



# Kids in Nutrition: Efficacy of Health Education Programs in First and Second Grade Classrooms

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## ABSTRACT

Kids in Nutrition (KIN) engages elementary students with an interactive curriculum that teaches lessons about nutrition. Essentially, student volunteers demonstrate the benefits of staying active and eating healthy to combat preventable diseases such as obesity, heart disease, and diabetes. This study evaluated the efficacy of the curriculum in terms of increasing students' knowledge about nutrition in first and second grade classrooms, using pre-post assessments. Overall, first and second-grade students both performed higher in post-assessments, indicating that the curriculum is effective.

## INTRODUCTION

Childhood obesity remains a public health complication in the United States.<sup>1</sup> This metabolic disorder continues into adulthood and increases the risk of diabetes, cardiovascular disease, and cancer.<sup>2-3</sup> These metabolic disorders are paradoxically coupled with widespread undernutrition because many are consuming foods that contain too many calories and not enough nutrients.<sup>4</sup>

This ironic co-existence of obesity and malnutrition suggests that children need to learn how to maintain a diet which both facilitates weight management and ensures an adequate intake of essential nutrients. Few school-based nutrition interventions have targeted children in first and second grade.<sup>5</sup> Kids in Nutrition is a nutrition education program for first and second children that uses demonstrations, posters, and interactive activities to teach how individual dietary choices impact long-term health. This seven-week course included seven, weekly lessons that cover water, fruits and vegetables, grains, proteins, healthy fats, and moderation.

## PARTICIPANTS

Grade Level	Schools	Number of Students	
1 <sup>st</sup> Grade	Brandon Elementary School La Patera Elementary School	51	16 Male
			25 Female
			10 Did not answer
2 <sup>nd</sup> Grade	Brandon Elementary School Foothill Elementary School	55	23 Male
			12 Female
			18 Did not answer

Figure 1 Breakdown of student participants

## METHODS

In two first grade and two second grade classrooms, students were asked to complete a preliminary survey to evaluate their knowledge about nutrition. The survey included a total of twelve questions, and there were two questions that corresponded to each of our weekly, one-hour lessons. After the final review lesson, to see if their knowledge has improved, the students were asked to complete the initial survey again. Every correct answer was worth one point, and we compared the total points between the before and after surveys to assess the effectiveness of our program across the two grade levels. Students in one control classroom for each grade level filled out preliminary and post-intervention surveys without participating in the program.

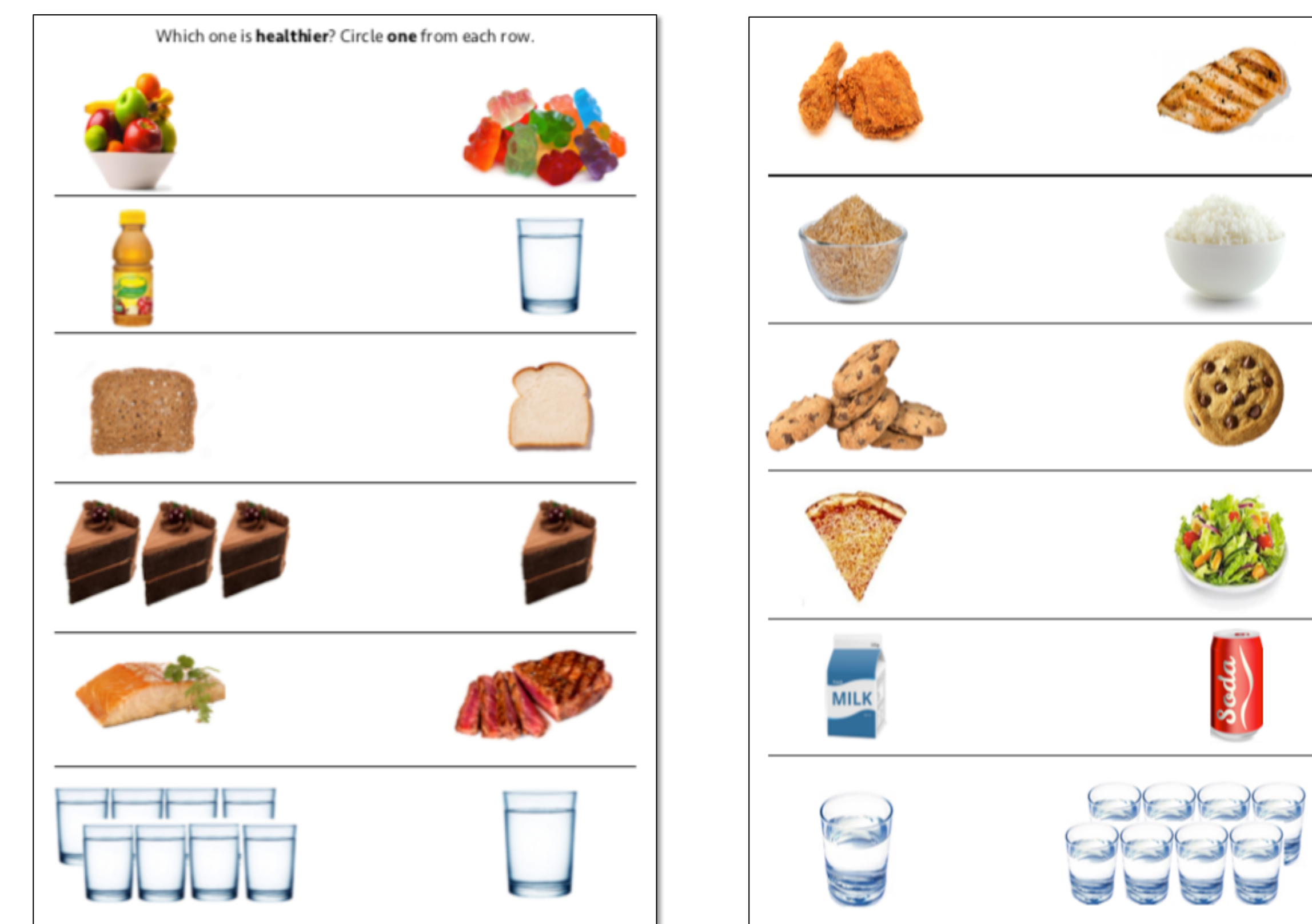


Figure 2 The evaluation given to students to determine understanding of basic nutrition with question content derived from the curriculum

## DATA AND RESULTS

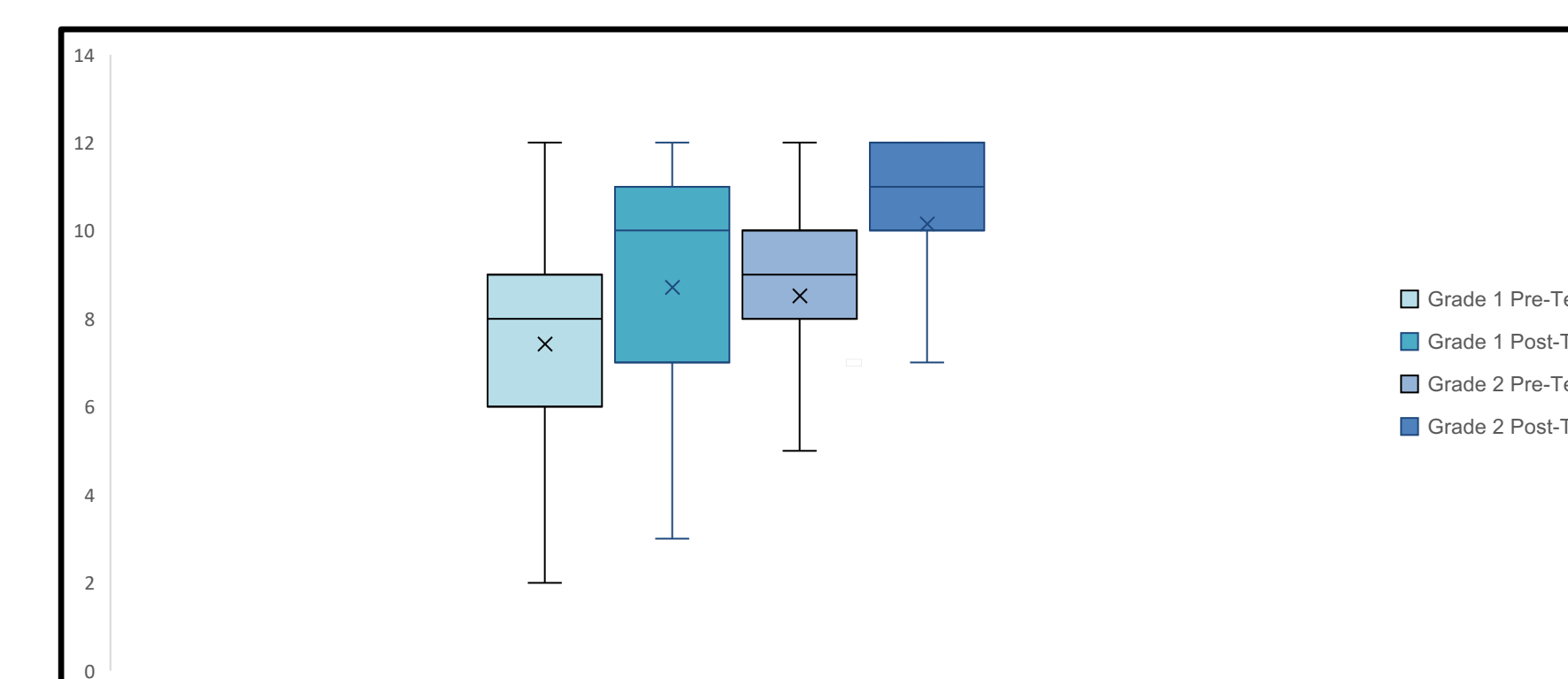


Figure 3 Boxplot showing the variation of correctly answered questions

**Grade 1: Pre and post-test difference is statistically significant.**

2 Sample Unequal Variance T-Test

*P value 0.013897*

**Grade 2: Pre and post-test difference is statistically significant.**

Paired T-Test

*P value 0.0034342*

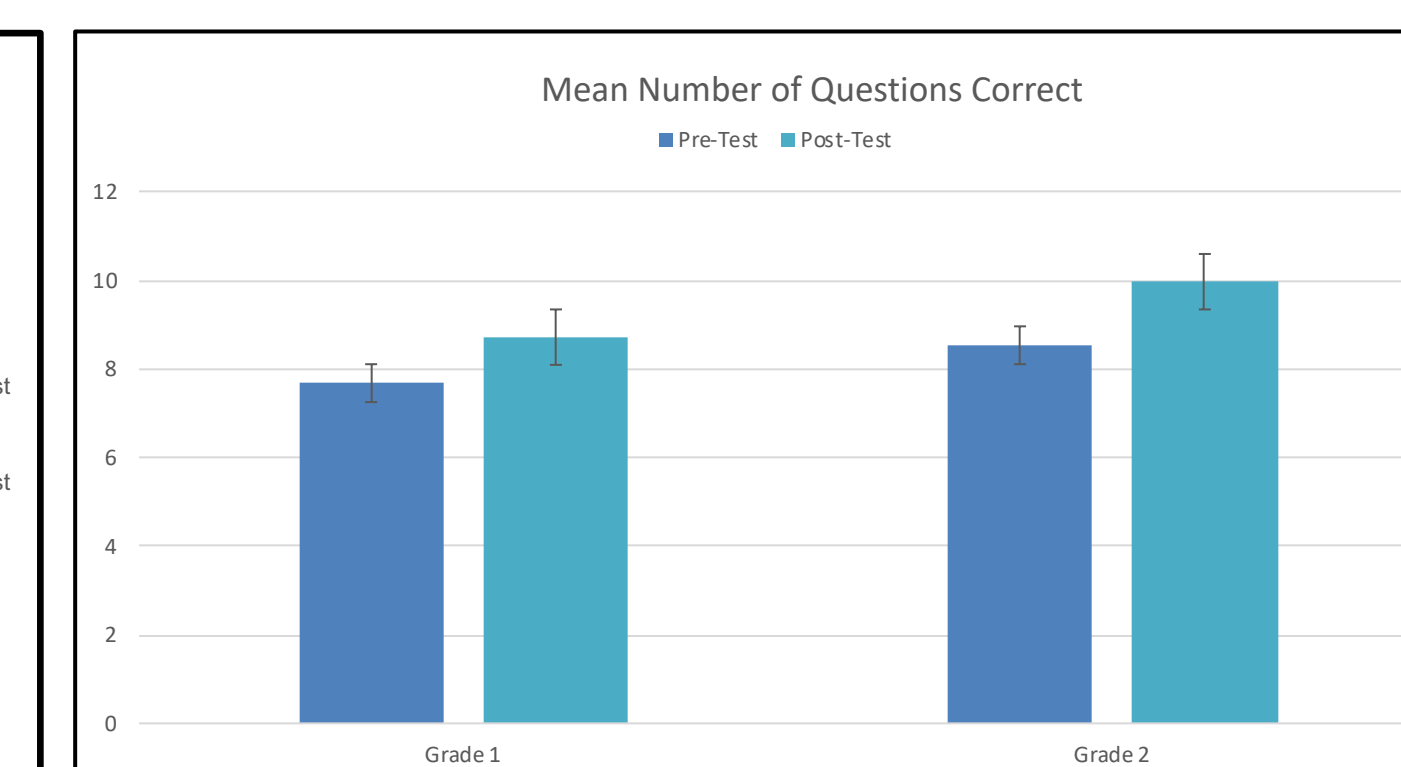


Figure 4 Bar graph indicating the increase in mean number of correctly answered questions

## CONCLUSIONS

Overall, Kids in Nutrition's education outreach program increased first and second grade students' knowledge about nutrition, but second grade students showed a more significant improvement. In terms of individual topics, some concepts were better understood than others.

## LIMITATIONS

- Some of the chosen questions may have been too simple for students at the first and second grade level.
- Variability in testing and teaching environments may have led to some differences in the students' understanding.

## FUTURE DIRECTIONS

- Testing retention and preference would indicate whether students are truly motivated to choose healthier food options.
- This project could be repeated with more consistent teaching and testing conditions, as well as with an evaluation that contains questions more appropriate for the students' grade level as well as those that relate directly to the material taught.

## ACKNOWLEDGEMENTS

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