

# Veggiecation: A Novel Approach to Improve Vegetable Consumption Among School-Aged Children

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## INTRODUCTION

Children's general preference for sweeter foods and aversion to bitter vegetables is explained partly by fear of new food and social and cultural influences. Reluctance to eat new foods is related to unfavorable facial expressions and is often learned from the child's family, social circle, and culture.<sup>1</sup> Researchers report that the fruit and vegetable consumption of children 6–12 years of age is associated with the accessibility and availability.<sup>2</sup> School-based interventions that combine classroom curricula, parental, and nutrition service components show the greatest promise for fruit and vegetable promotion among children.<sup>3</sup> Because studies indicate children's preference to fruit over vegetables when offered simultaneously,<sup>3,4</sup> designing an effective program to improve children's vegetable intake continues to be a challenge for nutrition educators. New strategies and approaches are needed to encourage a balanced diet and overcome barriers to vegetable intake.

Veggiecation is an innovative nutrition education and behavior change program that provides educators and nutrition providers the opportunity for children to learn about and taste new vegetables. The development of this program and the targets for intervention were informed by social marketing theory<sup>5</sup> and the Theory of Planned Behavior

(TPB).<sup>6</sup> The program consisted of poster displays (Figure) throughout the school, nutrition education in classrooms, and vegetable tasting in lunchrooms. Veggiecation was designed to create a positive environment leading to a favorable attitude and intention toward vegetable consumption. To evaluate the program, constructs of the TPB were measured after Veggiecation was implemented.

## VEGGICATION PROGRAM IMPLEMENTATION

For each of the 9 months of the school year, students were presented with a "Veggie of the Month." Nine vegetables throughout the year were selected based on seasonality and locality. Vegetables of varying bitterness offered a variety of tasting experiences for the children. In accordance with the social marketing theory, featured vegetables were advertised in posters throughout the school and in class activities and prepared by nutrition staff using different weekly recipes. Posters depicted each vegetable as an enchanting character that grew in nature. In a "who, what, when, where, and why" format, Veggiecation posters educated students about the name of the vegetable (who), the part of the plant it is (what), the season in which it grows (when), the geographical region in which it grows (where), and the nutrients and health benefits it provides (why).

The nutrition staff prepared the Veggie of the Month 4 different ways for students to try. Students sampled recipes daily either at lunch or snack time. After the students tried the vegetable, they voted on whether they liked it. At the end of the month, students received "I tried it" stickers that featured the Veggie of the Month. The program supplied classroom exercises for the teachers to implement. The exercises integrated nutrition concepts into literacy, math, science, social studies, and art (eg, from writing poems to arithmetic applications using the Veggie of the Month). To continue exposure to vegetables in a familiar way at home, the program provided a Family Recipe Book to parents so that they could prepare similar dishes at home.

## EVALUATION AND RESULTS

Third-graders in 2 schools in Connecticut participated in this posttest-only design study: program ( $n = 38$ ) and control ( $n = 35$ ). Racial and gender compositions were similar in schools ( $P > .05$ ). A newly developed instrument measured TPB constructs: attitude, subjective norm, and perceived behavioral control toward eating vegetables, as well as actual vegetable intakes. The researchers analyzed data to compare vegetable intakes ( $t$  test) and psychosocial variables hypothesized to influence intake (regression analysis) between schools. Factors that influenced vegetable consumption were attitude for the program school and subjective norm for the control school. Vegetable consumption was significantly higher in the program than in the control school (3.74 vs 2.36 servings, respectively;  $P < .01$ ) (SPSS Statistics for Windows, version 17.0, SPSS Inc, Chicago, IL, 2008).

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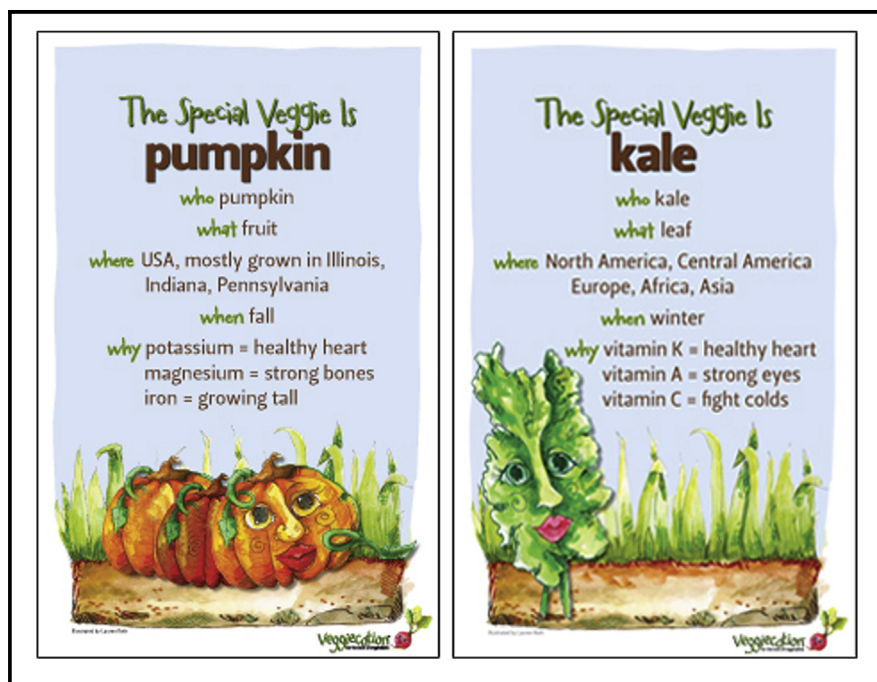
As an employee of Veggiecation, LLC, Lisa Suriano reports a potential conflict of interest in the publication of this article.

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**Figure.** Veggiecation posters feature Veggie of the Month (ie, broccoli, cauliflower, parsnip, pumpkin, butternut squash, kale, snap peas, zucchini, and asparagus).

## DISCUSSION AND IMPLICATIONS

Children's reluctance to eat new foods is a survival instinct to avoid potentially harmful foods.<sup>1</sup> Veggiecation offers education and tasting experiences in a coherent manner to replace food fears, and resistance with ownership and positive social influence so that children expand their horizons while simultaneously improving their nutritional status and knowledge. Improving accessibility to vegetables through repeated tasting and classroom experiences is an integral component of the program. The

school environment created by the Veggiecation program seemed to have generated a positive attitude to influence vegetable intake in the program school. However, social influence dictated intake in the control school, as found in other studies.<sup>1</sup>

Veggiecation has been implemented successfully in over 30 states through after-school programs, camps, and organizations, and continues to affect children's vegetable intakes nationwide.<sup>7</sup> Limitations were that the study lacked baseline data and the researchers did not know how many survey participants engaged in the program. However, as a trial evaluation

for a novel intervention, this may provide some support for implementing the program elsewhere.

## NOTE

The study protocol was approved by Montclair State University Institutional Review Board.

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