

# Preparing Healthy Snacks with Third Graders to Improve Knowledge of Nutrition

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A growing problem in the United States is the disease known as obesity, which affects 18% of children in the United States. Obesity, the condition of having 20% more body fat than the percentage considered ideal for one's height, often begins in childhood and continues into adulthood. Nutritional knowledge is important to instilling positive attitudes towards healthy lifestyles in young people. This project answers the question: "In a small group of Chapin area third grade students, will four weeks of preparing healthy snacks improve students' nutritional knowledge?"; nutritional knowledge was measured through pre- and post-test scores. Nine third grade students participated in the four week class as part of their afterschool program. They were able to prepare different types of snacks based around four nutritional themes—colorful fruits and vegetables, drinks with low sugar content, healthy snacks, and whole grains. The data collected thus far shows compelling evidence that cooking with third graders does improve their knowledge of nutrition: 88% of participants' pre/post test scores improved. It is predicted that further research will demonstrate that their improved nutritional knowledge will result in better snack choice.

## HISTORY AND HYPOTHESIS

Obesity is defined as "a condition that is characterized by excessive accumulation and storage of fat in the body and that in an adult is typically indicated by a body mass index of 30 or greater" [1]. While obesity does not appear to be as large of a problem in children because of their low risk of health problems, an overweight child has a greater chance of becoming an overweight adolescent and adult; this may lead to further health problems [2]. 18% of American children are currently considered to be obese [3]. In American society today, nutrition is not consistently taught to children. This can cause future problems because, if one does not have the knowledge of nutrition, they may not be aware of the effects their diet can have on their health.

By examining the pre- and post-test scores of third graders that participate in a four-week class focusing on healthy snack preparation, this research project will answer the question: "In a small group of Chapin area third grade students, will four weeks of healthy snack preparation improve nutritional knowledge?" A pre-test will be administered to the students before the first class begins, and a post-test, containing the same material, will be administered after completion of the last class.

One similar study has been conducted at Auburn University in 2005. This was a study where 1,100 second and third graders were given a pre and post-test on nutrition. Between the two assessments, the children participated in a six-week nutrition class. This study statistically proved that cooking with the children improved their knowledge of nutrition. The children were also followed after the initial study concluded. Teaching the students nutritious behaviors increased the potential for them to engage in a nutritious life style (including making healthier food choices). [4]

The current study will involve only third grade students. In addition, this study will consist of four weeks, whereas the duration of the class in the similar study was six weeks. The most significant difference is that the current study will involve hands-on instruction as compared to only instruction in the previous study.

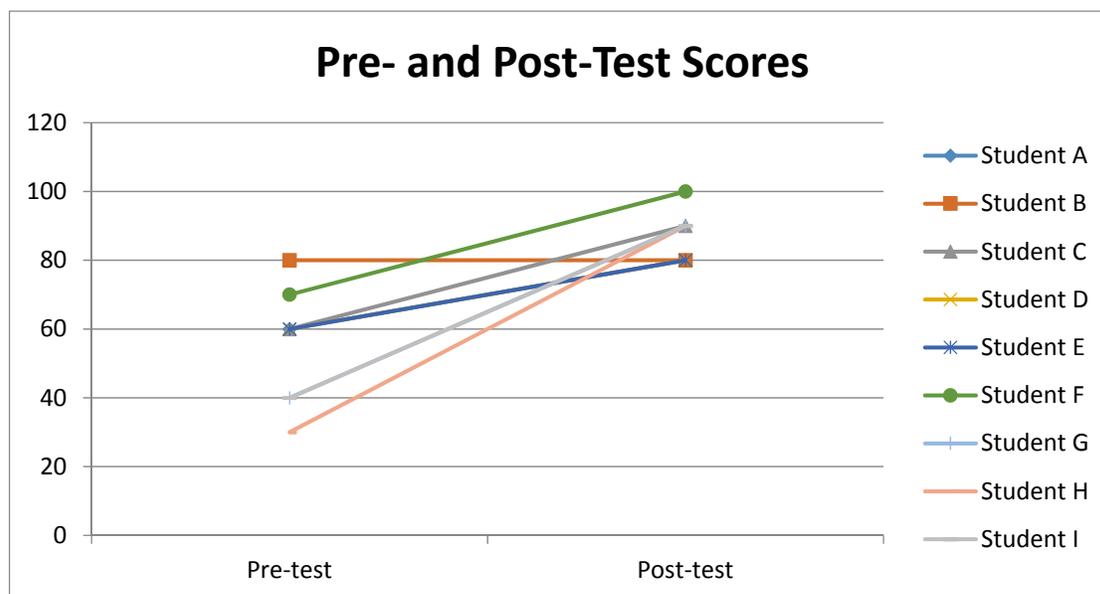
The goal of this project is to improve the knowledge that children have about nutrition. If this project helps teach children about nutrition, then hopefully it will lead to a healthier lifestyle—including the knowledge they hold about nutrition and its influence on the decisions students make about their food choices.

## METHODS

This project was completed by conducting a cooking class with third grade students from the Chapin area. This class was held at Crooked Creek Park in Chapin, SC during the Afternoon Safari afterschool program held there. The nine participants were selected at random; the activities coordinator drew ten third graders' names out of a hat. Parents were contacted and signed written consent and media release forms prior to the beginning of the classes. One student was not able to participate in all classes and did not complete the post-test. The other nine students participated in the cooking class for four consecutive Thursdays, beginning on October 8<sup>th</sup>, 2015 and ending on November 5<sup>th</sup>, 2015. The classes were based around four major themes—choosing a variety of colorful fruits and vegetables, choosing drinks with less sugar, preparing healthy snacks, and choosing whole grains. These four themes were chosen as part of the "Cooking Matters" curriculum [5]. This curriculum has been used by many organizations, including the Y, to teach families the importance of nutrition. The pre- and post-test questions were developed from the above four themes and the material taught in each cooking class. A copy of the pre- and post-test is included in Appendix A. Funding for project materials was provided by the District Five Foundation.

## RESULTS

The data collected from the pre- and post-test scores was analyzed using a matched pairs t-test. Overall, 88% of participants, eight of the nine students, improved in their knowledge of nutrition, while one student's score stayed the same. A graph of all the test scores is below.



The p-value found in the analysis was 0.000588; this value is less than 0.05, indicating that the results were significant.

## DISCUSSION AND CONCLUSIONS

From the results collected (*the matched pairs t-test analysis and the p-value found*), there is evidence to suggest that preparing healthy snacks with third grade students in the Chapin area improves nutritional knowledge. The project's impact is that it supports an alternative, way of teaching students about nutrition, including the importance of eating healthy without lecturing. It is a hands-on way of learning for students, engaging multiple areas of the brain to create a lasting impression. Currently, these type classes have been removed from the District 5 school system. This is due to the fact there are laws limiting food items brought into the classroom. If the data and results compiled are presented to the School Board, there is the potential to have this type of class re-integrated into schools. Another way to address this would be the implementation of this type class into more afterschool programs. Instead of having students choose from prepackaged snacks, they would participate in making their own healthy snacks. The knowledge that children will gain from participating in a cooking class can be used throughout their lives, positively influencing the knowledge that they retain and the choices that they make.

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## APPENDIX

11/9/2015

Snack Activity



### Snack Activity

\* Required

1. Name \*

\_\_\_\_\_

2. How many colors of fruits and vegetables should you eat? \*

Mark only one oval.

- 1
- 2
- 3
- As many as you can

3. How many servings of fruits and vegetables should you eat per day? \*

Mark only one oval.

- 1-2
- 3-4
- 5-6
- 7-8

4. What type of drink should you be drinking the most? \*

Mark only one oval.

- Milk and Water
- Fruit Juice
- Soft Drinks
- Energy Drinks

5. How many cups of milk and water should you drink per day? \*

Mark only one oval.

- 1-2
- 3-4
- 5-6
- 7-8

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Snack Activity

6. How many cups of fruit juice should you drink per days? \*

Mark only one oval.

- 1-2
- 3-4
- 5-6
- 7-8

7. Which of these items is a whole grain? \*

Mark only one oval.

- Mashed Potatoes
- Brown Rice
- Sugar
- Corn

8. How many servings of whole grains should you eat per day? \*

Mark only one oval.

- 1-2
- 3-4
- 5-6
- 7-8

9. Which snack is the healthiest? \*

Mark only one oval.

- Cookies
- Baked Potato
- Fruit Salad
- Chicken Fingers

10. Which snack is the least healthy? \*

Mark only one oval.

- Cheetos
- Apple
- Oreos
- Hamburger

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