Activity: Propagation Goal: Cognitive Populations: Children/Youth

TH Activity Plan – Hydroponic Gardening: Sowing Seed

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Photo by S. Morgan

ACTIVITY DESCRIPTION: Participants will grow seeds in a hydroponic gardening system. **Number one in a 3-part hydroponic series.**

THERAPEUTIC GOALS:

Cognitive/Intellectual: Practice sequencing & following step-by-step instructions; learn basic plant care in unique growing environment

Psychological/Emotional: Practice self-regulation strategies; increase patience & wait tolerance through turn taking & delayed gratification; exercise impulse control

Sensory: Engage tactile senses with seeds & growing media; improve mood through sensory stimulation

Social: Work collaboratively within a group; increase sense of belonging through collective class growing project

Materials

Hydroponic growing system (Juice Plus Tower Garden in photo above)

Assorted seed that is good for growing in hydroponic systems, such as lettuce & greens & leafy herbs like basil, flatleaf parsley, & cilantro

Growing medium, such as rock wool pods for seed starting, Vermiculite (in a container)

Spoons or small scoops
Shallow trays that hold water

Plant labels or popsicle sticks
Sharpie pens

Watering can with water
Sunny window or grow light

Optional, equity sticks for selecting small groups
Optional, printed photos of planted hydroponic system

STEP-BY-STEP PROCESS:

1. **Pre-Session Prep:** Gather seed starting materials. Pre-soak rock wool pods in water in trays 2 hours prior to seeding; select the number of pods per planting slots on the hydroponic system. Write seed names on labels. Print photos of planted hydroponic system, *optional*. Discuss with teacher ahead of time about what to expect for activity.
2. If working with a standard-sized class in an elementary school, divide the class into smaller groups of 5-7 participants. *Optional*, use equity sticks (popsicle sticks labeled with each student's name, one name per label) to select small groups. Determine number of small groups & figure out how many rock wool pods to plant per group.
3. Working at a small table in the back of the classroom or nearby, introduce the activity to the small group. Ask the group what plants need in order to grow & discuss any educational information about plant needs, such as sun/light, nutrients, water, air, & space to grow, that students are learning in their class curriculum. Explain how the plants' needs will be met through the different features of the hydroponic system (supplemental lighting, water & nutrients feed plants through a circulating pump system, etc.). Relate to self needs.
4. *Optional*, show printed photos of the planted hydroponic system so participants have an idea of what it will grow to look like in the future.
5. Have participants extend one hand out & hold in a flat, open hand position. Discuss what happens to the seed when hands are constantly shifting or tilted to the side – seed falls onto the table or floor.
6. Place about 2-3 seeds onto each participant's outstretched, flat hand. Invite participants to focus in & notice seed characteristics.

7. Taking turns, have each participant add seeds to rock wool pods, one seed type per pod. Point out which pods to add seeds to so that seed is evenly distributed across the tray. Multiple seeds can be added to each pod to ensure germination.
8. Using spoon, scoop vermiculite to cover seed in planted pods. Participants or practitioner can do this step.
9. Add plant label(s) to the planted seed pods.
10. Repeat activity with each small group until everyone has had a chance to plant seed & all pods are planted.
11. Add water in tray & place planted trays in a sunny window or under grow light. Refresh water as pods dry.
12. Seeds should germinate within 3 weeks. If seeds don't germinate in each pod during this timeline, re-seed pods where no seeds germinated. Add water & wait until all pods have grown their first set of true leaves. Then they are ready to be "planted" in the hydroponic system.

APPLICATIONS FOR POPULATIONS: Grow seeds of edible plants, such as leafy greens and herbs including those with a mix of flower/leaf/stem colors & textures and are quick to germinate, as well as cut flowers or other familiar and interesting plants. Use a variety of familiar and unfamiliar plants to experiment with growing and sampling. Slow-to-germinate plants can be frustrating to grow in a limited growing space where real estate is precious, so do research to select the right seed for your situation. Root vegetables do not grow well in a hydroponic system unless the system is designed for growing root veggies. This activity can be delivered as part of a multi-session program in an elementary school setting for grades K-5 – seed sowing, planting the hydroponic system, and harvesting produce. (See THAD Hydroponic Gardening activity plans.) Students can learn about plant science and gardening, nutrition and growing/sampling new and familiar plant-based foods/recipes, as well as water resources, farming and agriculture, the scientific method and observations, biophilia and the people-plant connection, and more concepts as part of school curriculum. As part of a multi-session program, the class (or two or more classes per grade) first adopts a hydroponic growing system. The seed sowing activity occurs during one session. Once all seedlings have sprouted and developed a second set of true leaves, then the practitioner comes back to work with the class to plant the tower with the seedlings, per the growing system's guidance. Once the seedlings have grown and plants are ready for harvesting, the practitioner comes back to work with the class to harvest produce off the tower. The harvested produce can be used in other sessions, such as food sampling within the class(es) or with other classes, used in recipes and shared with school staff for an employee appreciation lunch, donated to food insecure families at the school or local food bank, or taken home to share with participants' families. Consider hydroponic system access and maintenance during lengthy school breaks, such as summer break and winter break, when planning the planting and harvesting calendar.

SAFETY CONSIDERATIONS: Practitioners are responsible for knowing poisonous and toxic plant materials as well as safety protocols when handling nutrients, ph balancing chemicals, and other materials used for the hydroponic growing system. Supervise safe handling of materials and equipment, including rock wool pods and vermiculite, during the activity. Monitor individuals with tendencies to place non-food items in the mouth.

NOTES OR OTHER CONSIDERATIONS: There are many types of indoor and outdoor hydroponic growing systems available on the market. Operating a hydroponic system is not inexpensive and requires the ongoing purchase or replacement of materials and equipment, including nutrients, ph balancing kits, rock wool pods, indoor lighting systems, water pumps, timers, and hoses, often designed only for the specific growing system. Keep this in mind when making the investment on a hydroponic system. Make your selection based on available growing space, electricity, water access, budget, lighting conditions, and additional components that need to be maintained and purchased in order to keep the growing system operational. Or make your own system from locally sourced parts.

REFERENCES/ RESOURCES:

Shrestha, A., & Dunn, B. (2017). Hydroponics. *Oklahoma State University Extension.*
University of Georgia Extension. (2025). Hydroponic gardening for the homeowner and small grower.

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