The Way We Grow

Simple Sustainable Solutions

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The Way We Access

Simple Sustainable Solutions

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The Way We Cook
Where we work

Sustainable Agriculture from Classroom to Community

The Farm
Aquaponics Innovation Center

The Classroom
ECO Cycle Aquaponics Kit

The Community
Bayside Center

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ECO-Cycle Aquaponics Kit

- Builds educational infrastructure
- K-12 STEM curricula
- Engages students with their food systems
- 658 Kits donated & 122,020 students reached
- Local & National Programs

ECO-Garden Program

- Hands on project based learning
- Practical knowledge of larger scale aquaponics
- Native plant restoration
- 10 outdoor school systems
What is Aquaponics?

- **Nitrite-Oxidizing Bacteria (NOB) convert Nitrite to Nitrate**
- **Ammonia-Oxidizing Bacteria (AOB) convert Ammonia to Nitrite**

Diagram showing the process of water filtration, fish feeding plants, and bacterial conversion of nutrients.
Activity #1: Aquaponics Bracelet

**NGSS: 5-LS2-1:** Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

**OBJECTIVE:**
Students will use aquaponic vocabulary combined with art to replicate the action of the ECO-Cycle.

**MATERIALS:**
- Leather or nylon string
- 14 plastic beads per student in the following colors: yellow, green, blue, white, black, brown, and orange
Activity #1: Aquaponics Bracelet

- Sun shining down on growing plants
- Plants in the water using sun for food
- Water in the system
- Oxygen produced by plants through photosynthesis
- Fish that use the oxygen to breathe and grow
- Waste produced by the fish
- Bacteria which helps convert waste to nitrogen

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ECO-Cycle Aquaponics Kit

- Grant Application
- K-12 NGSS Curriculum
- Workshops
- Webinars
- In-Class Lectures

The ECO-Cycle Aquaponics Kit™ provides students and teachers with an interactive, hands-on tool for learning. The kit may be used to demonstrate concepts such as:

- Plant and animal anatomy
- Photosynthesis and respiration
- Living systems
- The Nitrogen Cycle
- The role of bacteria in ecology
- The function of water in ecology
- The science of sustainable agriculture
- Climate change and ecological issues

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122,020
Students Reached

658
Kits Placed In Classrooms
ECO-Cycle in the Classroom

“Having this as part of our classroom on a daily basis has really allowed for a deeper understanding of the interconnectivity between the plants and fish. I have seen those “lightbulb moments” at different times for different kids. It's been wonderful!”

- Ms. Leavitt, Jefferson Elementary

“Aquaponics has changed the way I teach science! It is helping me create junior scientists who experience learning in a hands on way. It has also allowed me to teach many standards at the same time. My scientists are so excited to eat healthy food that they grow themselves. They are also learning how to help the environment through sustainable agriculture.”

- Mrs. Maltz, Jonas Salk Elementary

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Aquaponics Education Programs are designed to break from the conventional classroom and immerse students in a world of experiential learning.

- Hands-on project based learning
- Immersive interaction with STEM concepts
- Connects students to their food systems, thereby exposing the challenges of industrial agriculture.
Aquaponics and Content Mastery

- Students apply new knowledge to real-world situations.

- **Contextualize: Use Human Themes**
  - Subjects are not taught in isolation and instead learning is connected to larger themes, concepts and across multiple subjects and apply their learning to real-world issues and problems.
Aquaponics and Communication

- Students demonstrate skills in active listening, clear writing, and persuasive presentation.

- **Reach: Network Beyond School Walls**
  - Teachers scout opportunities for their students and tap local resources like museums, businesses, and non-profits that match the schools learning philosophy as well as students’ interests and projects.
Aquaponics and Collaboration

● Students work with their peers, assume leadership roles, resolve conflicts, and manage projects.

● **Connect: Create a Community of Learners**
  ○ Inspire students to care about each other’s success; re-orient students to the value of learning and self-direction; involve older students as mentors.
Aquaponics and Self-Directed Learning

- Students use teacher feedback to monitor and direct their own learning, both in and out of the classroom.

- **Empower: Activate Students to Lead Their Own Learning**
  - Learning objectives emphasize inquiry-based learning and take care to get students working actively and productively in groups to create products or to solve problems together.
Aquaponics and Academic Mindset

- Students feel a sense of belonging and the motivation to persist through their school work.

- **Inspire: Personalize The Learning**
  - Finding the spark—a subject, idea, or project that makes a student light up.
Aquaponics and Critical Thinking

- Students consider a variety of approaches to produce innovative solutions.
- **Investigate: Student-led creative problem solving**
  - Create problem or topic specific working groups that test innovative solutions.
Activity #2: AP and DL

- Using the K-12 ECO-Cycle curriculum each group must design a mock activity.
- Each activity should be focused on your respective Deeper Learning Competency
  - NGSS Standards
  - Working Document
  - Curriculum
Follow us and Learn More!

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