the FFVP alone. Considering the majority of children are not meeting fruit or vegetable intake recommendations, and increased fruit and vegetable consumption can reduce childhood obesity, students would benefit from receiving nutrition education in addition to the FFVP.

Keywords

Nutrition Education, Fresh Fruit and Vegetable Program, Fruit and Vegetable Intake
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Next, I would like to acknowledge a few women that also played important roles in this journey. To Donna Handley, Heidi Hetzler, and Shira Hirshberg: Thank you for sharing your knowledge, wisdom, and advice with me over the years. Paula Paolino, thank you for all you have done to help me with this study.
Finally, to my friends and family, especially my parents and my cousins Diane, Kate, and her husband Joe: thank you from the bottom of my heart for everything. I credit my surviving this adventure to all of the love, support, and help I have received from all of you.
PREFACE

This thesis has been prepared in manuscript format. One manuscript for planned submission to the professional journal, The Journal of Nutrition Education and Behavior, has been formatted in accordance with the journal’s manuscript guideline for authors.
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“Impact of Nutrition Education on Fruit and Vegetable Consumption in an Urban School District”

Pauline R Fallon, Geoffrey Greene, Linda Sebelia, Adam Moore, Cathy English
INTRODUCTION

Childhood obesity among children aged 6-11 has risen from 7% in 1980 to 18% in 2012.\(^1\) According to the Dietary Guidelines Advisory Committee, childhood obesity increases the risk of developing chronic diseases later in life.\(^2\) Fruit and vegetable (F/V) consumption is related to healthier eating habits and reduction in the incidence of childhood obesity.\(^3\) The 2010 Dietary Guidelines for Americans (DGA) recommend 1 ½ cups of fruit and 2-2 ½ cups of vegetables for children 6-11.\(^3\) An evaluation of F/V consumption among children from 2003 to 2010 found a 12% increase in fruit with no change in vegetable consumption.\(^4\) Despite the increase in fruit consumption, 60% of children were still not meeting the recommendations for fruit consumption, and 93% were not meeting recommendations for vegetables.\(^4\) While Guidelines for F/V were not met by any socioeconomic class, there is evidence that low-income children have less fresh F/Vs regularly available in the home than higher income children.\(^5,6\) Economic challenges and access limitations make it difficult to increase availability in the home. However, the school food environment provides opportunities for increased availability at breakfast and lunch as well as F/V snacks during the school day.\(^5-7\)

The United States Department of Agriculture offers child nutrition programs that provide healthful foods to low-income students. These programs define low-income students as those who qualify for free or reduced-priced meals.\(^5-7\) Two of these, the School Breakfast Program (SBP) and the National School Lunch Program
(NSLP), reimburse schools or school food providers for meals provided to students.\textsuperscript{6,7} These programs have set reimbursement guidelines which require specific ranges for nutritional value for meals and amounts for weekly and daily food group components. The NSLP also requires students have at least three food groups, one must be a fruit or vegetable, on their lunch tray.\textsuperscript{8}

An additional child nutrition program, the Fresh Fruit and Vegetable Program (FFVP), provides F/V snacks, but this program is not provided to all schools.\textsuperscript{5} The FFVP is designed to provide low-income students the opportunity to regularly experience a variety of fresh F/V with a goal of increasing F/V consumption. The program provides fresh F/V to all students in participating schools at least twice a week at separate times from either SBP or NSLP meals. While the FFVP also encourages providing nutrition education as part of effort to meet goals, it does not provide funding for the education.\textsuperscript{5}

Nutrition education has been associated with increased F/V consumption. A review of studies that evaluated the impact of nutrition education on F/V consumption found varied results. Studies in which the educators received training prior to and/or used a uniform curriculum tended to result in increased consumption,\textsuperscript{9,10} while studies, where educators were responsible for the design and implementation of their nutrition education lessons, tended to be ineffective.\textsuperscript{11} Barriers related to providing nutrition education have been identified as lack of nutrition education training for the educators and lack of materials available, which may explain the varied study results.\textsuperscript{12,13}
Access and exposure to F/V have been associated with increased consumption among children.\textsuperscript{14-16} Evaluation of the FFVP found students in schools participating in the FFVP consumed ½ cup more F/V on distribution days than students in non-participating schools.\textsuperscript{15,16} Additionally, evaluations of school food environments have found positive associations between schools that participated in child nutrition programs and F/V availability.\textsuperscript{17}

The University of Rhode Island Supplemental Nutrition Assistance Program-Education (SNAP-Ed) developed a nutrition education curriculum to provide the education component that is recommended by the United States Department of Agriculture FFVP.\textsuperscript{5} Lesson materials consisted of a lesson plan, activity worksheets/handouts which reinforced the lesson, and parent letters. The activity worksheets/handouts were designed for use in a lesson or as take-home reinforcement. Some lessons included additional classroom activity materials such as story books provided to the library and posters that offered visual lesson materials or interactive group work. The effect of this curriculum was evaluated using a quasi-experimental design. Holmes found that while vegetable consumption increased in the education group compared to the control group, there was no difference in fruit consumption.\textsuperscript{18}

The Social Cognitive Theory (SCT) posits that individuals and the environment will interact reciprocally leading to personal and social change.\textsuperscript{19} According to the SCT, implementation of nutrition education in classrooms where students are participating in the FFVP should lead to increased FV consumption. Mechanisms include increased knowledge about fruits and vegetables and their health
benefits (positive outcome expectancies) and modeling by classmates consuming the
FFVP snack.

Separately nutrition education and the FFVP have had an effect on increased F/V
consumption but to the author’s knowledge, no study has compared the effect of a
combined program to a non-treatment control. The purpose of this study was to
determine if the combination of FFVP and education increased intake of F/V more
than FFVP alone and a non-treatment control. The secondary purpose was to compare
F/V consumption between students who received the FFVP to students who did not
receive the FFVP.
METHODS

Design:

This quasi-experimental study involved three schools; one received both the FFVP and a nutrition education program (FP), one received the FFVP only (FM), and one received neither the FFVP nor nutrition education (FN). Students in each participating school completed a pre and post survey separated by eight weeks. The survey assessed daily fruit and vegetable consumption. The primary hypothesis was that students in the combined FFVP plus nutrition education group would increase consumption of fruit and vegetables more than the students that received the FFVP without education as well as students that received neither the FFVP nor nutrition education. The secondary hypothesis was that students who received the FFVP (both schools combined), would have a higher intake of F/V at baseline and post than those students that did not receive the FFVP. This study was approved by the Institutional Review Board of the University of Rhode Island.

The nutrition education curriculum:

The nutrition education curriculum taught in this study was developed by the University of Rhode Island SNAP-Ed nutrition program. This study utilized separate curricula for the third and fourth grade that provided developmentally appropriate lessons on fruits and vegetables. The materials provided in the curriculum included eight mini lesson plans, handouts, activities, worksheets, and parent newsletters. The original intent for lesson delivery coincided with the distribution of the FFVP cups.
However, that time frame does not always fit with a teacher’s classroom flow.

Therefore, the design of the curricula allowed for flexibility of delivery time, both for the length of the lesson and time of the day. Lesson topics for each grade are provided in Table 1. The full curriculum is available in Appendix B and C. The parent letters are available in Appendix D and E.

Instrument:

This study used an existing two question SNAP-Ed survey to assess fruit and vegetable consumption. The amount of fruit consumed was assessed by one question asking;” How many pieces of fruits did you eat yesterday? Do NOT include fruit juice.” Students responded by filling in a circle indicating “none,” “1 pieces,” “2 pieces,” “3 pieces,” “4 pieces,” “5 or more.” The frequency of vegetable consumption was assessed by one question asking, “How many times did you eat vegetables yesterday? Do NOT include French fries.” Students responded by filling in the circle indicating “none,” “1 time,” “2 times,” “3 times,” “4 times,” “5 or more.” The rationale for assessment in different units (pieces/times) was based on cognitive interviews demonstrating the separate units were easier to comprehend for children. (personal communication, Linda Sebelia, 2015). Surveys are found in Appendix F.

Survey administration protocol started with the following prompt that was read aloud to students, “Think about what you ate yesterday; from the time you woke until when you went to bed.” Then each question of the survey was separately read aloud. Students were encouraged to ask clarifying questions.
Recruitment/ selection:

Three public elementary schools in a mid-sized urban school district\textsuperscript{20} were recruited for this study. This was a convenience sample purposefully recruited based on 1) a history of prior teaching of the curriculum for the FP and 2) the first teachers responding from FM and FN schools. Information about the school district in the 2013-2014 school year was reported by the Rhode Island Department of Education. Approximately 17\% of students enrolled in public schools throughout the state attended school in this district. The majority of the families in this district were classified as low-income, and 80\% of the students in the district qualified for free or reduced meals; eligibility’s based on the household income being at or below 185\% of the federal poverty line (FPL).\textsuperscript{21} Additionally 20\% of students received ESL/Bilingual education services. This district was ethnically diverse with 65\% of students identified as Hispanic, 18\% African-American, 9\% white non-Hispanic, 5\% Asian, 3\% multiracial, and 1\% Native American.\textsuperscript{21} Student characteristics for study schools, district, and state are available in Table 2.

Recruited schools were all eligible for the FFVP, participated in the SBP as well as the NSLP. Additionally, all three school lunch programs included the “garden cart”; a daily salad bar offering additional fruits and vegetables to students beyond the daily menu.

Groups were defined by the school participants attended. The first school was the intervention school (FP) with 88\%\textsuperscript{22} of its students eligible for free or reduced meals. This school both participated in the FFVP and received the SNAP-Ed nutrition education curriculum during health class. The health education teacher at FP had been
trained and taught the curriculum the previous year. This teacher included the two classes of students from the third and fourth grade for the study. The second school was the control school (FM), with 90% of its students eligible for free or reduced meals. This school participated in the FFVP but did not receive the nutrition education component. The third school was the no treatment school (FN), with 91% of its students eligible for free or reduced meals. Although this school was eligible for the FFVP and had participated in past years, it chose not to continue participation due to problems with distribution and disposal of leftovers. This school never received the nutrition education curriculum. All of the third and fourth grade teachers at FM and FN received an electronic invitation to have students participate in the study. Final classroom selection, for the FM and FN schools, was done on first response basis; the study recruited two classes of students per grade per school.

Data collection:

All data were collected between February 2014 and May 2014. Students at FP completed pre-surveys prior to receiving the nutrition education lessons and the post-survey upon completion of the eight lessons. All surveys at FP were administered by the health education teacher during each individual health class which were held on different days of the week. Students at FM and FN completed surveys at baseline and eight weeks later. All surveys at FM and FN were administered by SNAP-Ed staff on Thursdays in which the day prior was a school day. Table 3 provides a schedule for survey administration and FFVP distribution.

A total of 276 students were eligible to participate in the study, 99 students from FP, 92 from FM, and 85 from FN. However, the study sample was restricted
based on the completion of pre and post surveys. Missing pre or post surveys, primarily due to absenteeism or incomplete surveys (failure to answer at least one question) were excluded from primary analysis but included in the secondary analysis where appropriate. Students who completed more than one pre or post-survey were also excluded from all analyses. A total of 230 students completed pre/post surveys; 87 from FP (3rd =49, 4th =38), 73 from FM (3rd =39, 4th =34), and 70 from FN (3rd =29, 4th =41).

Statistical Analyses:

Data met skewness and kurtosis criteria for normalcy. All data analyses for F/V were conducted separately as consumption was measured in different units; fruits measured in pieces per day and vegetables in times per day. Analysis of variance was performed to assess F/V consumption change from pre to post between schools. Where a significant effect between schools was found, posthoc Tukey tests were conducted for both F/V to compare schools. Paired t-tests were used to assess within school changes. To assess F/V consumption based on exposure to the FFVP, data were separated into two groups (students receiving the FFVP and students not receiving the FFVP). Independent t-tests were used to compare F/V consumption at baseline between the two groups. Analysis of covariance was performed to compare F/V consumption at post while controlling for baseline intake.

The FP data were collected on different days of the week while FM and FN data were collected on Thursdays in which the day prior was a school day and not a FFVP distribution day. One class at the FP completed surveys in which the day prior was not a school day. Repeated measures of analysis of covariance were performed to
assess the effect of non-school day consumption on F/V consumption over time. One class at the FP completed surveys on a day in which the FFVP distribution occurred on the day prior. Repeated measures of analysis of covariance were performed to assess the effect of FFVP distribution on F/V consumption over time. All data were analyzed using SPSS (IBM, 22.0, Armonk, NY).
RESULTS

Table 2 shows selected characteristics representative of students in study schools, district, and state. The majority of students in this district were Hispanic (65%) or African American (18%) and 80% were eligible for free or reduced meals. Tables 4 and 5 present the change in fruit and vegetable consumption from pre to post-intervention between and within groups. There was a significant effect of group on change in fruit consumption (F=8.4, p<0.001) and vegetable consumption (F=4.6, p=0.01) in separate repeated measures analyses of variance with the intervention group differing from the two control groups (post-hoc Tukey, p<0.05) for both fruit and vegetables. The intervention group increased fruit by 0.89±1.75 pieces/day (p<0.001) and vegetables by 0.81±1.8 times/day (p<0.001) in within-group analyses (paired t-tests). No change found in control groups for either fruit or vegetables.

Data were separated into two groups (students receiving the FFVP and students not receiving the FFVP) for assessment of F/V consumption based on exposure to the FFVP. There was no difference in fruit consumption at baseline between those receiving FFVP (n=180, 2.61±1.75 pieces/day) and those not receiving the FFVP (n=77, 2.57±1.5 pieces/day t=0.18, p=0.85). There also was no difference in vegetable consumption at baseline between those receiving FFVP (n=180, 2.28±1.71 times/day) and those not receiving the FFVP (n=77, 1.96±1.63 times/day, t=1.38, p=0.17). Analysis of covariance at post, controlling for baseline intake, found a significantly higher fruit intake (n=162, 3.13±0.11 pieces/day) in those receiving
FFVP and those not receiving the FFVP (n=70, 2.42± 0.17 pieces/day, F=11.69, p=0.001). There was no difference between groups (F=3.12, p=0.08) in vegetable consumption at post adjusting for baseline values.

While survey administration days for both control schools occurred on Thursdays, where the day prior was a school day, and students did not receive the FFVP, the intervention group had surveys administered on different days due to health class scheduling. The different administration days resulted in one classroom reporting F/V intake for a day in which students had received the FFVP and one classroom reporting F/V intake for a non-school day. Repeated measures of analyses of covariance were performed within this school to assess the effect of survey administration day in F/V intake. There was no effect of receiving FFVP on the day of assessment on consumption for fruit (F=0.003, p=0.95) or vegetables (F=0.73, p=0.40). There was also no effect of the day prior being a school day on consumption of fruit (F=0.70, p=0.41) or vegetables (F=3.0, p=0.09).
DISCUSSION

This study was based on a prior study comparing FFVP plus nutrition education to FFVP alone. To this author’s knowledge, it was the first time these three groups (FFVP plus nutrition education, FFVP alone, and neither education nor FFVP) were studied together. Additionally, this study targeted low-income children in urban schools which provided increased availability of F/V through the SBP, NSLP, and the “garden cart” daily salad bar. The intent of this study was to assess the impact of a nutrition education curriculum designed to complement the FFVP program on F/V consumption. Results found that the combination of nutrition education and participation in the FFVP increased both fruit and vegetable consumption among third and fourth grade students. Although this study found an increased intake of fruit at post test in the FFVP schools, there was no effect of the FFVP on baseline F/V intake.

This study found a significant difference between groups for F/V consumption from baseline to post-intervention. There was an increased intake in the intervention group for fruit (0.89 pieces/day) and vegetables (0.81 times/day) and no differences in either control group. However, it is not possible to compare intake to the 2010 DGA recommendations for fruit (1½ cup equivalents) and vegetables (2-2 ½ cup equivalents) because the instrument, for this study, did not measure intake in cup equivalents.

The preliminary study conducted by Holmes, utilizing a large sample of non-matched subjects, found a significant increase in vegetable consumption for the
intervention group after receiving the education in addition to the FFVP, compared to the control group, receiving the FFVP without education, with no difference in fruit. The difference in results between the current study and Holmes’s may be explained by increased control over variables in the current study. Holmes assigned group by school district and surveys were not matched to students, while the current study assigned group by school, within the same district, and assessed results of individually matched pre/post surveys. Finally, the Holmes study compared the intervention with FFVP against an FFVP alone group, and the current study included the addition of a no-treatment control group.

The current study involved a previously established curriculum delivered by a trained health education teacher. This curriculum, developed by Rhode Island SNAP-Ed, was based on a curriculum created in the study conducted by Holmes. Previous studies on the impact of nutrition education on F/V consumption among elementary school children have had mixed results. Kristjansdottir et al. conducted a two-year study (n=106) which provided nutrition education curricula with some teacher training. This study found there was a significant effect on intake from pre to post-intervention between groups for both fruit (p=0.001) and vegetables (p<0.001) with increased intake for the intervention group (fruit 24.6 grams and vegetable 36.6 grams) and decreased intake for control. Similarly, an additional multicomponent study conducted by Prelip et al. involved three groups in which two utilized an established curricula and the third group was responsible for providing their own curricula, found the third group had the least effect on F/V intake. As discussed above, the eight-week study conducted by Holmes which utilized the study curriculum
only found a significant increase in vegetable intake (0.25 cups, p=0.027) from pre to post-intervention. In contrast, a one-year study conducted by Rosario et al. which involved extensive teacher training but did not provide curricula for the study, found no significant effect between groups at post-intervention for fruit (p=0.095) or vegetables (p=0.147). This study’s findings are consistent with other studies that provided nutrition education curricula.

A significant difference in F/V consumption at baseline and post-intervention between participants in the FFVP compared to non-participants was expected. Contrary to other studies there was no effect at baseline, and the only effect was found in fruit intake at post-intervention (p=0.001). A cross-sectional study conducted by Olsho et al. (n=4,696) assessed F/V intake, obtained from a food-diary assisted 24 hour food recall, on days students received the FFVP snack. This study found a significant increase in F/V intake during school (p<0.001) and for the total day (p<0.001) among participants in the FFVP compared to non-participants. A longitudinal study conducted by Bere et al. assessed the effect of providing a free piece of fruit daily to students on F/V intake, through matched questionnaires and 24 hour food recall (n=1,794) from baseline to post-intervention. A significant difference in intake was found between groups for F/V intake at school (portions/day, p<0.001), all day (portions/day, p<0.001), and usual intake (times/week, p<0.001) with the intervention group increasing intake and control group decreasing intake.

Possible explanations for the lack of effect of the FFVP at baseline include the sample size and the F/V availability at baseline. Previous studies, which found a
difference in F/V intake between participants in the FFVP and non-participants, involved significantly larger sample sizes than in this study. In contrast to other studies, all schools in this study provided extensive F/V availability during school meals which may explain why there was no difference in F/V intake at baseline between participants in the FFVP and non-participants in this study.

Increased F/V consumption was an expected outcome of this study. This expectation was based on the principles of the Social Cognitive Theory related to modeling behaviors of classmates, increasing nutrition knowledge, and the bi-weekly repetition of FFVP cup distribution. This study did not include direct observation and did not assess the students’ knowledge or attitudes related to F/V. Future studies which include these assessments may reinforce study findings.

Strengths of this study include the target population which was representative of those children at increased risk of childhood obesity and the F/V availability in the target schools provided through the SBP, NSLP, and the “garden cart”. Finally, this survey excluded fruit juice and french fries both of which were included in other studies suggesting the nutrition education component had an impact on not only F/V intake but also on diet quality.

One limitation of this study was that survey administration for the intervention group occurred on different days of the week. Although this affected exposure to the FFVP as well as school F/V availability on the previous day, there was no effect of day on intake in the intervention school. However, future studies should control for the day of the week.
Other limitations of this study are related to the instrument used to measure consumption. Unlike many studies which utilized 24 hour food recalls, and/or food diaries, and usual intake in addition to the one-day assessment, this study solely utilized a survey for assessment. The instrument in this study measured fruit and vegetable consumption on the previous day based on recall alone. Additionally, this instrument assessed fruit and vegetable in different units of measurement. Future studies should include an additional instrument to reduce the potential risk of recall error and to quantify intake. The different units of measurement in the survey made it not only difficult to compare this study’s results to other studies, but also made it difficult to assess the effect of the education component on usual intake. Finally, school selection was a limitation as the schools included in the study were not selected at random. While school selection and the instrument were limitations, the schools all had F/V available to students and the assessment of intake found that the nutrition education component had an effect on F/V consumption.
IMPLICATIONS FOR RESEARCH AND PRACTICE

The findings from this study suggest low-income students would benefit from the implementation of the SNAP-Ed’s nutrition education curriculum in conjunction with participation in the FFVP. Future research may benefit from utilization of an instrument that measures intake in units comparable to the daily recommendations. Additional research could include a second intervention group; one that receives the education without the FFVP. This would further demonstrate the curriculum’s impact on F/V consumption. Finally, future studies could consider additional follow-up assessments to identify the long-term effects of nutrition education on F/V intake. In conclusion, this study found that the SNAP-Ed nutrition education curricula had a significant effect on increasing F/V consumption when provided in addition to participation in the FFVP. The nutrition education component tied in with FFVP may help increase consumption F/V from other sources in school or potentially outside of school. This is a promising result considering that the target audience is at increased risk for childhood obesity.
REFERENCES


18. Holmes M. *The evaluation of the impact of a school-based nutrition education program on fruit and vegetable consumption in low-income elementary students*: Nutrition and Food Sciences, University of Rhode Island; 2010.


Table 1. Lesson Topics for the 3\textsuperscript{rd} and 4\textsuperscript{th} Grade Nutrition Education Curricula

\textbf{3\textsuperscript{rd} Grade Curriculum}

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<tr>
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<tr>
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<td>2</td>
<td>MyPlate</td>
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<tr>
<td>3</td>
<td>Amounts and Serving Sizes</td>
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<tr>
<td>4</td>
<td>Variety</td>
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<tr>
<td>5</td>
<td>Fruits: Go/ Slow/ Whoa</td>
</tr>
<tr>
<td>6</td>
<td>Vegetables: Go/ Slow/ Whoa</td>
</tr>
<tr>
<td>7</td>
<td>The Plant Parts we Eat</td>
</tr>
<tr>
<td>8</td>
<td>Farm to Fork</td>
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</table>

\textbf{4\textsuperscript{th} Grade Curricula}

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fruit and Vegetable Challenges</td>
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<tr>
<td>2</td>
<td>MyPlate- Fruit and Vegetable</td>
</tr>
<tr>
<td>3</td>
<td>The Color Chart</td>
</tr>
<tr>
<td>4</td>
<td>Cups of Colorful Fruit</td>
</tr>
<tr>
<td>5</td>
<td>V.I.V. : Very Important Veggies</td>
</tr>
<tr>
<td>6</td>
<td>Eating and Growing Vegetables</td>
</tr>
<tr>
<td>7</td>
<td>The Right Stuff: Vitamin A,C, and Fiber</td>
</tr>
<tr>
<td>8</td>
<td>Go/ Slow/ Whoa</td>
</tr>
</tbody>
</table>
Table 2. Student Characteristics in Study Schools, District, and State for School Year 2013-2014

<table>
<thead>
<tr>
<th></th>
<th>FFVP* plus Education</th>
<th>FFVP* alone</th>
<th>Neither FFVP* nor Education</th>
<th>District</th>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible for Free or Reduced Meals**</td>
<td>88%</td>
<td>90%</td>
<td>91%</td>
<td>80%</td>
<td>47%</td>
</tr>
<tr>
<td>Receiving ESL/Bilingual Education Services</td>
<td>46%</td>
<td>37%</td>
<td>27%</td>
<td>20%</td>
<td>6%</td>
</tr>
<tr>
<td>Race and Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>11%</td>
<td>14%</td>
<td>17%</td>
<td>18%</td>
<td>8%</td>
</tr>
<tr>
<td>Asian</td>
<td>13%</td>
<td>2%</td>
<td>7%</td>
<td>5%</td>
<td>3%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>69%</td>
<td>75%</td>
<td>66%</td>
<td>65%</td>
<td>23%</td>
</tr>
<tr>
<td>Multiracial</td>
<td>2%</td>
<td>3%</td>
<td>4%</td>
<td>3%</td>
<td>3%</td>
</tr>
<tr>
<td>Native American</td>
<td>0%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
<td>1%</td>
</tr>
<tr>
<td>White</td>
<td>4%</td>
<td>4%</td>
<td>6%</td>
<td>9%</td>
<td>62%</td>
</tr>
</tbody>
</table>

*FFVP: Fresh Fruit and Vegetable Program

Data obtained from the Rhode Island Department of Education

** Eligibility based on federal poverty line (FPL)  Free: <130% FPL  Reduced: 130% - 185% FPL
Table 3. Survey Administration and Fresh Fruit and Vegetable Program (FFVP) Distribution Schedule by Classroom and by Day of the Week

<table>
<thead>
<tr>
<th>School/Class</th>
<th>Survey</th>
<th>FFVP</th>
<th>Survey</th>
<th>FFVP</th>
<th>Survey</th>
<th>FFVP</th>
<th>Survey</th>
<th>FFVP</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFVP plus Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>x</td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td></td>
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<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFVP alone</td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<td>1</td>
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<td>x</td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>x</td>
<td></td>
<td>x</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>x</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neither FFVP nor Education</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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<td>1</td>
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<td></td>
<td>x</td>
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<td></td>
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<tr>
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<tr>
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<td>x</td>
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<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Table 4. Mean (SD) Pieces of Fruit Consumed From Pre to Post Intervention Among 3rd and 4th Grade Students in Three Elementary Schools in an Urban District

<table>
<thead>
<tr>
<th>School exposure</th>
<th>total n</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
<th>Within Group</th>
<th>Between Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFVP* plus Nutrition Education</td>
<td>89</td>
<td>2.82 ± 1.7</td>
<td>3.71 ± 1.4</td>
<td>.89 ± 1.75</td>
<td>4.80</td>
<td>&lt;.001ᵇ</td>
</tr>
<tr>
<td>FFVP* alone</td>
<td>73</td>
<td>2.32 ± 1.7</td>
<td>2.44 ± 1.8</td>
<td>.12 ±1.58</td>
<td>.67</td>
<td>.507</td>
</tr>
<tr>
<td>Neither FFVP nor Education</td>
<td>70</td>
<td>2.57± 1.5</td>
<td>2.41 ± 1.5</td>
<td>.16 ±1.71</td>
<td>.77</td>
<td>.444</td>
</tr>
</tbody>
</table>

SD: standard deviation

*FFVP: Fresh Fruit and Vegetable Program

ᵃ Repeated measures analysis of variance, post hoc (Tukey), p<.05 FFVP Plus compared to FFVP and Neither
ᵇ Paired t-tests
Table 5. Mean (SD) Times Per Day Vegetables Consumed From Pre to Post Intervention Among 3<sup>rd</sup> and 4<sup>th</sup> Grade Students in Three Elementary Schools in an Urban District

<table>
<thead>
<tr>
<th>School exposure</th>
<th>total n</th>
<th>Pre</th>
<th>Post</th>
<th>Change</th>
<th>Within Group</th>
<th>Between Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFVP* plus Nutrition Education</td>
<td>87</td>
<td>2.47 ± 1.6</td>
<td>3.28 ± 1.4</td>
<td>.81 ± 1.8</td>
<td>4.13</td>
<td>&lt;.001&lt;sup&gt;b&lt;/sup&gt;</td>
</tr>
<tr>
<td>FFVP* alone</td>
<td>73</td>
<td>1.93 ± 1.8</td>
<td>1.92 ± 1.7</td>
<td>.01 ± 1.6</td>
<td>.07</td>
<td>.943</td>
</tr>
<tr>
<td>Neither FFVP nor Education</td>
<td>70</td>
<td>1.87 ± 1.6</td>
<td>2.14 ± 1.5</td>
<td>.27 ± 1.76</td>
<td>1.29</td>
<td>.201</td>
</tr>
</tbody>
</table>

SD: standard deviation

<sup>a</sup> FFVP: Fresh Fruit and Vegetable Program

<sup>b</sup> Repeated measures analysis of variance, post hoc (Tukey), p < .05 FFVP Plus compared to FFVP and Neither

<sup>b</sup> P paired t-tests
APPENDIX A. Literature Review

Introduction

This literature review will explore the prevalence of childhood obesity with attention to risk factors related to income and race. The second portion of the review will explore interventions to promote fruit and vegetable (F/V) intake in schools. Interventions include government programs, modifications to the school food environment, and nutrition education programs.

Obesity in Children

The prevalence of childhood obesity in the United States (US) had risen from 7% in 1980 to 18% in 2012 among children aged 6-11\textsuperscript{1} based on data from the National Health and Nutrition Examination Surveys (NHANES).\textsuperscript{2} This program selects a nationally representative sample of the population to assess through interviews and physical examinations and is reported annually. The data reported provide information pertaining to the health and nutritional status of children and adults. Additionally, data sets report subgroups by demographic categories including; age ranges, gender, race/Hispanic origin, and income as percentage of the federal poverty line (FPL).

According to the Center for Disease Control and Prevention (CDC) consequences of childhood obesity have both immediate and long-term effects on health and well-being.\textsuperscript{3} The immediate effects include increased risk for diagnosis of pre-diabetes, high cholesterol, and high blood pressure. Other effects include increased risk of developing sleep apnea, bone and joint problems, poor self-esteem
and social problems. The long-term effects include increased risk for development of stroke, cardiovascular disease, type 2 diabetes, osteoarthritis, and several types of cancer. ³

Prevalence

In 2012, roughly 34% of children aged 6-11 were overweight or obese of which 18% were obese as of 2012¹ based on Ogden et al.’s analysis of 2011-2012 NHANES data. Although 18% of children aged 6-11(n=1,268) were obese in 2012, there had been no significant change in obesity prevalence since 2003-2004.¹ While no significant difference in obesity prevalence was found between genders, there were significant differences among race/Hispanic origins.

Obesity prevalence was significantly lower among non-Hispanic Asians as compared to non-Hispanic whites (p=0.04), non-Hispanic blacks (p<0.001), and Hispanics (p<0.001).¹ Additionally, prevalence was significantly lower among non-Hispanic whites as compared to non-Hispanic blacks (p=0.048) and Hispanics (p<0.001). No significant difference was found between non-Hispanic blacks and Hispanics. The main finding was that while the prevalence of obesity among children aged 6-11 has been consistent from 2003-2012 there are significant differences in obesity prevalence between groups when categorized by race/Hispanic origins.
Fruit and Vegetable Consumption

Several studies have analyzed NHANES F/V intake data among children 6-11. All data were obtained from 24 hour dietary recalls and defined total fruit consumption as whole fruit and 100% fruit juice and total vegetables including french fries. Lorson et al. and Kim et al. assessed intake in relation to federal recommendations while Kirkpatrick et al. focused on F/V intake in relation to socioeconomic status and race/ethnic origin.

Lorson et al. analyzed 1999-2002 NHANES data for fruit and vegetable intake among children aged 6-11 (n=1,838). This study compared F/V intake in cup equivalents to MyPyramid recommendations for F/V which are given in servings. The MyPyramid recommendations for children in the 6-11 age range was three servings of fruit and four servings of vegetables daily. One serving of fruit has been defined as one medium apple, banana, orange or pear, a ½ cup of cooked, chopped, or canned fruit, or ¾ cup of juice. One serving of vegetables has been defined as one cup of raw leafy greens, a ½ cup of any other type of vegetables raw or cooked, or ¾ cup of juice. Lorson et al. found that total fruit intake was 0.99 ± 0.05 cup equivalents of which 0.38 ± 0.03 cups was 100% juice, meeting 71.5 ± 3.7% of the MyPyramid recommendations. Total vegetable intake was 0.98 ± 0.03 cup equivalents of which 0.10 ± 0.01 cups was french fries, meeting 58.3 ± 1.7% of the MyPyramid recommendations. Additionally this study reported F/V intake based on categories of household food security but found no significant differences between groups. Overall this study found that children in this age group are not meeting fruit or vegetable recommendations.
Kim et al. compared 2003-2010 NHANES F/V data to assess intake trends among children aged 6-11, 2003-2004 (n=861) and 2009-2010 (n=1,058). This study reported intake as cup-equivalents per 1,000 calories (CEPC). Total fruit intake in 2003-2004 was (0.51 CEPC, 95% confidence interval (CI), 0.42 - 0.60) and 2009-2010 (0.61 CEPC, 95% CI, 0.55 - 0.67) with an average annual increase of 0.020 CEPC (p= 0.015) equivalent to 3% per year. Total vegetable intake in 2003-2004 (0.55 CEPC, 95% CI, 0.49 - 0.61) and 2009-2010 (0.48 CEPC, 95% CI, 0.42 - 0.054) with an average annual change of -0.011 CEPC (p=0.08). Additional analysis of these data found that 60% of children were not meeting United States Department of Agriculture food patterns for fruit intake recommendations and 93% were not meeting recommendations for vegetables. The main findings of this study indicate that while fruit intake from 2003-2010 has significantly increased, intake decreased for vegetables and intake for both are still below recommendations.

Kirkpatrick et al. examined the 2001-2004 NHANES data with a focus on dietary intake in relation to meeting recommendations comparing socioeconomic and race/ethnic groups. There was no difference F/V intake or percent meeting recommendations among children aged 2-18. However, a higher proportion of adults with household incomes <185% FPL failed to meet recommendations for total fruit, whole fruit, and vegetable intake was significantly higher than those with higher incomes. Similarly, a higher proportion of non-Hispanic blacks failed to meet recommendations for fruit and vegetables than non-Hispanic whites and Mexican Americans.
These studies demonstrated inadequate F/V intake among children aged 6-11. Although there were no differences among children, there was greater risk for inadequate intakes of F/V in low-income or minority adults than those with higher incomes and non-Hispanic whites.

**Promoting Fruit and Vegetable Intake**

Healthful diets that include adequate F/V consumption help prevent obesity in children. Different types of programs have been developed to increase F/V consumption among school children such as providing nutrition education, facilitating access, increasing promotion, and changing the school food environment. The government has established several child nutrition programs designed to provide low-income children with healthful foods. One of these programs, the Fresh Fruit and Vegetable Program (FFVP), will be reviewed in this section.

The Fresh Fruit and Vegetable Program

The FFVP is specifically designed to provide F/V snacks to low-income children during the school day. The rationale is that low-income children have less opportunities to consume fresh fruits and vegetables. The goals of the FFVP include making a difference in children’s diet to improve their present and future health. Specific goals include increasing children’s F/V consumption and exposing children to a wider variety of fruits and vegetables.

The FFVP is unique as eligibility is only offered to elementary schools that already participate in the National School Lunch Program (NSLP), a child nutrition program which provides healthful lunches. Eligibility is also based on a school’s
percentage of students eligible for free or reduced meals. The program provides F/V
two or more times per week for all students in the school at a set rate of $50-$75 per
student per school year. The set monetary rate includes administration and food
preparation costs. Excluded costs include education and F/V promotional materials.
Despite educational costs being excluded from the FFVP, schools are encouraged to
include nutrition education whenever possible as students may lack or have limited
knowledge or exposure related to fresh fruits and vegetables.

Evaluation: Does participation increase consumption?

Olsho et al.\textsuperscript{9} and Bere et al.\textsuperscript{10} conducted studies to evaluate the effect of F/V
programs on intake. Both the FFVP in the US and the Norwegian School Fruit
Programme in Norway were established in response to low F/V intake. An additional
study by Bere et al.\textsuperscript{11} followed up with original participants to assess long-term effects
of the F/V program both on consumption and associations with weight status.

An evaluation of the FFVP’s effect on F/V intake was conducted by Olsho et
al.\textsuperscript{9} This study examined F/V intake during school, outside of school, and combined
for one day. F/V intake was also reported as either fresh or not fresh. These time
periods and type of F/V provided information related to the direct (consumption of the
F/V snack) and indirect (increase in familiarity and preferences as result of exposure
and education) effects of the FFVP on intake. A total of 214 elementary schools
located in 16 states were involved in this evaluation providing a sample size of
n=4,696 fourth, fifth, and sixth graders. All the schools were FFVP eligible, 113
participated and 99 did not participate (defined as the control group). Intake was
obtained from a 24 hour diary assisted food recall which was conducted by trained interviewers. The students receiving the FFVP were instructed to complete a food diary on a FFVP distribution day. All F/V intakes were measured in cup equivalents. This study found F/V intake for students in FFVP schools was significantly higher than those in control schools for the whole day for both total F/V (2.39 cups vs. 2.07 cups, p<0.001) and fresh F/V only (1.52 cups vs.1.21 cups, p=0.001). Intake during school was significantly higher for those in FFVP schools for total F/V intake (1.09 cups vs. 0.83 cups, p<0.001) and for fresh F/V only (0.77 cups vs. 0.52 cups, p<0.001). Intake outside of school was significantly higher for those in FFVP schools for fresh F/V only (0.74 cups vs. 0.68 cups, p=0.04). Results indicate that the FFVP snack is being consumed and the higher total intake of fresh F/V for the FFVP schools may be result of the indirect effects of the FFVP.

Bere et al. conducted studies to measure the short and long-term effects the Norwegian School Fruit Programme had on F/V intake.10,11 The rationale for establishing the program was that children in Norway have an inadequate fruit and vegetable intake and F/V are not typically provided in school lunches. Additionally, while this program is widely available, it is underutilized because of the cost of the program to parents. This study provided the program for free for intervention schools. The study measured F/V intake at three time points; beginning of school year for baseline, end of school year which was also end of intervention, and three years post intervention. A total of 38 elementary schools participated in study; nine were in the intervention group where the Norwegian School Fruit Programme was provided to all students free of cost and the remaining 29 schools were the control group where the
program was provided but parents had to pay. All 38 schools were simultaneously participating in the “Fruits and Vegetables Make the Marks Project”, which provided nutrition education. Survey questionnaires which included a 24 hour recall were completed at baseline (n=1,950), end of intervention (n=1,794) and three years after the intervention (n=1,602). The 24 hour recall portion was read aloud to students at baseline and post intervention and was mailed with other survey materials at the three-year follow-up. FV intake was assessed for all day (portions/day) and at school (portions/day). Additional variables measured included usual F/V intake (times/week) and soda/candy/chips (times/week). Surveys completed by students who had not attended school the day prior were not included in analysis. At the end of the one-year intervention, the intervention group intake was significantly higher than the control group for all day F/V intake (adjusted mean) for both boys (0.57 portions/day, p<0.001) and girls (0.69 portions/day, p<0.001). Intake in intervention group was also significantly higher than control for at school F/V intake among both boys (0.53 portions/day, p<0.001) and girls (0.56 portions/day, p<0.001), and in F/V usual intake; boys (1.3 times/week, p<0.001); and girls (1.3 times/week, p<0.001). No significant difference was found between groups for the intake of soda/candy/chip. The three-year post intervention assessment found F/V intake in the intervention group was significantly higher than the control for both boys and girls in all day (p<0.001) at school (p<0.001), and usual F/V intake (p<0.001). This study found participation in the Norwegian School Fruit Program had positive short-term and long-term effects on F/V intake. Even though a higher percentage of students in the intervention group continued participation in the fruit program than those in the control, this study found
that the long-term effects of intervention were not dependent on continued participation in fruit program.

School fruit programs have been established to aid in the prevention of childhood obesity; Bere et al.\textsuperscript{11} conducted the first study to assess long-term effects of a fruit intervention on relative weight. While surveys were completed in the classrooms during initial study, the follow-up surveys in 2009 were mailed to participants homes. Assessment in both 2005 and 2009 included a component related to weight that included weight and height data and a self-reported weight perception question. A total of 320 completed the survey in 2009; 112 from intervention and 208 from control, representing 16\% of baseline participation. No significant differences between groups were found for F/V intake, usual F/V intake, or unhealthy snacks. In 2005 there were no significant differences between groups for reported weight status, perceived weight status, or BMI; however in 2009 there was a significant difference for BMI $\geq$25 (overweight) between the intervention (15\%) and the control group (25\%) $p=0.04$. Additionally, data suggested that the overall odds of a person, in the intervention group, becoming overweight was 52\% lower than a person in control group. Variables such as gender, grade in school, and parents’ education level did not affect these odds. This study suggests that provision of free fruit in schools can play role in the prevention of childhood obesity.

Studies reviewed in this section found F/V intake significantly increased among students exposed to school fruit/vegetable programs. One long-term study found that intake after exposure was still higher than baseline and participation in the fruit program was associated with reduced odds of obesity.$^{11}$
School food environment

Given that students are in school for the majority of day, the school food environment can provide an opportunity to develop healthful eating habits through offering increased F/V and limiting competitive foods such as sugary and fatty snacks. Turner et al. and Ohri-Vachaspati et al. both conducted assessments of the school food environments among public elementary schools in the US in the 2009-2010 school year.\textsuperscript{12,13} Turner et al. examined public schools overall where Ohri-Vachaspati et al. focused on schools participating in the NSLP and FFVP.

Turner et al. conducted an assessment of foods available at 680 public elementary schools. Regardless of participation in NSLP, 36.3\% offered salads and 66.1\% offered fresh fruit most days and that 77.6\% did not have snack bars or vending machines available.\textsuperscript{13}

Ohri-Vachaspati et al. conducted an assessment of healthful food items offered in 620 schools participating in the NSLP, of which 25.4\% also participated in the FFVP, during the 2009-2010 school year.\textsuperscript{12} They found the proportion of schools that offered fresh fruit, salad, and vegetables (not potatoes) on most days was higher for schools that participated in the NSLP and FFVP than those in NSLP only. This study also found that schools participating in the FFVP were twice as likely to offer fresh fruit most days as schools which did not participate (OR 2.07, 95\% CI 1.12 – 3.53); participation did not affect the proportion that offered salad or vegetables. These findings suggest that participation child nutrition programs increases fruit and vegetable availability.
Nutrition Education

Having fruits and/or vegetables available does not guarantee they will be consumed. There are many factors involved in food choices and some of these factors can be influenced by nutrition education increasing knowledge, skills, and attitudes.\textsuperscript{14}

Rosario et al.\textsuperscript{15}, Kristjansdottir et al.\textsuperscript{16}, and Prelip et al.\textsuperscript{17} examined the impact of nutrition education on F/V intake among elementary school students. Each study identified inadequate F/V intake as a concern and promoted healthful eating habits as a goal. Other studies explored barriers to providing nutrition education.\textsuperscript{18,19}

Rosario et al. evaluated the impact of nutrition education delivered by trained teachers on F/V intake. The first six months involved training the interventions schools’ teachers on 12 nutrition topics. A three-hour workshop was provided for each topic resulting in 36 hours of nutrition education training prior to implementation. The second six months of study involved teaching the students in the intervention schools. Students in 7 schools participated in study, 3 in the intervention group (n=151) and 4 in the control (n=143) all children were 6-12 years of age. Dietary intake was assessed by a 24 hour recall conducted at baseline and post intervention. There were no overall changes in total fruit, whole fruit, or total vegetable from baseline to post or between groups. However total fruit and total vegetable intake in the intervention group were found to be significantly higher than control when adjusted for gender, age, baseline total energy intake, parents’ education, and baseline BMI. Among obese participants, the intervention group intake at follow-
Kristjansdottir et al. conducted a two-year study to assess the effect of nutrition education on dietary intake. All education materials were developed specifically for this study. In the beginning of the study the researchers were involved in the delivery of the education materials to the students but as the study progressed, additional materials were developed and the teachers delivered the education. Education materials included a teacher’s binder containing seven sections with topics and a variety of assignments available. All intervention schools provided the same homework assignments and encouraged students to bring in F/V snacks from home. Dietary intake was assessed through a three-day continuous food record completed by parents for all food not provided through the school. Intake at school was assessed by staff. All parents were given food scales and instructions on how to measure and record food prior to baseline assessment. This two-year study obtained baseline data from students at the beginning of the second grade. The nutrition education was implemented over two school years. Post intervention data were collected at the beginning of the fourth grade. A total of 265 students in 6 elementary schools were invited to participate in the study. Three schools received the intervention and three were in control group. Final analysis included matched pre/post data for 106 students; 58 from the intervention group and 48 from the control group. Vegetable intake at post was higher for intervention group than control (p<0.001). Intake changes from baseline to post were significantly higher in the intervention group for fruit (p=0.001) and vegetables (p<0.01) compared to the control group. This study found that F/V up was significantly higher for total fruit (115.3 g vs. 168.2 g, p=0.030), whole fruit (52.7 g vs. 161.4 g, p=0.02), and total vegetable (81.9 g vs. 11.6 g, p=0.046).
intake in the nutrition education group increased by 47% from baseline as compared to
a decrease in F/V intake in the group not receiving the education.

Prelip et al. studied the effect of a multicomponent nutrition education program
on F/V intake.\textsuperscript{17} Three different methods of providing and delivering nutrition
education were involved in this study. The intervention groups (2 methods) provided
a standardized nutrition curriculum with teacher training workshops and required
teachers provide at least 10 hours of nutrition every quarter. The control group did not
receive either a curriculum or teacher training however was required to provide at least
10 hours of education. The study found no changes in nutrition knowledge, F/V
intake, or teacher attitudes between groups.\textsuperscript{17}

Two studies that explored perceived barriers and facilitators for providing
nutrition education identified common themes. Teachers most frequently cited lack of
time in the school day, funding for curricula and/or materials, lack of professional
development in-services, and lack of personal nutritional knowledge as barriers to
their including nutrition education in their classroom.\textsuperscript{18,19} Many teachers indicated
that if corrective measures were taken to address barriers, particularly related to
funding and/or materials and professional development, they were more likely to
implement nutrition education in the classroom. Most teachers were not aware of
local and national resources available to them, including SNAP-Ed and other nutrition
programs.\textsuperscript{18,19}
Most, but not all, studies found nutrition education, particularly when curriculum based, influences F/V intake. However, many teachers are not aware of many of the nutrition education resources available.

Preliminary Study

Holmes conducted a study to assess the effect of nutrition education on F/V consumption in a population already participating in the FFVP. Third and fourth grade students from two school districts, one assigned to the intervention group (n=475) and the other to the control group (n=402), participated in study. A nutrition education curriculum for each grade was developed specifically for this study created by the University of Rhode Island SNAP-Ed nutrition program. Each curriculum consisted of eight weekly lessons with worksheets, activities, and homework and was designed to complement the FFVP. The researchers trained the classroom teachers on the curricula prior to the study and collected homework from them weekly. Baseline and post intervention intake was measured using a two-question survey related to F/V intake on a typical day. These surveys were not matched to students; rather assessment was based total surveys completed at baseline and post. Intake was reported by increments of a cup, coded for analysis, and reported in mean ±SD of coded amounts. No significant changes in fruit intake from baseline to post were found for either the intervention group (pre 4.21± 0.43, post 3.96± 0.37, change -0.26) or the control group (pre 4.07± 0.043, post 4.75± 0.56, change 0.08). While there was no significant change in vegetable intake from baseline to post in the control group (pre 3.65± 0.72, post 3.44± 0.57, change -0.20), there was a significant increase in intake in the
intervention group (pre 3.59± 0.50, post 3.85± 0.46, change 0.26, p=0.027), equivalent to approximately 0.25 cups.

This study involved a large population of students in two similar school districts that were already participating in the FFVP. It also developed a nutrition education curriculum to complement the FFVP, and provided training for the classroom teachers on the curriculum. While this study did not find significant changes in fruit intake, there was a significant change in vegetable consumption on the overall intervention group.

**Conclusion**

Childhood obesity continues to be of concern in the US. Inadequate F/V consumption has been identified as a risk factor of becoming obese. Most children are not meeting daily F/V recommendations with increased risk of inadequacy among children in low-income households and non-white races. The FFVP was been established in response to these concerns, and evaluations found it promoted F/V consumption and increased F/V availability in schools. Nutrition education also can increase F/V consumption. The literature has shown that F/V programs and nutrition education both promote F/V consumption separately. The effect of education combined with FFVP was found to increase consumption of vegetables compared to FFVP without education in one preliminary study. However, additional studies are needed.
References


20. Holmes M. *The evaluation of the impact of a school-based nutrition education program on fruit and vegetable consumption in low-income elementary students:* Nutrition and Food Sciences, University of Rhode Island; 2010.
This material was funded by USDA's Supplemental Nutrition Assistance Program – SNAP. The Supplemental Nutrition Assistance Program (SNAP) provides nutrition assistance to people with low income. It can help you buy nutritious foods for a better diet. To find out more, contact your local DHS office, or call the URI SNAP-Ed nutrition program at 1-877-Food-URI (1-877-366-3874). USDA is an equal opportunity provider and employer.
Introduction

The University of Rhode Island Supplemental Nutrition Assistance Program education component (SNAP-Ed) would like to thank you for your interest in our fruit and vegetable lessons. This curriculum provides nutrition education that complements your school’s Fresh Fruit and Vegetable Program. The goals of the Fresh Fruit and Vegetable Program are to:

- Increase children’s fruit and vegetable consumption.
- Expand the variety of fruits and vegetables that children are exposed to.
- Make a difference in children’s diets to impact their present and future health.
- Create healthier school environments by providing more nutritious food choices.

This program is an important catalyst for change in efforts to combat childhood obesity and to prevent the chronic diseases associated with obesity. If you have any questions about this curriculum, please contact Heidi Hetzler at (401) 277-5043 or heidihetzler@uri.edu or Paula Paolino at (401) 277-5391 or paula_paolino@uri.edu.

These brief lessons have been developed to be taught during the time at which the fruit and vegetables are distributed. We have included extra activities at the bottom of some lesson pages which are meant to be flexible so they may be incorporated into your existing classroom curricula. Also, a parent newsletter is included in this program which should be sent home after each week’s activity. Thank you for supporting the program and for helping your students develop lifelong healthy eating habits.

How to use this curriculum

We would like you to choose one day each week when the children receive a fruit or vegetable snack to present the brief lesson provided. On the other day(s) that fruit and vegetables are distributed, we would ask for you to refer to the color message sheet attached. For example, if your fruit and vegetables are served on Tuesday and Thursday, please choose one of these days for the lesson and the other will be for the color sheet.

We have provided 5 different color sheets with an important nutrition message for the students to learn. For example, on the day that you use the color sheet, if the fruit or vegetable is red, please refer to the red sheet and read the saying provided, then have the students repeat the phrase. In addition, if fruit is served that day, please read the fruit message, and when a vegetable is offered, please read the vegetable message. Eventually, your students will be able to come up with each day’s message on their own.
Fresh Fruit & Vegetable Program Lesson Plans

Third Grade

Lesson 1: Food Groups - Fruit and Vegetables
Lesson 2: MyPlate
Lesson 3: Amounts and Serving Size
Lesson 4: Variety
Lesson 5: Fruit- Go Slow Whoa
Lesson 6: Vegetables- Go Slow Whoa
Lesson 7: The Plant Parts We Eat
Lesson 8: Farm to Fork
Lesson 1: Food Groups - Fruit & Vegetables

Nutrition Objectives:
1. Students will be able to identify the five food groups on the MyPlate poster.
2. Students will be able to state that they need 2 cups of fruits and 2 cups of vegetables every day.

Supplies/Materials:
- MyPlate poster with colored bands and pictures of foods.
- Put More Power on Your plate worksheet (one for each student)
- Measuring cup

Opening:
Today we are learning about the five food groups and fruits and vegetables. We will be focusing on the bottom portion of the poster.

Ask: What are the 5 food groups? What food group is represented by each color?
Point to the foods in each group as you discuss:
- Green is the vegetable group which has carrots, corn, lettuce, tomatoes, and cucumbers.
- Red is the fruit group which has apples, pears, bananas, grapes and 100% orange juice.
- Orange is the grains group which includes cereal, bread, bagels, rice and pasta.
- Purple is the protein group which has meat, fish, chicken, eggs, beans, and peanut butter.
- Blue is the dairy group which includes milk, yogurt and cheese.

Ask: What food group does the red color represent? (fruit group)
- You need 2 cups of fruit every day. (Show the students the measuring cup.)
- It is important to eat 2 cups of fruit every day because fruit contains vitamin C which helps to protect you from getting a cold. Fruit also keeps our teeth, gums, and bones strong and healthy.

Ask: What are some examples of fruit? (apples, oranges, bananas, peaches, pears, etc.)

Ask: What food group does the green color represent? (vegetable group)
- You need 2 cups of vegetables every day. (Show the students the measuring cup.)
- It is important to eat 2 cups of vegetables every day because vegetables contain vitamins and minerals that help keep you healthy and strong. They also contain fiber, which keeps food moving through your body so it helps you go to the bathroom.
Ask: What are some examples of vegetables? (*carrots, green beans, potatoes, broccoli, etc.*)

Over the next few weeks, you may receive a fruit or vegetable that you've never tried before or one that you don't like. Please have a good attitude about trying a new food for the first time or trying it again. Your taste buds may have changed!

**Activity#1: Put More Power on Your Plate** Refer to worksheet for directions.

**Classroom Connections (Writing/Language Arts):** Write about a time you tried a new fruit or vegetable. What was it? Did you like it? Would you try it again?

**Add-on: Lots O’ Dots** - Students can follow the directions to complete the Lots O’ Dots handout.
Lesson 2: MyPlate

Nutrition Objectives:
1. Students will be able to identify the food groups on MyPlate.
2. Students will be able to state that half of their plate should be filled with fruits and vegetables.

Supplies/Materials:
- MyPlate poster with colored bands and pictures of food
- Half My Plate Pledge Form (one for the entire class)
- Make MyPlate Your Plate handout (one for each student)

Opening:
- Today we are learning about the five food groups and MyPlate. Instead of MyPyramid, we now use MyPlate as a guide to help us eat more healthfully.
- Refer to the MyPlate poster, drawing attention to the foods pictured in each food group at the bottom of the poster. Ask the following questions to generate a discussion:
  - What do you notice about the plate on this poster? (There are five different colors each representing a different food group.)
  - Let’s review the five food groups.
  - Can you name a food group and some foods that belong in that group?
    - **Green** is the vegetable group which includes carrots, lettuce, tomatoes, and cucumbers.
    - **Red** is the fruit group which contains apples, bananas, grapes, and 100% orange juice.
    - **Orange** is the grains group which includes cereal, bread, bagels, pasta and rice.
    - **Purple** is the protein group which contains meat, fish, chicken, beans, eggs and peanut butter.
    - **Blue** is the dairy group which includes milk, cheese, and yogurt.

  - Let’s take a closer look at the fruit (red) and vegetable (green) groups.
  - How much of the plate is full if you combine the fruit and vegetable groups? (one half)

Ask _ What meal do you eat that looks most like this plate? (dinner)

Ask _ Is your dinner plate at home half full of fruits and vegetables?

Ask _ Are you going to ask the person who cooks in your house to buy and/or prepare more fruits and vegetables?

Ask _ Have you tried one new fruit or vegetable this week?

Activity #1: Class Pledge
- Ask students to take the “half my plate pledge” by signing the certificate. Display it in a prominent place in the classroom. Refer to it periodically to monitor progress.

Activity #2: Make MyPlate Your Plate
- Read the nutrition messages in the circles with the class. The children can then draw their
favorite food from each food group on the plate on the other side.

**Add-on: Silly Story:** Have students work with a partner to write a silly story. Partners can read the story to each other when their story is complete.
Lesson 3: Amounts and Serving Size

Nutrition Objectives:
1. Students will be able to identify a portion of fruit or vegetables and estimate the number of cups it is equal to.

Supplies/Materials:
- Yummy Fruit and Vegetable Serving Size Sheet (one for each student)
- What Counts as one cup of Fruit? (reference sheet for teacher)
- What Counts as one cup of Vegetables? (reference sheet for teacher)
- Measuring cup
- Make a Fruit and Vegetable Diary (one for each student)

Opening:
- Today we are practicing how to estimate what counts as a cup of fruit and vegetables.

Ask  How many cups of fruit you should have every day? (2 cups) Show students measuring cup.
Ask  How many cups of vegetables you should have every day? (2 cups) Show students measuring cup.
- You should have at least FOUR cups of fruits and vegetables every day (2 cups of each).

Activity #1: Serving Size Cards
- Distribute Yummy Fruit and Vegetable Serving Size handout.
  - Review the fruit servings sizes:
    - 1 cup of fruit= size of a tennis ball= 1 small apple
    - ½ cup of fruit= size of a small computer mouse= 16 grapes
    - ½ cup of fruit received as a snack in school= size of a small computer mouse
      You need 4 servings this size to = 2 cups of fruit which you should eat every day.
  - Review the vegetable serving sizes:
    - 1 cup of vegetables= size of a baseball= 1 cup broccoli
    - ½ cup of vegetables= size of small computer mouse= 6 baby carrots
    - ½ cup of vegetables received as a snack in school= size of small computer mouse

Ask  How many servings this size will it take to = 2 cups of veggies which you should eat every day? (4)
Ask  Looking at the pictures of the fruits, how can you eat 2 cups per day? (Have the apple (1 cup) and double the amount of grapes to make another cup; it would be 32 grapes.)
Ask  Looking at the pictures of the vegetables, how can you eat 2 cups per day? (Eat the broccoli (1 cup) and double the amount of baby carrots to make another cup; it would be 12 baby carrots.)
- Take a look at today’s fruit or vegetable snack. Have students estimate the serving size of the snack. Compare it to the size of a tennis ball and a computer mouse.
- Notice how these fruits and vegetables are all different colors. We’ll be talking about why that’s important next week.

Activity #2: Make a Fruit and Vegetable Diary
Follow the directions on the paper. Have students record how many fruits and vegetables they eat each day for one week. Did the children eat 2 cups of fruit and 2 cups of vegetables each day?
Curriculum Connections (Reading/Language Arts): Fruit and Vegetable Reading Passages —
Assign any or all of the four reading passages (Citrus Fruits, Pears, Root Vegetables and Salad Greens)
and ask the students to answer the questions in complete sentences.

Add-on: Power Search: Have the students complete the Power Search word search.
Lesson 4: Variety

Nutrition Objectives:
1. Students will be able to define what “variety” means in terms of fruit and vegetable consumption.
2. Students will be able to identify two health benefits of different colored fruits and vegetables.

Supplies/Materials:
- A Variety of Fruits and Vegetables worksheet (one for each student)
- Girl Jumping handout (one for each student)
- Catch a Rainbow Every Day (reference sheet for teacher)
- The Color Chart and Sheets (in front of binder; reference sheets for teacher)

Opening:
Today we are learning how to choose a variety of fruit and vegetables.

Ask Does anyone know what variety means?
- Variety means different colors, shapes, and sizes.
- Usually when you vary the color, you get different shapes and sizes, too.
- You need to eat a variety of colorful fruits and vegetables every day to get all the
  vitamins and minerals your body needs to grow and to stay strong and healthy.
  Different colored fruits and vegetables will give you a variety of vitamins and minerals.

Ask Now that you know variety is different shapes, colors, and sizes, can you name three fruits and
vegetables you think show a good variety? (sample answer: apple, green beans and corn)

Activity#1: A Variety of Fruits and Veggies Each Day…so You Can Play handout (girl
jumping)
- Distribute the handout.
- Refer to the Catch a Rainbow sheet for more examples of fruits and vegetables in each color group.
- Refer to the handout and read aloud ways that each different color helps the body function.
  - White, Brown and Tan: Keeps your muscles strong and your body safe from germs.
  - Red: Keeps your heart strong.
  - Green: Helps you go to the bathroom for a healthy tummy.
  - Purple/Blue: Help your brain learn and remember.
  - Yellow/Orange: Keeps your eyes healthy and skin glowing.

Ask What color fruits and vegetables help you heart? (red)
Ask What are some examples of red fruits and veggies? (tomatoes, radishes, apples, strawberries)
Ask What color fruits and vegetables help you do well in school? (purple and blue)
Ask What are some examples of purple and blue fruits and vegetables? (blueberries, grapes, raisins)
Ask What color fruits and vegetables help you go to the bathroom? (green)
Ask What are some examples of green fruits and vegetables? (lettuce, broccoli, pears, grapes, kiwi)
Ask What color fruits and vegetables are good for your eyes and skin? (yellow and orange)
Ask What are some examples of yellow and orange fruits and veggies? (corn, oranges, peppers)
Ask What color fruits and vegetables help to keep your muscles strong? (white)
Ask What are some examples of white fruits and veggies? (potatoes, bananas, pears, mushrooms)

Note: Examples of white fruits and vegetables are those that are white on the inside like a banana, pear, or potato, or those that are white inside and out like mushrooms.

Activity #2: A Variety of Fruits and Vegetables: Instruct the students to complete the worksheet and share their responses with the class.
Lesson 5: Fruit- Go Slow Whoa

Nutrition Objective:
1. Students will be able to identify a “go” fruit, a “slow” fruit, and a “whoa” fruit.

Supplies/Materials:
- My Plate poster with colored bands and pictures of foods
- 3 fruit pictures (apple, applesauce, apple pie)
- Fruit & Vegetables: Make Healthy Choices (one for each student; save for Lesson 6)
- Chart paper or whiteboard
- Red, green and yellow markers

Opening:
- Today we are learning about the fruit group and how to make the healthiest choices when we eat fruit.

Ask What color is the fruit group? (red) Point to the red band on the poster.
Ask Why is fruit important for your body? (Fruits contain vitamin C, which helps to protect you from getting a cold. Fruit also keeps our teeth, gums and bones strong and healthy. In addition, fruit contains fiber which keeps food moving through your body so it helps you go to the bathroom.)
Ask How many cups of fruit do you need every day? (2 cups)

Activity#1: Go Slow Whoa
- Write the word “go” in green, “slow” in yellow and “whoa” in red in a column on the board or chart paper. Display the 3 pictures of fruit.
- In the fruit group, there are healthy fruits we should eat every day. These are called “go” fruits.

Ask Who can name a “go” fruit we should eat every day? (orange, kiwi, apple, banana)
Ask Why are these healthy fruits? (They are in their natural form; the way you would get them right from a plant or a tree. Nothing has been added to the fruit like sugar or fat such as butter.)
Ask Which of these three fruits would be the “go” fruit or the healthiest fruit? (the apple)
- Display the picture of the apple on the board or chart paper next to “go”.

- There are other fruits we call “slow” because we should only eat them sometimes.
Ask Which of these two is the “slow” fruit? (applesauce) Why? (It has sugar added to it.)
- Display the picture of applesauce on the board or chart paper next to “slow”.

- The apple pie is a “whoa” fruit which you should eat only once in a while.
Ask Why? (Apple pie has lots of fat and sugar added to it. It is not as healthy for us, even though it is made out of apples. We should only eat “whoa” foods once in a while.)
Display the picture of the apple pie on the board or chart paper next to “whoa”.

Ask How can you remember “go”, “slow”, and “whoa”? (It’s like the colors of a stoplight).

Distribute Fruit and Vegetables: Make Healthy Choices handout. Ask the children to save it for Lesson 6.

Continue to ask questions re: go, slow and whoa fruits by looking at the pictures.

Classroom Connections: (Language Arts): Fruit Fun Talk - Have the students work with a partner to complete Fruit Fun Talk. Review the answers with the class.
Lesson 6: Vegetables- Go Slow Whoa

Nutrition Objective:
1. Students will be able to name a “go” vegetable, a “slow” vegetable, and a “whoa” vegetable.

Supplies/Materials:
_ My Plate poster with colored bands and pictures of foods
_ 3 vegetable pictures (baked potato, mashed potato and French fries)
_ Fruits & Vegetables: Make Healthy Choices handout (saved from Lesson 5)
_ Chart paper or whiteboard
_ Red, yellow and green markers

Opening:
_ Today we are learning about the vegetable group and how to make the healthiest choices when we eat vegetables.
Ask_ What color is the vegetable group? (green) Point to the green band on the poster.
Ask_ Why are vegetables important for your body? (Vegetables contain lots of important vitamins and minerals that keep us healthy and strong, and fiber which keeps food moving through your body so it helps you go to the bathroom.)
Ask_ How many cups of vegetables do you need to eat every day? (2 cups)

Activity#1: Go Slow Whoa
_ Write the word “go” in green, “slow” in yellow and “whoa” in red in a column on the board or chart paper. Display the 3 pictures of vegetables.
_ In the vegetable group, there are healthy veggies we should eat every day. These are called “go” vegetables.
Ask_ What are some examples of “go” vegetables that we should eat every day? (green beans, broccoli, carrots, corn, celery, cucumbers, zucchini, tomatoes, peppers)
Ask_ Why are these healthy veggies? (They are in their natural form; the way you would get them right from a plant. Nothing has been added to the vegetables like salt and fat such as butter or oil.)
Ask_ Which of these three vegetables would be the “go” or the healthiest vegetable? (baked potato).
_ Display the picture of the baked potato on the board or chart paper next to “go”.

_ We call some vegetables “slow” because we should only eat them sometimes.
Ask_ Which of these two is the “slow” vegetable? (mashed potato) Why? (When you prepare mashed potatoes, you add some butter, milk and salt to the potatoes.)
_ Display the picture of mashed potatoes on the board or chart paper next to “slow”.

_ The French fries are a “whoa” vegetable which you should eat only once in a while.
Ask_ Why? (French fries are fried in lots of oil and salt is added. The French fries are not as healthy for us, even though they are made out of potatoes. We should only eat “whoa” foods once in a while.)
_ Display the picture of the French fries on the board or chart paper next to “whoa”.


Ask How can you remember “go”, “slow”, and “whoa”? (It’s like the colors of a stoplight.)

Ask the students take out the Fruit and Vegetables: Make Healthy Choices handout and discuss.

Ask Can you think of another “go” “slow” “whoa” vegetable? (onions: raw=“go”, sautéed in oil=“slow” and onion rings which are fried in lots of oil and have a lot of salt added=“whoa”)

Classroom Connections: (Language Arts): Vegetable Riddles - Have the students solve the Vegetable Riddles. Review the answers with the class.
Lesson 7: The Plant Parts We Eat

Nutrition Objective:
1. Students will be able to identify three different parts of a vegetable plant we eat.

Supplies/ Materials:
- Tops and Bottoms by Janet Stevens
- The Plants We Eat Teacher's Guide

Opening:
Today I will be reading a book about fruits and vegetables. As I read, be on the lookout for how vegetables are grouped by the different parts of the plant that we eat.

Activity#1:
Read aloud Tops and Bottoms by Janet Stevens. Discuss the following questions referring back to the text and The Plants We Eat Teacher’s Guide.

Ask. Can anyone name the vegetables we eat when we eat the top or the leaves of the plant? (lettuce, spinach, cabbage)

Ask. There are other vegetables we eat the tops of but they are considered to be flowers. Can you name one? Hint: flower is part of the name of one of these vegetables. (broccoli, cauliflower)

Ask. We eat the bottom or the root of the plant when we eat these vegetables. What are they? (carrots, radishes, potatoes, beets, onions, turnips)

Ask. What vegetables are you eating when you eat the middle and the seeds of the plant? (corn, peas, lima beans)

Ask. If you eat these vegetables you are still eating the middle of the plant, but you are eating the stem of the plant. What are they? (celery, asparagus, and broccoli which is also classified as a flower)

Ask. We eat the fruit of the plant when we eat these fruits and vegetables. Think of fruits and vegetables that grow on vines or on trees. What are they? (bananas, strawberries, blueberries, pears, grapes, tomatoes, cucumbers)

Classroom Connections (English/Language Arts): Santa Cruz Farms
Read the letter about Santa Cruz Farms together and instruct the students to answer the questions in complete sentences.

**Add-on:** Using *The Plants We Eat List* as a teacher’s guide, bring in different fruits and vegetables. Have the students identify which plant parts they represent.
Lesson 8: Farm to Fork

Nutrition Objective:
1. Students will be able to state how fruits and vegetables get from the farm to their plate.

Supplies/Materials:
- Food System cards

Opening:
Ask Did you eat 2 cups of fruit and 2 cups of vegetables yesterday?
Ask Have you tried one new fruit or vegetable this week?
- Today we are learning about food systems. A food system is all the different steps that a food has to go through beginning from when it is planted to when you finally eat it.
Ask Where do fruits and vegetables come from? (Fruits and vegetables come from plants or trees. They are grown on farms and in gardens.)
Ask Has anyone here been to a farm?
Ask What kinds of fruits and vegetables did you see being grown on the farm?
Ask Have you ever grown anything in a garden?
Ask What types of fruits and vegetables have you grown in a garden?

Activity: Telling the Apple Story
- Food System cards are included with this lesson.
  o Ask for 8 student volunteers. Hand out one Food System card to each student. Tell them that they are going to tell the story of how an apple grows and becomes a food product.
  o Have the students work together to decide who has the first step in the food system, and so forth until the whole story is in place.

Answer:
Growing_Harvesting_Storing_Transporting_Selling_Preparing_Consuming_Disposing

Ask Who has ever been apple picking?
Ask When you pick your own apples, which steps of the food system are you doing yourself? (harvesting, storing, and transporting)
- Let’s talk about transporting which means delivering the apples from where they are grown to where they will be sold. Think about what happens to the environment.
Ask: What happens when we ship apples thousands of miles around the world? (*uses up lots of gasoline, creates pollution, apples get mushy and don’t taste as good*)

Let’s talk about the final step: disposing which means throwing your trash away.

Ask: Why is it better for the environment if you eat fresh fruits and vegetables rather than processed or packaged foods? (*All the trash you create will break down and become part of the soil. You won’t have to throw away a lot of packaging like paper or plastic.*)

**Classroom Connections (Social Studies):** On a world map, show all of the different countries that ship apples to the United States (examples—New Zealand, Chile, China, Argentina, Australia). Remind the children that we grow lots of apples right here in the United States, including here in Rhode Island.

**Classroom Connections (Math): Fruit Fractions** - Have the students complete the worksheet.
The Fresh Fruit and Vegetable Program

Nutrition Curriculum
4th Grade

This material was funded by USDA’s Supplemental Nutrition Assistance Program – SNAP. The Supplemental Nutrition Assistance Program (SNAP) provides nutrition assistance to people with low income. It can help you buy nutritious foods for a better diet. To find out more, contact your local DHS office, or call the URI SNAP-Ed nutrition program at 1-877-Food-URI (1-877-366-3874). USDA is an equal opportunity provider and employer.
Fresh Fruit & Vegetable Program Lesson Plans

Fourth Grade

Lesson 1: Fruit and Vegetable Challenge
Lesson 2: MyPlate-Fruits and Vegetables
Lesson 3: The Color Chart
Lesson 4: Cups of Colorful Fruits
Lesson 5: VIVs (Very Important Veggies)
Lesson 6: Eating and Growing Vegetables
Lesson 7: The Right Stuff
Lesson 8: Go Slow Whoa
Lesson 1: Fruit and Vegetable Challenge

Nutrition Objectives:
1. Students will be able to identify fruits and vegetables in their diets.
2. Students will name one new fruit or vegetable that they would like to try in school.

Supplies/Materials:
- Stopwatch or clock with a second hand
- Paper and pencil for each student

Opening:
- Over the next few weeks we will be learning about fruits and vegetables and why they are an important part of a healthy diet.

Ask: Why is it important to eat fruits and vegetables? (Fruits and vegetables are loaded with vitamins and minerals that help protect your body against germs and keeps your heart, brain, eyes, and skin healthy. Fruits and vegetables also contain fiber, which keeps food moving through your body so it helps you go to the bathroom.)

Ask: How many servings of fruits and vegetables does your body need every day? (You need 2 cups of fruit and 2 cups of vegetables every day.)

Activity#1: Make a List
- Instruct students to write down as many fruits and vegetables as they can in one minute.
- Use a stopwatch or a clock to let the students know when to stop writing.

Ask: Now look at your list. Are there any fruits or vegetables on your list that you’ve never tried?

Activity #2: Analyze Your List
- Put a circle around the fruits and vegetables you’ve never tried.
- Put a rectangle around the fruits and/or vegetables that you don’t like.
- Put a star next to the fruits and vegetables you’re willing to try for the first time or try again.

Add-on: Ask the students to share the names of fruits and vegetables they’ve written on their lists. Make a class list on the board. Stress the importance of
having a good attitude and being willing to try new foods. Students should save their individual lists to refer to in future lessons.

**Classroom Connections (Math):** From the class list on the board, ask students to raise their hand to vote for their favorite fruit. Place a tally mark indicating the number of students who chose that particular fruit. Discuss these terms: maximum, minimum, range, mode and median and list the answers on the board. Create a bar graph to organize the data. Repeat the lesson using the data for vegetables.
Lesson 2: MyPlate - Fruits and Vegetables

Nutrition Objectives:
1. Students will be able to identify the food groups on MyPlate.
2. Students will be able to state that half of their plate should be filled with fruits and vegetables.

Supplies/Materials:
- MyPlate poster with colored bands and pictures of food
- Catch a Rainbow Every Day handout (one for each student; they need to save this for Lesson 3)

Opening:
- Today we are learning about the five food groups and MyPlate. Instead of MyPyramid, we now use MyPlate as a guide to help us eat more healthfully.

Activity #1: MyPlate poster
- Refer to the MyPlate poster, drawing attention to the foods pictured in each food group at the bottom of the poster. Ask the following questions to generate a discussion:

Ask: What do you notice about the plate on this poster? (There are five different colors each representing a different food group.)

Ask: Can you name a food group and some foods that belong in that group?
- **Green** is the **vegetable** group which includes carrots, lettuce, tomatoes, and cucumbers.
- **Red** is the **fruit** group which contains apples, bananas, grapes, and 100% juice.
- **Orange** is the **grains** group which includes cereal, bread, bagels, pasta and rice.
- **Purple** is the **protein** group which contains meat, fish, chicken, beans, eggs and peanut butter.
- **Blue** is the **dairy** group which includes milk, cheese, and yogurt.

- Let’s take a closer look at the fruit (red) and vegetable (green) groups.

Ask: How much of the plate is full if you combine the fruit and vegetable groups? (one half)

Ask: What meal do you eat that looks most like this plate? (dinner)
x This means that half your plate should be filled with foods that come from plants or trees.
x Raise your hand if your dinner plate at home is half full of fruits and vegetables.
x Raise your hand if you are going to ask the person who cooks in your house to buy and/or prepare more fruits and vegetables.
x Raise your hand if you've tried one new fruit or vegetable this week.

**Activity:#2: Catch a Rainbow Every Day**

x Pass out Catch a Rainbow Every Day handout. *(Save it.)* Introduce the concept of variety. *Ask:* Why is it important to eat many different fruits and vegetables every day? *(Your body needs lots of different nutrients which it will get if you eat a variety of fruits and vegetables.)*
*Ask:* What is an easy way to remember to eat a variety of foods and vegetables every day? *(Eat a lot of different colored fruits and vegetables every day.)*

**Classroom Connections (English/Language Arts):** Power Search word search
Lesson 3: The Color Chart

Nutrition Objectives:
1. Students will be able to identify the body functions of three different colored fruits and vegetables.

Supplies/Materials:
- Catch a Rainbow (one for each student saved from Lesson 2)
- The Color Chart (one for each student; they need to save it for future lessons)
- Individual Color Sheets (needed for teacher only; located in front of binder)
- Half My Plate Pledge Form (one for the entire class)

Opening:
- You’ve already learned that a healthy diet consists of foods that have a variety of colors. Today you will learn how each color affects the human body.

Activity#1: The Color Chart
- Pass out The Color Chart and ask the following questions to generate a discussion. Note: Examples of white fruits and vegetables are those that are white on the inside like a banana, pear, or a potato, or those that are white inside and out like mushrooms.

AskÆ Look at your color chart. Which part of the body helps keep you strong? (muscles)
AskÆ What color fruits and vegetables helps to keep your muscles strong? (white)
AskÆ Now look at the rainbow on your paper. What are examples of white fruits or vegetables? (potatoes, bananas, pears, mushrooms)

AskÆ What part of the body allows you to learn and remember? (brain)
AskÆ What color fruits and vegetables help your brain? (purple and blue)
AskÆ What are some examples of purple and blue foods? (blueberries, grapes, raisins and eggplant)

AskÆ What color fruits and vegetables keeps your eyes healthy, your skin glowing, and helps to keep you from getting a cold? (yellow and orange)
Ask: What are some examples of yellow and orange fruits and vegetables? (carrots, cantaloupe, oranges, corn, sweet potatoes, tangerines, peppers)

Activity#2: Class Pledge
   x  Ask students to take the” half my plate pledge” by signing the certificate. Display it in a prominent place in the classroom. Refer to it periodically and ask questions like:

Ask: What new vegetables have you tried this week?

Ask: How many of you filled ½ your plate with fruits and vegetables yesterday?

Add-On: Have the students dress in the color of their favorite fruit or vegetable on the following day. Call on students to ask what their favorite fruit or vegetable is and what its function is.

Classroom Connections (Health/Science): Discuss in greater detail the systems of the human body with an emphasis on digestion and where food goes after it is consumed. Refer to Where Does My Lunch Go? Review the color sheet and the functions of the different colored fruits and vegetables
Lesson 4: Cups of Colorful Fruits

**Nutrition Objectives:**
1. Students will be able to provide two examples of how to eat 2 cups of fruit.

**Supplies/Materials:**
- 6 Fruit picture cards
- Set of measuring cups
- What Counts as One Cup of Fruits? (reference sheet for teacher)
- Chart paper on an easel or mounted on the board (for word wall)
- Name That Fruit worksheet (one for each student)

**Opening:**
- Today we are learning about the amount of fruit you need to eat every day to be healthy.

**Ask:** Why is it important to eat 2 cups of fruit every day? (*Fruit contains vitamin C, which helps keep you from getting a cold. Fruit also keeps our teeth, gums, and bones strong and healthy.*)

Show pictures of the following and hold up the appropriate measuring cup as you discuss:
- 1 cup of fruit equals one piece of fruit like an apple, orange, or banana
- 1 cup of fruit equals 1 cup of chopped fruit like fruit salad or fruit cocktail (packed in natural juice)
- 1 cup of fruit equals 32 red seedless grapes
- 1 cup of fruit equals ½ cup of dried fruit like raisins
- 1 cup of fruit equals 8 fluid ounces of 100% fruit juice
- 1 cup of fruit equals 2 small pieces of fruit like kiwi
- ½ cup fruit received as a snack in school (You need 4 servings this size to equal the 2 cups of fruit you should eat every day.)

**Activity#1: Word Wall**
- Write the names of the fruits from children’s responses on chart paper to start a word wall. **Save it for Lesson 5 when you will be adding vegetables to it or creating a separate list for vegetables. Display the list in the classroom so the children can refer to it when they complete their food diaries in Lesson 5.**

**Ask:** Who can use the picture cards to show me how much fruit you need to eat to equal 2 cups of fruit per day? Get a variety of responses. Refer to the What Counts as One Cup of Fruits? reference sheet for answers.

Examples:
x 2 kiwi and 1 cup 100% fruit juice
x 1 banana and ½ cup raisins
x 32 red seedless grapes and 1 cup of chopped fruit (fruit salad)

Activity#2: Name That Fruit Worksheet
Working with a partner, give the students some time to complete the worksheet. Correct it together and add the answers to the fruit word wall.

Classroom Connections (English/Language Arts): Have the students write a poem about their favorite fruit of vegetable. Refer to the adjective list (Let’s Get Descriptive) in the front of the binder.
Lesson 5. V.I.V. Very Important Vegetables

Nutrition Objectives:
1. Students will be able to provide two examples of how to eat 2 cups of vegetables.

Supplies/Materials:
- 6 Vegetable picture cards
- Set of measuring cups
- What Counts as One Cup of Vegetables? (reference sheet for teacher)
- Chart paper on an easel or mounted on the board (for word wall)
- Make a Fruit and Vegetable Diary worksheets (one for each student)

Opening:
- Today we are learning about the amount of vegetables you need to eat every day to be healthy.

Ask: How many cups of vegetables do you need every day? (2 cups)
Ask: Why is it important to eat 2 cups of vegetables every day? (Veggies contain vitamins and minerals that keep us healthy and strong. They also contain fiber, which keeps food moving through your body so it helps you go to the bathroom.)
Show pictures of the following and hold up the appropriate measuring cup as you discuss:
- 1 cup of vegetables equals 1 cup of raw or cooked vegetables like broccoli, corn, peas, cucumbers, green beans, mushrooms, tomatoes, peppers or zucchini
- 1 cup of vegetables equals 1 large sweet potato
- 1 cup of vegetables equals 12 baby carrots or 2 medium carrots
- 1 cup of vegetables equals 1 cup of cooked beans and peas such as black, kidney, pinto, soy beans, black eyed peas, or split peas
- 1 cup of vegetables equals 2 cups of raw leafy greens like lettuce and spinach
- 1 cup of vegetables equals 8 fluid ounces of 100% tomato or vegetable juice
- ½ cup of vegetables received as a snack in school (You need 4 servings this size to equal the 2 cups of vegetables you should eat every day.)

Activity#1: Word Wall
- Write the names of the vegetables from children’s responses on a separate sheet of chart paper or add the vegetables to the fruit list you began in Lesson 4.
  Display it in your classroom so the children can refer to it as they fill in their food diaries.
Ask: Who can use the picture cards to show me the amount of veggies you need to eat to equal 2 cups of vegetables per day? Get a variety of responses. Refer to the What Counts as One Cup of Vegetables? reference sheet for answers. Examples:
x 1 cup of green beans and 1 cup (8 fluid ounces) of 100% tomato or vegetable juice
x 2 cups of raw spinach and 1 large sweet potato
x 12 baby carrots and 1 cup of broccoli

Activity #2: Fruit and Vegetable Diary
x Follow the directions on the Make a Fruit and Vegetable Diary worksheet. Instruct students to use the word wall as they record the fruits and vegetables they eat over the next 5 days. Remind them that all forms count: fresh, frozen, canned, dried, and 100% juice.

Classroom Connections (English/Language Arts): Instruct the students to answer the questions on the right side of the Have Fun with Fruits and Vegetables worksheet and then solve the puzzle.
Lesson 6: Eating and Growing Vegetables

Nutrition Objectives:
1. Students will be able to identify four different parts of the plant we eat when we consume vegetables.

Supplies/Materials:
- The Vegetables We Eat by Gail Gibbons
- The Plants We Eat Reference List

Opening:
- Today we are learning about the different parts of vegetable plants that we eat and how vegetables are grown.

Ask: What are the different parts of a plant? *(root, stem, fruit, leaves, flowers, and seeds)*
- In this book, you’ll see the different parts of various vegetables that we eat.

Activity#1: Picture Book
- Read aloud *The Vegetables We Eat* by Gail Gibbons. Discuss the following questions. Refer back to the text and The Plants We Eat Reference List

Ask: Can anyone name the vegetable we eat when we eat the *leaves* of the plant? *(lettuce, spinach)*

Ask: We eat the *root* of the plant when we eat this vegetable. What is it? *(carrots, radishes)* Ask: If you eat this vegetable you are eating the *stem* of the plant. What is it? *(celery, asparagus)* Ask: What vegetable are you eating when you are eating the *seeds* of the plant? *(corn, peas)*

Ask: Who knows which vegetable we eat when we eat the *flowers* of the plant? *(broccoli, cauliflower)*

Ask: We eat the *fruit* of the plant when we eat this vegetable. What is it? *(tomatoes, cucumbers)*

Explain the difference between the fruit of a vegetable plant and the fruit that we eat. Refer to The Plants We Eat Reference List.
AskÆ Is a tomato a fruit or a vegetable? Refer to The Plants We Eat Teacher’s Guide.

Add-on: Using The Plants We Eat List as a teacher’s guide, bring in different fruits and vegetables. Have the students identify which plant parts they represent.

Classroom Connections (Science): Plant different types of vegetables in a container garden. Have the students take turns caring for the plants so they learn about the process of making a plant grow.
Lesson 7: The Right Stuff

Nutrition Objectives:
1. Students will be able to explain one health benefit of eating a diet rich in fiber, vitamin A and vitamin C.
2. Students will be able to name one food that is high in fiber, vitamin A and vitamin C.

Supplies/Materials:
- Vegetable Riddles (one for each student)
- What Does Your Food Do For You? (reference sheet for teacher)
- The Color Chart (students saved this in Lesson 3)

Opening:
- Today we are learning about fiber, vitamin A and vitamin C. Fruits and vegetables contain a lot of fiber and vitamins A and C, so it’s important to your health to eat a variety of them every day.

Ask: What types of foods have fiber in them? (Fiber is found in all kinds of food, but especially whole grains, fruits and vegetables. That is why it’s important to eat 2 cups of fruits and 2 cups of vegetables every day and to fill half your plate with fruits and vegetables.)

Ask: What does fiber do for your body? (Fiber keeps food moving through your body, so it helps you go to the bathroom. Fiber helps to keep you full for a long period of time.)
- Vitamin A is important for your vision and skin. You can get more vitamin A in your diet by eating more orange fruits and vegetables.

Ask: What are some orange fruits and vegetables that will provide vitamin A in your diet? (carrots, sweet potatoes, butternut squash and cantaloupe) Refer to What Does Your Food Do For You?
- Vitamin C helps to heal cuts and bruises and fights infection. Certain fruits and vegetables such as oranges, strawberries, tomatoes and peppers are high in vitamin C.
Let’s review The Color Chart to remind us how different colored fruits and vegetables help our bodies stay healthy and keep us growing strong. Read it together.

**Activity #1: Vegetable Riddles**

Have the children solve the vegetable riddles. Correct it together and share the information on the answer sheet.

**Classroom Connections (Math):** Use The Fiber Fun worksheet as part of a math lesson involving decimals. Students can also practice using calculators to add sums of numbers that are decimals.
Lesson 8: Go/ Slow/ Whoa

**Nutrition Objectives:**

1. Students will be able to name a fruit or vegetable they should eat every day, sometimes, or once in a while.

**Supplies/Materials:**

- MyPlate poster
- 3 vegetable pictures (baked potato, mashed potatoes, French fries) and 1 fresh fruit cup
- Fruit and Vegetables: Make Healthy Choices handout (one for each student)

**Opening:** Today we are learning how to make the healthiest choices when we eat fruits and vegetables. Refer to Fruits and Vegetables: Make Healthy Choices handout.

- Fruits and vegetables are most healthy in their natural forms; the way you would get it right from a plant or a tree. We call these the “go” foods, meaning these are the healthiest fruits and vegetables because they contain a lot of nutrients. You should eat them every day.

AskÆ What are some examples of “slow” fruits and vegetables that you can eat sometimes? (cream soups like cream of mushroom or cream of broccoli soup, fruit packed in light syrup, dried fruit; these foods have some added sugar, salt or fat like butter)

AskÆ What are some examples of “whoa” fruits and vegetables meaning that you should eat them only once in a while? (French fries, onion rings, fruit pies and fruits packed in heavy syrup)

AskÆ Why are these “whoa” foods? (They have lots of added salt, fat and/or sugar and not a lot of fiber or important nutrients your body needs like vitamins and minerals.)

**Activity #1: Food Pictures Demonstration**

- Show the children the three food pictures to display three different potatoes. (baked potato, mashed potatoes and French fries)

AskÆ Who can come up and pick the potato which would be the “go” food (baked potato), the “slow” food (mashed potatoes because you add some butter and salt to it), and the “whoa” food? (French fries because they are fried in lots of oil and salt is usually added)
Call on someone to place the best example of a potato (baked) on the MyPlate poster.

**Ask/E** What would be an example “go” fruit? (any fresh fruit or fruit packed in natural juice)

Call on someone to put fresh fruit on the plate. Notice that ½ the plate is full of fruit & veggies.

**Activity #2:** Fruit and Vegetable Trivia Challenge

Complete the worksheet with a partner and review the answers with the class.

**Classroom Connection (Lang. Arts):** Work with a partner to complete the “madlib” Surprise Picnic story.
Dear Parent,

This week, your child is learning about healthy eating in school. Your child pledged to eat more fruits and vegetables and to persuade family members to do the same. Fruit and vegetables are an important part of a healthy diet. They are loaded with vitamins and minerals that keep our heart, brain, eyes, skin, and immune system healthy. They also contain fiber, which is good for digestion. Unfortunately, only 23% of youth in Rhode Island eat the recommended daily amounts of fruit and vegetables.

Did you know that children need to eat 2 cups of fruit and 2 cups of vegetables every day? Give your family a veggie boost by trying out the Creamy Cucumber Dip recipe below.

Sincerely,

The URI SNAP-Education Program
Creamy Cucumber Dip

Ingredients:

- 1/3 cup mayonnaise
- 2/3 cup nonfat plain yogurt
- 1/4 teaspoon dill weed
- 1/2 teaspoon celery salt
- 1/3 cup finely chopped cucumber
- Veggies for dipping, such as carrot sticks, cherry tomatoes, or pepper strips

Directions:

1. Put all ingredients in a bowl and mix well.
2. Serve with a variety of vegetables, or use as a salad dressing!
3. Store leftovers in the refrigerator.
Estimado Padre,

En la escuela esta semana, su hijo/a está aprendiendo a como comer saludable.

La fruta y las verduras son importantes para una dieta saludable. Tienen muchas vitaminas y minerales para mantener sano el corazón, el cerebro, los ojos, la piel y el sistema inmunológico. Ellas también tienen la fibra dietética, que facilita la digestión.

Desafortunadamente, sólo 23% de la juventud en Rhode Island come la cantidad diaria recomendada de la fruta y las verduras.

¿Sabía usted que los niños deben comer 2 tazas de fruta y 2 tazas de verduras cada día? Dé a su familia unas verduras extras con la receta más abajo para Salsa Cremosa de Pepino.

Saludos,

El Programa de URI SNAP-Education
Salsa Cremosa de Pepino

Ingredientes:
- 1/3 taza mayonesa
- 2/3 taza yogur natural, descremado
- 1/4 cucharadita eneldo (‘dill’) seco
- 1/2 cucharadita sal de apio (‘celery salt’)
- 1/3 taza pepino picado
- Vegetales para servir, como palitos de zanahoria, tomatitos cherry o rebanadas de pimiento

Preparación:
1. Ponga todos los ingredientes en una taza y mezcle bien.
2. Sirvala con una variedad de vegetales, o úsela como una vinagreta para la ensalada.
3. Guarde las sobras en la refrigeradora.
Dear Parent,

This week, your child is learning about fruit in school.

Fruit is an important part of a healthy diet, yet most of us do not eat enough throughout the week. Aim for your child to get 2 cups of fruit every day. Fresh, frozen, or canned in juice—they’re all good choices!

Here are a few ideas for how to get your child to eat more fruit:

- **Breakfast**—Add sliced banana or berries to cold or hot cereal.
- **Lunch**—Pack a bunch of grapes or an orange instead of chips.
- **Dinner**—Follow the meal with a fresh fruit salad.
- **Snacks**—Try out the recipe below for Apple Smiles!

Sincerely,

The URI SNAP-Education Program
Apple Smiles

**Ingredients:**

1 red apple
3 tablespoons peanut butter
About ¼ cup raisins

**Directions:**

1. Rinse, core, and cut apple in half.
2. Cut each apple half into 8 slices.
3. Spread peanut butter on one side of each slice.
4. Place 4 raisins on top of peanut butter on one apple slice. Top with another slice and press together to make a “smile.”
5. Repeat with remaining ingredients.
Estimado Padre,

En la escuela esta semana, su hijo/a está aprendiendo sobre la fruta.

La fruta forma una parte importante de una dieta saludable, pero la mayoría de nosotros no come bastante durante toda la semana. Su hijo/a debe comer 2 tazas de fruta cada día.

Fresca, congelada o enlatada en jugo natural—todas son buenas opciones.

Aquí hay unos consejos para ayudar a su hijo/a a comer más fruta:

- **Desayuno**—Echar rodajas de banana o fresas en los cereales fríos o cocidos.
- **Almuerzo**—Poner un racimo de uvas o una naranja en vez de los chips en la lonchera.
- **Comida**—Escoger una ensalada de frutas frescas como postre.
- **Meriendas**—Probar la receta más abajo para las Manzanas Alegres.

Saludos,

El Programa de URI SNAP-Education
Manzanas Alegres

Ingredientes:
1 manzana roja
3 cucharadas mantequilla de maní
¼ taza uvas pasas

Preparación:
1. Lave y quite el corazón de la manzana.
2. Pártala por la mitad, y cada mitad en 8 rodajas.
3. Unte un lado de cada rodaja con la mantequilla de maní.
4. Ponga 4 pasas encima de la mantequilla de maní en una rodaja. Ponga otra rodaja y apriételas para hacer un “sonríe”.
5. Repita con los ingredientes que sobran.
Dear Parent,

This week, your child is learning about vegetables in school. Vegetables are an important part of a healthy diet. Fresh, frozen, or canned—they all provide us with plenty of essential nutrients. Your child should eat 2 cups of vegetables every day.

Here are a few ideas for how to get your child to eat more vegetables:

- **Breakfast**—Add diced green pepper or tomato to a cheese omelet.
- **Lunch**—Have your child ask for extra veggies on pizza.
- **Dinner**—Try out the recipe below for Easy Cheesy Chicken and Broccoli.
- **Snacks**—Serve baby carrots with low fat dip.

Sincerely,

The URI SNAP-Education Program
Easy Cheesy Chicken and Broccoli

Ingredients:
- 1 14.5-ounce can low sodium chicken broth
- 2 cups instant brown rice
- 4 cups fresh or frozen broccoli florets
- 1 1/4 cups shredded reduced fat cheddar cheese
- 1/4 cup parmesan cheese
- 1/2 teaspoon garlic powder
- 1 cup cooked diced chicken (or 1 10-ounce can chicken, drained)

Directions:
1. Place broth in medium saucepan. Bring to a boil over medium-high heat.
2. Stir in rice. Place broccoli over rice but do not stir in. Cover and cook 5 minutes. Remove from heat and let stand, covered, for 5 minutes.
3. Stir in cheeses, garlic powder, and chicken. Let stand, covered, for 5 minutes, then serve.
Estimado Padre,

En la escuela esta semana, su hijo/a está aprendiendo sobre las verduras.
Las verduras son muy importantes para una dieta saludable. Frescas, congeladas, o enlatadas—todas nos dan una abundancia de nutrientes esenciales. Su hijo/a debe comer 2 tazas de verduras cada día.

Aquí hay unas ideas a ayudar a su hijo/a a comer más verduras:

- **Desayuno**—Echar trocitos de pimiento verde o tomate en una tortilla de huevo.
- **Almuerzo**—Pedirle a su hijo/a que pida más vegetales en la pizza.
- **Cena**—Probar la receta más abajo para Pollo y Brócoli Fácil con Queso.
- **Meditaciones**—Servir zanahorias pequeñas con una salsa baja en grasa.

Saludos,

El Programa de URI SNAP-Education
Pollo y Brócoli Fácil con Queso

Ingredientes:
- 1 lata (14.5 onzas) caldo de pollo, bajo en sodio
- 2 tazas arroz integral, instantáneo
- 4 tazas trocitos de brócoli, fresco o congelado
- 1 1/2 taza queso cheddar bajo en grasa, rallado
- 1/4 taza queso parmesano
- 1/2 cucharadita ajo en polvo
- 1 taza trocitos de pollo cocido (o 1 lata pollo de 10 onzas, desaguada)

Preparación:
1. Ponga el caldo en una cacerola de tamaño mediano. Llévelo a hervir a fuego medio-alto.
2. Mezcle el arroz con el caldo. Ponga el brócoli encima del arroz. Tape la cacerola y cocine por 5 minutos. Quítela del fuego y déjela al lado, con tapa, por 5 minutos.
3. Mezcle con los quesos, el ajo y el pollo. Déjela al lado, con tapa, por 5 minutos antes de servir.
Dear Parent,

This week, your child has been learning about the importance of eating a variety of fruit and vegetables. Because each color group gives our bodies different nutrients, make sure your child eats from all parts of the rainbow throughout the week:

- **Red**: Tomato, watermelon, strawberries, beets, apples, grapefruit
- **Yellow/Orange**: Mango, peach, winter squash, carrot, yam, corn, summer squash
- **Green**: Broccoli, kale, collards, romaine, spinach, kiwi, bell peppers, green beans
- **Blue/Purple**: Blueberries, purple grapes, plums, eggplant, purple cabbage
- **White**: Cauliflower, onion, garlic, turnip, potato, radish, banana

Give your family a rainbow of nutrition with our Tropical Salsa recipe below!

Sincerely,

The URI SNAP-Education Program
Tropical Salsa

Ingredients:

- 1 1/2 -ounce can peaches, drained & chopped
- 1 20 -ounce can pineapple tidbits, drained
- 3/4 cup diced cucumber
- 1/4 cup finely chopped red onion
- 1/4 cup chopped fresh cilantro (or parsley if you prefer)
- Juice of 1/2 lime
- 1/2 cup canned black beans, drained

Directions:

1. Drain peaches and pineapple well.
2. In a large bowl, gently combine all ingredients.
3. Serve with tortilla chips, or on top of cheese quesadillas.
Estimado Padre,

Esta semana, su hijo/a ha aprendido sobre la importancia de comer una variedad de frutas y verduras. Porque cada grupo de colores les da a nuestros cuerpos nutrientes específicos, asegúrese que su hijo/a come de todas partes del arco iris durante la semana:

- **Rojo**: Tomate, sandía, fresas, remolachas, manzanas, toronja
- **Amarillo / Naranja**: Mango, dura zno, calabaza de invierno, zanahoria, cebolla, maíz, calabacín
- **Verde**: Brócoli, col rizada, col berza, lechuga romana, espinacas, kiwi, pimiento, judías verdes
- **Azul / Morado**: Arándanos, uvas moradas, ciruelas, berenjenas, repollo morado
- **Blanco**: Coliflor, cebolla, ajo, nabo, papas, rábano, banana

Dé a su familia un arco iris nutricional con la receta más abajo para Salsa Tropical.

Saludos,

El Programa de URI SNAP-Education
**Salsa Tropical**

**Ingredientes:**

- 1 lata (15 onzas) de duraznos, drenados y cortados
- 1 lata (20 onzas) de pedazos de piña, drenados
- ½ taza de pepino picado
- ⅓ taza de cebolla roja, picada
- ⅓ taza de cilantro fresco, cortado
- (o perejil si lo prefiere)
- ½ taza de limón fresco
- ½ taza de frijoles negros, drenados

**Preparación:**

1. Drene bien los duraznos y la piña.
2. En un tazón, combine todos los ingredientes.
3. Sirva con tortillas fritas, o encima de las quesadillas.
Dear Parent,

In the United States, children see thousands of food advertisements every year, with most of the marketing dollars promoting unhealthy foods like fast food, candy, and sugary snacks and drinks. These ads are found on TV, the internet, and grocery store displays.

Encourage your family to think critically about the information they see in advertisements.

Remember that the advertiser’s main goal is to get you to buy their product, not to keep you healthy!

Sincerely,

The URI SNAP-Education Program
Berry Banana Smoothies

Ingredients:

- ¾ cup frozen blueberries
- ½ cup frozen strawberries
- 1 ripe banana
- 1 cup low fat vanilla yogurt
- 1 cup low fat milk
- 6 ice cubes

Directions:

1. Add all ingredients to a blender and blend for 30 seconds.
2. Serve and enjoy!
Estimado Padre,

En los Estados Unidos, los jóvenes ven miles de anuncios para la comida cada año. Casi todo el dinero para el mercadeo se usa para promocionar los productos poco saludables, como la comida rápida, los caramelos y las meriendas y bebidas azucaradas. Se encuentran estos anuncios en la televisión, el internet y los escaparates de tienda.

Anime a su familia a estar analítica en cuanto a la información en los anuncios. No se olvide de que el objetivo principal de las empresas del mercadeo es convencer a la gente a comprar sus productos, ¡no ayudarle a ser sano!

Saludos,

El Programa de URI SNAP-Education
Batidos de Bayas y Banana

Ingredientes:
- 1/4 taza arándanos (blueberries) congelados
- 1/3 taza fresas congeladas
- 1 banana madura
- 1 taza yogurt vainilla, bajo en grasa
- 1 taza leche descremada
- 6 cubitos de hielo

Preparación:
1. Ponga todos los ingredientes en la licuadora. Licue por 30 segundos.
2. Sirva y disfrute.
Dear Parent,

This week, your child has been learning about the importance of vegetables in his or her diet. Every culture has its own healthy foods that they grow and eat—talk to your child about the fruits and vegetables that are special to your family.

Do you want to try a meal from a different culture? Check out our Frittata Verde recipe below. A frittata is like an open-faced omelet, except that the add-ins such as vegetables or cheese are mixed into the eggs rather than used as a filling. In Italy, a frittata is eaten as a light dinner along with a tossed salad and crusty bread. Buon appetito!

Sincerely,

The URI SNAP-Education Program
Frittata Verde

Ingredients:

- 3 eggs
- 2 tablespoons reduced fat cheddar cheese, shredded
- Dash of salt and pepper
- ¼ teaspoon garlic powder
- 1 teaspoon olive oil
- ¼ cup sliced zucchini
- 2 tablespoons diced green pepper
- 1 tablespoon diced onion
- 1 cup fresh spinach or Swiss chard, torn into pieces

Directions:

1. In a small bowl, beat the eggs until foamy. Add cheese, salt, pepper, and garlic powder. Mix well.
2. Heat oil in a medium nonstick skillet, then add zucchini, green pepper, and onion. Cook, stirring, for about 4 minutes.
3. Add spinach or chard. Cook, stirring, for about 1 minute. Add egg mixture. Let cook for about 2 minutes, then flip and cook another 2 minutes.
4. Cut into wedges and serve immediately.
Estimado Padre,

Esta semana, su hijo/a ha aprendido sobre la importancia de verduras en su dieta. Cada cultura tiene sus propios alimentos saludables que cultivan y comen—hable con su hijo/a sobre las frutas y verduras especiales para su familia.

¿Desea probar una comida de otra cultura? Fíjese en la receta más abajo para Frittata Verde. La frittata es como una tortilla de huevo en que se mezcla los otros ingredientes, como vegetales o queso, con los huevos antes de cocinar. En Italia, se come la frittata junto con una ensalada mixta y pan crujiente para una comida ligera. ¡Buon appetito!

Saludos,

El Programa de URI SNAP-Education
**Frittata Verde**

**Ingredientes:**
- 3 huevos
- 2 cucharadas queso cheddar de grasa reducida, rallado
- Una pizca de sal y pimienta
- ½ cucharadita ajo en polvo
- 1 cucharadita aceite de oliva
- ¼ taza rodajas de calabacín
- 2 cucharadas pimiento verde, picado
- 1 cucharada cebolla, picada
- 1 taza espinacas o acelga, en pedazos

**Preparación:**

1. En una taza, bata los huevos hasta espumosos. Eche el queso, sal, pimienta y ajo. Mezcle bien.
2. Caliente el aceite en un sartén mediano antiadherente, y después ponga el calabacín, el pimiento y la cebolla. Cocine por 4 minutos, revolviendo.
3. Eche las espinacas o acelga. Cocine por 1 minuto, revolviendo. Eche los huevos. Deje cocer por 2 minutos, déla la vuelta y deje cocer 2 minutos más.
Dear Parent,

This week, your child has been learning about the different parts of the plant that we eat. For example, when we eat asparagus we are eating the stem of the plant, and when we eat carrots we are eating the root of the plant. We also eat the leaves, fruit, seeds, and flowers of fruit and vegetable plants.

Do you have a garden at home or live near a community garden? Take a trip with your family and see how many edible plant parts your child can name. Or have a family pizza night using the Presto Pizza recipe below, and see how many different plant parts your child can name in the meal (answers below).

Sincerely,

The URI SNAP-Education Program
Presto Pizza

Ingredients:
- 1-pound bag pizza dough (in deli section of store)
- 1 ½ -ounce can tomato sauce
- 12 basil leaves (or 1 teaspoon dried basil)
- 1 small green pepper, diced
- ½ cup diced veggies (onions, tomatoes, broccoli)
- 2 cups shredded part-skim mozzarella cheese

Directions:
1. Preheat oven to 400°F. Wash and chop all vegetables.
2. Spread pizza dough on baking sheet. Spread tomato sauce in thin layer over the dough. Top with basil and veggies, then sprinkle cheese on top.
3. Bake for 25 minutes. Cut into wedges and enjoy!

Answers: Basil=leaves, Green pepper=fruit, Onion=root, Tomato=fruit, Broccoli=flower
Estimado Padre,

Esta semana, su hijo/a ha aprendido sobre las varias partes de una planta que se come. Por ejemplo, cuando se come los espárragos se come los tallos de la planta, y cuando se come la zanahoria se come la raíz de la planta. También comemos las hojas, la fruta, las semillas y las flores de las plantas de vegetales y frutas.

¿Tiene un huerto en casa o vive cerca de un huerto comunitario? Váyase de excursión con su familia para ver cuántas partes comestibles de la planta su hijo/a puede identificar. O tenga una fiesta familiar de pizza con la receta para Presto Pizza más abajo. Pida a su hijo/a cuántas diferentes partes de la planta hay en la cena (respuestas más abajo).

Saludos,

El Programa de URI SNAP-Education
Presto Pizza

Ingredientes:

- 1 libra masa para hacer pizza, en bolsa (en la sección deli del supermercado)
- 1 lata (8 onzas) salsa de tomate
- 12 hojas de albahaca (o 1 cucharadita seca)
- 1 pimiento verde pequeño, picado
- 1/2 taza verduras picadas (cebolla, tomate, brócoli)
- 2 tazas queso mozzarella bajo en grasa, rallado

Preparación:

1. Precaliente el horno a 400°F. Lave y corte todas las verduras.
2. Extiende la masa en una bandeja de horno. Unte la masa con la salsa de tomate. Agregue la albahaca y las verduras, y después el queso encima.
3. Hornee la pizza por 25 minutos.
Córtela en porciones y ¡disfrute!

Respuestas: Albahaca=hojas, Pimiento verde=fruta, Cebolla=raíz, Tomate=fruta, Brócoli=flor
Dear Parent,

This week, your child has been doing fun activities while learning about fruit and vegetables. Here are some tips to remember when it comes to getting your family to eat more of these healthy foods:

- Serve new foods more than once—your child’s taste preferences will grow and change as quickly as they do! It may take 6-7 times before they like a new food.
- Make fruit and veggies fun—set up a “salad bar” at home or send your child on a fruit and vegetable scavenger hunt at the grocery store.
- Be a good role model—show your child that you enjoy vegetables by taking an extra helping at dinner or saying how delicious they are!

Sincerely,

The URI SNAP-Education Program
Apple Cole Slaw

Ingredients:
- 1 small head of cabbage
  (about 3 cups shredded)
- 2 medium red apples
- 1 large carrot
- 2 medium scallions
- 1/4 cup light mayonnaise
- 1/2 cup unpacked brown sugar
- 2 tablespoons lemon juice

Directions:
1. Wash all produce. Finely chop or shred cabbage. Core apples and chop into bite-size pieces. Grate carrot. Finely chop scallions. Combine all in large bowl.
2. In small bowl, beat together mayonnaise, sugar, and lemon juice. Pour dressing over salad and mix well.
Estimado Padre,

Esta semana, su hijo/a ha participado en unas actividades divertidas mientras aprende sobre la fruta y las verduras. Aquí hay unos consejos para usted en cuanto a ayudar a su familia a comer más de estos alimentos saludables:

- **Servir los nuevos alimentos más que una vez**—las preferencias de su hijo/a siguen madurando y cambiando tan rápidos como él/ella. Tal vez toma 6-7 pruebas antes de que al niño le guste un alimento nuevo.

- **Divertirse con la fruta y las verduras**—monte un “salad bar” en casa o tenga una búsqueda para frutas y verduras con su hijo/a en el supermercado.

- **Sea un buen ejemplo**—demuestre su entusiasmo para las verduras comiendo dos porciones en la cena o diciendo ¡qué deliciosas están!

Saludos,

El Programa de URI SNAP-Education
Ensalada de Manzana y Repollo

Ingredientes:
- 1 cabeza pequeña de repollo
  (unas 3 tazas ralladas)
- 2 manzanas rojas medianas
- 1 zanahoria grande
- 2 cebolletas medianas
- 1/3 taza mayonesa baja en grasa
- 1/3 taza azúcar morena
- 2 cucharadas jugo de limón

Preparación:


2. En una taza mezcle la mayonesa, el azúcar y el limón. Combine la ensalada con la mayonesa y mezcle bien.
Dear Parent,

This week, your child is learning about healthy eating in school. Your child pledged to eat more fruits and vegetables and to persuade family members to do the same.

Fruit and vegetables are an important part of a healthy diet. They are loaded with vita- mins and minerals that keep our heart, brain, eyes, skin, and immune system healthy. They also contain fiber, which is good for digestion. Unfortunately, only 23% of youth in Rhode Island eat the recommended daily amounts of fruit and vegetables.

Did you know that children need to eat 2 cups of fruit and 2 cups of vegetables every day? Give your family a veggie boost by trying out the Creamy Cucumber Dip recipe below.

Sincerely,

The URI SNAP-Education Program
Creamy Cucumber Dip

Ingredients:

- ⅓ cup mayonnaise
- ⅔ cup nonfat plain yogurt
- ¼ teaspoon dill weed
- ½ teaspoon celery salt
- ⅓ cup finely chopped cucumber
- Veggies for dipping such as carrot sticks, cherry tomatoes, or pepper strips

Directions:

1. Put all ingredients in a bowl and mix well.

2. Serve with a variety of vegetables, or use as a salad dressing!

3. Store leftovers in the refrigerator.
Estimado Padre,

En la escuela esta semana, su hijo/a está aprendiendo a comer saludable. Su hijo/a prometió a comer más frutas y verduras y a convencer a su familia hacer lo mismo.

Las frutas y las verduras son importantes para una dieta saludable. Tienen muchas vitaminas y minerales para mantener sano el corazón, el cerebro, los ojos, la piel y el sistema inmunológico. Ellas también tienen la fibra dietética, que facilita la digestión. Desafortunadamente, sólo 23% de la juventud en Rhode Island come la cantidad diaria recomendada de las frutas y las verduras.

¿Sabía usted que los niños deben comer 2 tazas de fruta y 2 tazas de verduras cada día?

Dé a su familia unas verduras extras con la receta más abajo para Salsa Cremosa de Pepino.

Saludos,

El Programa de URI SNAP-Education
Salsa Cremosa de Pepino

Ingredientes:

x ½ taza mayonesa
x ⅔ taza yogur natural, descremado
x ¼ cucharadita eneldo (‘dill’) seco
x ½ cucharadita sal de apio (‘celery salt’)
x ½ taza pepino picado
x Vegetales para servir, como palitos de zanahoria, tomatitos cherry o rebanadas de pimiento

Preparación:

1. Ponga todos los ingredientes en una taza y mezcle bien.

2. Sirvala con una variedad de vegetales, o úselo como una vinagreta para la ensalada.

3. Guarde las sobras en la refrigeradora.
Dear Parent,

This week, your child has been learning about the different parts of the plant that we eat. For example, when we eat asparagus we are eating the stem of the plant, and when we eat carrots we are eating the root of the plant. We also eat the leaves, fruit, seeds, and flowers of fruit and vegetable plants.

Do you have a garden at home or live near a community garden? Take a trip with your family to see how many edible plant parts your child can name. You could also have a family pizza night using the Pizza Bites recipe below, and ask how many different plant parts your child can name in the meal (answers below).

Sincerely,

The URI SNAP-Education Program
Pizza Bites

**Ingredients:**

- x 1 English muffin
- x 2 tablespoons tomato sauce
- x 2 tablespoons shredded mozzarella cheese
- x Sliced vegetables (try green peppers, mushrooms, onions & broccoli or any veggies that are on sale at the market).

**Directions:**

1. Preheat oven to 400°F. Wash and chop all vegetables.
2. Spread tomato sauce on each English muffin half.
3. Top with veggies, then sprinkle cheese on top.
4. Bake for 10 minutes, or until cheese has melted.

*Answers: Green pepper=fruit, Onion=root, Tomato=fruit, Broccoli=flower*
4th Grade Lesson 2

Estimado Padre,

Esta semana, su hijo/a ha aprendido sobre las varias partes de una planta que se come. Por ejemplo, cuando se come los espárragos se come los tallos de la planta, y cuando se come la zanahoria se come la raíz de la planta. También comemos las hojas, la fruta, las semillas y las flores de las plantas de vegetales y frutas.

¿Tiene un huerto en casa o vive cerca de un huerto comunitario? Váyase de excursión con su familia para ver cuántas partes comestibles de la planta su hijo/a puede identificar. O tenga una fiesta familiar de pizza con la receta para Bocados de Pizza más abajo. Pida a su hijo/a cuántas diferentes partes de la planta hay en la cena (respuestas más abajo).

Saludos,

El Programa de URI SNAP-Education
Bocados de Pizza

Ingredientes:

x 1 English muffin
x 2 cucharadas salsa de tomate
x 2 cucharadas queso mozzarella, rallado
x Vegetales cortados (pruebe pimientos verdes, champiñones, cebollas, brócoli
o cualquier vegetal que está rebajado en el supermercado)

Preparación:

1. Precaliente el horno a 400ºF. Lave y corte todas las verdu拉斯.

2. Unte cada mitad del English muffin con la salsa de tomate.

3. Ponga los vegetales encima, y después el queso.

4. Hornee por 10 minutos, o hasta el queso esté fundido.

Respuestas: Pimiento verde=fruta, Cebolla=raíz, Tomate=fruta, Brócoli=flor
4th grade lesson 3

Dear Parent,

This week, your child is learning about vegetables in school.

Vegetables are an important part of a healthy diet. Fresh, frozen, or canned—they all provide us with plenty of essential nutrients. Buy vegetables that are in season for maximum flavor at a lower cost. Your child should eat 2 cups of vegetables every day.

Here are a few ideas for how to get your child to eat more vegetables:

- **Breakfast**—Add diced green pepper or tomato to a cheese omelet.
- **Lunch**—Have your child ask for extra veggies on pizza.
- **Dinner**—Try out the recipe below for *Lemon Broccoli Chicken*
- **Snacks**—Serve baby carrots with low fat dip.

Sincerely,

The URI SNAP-Education Program
Lemon Broccoli Chicken

Ingredients:

- x 2 teaspoons olive oil
- x 4 boneless chicken breast halves
- x 1 10 oz. can low fat cream of broccoli soup
- x ¼ cup low fat milk
- x 2 teaspoons fresh or bottled lemon juice
- x ¼ teaspoon pepper
- x 8 fresh or frozen broccoli spears

Directions:

1. Heat oil in a large skillet or frying pan.
2. Cook chicken breasts for about 5 minutes on each side, or until no longer pink inside. Drain off fat from the pan.
3. Keep chicken in pan. Add the can of soup. milk, lemon juice, and pepper. Stir well. Cover pan tightly and cook over medium-low heat for 5 minutes.
4. Place broccoli spears on top of chicken in pan.
   Cover pan tightly. Cook for an additional 8-10 minutes, or until broccoli is bright green and tender and chicken is cooked through.
Estimado Padre,

En la escuela esta semana, su hijo/a está aprendiendo sobre las verduras.

Las verduras son muy importantes para una dieta saludable. Frescas, congeladas, o enlatadas—todas nos dan una abundancia de nutrientes esenciales. Su hijo/a debe comer 2 tazas de verduras cada día.

Aquí hay unas ideas a ayudar a su hijo/a a comer más verduras:

- **Desayuno**—Echar trocitos de pimiento verde o tomate en una tortilla de huevo.
- **Almuerzo**—Pedirle a su hijo/a que pida más vegetales en la pizza.
- **Cena**—Probar la receta más abajo para *Pollo con Brócoli y Limón*.
- **Meriendas**—Servir zanahorias pequeñas con una salsa baja en grasa.

Saludos,

El Programa de URI SNAP-Education
Pollo con Brócoli y Limón

Ingredientes:

- 2 cucharaditas aceite de oliva
- 4 filetes de pechuga de pollo
- 1 lata de 10 onzas sopa cremosa de brócoli, baja en grasa
- ½ taza leche baja en grasa
- 2 cucharaditas jugo de limón, fresco o de botella
- ½ cucharadita pimienta negra
- 8 ramitas de brócoli, fresco o congelado

Preparación:

1. Caliente el aceite en un sartén grande.
2. Cocine las pechugas por 5 minutos en cada lado.
   Drene la grasa del sartén.
3. Guarde el pollo en el sartén. Agregue la sopa, el limón y la pimienta.
   Mezcle bien. Cúbralo y cocine sobre fuego medio-lento por 5 minutos.
4. Ponga las ramitas de brócoli encima del pollo en el sartén. Cúbralo bien. Cocine por 8-10 minutos más, o hasta el brócoli esté un verde vivo y tierno y el pollo esté cocido.
Dear Parent,

This week, your child has been learning about the importance of eating a variety of fruit and vegetables. Because each color group gives our bodies different nutrients, make sure your child eats from all parts of the rainbow throughout the week:

- **Red**: Tomato, watermelon, strawberries, beets, apples, grapefruit
- **Yellow/Orange**: Mango, peach, winter squash, carrot, yam, corn, summer squash
- **Green**: Broccoli, kale, collards, romaine, spinach, kiwi, bell peppers, green beans
- **Blue/Purple**: Blueberries, purple grapes, plums, eggplant, purple cabbage
- **White**: Cauliflower, onion, garlic, turnip, potato, radish, banana

Give your family a rainbow of nutrition with our *Ratatouille* recipe below!

Sincerely,

The URI SNAP-Education Program
Ratatouille

Ingredients:

- 2 tablespoons olive oil
- 2 cloves garlic, crushed or minced
- 1 large onion, thinly sliced
- 1 small eggplant, cubed
- 2 green bell peppers, chopped
- 4 large tomatoes, chopped
- 3 small zucchini, sliced
- 2 teaspoons dried herbs-basil, oregano, thyme, or all three
- 2 tablespoons fresh parsley
- Salt, to taste

Directions:

1. In a 4-quart saucepan, heat olive oil over medium heat. Add garlic and onions and cook, stirring often, until soft, about 6 min.

2. Add eggplant, stir until coated with oil.

3. Add peppers. Stir to combine.

4. Cover and cook for 10 minutes, stirring occasionally to keep vegetables from sticking.

5. Add tomatoes, zucchini and herbs. Mix well. Cover and cook over low heat about 15 min. or until eggplant is tender but not too soft.

6. Add salt to taste.
Estimado Padre,

Esta semana, su hijo/a ha aprendido sobre la importancia de comer una variedad de frutas y verduras. Porque cada grupo de colores les da a nuestros cuerpos nutrientes específicos, asegúrese que su hijo/a come de todas partes del arco iris durante la semana:

**i Rojo:** Tomate, sandía, fresas, remolachas, manzanas, toronja

**i Amarillo/Naranja:** Mango, durazno, calabaza de invierno, zanahoria, camote, maíz, calabacín

**i Verde:** Brócoli, col rizada, col berza, lechuga romana, espinacas, kiwi, pimiento, judías verdes

**i Azul/Morada:** Arándanos, uvas moradas, ciruelas, berenjena, repollo morado

**i Blanco:** Coliflor, cebolla, ajo, nabos, papa, rábano, banana

Dé a su familia un arco iris nutricional con la receta más abajo para *Ratatouille*.

Saludos,

El Programa de URI SNAP-Education
Ratatouille

Ingredientes:

- 2 cucharadas aceite de oliva
- 2 dientes de ajo, picados
- 1 cebolla grande, en rodajas
- 1 berenjena pequeña, en cubitos
- 2 pimientos verdes, cortados
- 4 tomates grandes, cortados
- 3 calabacines pequeños, en rodajas
- 2 cucharaditas hierbas secas - albahaca, orégano o tomillo
- 2 cucharadas perejil fresco
- Sal al gusto

Preparación:

1. Caliente el aceite en una cacerola sobre fuego medio. Eche el ajo y la cebolla y cocine, revolviendo, hasta tiernos, unos 6 minutos.

2. Eche la berenjena y mezcle para cubrir en aceite.


4. Cubra la cacerola y cocíne por 10 minutos, revolviendo de vez en cuando para que las verduras no se peguen.

5. Eche los tomates, los calabacines y las hierbas. Mezcle bien. Cubra y cocíne sobre fuego lento unos 15 minutos o hasta la berenjena esté tierna.

6. Ponga sal al gusto.
Dear Parent,

This week, your child is learning about fruit in school.

Fruit is an important part of a healthy diet, yet most of us do not eat enough throughout the week. Aim for your child to get 2 cups of fruit every day. Fresh, frozen, or canned in 100% juice—they’re all good choices!

Here are a few ideas for how to get your child to eat more fruit:

- **Breakfast**—Add sliced banana or berries to cold or hot cereal.
- **Lunch**—Pack a bunch of grapes or an orange instead of chips.
- **Dinner**—Follow the meal with a fresh fruit salad for dessert. Try the recipe below!
- **Snacks**—Try a fruit smoothie.

Sincerely,

The URI SNAP-Education Program
Fruit Salad with Lime Dressing

Fruit Ingredients:

- 1 small watermelon, seeded & cut into 1 inch chunks
- 1 small pineapple, peeled, cored, & cut into 1 inch chunks
- 1 mango, pitted & cubed
- 1 cup green or red grapes
- 1 pint strawberries

Note: You can use any fruit that’s on sale this week.

Dressing Ingredients:

- 2 cups plain low fat yogurt
- ¼ cup lime juice (about 2 limes)
- ¼ cup honey

Directions:

1. Wash & prepare all fruit. Combine in a large bowl.

2. In a small bowl, whisk together yogurt, lime juice, and honey. Pour over fruit and toss.

3. Serve for breakfast, snack, or dessert.
Estimado Padre,

En la escuela esta semana, su hijo/a está aprendiendo sobre la fruta.

La fruta forma una parte importante de una dieta saludable, pero la mayoría de nosotros no come bastante durante toda la semana. Su hijo/a debe comer 2 tazas de fruta cada día. Fresca, congelada o enlatada en jugo natural—todas son buenas opciones.

Aquí hay unos consejos para ayudar a su hijo/a a comer más fruta:

- **Desayuno**—Echar rodajas de banana o fresas en los cereales fríos o cocidos.
- **Almuerzo**—Poner un racimo de uvas o una naranja en vez de los chips en la lonchera.
- **Cena**—Escoger una ensalada de frutas frescas como postre. ¡Prueba la receta abajo!
- **Meriendas**—Probar un licuado de frutas.

Saludos,

El Programa de URI SNAP-Education
Ensalada de Frutas con Salsa de Lima

**Frutas:**
- 1 sandía pequeña, sin semillas y cortada en cubitos
- 1 piña pequeña, pelada y cortada en cubitos
- 1 mango, deshuesado y cortado
- 1 taza uvas, verdes o rojas
- 1 pinta fresas

**Nota:** Puede usar cualquier fruta que está rebajada esta semana.

**Ingredientes para la salsa:**

- 2 tazas yogur natural, bajo en grasa
- $\frac{1}{4}$ taza jugo de lima (unos 2 limas)
- $\frac{1}{4}$ taza miel

**Preparación:**

1. Lave y corte toda la fruta. Combine en un tazón.

2. En una taza, bata el yogur, la lima y la miel.

   Póngalo sobre la fruta y mezcle.

3. Sirva para desayuno, merienda o postre.
Dear Parent,

This week, your child has been learning about the importance of vegetables in his or her diet. Every culture has its own healthy foods that they grow and eat—talk to your child about the fruits and vegetables that are special to your family.

Do you want to try a meal from a different culture? Check out our recipe below. **Sweet Potato Quesadillas** are a good source of fiber, vitamin A and vitamin C. ¡Buen Provecho!

Sincerely,

The URI SNAP-Education Program
Sweet Potato Quesadillas

Ingredients:

x 1 medium sweet potato, cooked, (or 1 15 oz. can sweet potatoes, drained)
x ½ cup canned black beans, rinsed and drained
x 2 whole wheat tortillas, medium- sized
x 2 tablespoons tomato salsa
x 2 tablespoons shredded cheddar cheese
x Non-stick cooking spray or vegetable oil

Directions:

1. In a medium bowl, mash the sweet potato with the beans.
2. Coat a medium sized skillet with cooking spray or lightly rub with oil. Put skillet on medium heat.
3. Place one tortilla in pan. Spread the sweet potato and bean mixture onto the tortilla. Top with salsa and shredded cheese. Cover with the other tortilla.
4. Cook for 2-3 minutes until the bottom tortilla begins to crisp. With a wide spatula, turn the quesadilla over and cook for 2-3 minutes until crisp.
5. Remove from pan to slice into quarters.
Estimado Padre,

Esta semana, su hijo/a ha aprendido sobre las tradiciones alimentarias de las familias de los otros estudiantes. Cada cultura tiene sus propios alimentos saludables que cultivan y comen—hable con su hijo/a sobre las frutas y verduras especiales para su familia.

¿Desea probar una comida de otra cultura? Fíjese en la receta más abajo. Las Quesadillas de Batata tienen mucha fibra, vitamina A y vitamina C. ¡Buen provecho!

Saludos,

El Programa de URI SNAP-Education
Quesadillas de Batata

Ingredientes:

- 1 batata mediana, cocida, (o 1 lata de 15 oz. Batatas, drenadas)
- ½ taza frijoles negros de lata, lavados y drenados
- 2 tortillas de harina integral, de tamaño mediano
- 2 cucharadas salsa de tomate
- 2 cucharadas queso cheddar, rallado
- Aceite vegetal en botella o en spray

Preparación:

1. En un tazón, mezcle las batatas con los frijoles.


3. Ponga una tortilla en el sartén. Ponga la mezcla de batata y frijoles encima de la tortilla. Ponga la salsa y queso encima. Cubra con la otra tortilla.

4. Cocine por 2-3 minutos hasta la tortilla más abajo esté dorada. Con una espátula ancha, dé la quesadilla la vuelta y cocine por 2-3 minutos más.

5. Quite la quesadilla del sartén y córtela en cuatro.
Dear Parent,

This week, your child has been recording the fruits and vegetables he or she eats in a food diary. We have also discussed the importance of having fiber in their diets.

To encourage your child to eat more fruit, think about variety. Buy fruits in season when they may be less expensive and at their peak flavor. Buy fruits that are dried, frozen and canned (in water or 100% juice) as well as fresh, so that you always have a supply on hand. By making most of your choices whole or cut-up fruit, rather than juice, you will get the benefits of adding fiber to your diet. Set a good example for your children by eating fruit every day with meals or as snacks. Try our Strawberry Banana Smoothie recipe this week!

Sincerely,

The URI SNAP-Education Program
Strawberry Banana Smoothies

Ingredients:

x 1½ cups frozen strawberries

x 1 ripe banana

x 1 cup low fat vanilla yogurt

x 1 cup orange juice

Directions:

1. Add all ingredients to a blender and blend for minute.

2. Serve and enjoy!
4th grade lesson 7

Estimado Padre,

Esta semana, su hijo/a ha estado anotando las frutas y verduras que come en un diario de alimentos. También hemos discutido la importancia de la fibra en su dieta.

Para animar a su hijo/a a comer más fruta, piense en la variedad. Compre las frutas en temporada cuando están menos caros y tienen mejor sabor. Compre las frutas secas, congeladas y enlatadas (en agua o jugo 100% natural) además que las frescas, para que siempre tenga algunas en casa. Elegir frutas enteras o cortadas más que el jugo le da los beneficios de añadir la fibra a su dieta. Darle ejemplo a sus hijos y coma fruta todos los días con la comida o como snack. Prueba la receta para Batidos de Fresa y Banana esta semana.

Saludos,

El Programa de URI SNAP-Education
Batidos de Fresa y Banana

Ingredientes:

- 1½ taza fresas congeladas
- 1 banana madura
- 1 taza yogur vainilla, bajo en grasa
- 1 taza jugo de naranja

Preparación:

1. Ponga todos los ingredientes en la licuadora. Licue por un minuto.

2. Sirva y disfrute.
Dear Parent,

This week, your child has been participating in fun activities while learning about fruit and vegetables. Here are some tips to remember when it comes to getting your family to eat more of these healthy foods:

i. **Serve new foods more than once**—your child’s taste preferences will grow and change as quickly as they do! It may take 6-7 times before they like a new food.

ii. **Make fruit and veggies fun**—set up a “salad bar” at home or send your child on a fruit and vegetable scavenger hunt at the grocery store.

iii. **Be a good role model**—show your child that you enjoy vegetables by taking an extra helping at dinner or saying how delicious they are!

Sincerely,

The URI SNAP-education Program
Easy Apple Crisp

Ingredients:

x 1 cup brown sugar  
x \frac{1}{2} cup water  
x \frac{1}{2} teaspoon cinnamon  
x 6 large apples, peeled and sliced  
x \frac{3}{4} cup flour  
x \frac{1}{2} cup uncooked rolled oats (not instant)  
x \frac{1}{2} teaspoon salt  
x 2 tablespoons butter

Directions:

1. Preheat oven to 375°F.

2. Combine \frac{1}{2} cup sugar, water, and cinnamon in bottom of small baking pan.

3. Spread apple slices in pan.

4. In a separate bowl, combine remaining sugar, flour, oats, salt, & butter. Using pastry knife or 2 knives, cut until crumbly

5. Spread mixture over apples and pat smooth.

6. Bake at 375 °F. for 40-50 minutes, until apples are tender and crust is browned. Serve hot.
Estimado Padre,

Esta semana, su hijo/a ha participado en unas actividades divertidas mientras aprende sobre la fruta y las verduras. Aquí hay unos consejos para usted en cuanto a ayudar a su familia a comer más de estos alimentos saludables:

- **Servir los nuevos alimentos más que una vez**—las preferencias de su hijo/a siguen madurando y cambiando tan rápidos como él/ella. Tal vez toma 6-7 pruebas antes de que al niño le guste un alimento nuevo.

- **Divertirse con la fruta y las verduras**—monte un “salad bar” en casa o tenga una búsqueda para frutas y verduras con su hijo/a en el supermercado.

- **Sea un buen ejemplo**—demuestre su entusiasmo para las verduras comiendo dos porciones en la cena o diciendo ¡qué deliciosas están!

Saludos,

El Programa de URI SNAP-Education
Postre Sencilla de Manzanas

Ingredientes:

- 1 taza azúcar morena, dividida
- $\frac{1}{4}$ taza agua
- $\frac{1}{2}$ cucharadita canela
- 6 manzanas grandes, peladas y en rodajas
- $\frac{3}{4}$ taza harina
- $\frac{1}{2}$ taza avena (no instantánea)
- $\frac{1}{4}$ cucharadita sal
- 2 cucharadas mantequilla

Preparación:

1. Precaliente el horno a 375°F.

2. Combine $\frac{1}{2}$ taza azúcar, agua y canela en el fondo de un fuente pequeño para el horno. Ponga las rodajas de manzana por encima.

3. En un tazón, combine la azúcar que sobra, la harina, la avena, sal y mantequilla. Mezcle con 2 cuchillos.

4. Ponga la mezcla sobre las manzanas.

5. Hornee a 375°F por 40-50 minutos, hasta las manzanas estén tiernas y la tapa esté dorada. Sirvalo caliente.
APPENDIX F.  Surveys

SNAP-Ed YOUTH FY survey

Name:  Grade:
Teacher’s name:  Room:

PRE-TEST

Listed below are questions about the fruits and vegetables you eat.
For these questions, think about what you ate yesterday.

Each of these is an example of 1 piece of **fruit:**

1. How many pieces of fruits did you eat yesterday? Do NOT include fruit juice.

*Fill in one circle.*

- O None
- O 1 pieces
- O 2 pieces
- O 3 pieces
- O 4 pieces
- O 5 pieces or more

Each of these is an example of **vegetables:**

2. How many times did you eat vegetables yesterday? Do NOT include French fries.

*Fill in one circle.*

- O None
- O 1 time
- O 2 times
- O 3 times
- O 4 times
- O 5 or more
Listed below are questions about the fruits and vegetables you eat. For these questions, think about what you ate yesterday.

1. How many pieces of fruits did you eat yesterday? Do NOT include fruit juice. (Fill in one circle.)
   - O None
   - O 1 pieces
   - O 2 pieces
   - O 3 pieces
   - O 4 pieces
   - O 5 or more

2. How many times did you eat vegetables yesterday? Do NOT include French fries. (Fill in one circle.)
   - O None
   - O 1 time
   - O 2 times
   - O 3 times
   - O 4 times
   - O 5 or more