

The correlation between school gardens and nutrition education for middle school students.

Loren Alcorn
Advisor: Dr. Rufaro Chitiyo

Introduction

Many students rely on school lunches to avoid going hungry throughout the day. Many schools also have a lot of waste from school lunches, due to students not liking the food offered and required to get or due to students never trying the foods offered.

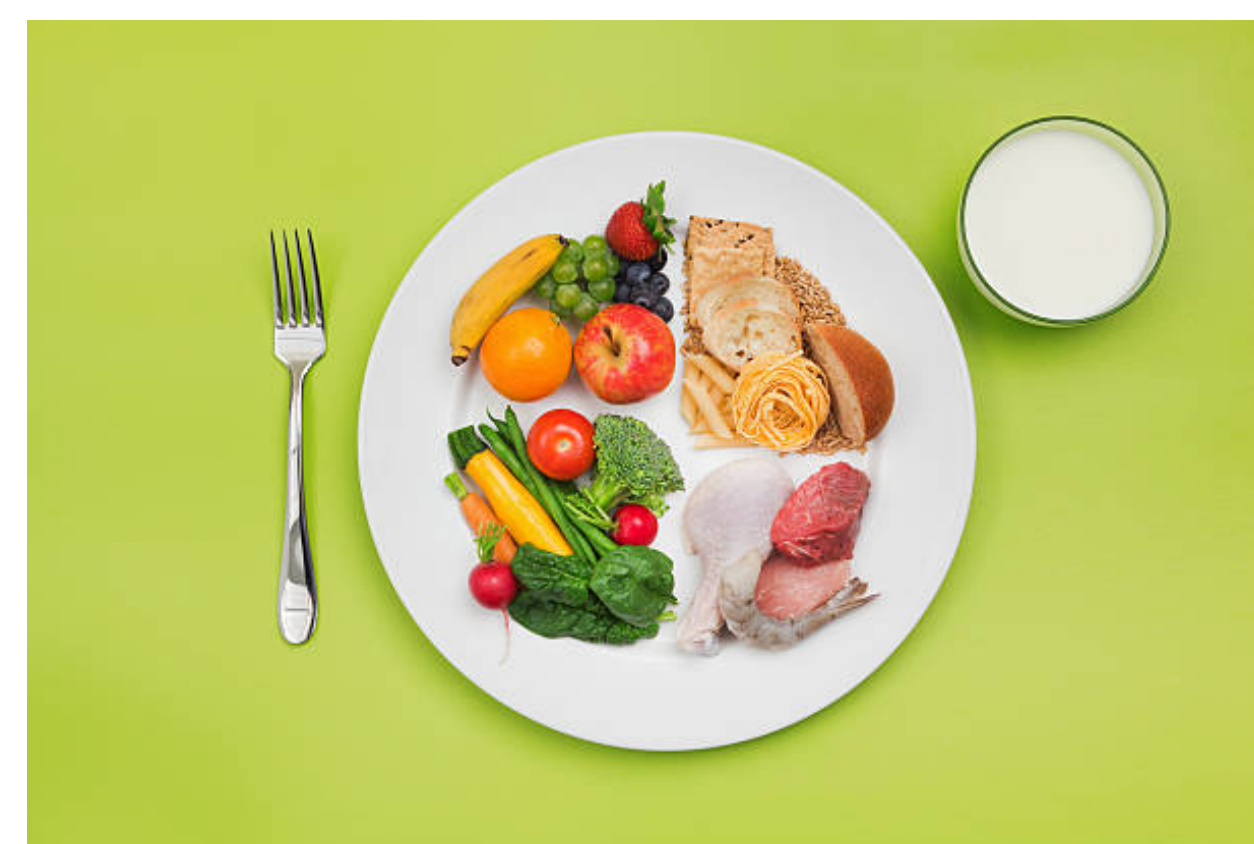
Most students, also, are not properly educated on the nutritional benefits of foods like fruits and vegetables or what a balanced meal should consist of.

Implementing a school garden would provide an interactive learning experience for students and provide fresh fruits and vegetables, that don't have to be shipped and don't have any harsh chemicals, that could be used in the school lunches every day by the cafeteria staff.

Coverage/Methodology

What should a balanced meal look like?

- **Fruits and Vegetables:** half of the plate should include fruit and vegetables; half of the fruits should be whole fruits, rather than fruit juice, and include different types of vegetables.
- **Grains:** one quarter of the plate should include grains and half of them should be whole grains.
- **Protein:** one quarter of the plate should include protein focusing on lean and low-fat proteins.
- **Dairy:** the meal should also consist of one cup of dairy, milk, cheese, or yogurt, that is low in fat or fat free.



USDA guidelines for school lunches

The USDA has a set of guidelines that every school must follow for the meals they provide. Some examples of those guidelines include:

- Half of the grains offered are whole grains
- Offering fruits and vegetables as two separate options

- Flavored and non-flavored low fat dairy and a non-flavored fat free dairy
- Limiting saturated fats and limiting trans fats to 0.5 grams per serving

Example of a school lunch

This is an example of a lunch from Avery Trace Middle School:

- **Entrée:** whole grain Bosco cheese breadsticks, italian cheesy pull-aparts, or turkey and cheese lasagna roll-ups
- **Vegetables:** roasted broccoli parmesan, rainbow salad, or marinara sauce cup
- **Fruit:** variety canned fruit
- **Milk:** Mayfield 1% white milk, TruMoo 1% chocolate milk, or TruMoo fat free milk
- **Grain:** whole grain cornbread

From the lunch offered on this specific day, there were not many options when it comes to fruits, vegetables, or whole grains. If a student chose the Bosco cheese breadsticks as the entrée option and the marinara sauce cup as the vegetable option, they would not be able to get a true vegetable. The student would not meet the USDA recommendations of fruits and vegetables comprising half of the plate. Canned fruit normally contains a lot of fruit juice, instead there should be more fresh, whole fruit options offered.

Waste from school lunches

A study was conducted, in northern Colorado in elementary and middle schools, to measure the amount of plate waste from the students.

The study found that " Middle-school students left nearly 50 % of fresh fruit, 37 % of canned fruit and nearly a third of vegetables unconsumed." [4]

This waste could be due to fruits and vegetables that are being offered don't look appetizing or unfamiliarity of the fruits and vegetables.

Benefits of a school garden

Implementing a school garden would not only benefit the students, by providing them with an interactive learning experience, but also the school by being able to provide more fresh fruit and vegetable options.

The students would have the opportunity to work together to grow different kinds of foods, learn how the foods benefit their body, have the opportunity to try new foods, and learn skills they can use at home and later in life.

The school would benefit by being able to provide nutrition education to the students, more fruit and vegetable options, and be able to cut down on food ordering and shipping costs. Students would be more willing to try new foods from the gardens, so there could be less food waste from the school lunches.

The cafeteria could provide a more "home-style" approach to preparing the vegetables rather than having to use frozen and pre-cooked vegetables. They could and freeze and store any extra fruits and vegetables and use them at a later date.

Implementing a school garden

Some things needed to start a school garden include: approval from the school director or school or board, funding, grants, or donations to buy the materials need for the garden, space for the garden to grow, and tools to help maintain the garden.

Significance

Students are very impressionable at a young age. By providing more education, especially hands on experiences, will help make a lasting impression on students. Students will have more access to fresh fruits and vegetables, which will promote healthier eating habits throughout adulthood, help reduce obesity in childhood, and prevent other chronic diseases. Not only, by implementing a school garden, will healthier eating habits be promoted at school, they will also be promoted at home and shared with their families.

Implementing a school garden will also help decrease the amount of waste from school meals by introducing students to new foods that they may have never eaten before. It can also help the students understand plant life and their ecosystems.



Results

Participation in a school garden

A study was conducted by Nancy Wells, at Cornell University, that compared students participation in a school garden and gardening lessons to fruit and vegetable access.

Wells found students that were provided access to a school garden and to gardening lessons, had more access to fruits and vegetables.

Due to the increased access to fruits and vegetables, students are more willing to try and eat more fruits and vegetables.



Conclusion

Research has proved that having more access to fruits and vegetables, through a school garden, and providing supplemental lessons to students will increase their knowledge about healthier eating and their willingness to try new fruits and vegetables not only at school, but also at home.

A school garden not only provides a hands on learning experience on how to grow different foods, but also teaches life skills that students can use at home and as they grow. It also provides more nutrition education, which can change perceptions and connections to foods.

References

1. Avery Trace Middle School. (n.d.) Meal Viewer. Retrieved April 9, 2021, from <https://schools.mealviewer.com/school/AveryTraceMiddleSchool>
2. Cocannon, Kevin. (2012) Nutrition Standards in the National School Lunch and School Breakfast Programs. *Federal Register*, 77(17),4088- 4167. <https://www.govinfo.gov/content/pkg/FR-2012-01-26/pdf/2012-1010.pdf>
3. Shafer, L. (2018, July 18). *Let It Grow*. Usable Knowledge. <https://www.gse.harvard.edu/news/uk/18/07/let-it-grow>
4. Smith, S. L., Cunningham-Sabo, L., (2013). Food choice, plate waste and nutrient intake of elementary- and middle-school students participating in the US National School Lunch Program. *Public Health Nutrition*, 17(6),1255-1263. <https://doi.org/10.1017/S1368980013001894>
5. *What is MyPlate?*. (n.d.) MyPlate. Retrieved April 9, 2021, from <https://www.myplate.gov/eat-healthy/what-is-myplate>