

Session 1: Introduction to Hydroponics

Learning Outcomes

Upon completion of this session, students will:

- Know the definition of hydroponics
- Know the main parts of a plant and their basic functions
- Be able to tie each thing that a plant needs to grow to the part of the plant that uses it
- Understand why people use hydroponic systems

Duration

1 hour

Activities

- Introduction of the instructor
- Introduction of students
- Discussion of hydroponics, parts of the plant, and plant needs
- Plant Part Worksheet and hydroponic system setup

Materials

- Example potted plant (tomato/bean seedling?)
- Skeleton of system (tub, aerator, lights, nutrient solution, rockwool cube/Styrofoam)
- Student Workbooks

Background Information

During the first class, it is important for the instructor to develop an understanding of the students' existing knowledge about plants and how they are grown. At the same time, the introduction of basic concepts is necessary as a foundation for the remainder of the course. I started by asking students about how they grow plants and what they need (seeds, dirt, water) and used what students already know to introduce a “new” way to

grow plants—without soil. I then asked them to think of the different parts of plants (using the example potted plant) and what the functions of these parts might be.

Each student will be given a Workbook (see [Appendix](#)) and will work on lessons in it each week. This week, we will work on the Plant Part Worksheet and try to match up the parts of plants to their functions and to the parts of the hydroponic system that help with those functions. These exercises introduced some basic concepts and enabled me to gain insight into the students' existing levels of knowledge about topics that will be discussed further in the course.

Procedures

I will start with a basic introduction of myself and will ask the kids to introduce themselves to me by asking them to tell me their names and what their favorite vegetable is (this is to get an idea of their personalities). I will also give an overview of all the things we will be doing.

Next, I will introduce the topic of hydroponics by asking the students what they think hydroponic means (hydro = water, ponic = working; “working water”). Using this example, we will show the difference between hydroponics, where the water is doing most of the work of growing the plant, and soil growing. To understand this better, we will need to discuss the different parts of plants and how they grow.

Using the example plant, I will ask the students to name the four basic parts of the plant (leaves, stem, roots, flower/fruit). I will then ask the students what they think plants need to grow (water, light, air [CO₂ and O₂], nutrients, and support). We will then discuss how each part of the plant uses these things to grow. At this point, we will work through the Plant Part Worksheet.

After this is done, I will bring out the different parts of the hydroponic system, and as we start to assemble it, we will correlate each part of the system to one of the needs of the plant. For example, the plastic tub holds the *Water*, the light bulbs give off *Light*, the aerator gives *Oxygen*, the concentrated nutrient solution provides *Nutrients*, and the Styrofoam and grow cubes lend *Support*.

If there is time at the end, we will discuss why people might use a hydroponic system over soil-based systems.

Suggestions

When building the frame for the system, it worked well to divide the students into groups and designate a specific job to each group. That way everyone gets to help in the process without there being too many students crowded around the system at one time.