

# **The Nova Hydroculture Project: Bringing a Community of Science, Technology, Engineering, Arts, and Math (STEAM) Learners Together to Grow a Unique Garden**

Emily Schmitt Lavin<sup>1</sup>, Varun Andrews<sup>1</sup>, Espélandia Bell<sup>1</sup>, Kenneth Bui<sup>1</sup>, Aleessa Celestin<sup>1</sup>, Vincent Do<sup>1</sup>, Neha Joshi<sup>1</sup>, Alexander Lavin<sup>2</sup>, Carol Manikkuttiyil<sup>1</sup>, Shashank Nutalapati<sup>1</sup>, Alina Poothurail<sup>1</sup>, Caroline Roy<sup>1</sup>, Sanjana Vadlamudi<sup>1</sup>, Shawn McQuaid<sup>2</sup>, Michele Parsons<sup>3</sup>, Aarti Raja<sup>1</sup>

<sup>1</sup>Nova Southeastern University, <sup>2</sup>Nova High School, <sup>3</sup>Nova Blanche Elementary School

The Nova Hydroculture Project (NHP) is a collaboration between the Nova Southeastern University (NSU) American Society for Biochemistry & Molecular Biology (ASBMB) and Sigma Xi chapters as well as Science Alive and the Nova Public Schools (K-12) in Broward County, FL. Science Alive is a 501(c)(3) non-profit organization (faculty-sponsored and student-run program) providing opportunities for teams of learners from all academic levels to explore STEAM (science, technology, engineering, arts, and mathematics) beyond textbooks through hands-on, interactive discovery. By providing service learning opportunities for college students to lead in the local school community, we fill a need for the development of fun and educational science-related activities in schools with traditionally underserved populations. For the NHP we are collaborating with schools that have the Title 1 designation meaning that at least 40% of the student population comes from low-income families. Many of our college volunteers are the first in their families to attend college, as would be the case for many of the K-12 students that we serve. Therefore, we are in an ideal environment to positively impact students that are “just like us”. The NHP involves building hydroculture gardens with food plants (such as tomatoes, peppers, and berries). Showing NHP participants how to grow vegetables and fruits in a small space with reduced amounts of water can teach alternate methods to grow fresh produce, especially in communities where traditional agricultural practices may not be possible. These techniques are also being used on the International Space Station (ISS) in their Vegetable Production System (Veggie). The first peppers from the ISS Veggie were harvested and consumed on the ISS in early November 2021, which was exciting for our teams to discuss. The NHP also provides experiential learning opportunities for young students to apply science and engineering concepts to garden-building while working in teams with their mentors. The NHP teams document the growth and water quality of the gardens, take photos, and make science journal entries throughout the Project. Not only are hydroculture gardens fantastic opportunities to learn about science, math, technology, art, and engineering, but they are also living, breathing entities that require ongoing care and commitment, thus fostering a collaborative and interactive experience for everyone involved. The NHP brings together diverse teams of K-12 students, parents, teachers, NSU students, and faculty as we work together and learn from each other in our diverse community.

## **Support or Funding Information**

The Project was supported by the Sigma Xi (National Scientific Research Honor Society) Science, Math and Engineering Education (SMEE) Chapter Grant.