

Hydroponics in the Elementary School Classroom

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Independent Study

- Set up a Tower Garden in the TCNJ ECE classroom
- Attended and assisted at the Environmental Sustainability Summit
- Researched hydroponics and its benefit in the elementary classroom
- Collaborated with TCNJ Professor Louise Ammentorp and K-5 STEM Coordinator Helen Corveleyn at Hopewell Elementary School
- Co-authoring an article about hydroponics in the elementary classroom



Aeroponic Tower Garden

What is hydroponics?

- Process of growing plants without soil, but instead in a mineral-rich water
 - Aeroponics: an air or mist environment that uses water, nutrients and a soilless growing medium like rockwool
 - Aquaponics: a water environment that uses fish waste to fertilize plants
- Grown indoors or outdoors using either a lighting system or sunlight

Benefits of Hydroponics

- Accelerated plant growth rate
- Can be used year round because it is not weather dependent
- Requires a small amount of space
- Easy to setup and maintain- no digging or weeding
- Versatile access to students in a school because of the mobility of the garden



How Schools are Using Hydroponics

- Whole school: a source of community and promotion of nutrition
- Outdoor connections: gives children a deeper connection to and better understanding of nature
- Social Emotional Learning: student responsibility, care and nurture, accomplishment and community building
- Curriculum connections: STEM, literacy, arts, cooking



Hydroponics at TCNJ



The seeds planted in rockwool and labeled.

A sprouting plant in rockwool before planting in the Tower Garden.

Lettuce growing in the Tower Garden.

The Tower Garden on planting day.



Hydroponics at Hopewell Elementary School

- Three Tower Gardens are kept in the cafeteria and room off the cafeteria is used for hydroponics
- The harvest is used in cafeteria lunches
- Hydroponics is integrated into the K-5 NGSS science and literacy curriculum
- The Green Team Club, a group of 4th and 5th grade students, helps maintain the hydroponic gardens
- Connects indoor hydroponics to outdoor gardening
- Lessons include pollination, plant cycle, SEL and nutrition

Journal Article

- Working with TCNJ Professor Louise Ammentorp and K-5 STEM Coordinator Helen Corveleyn on an article about how to use hydroponics in the elementary classroom.
- Article to be submitted to *Childhood Education Innovations* in May 2020



Journal Article Outline

- Introduction to hydroponics
- Benefits of hydroponics in schools and classrooms
- Instructions to setup and use a hydroponics system
- Whole school involvement
- Curriculum connections
- Example lessons
- Resources for educators

Connections to ESE Minor

- Promotion of a sustainable future by using less land and water to grow plants
- Environmental sustainability in and action
- Sustainability education in practice
- Opportunity to work with Hopewell Elementary School, recipient of the 2018 Best of New Jersey Farm to School award



Resources

Tower Garden Website <u>https://www.towergarden.com</u>

National Farm to School Network

http://www.farmtoschool.org

San Diego Hydro https://sdhydroponics.com/2012/05/11/howto-grow-hydroponically-overview-of-grow-s ystems/