# STEM in the Garden

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## Need/Goal Statement

The United States is behind other nations in high school graduates going into STEM (Science, Technology, Engineering, Math) fields. Wilson County has an unemployment rate of 5%, 11% higher than the national average. The high school graduation rate is 78.5% but only 17.9% of students attain a four-year degree. Local employers in STEM fields have difficulty in hiring qualified employees.

The goal of STEM in the Garden is to educate middle and high school students in STEM fields by using hands-on activities in horticulture, agriculture, and environmental stewardship. This program develops skills to enhance student STEM learning and interest.


Students learn about native carnivorous plants as well as plant, insect, and water interactions with the inclusion of over-arching biodiversity.

Students learn about hydroponic growing conditions systems with discussion on media, sustainability, and climate change.

## Educational Practices

- Activities support and extend the state curriculum on
  - Weather prediction: Students read the weather station using the Weather Underground app including relative humidity, precipitation, and dew point to indicate water vapor factors. The had a discussion on weather patterns, cloud shapes, and the effect weather has on global climate change.
  - Solar power: Students read digital thermometers to determine temperature increase and if the solar energy was strong enough to melt a marshmallow.
  - Wind power: Students made their own pinwheel and then compared and contrasted the speed and efficiency of each.
  - Hydroponics: Students made and brought home their own system to grow plants in water.
  - Native plants: Students used iPads and apps to identify native plants.

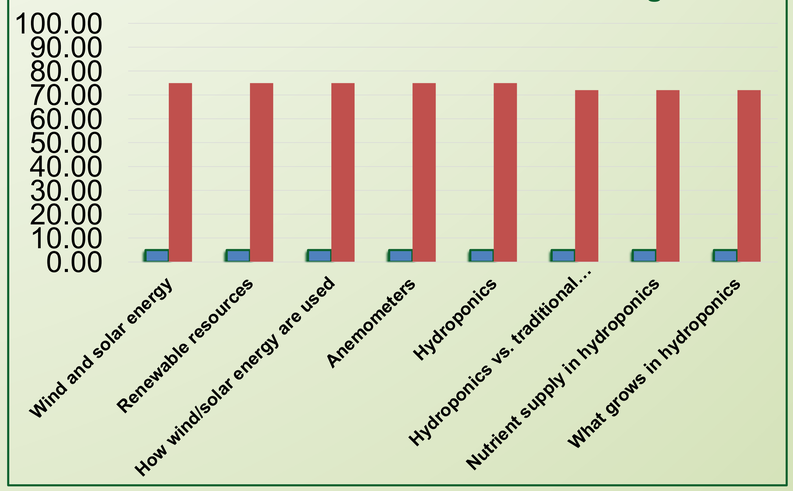
Wind power focused on how to increase turbine efficiency, how wind flow patterns work, and how aerodynamic force converts to electricity.


A solar powered device charging station charged students phones during the class showing that solar energy is a viable resource.

## Program Results

- The student evaluation indicated that student interest in STEM careers was increased, they were excited to share what they learned with others, and they highly recommend the program.
- The teachers expressed a high level of satisfaction with the program's alignment to the state standards and the utilization of STEM principles.

**Students showed a better understanding of**





Solar ovens were used to develop critical thinking skills such as if solar energy has a negative impact on biodiversity or has limitations.

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