Activity: Planting Goal: Psychological/Emotional Populations: Children/Youth

TH Activity Plan – Hydroponic Gardening: Planting Seedlings

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ACTIVITY DESCRIPTION: Participants will plant young seedlings in a hydroponic gardening system. **Number two 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

Physical: Strengthen fine & gross motor skills

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

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)

Seedlings with at least 2 sets of true leaves, planted in rock wool pods

Net pots for planting seedlings

Plant labels or popsicle sticks
Sharpie pens

Optional, equity sticks for selecting small groups

STEP-BY-STEP PROCESS:

1. **Pre-Session Prep:** Grow seedlings from seed (see activity plan Hydroponic Gardening: Seed Sowing). Set up hydroponic growing system with appropriate lighting system & water pump installed. Fill water tank to desired amount. Add nutrients per instructions. Check water ph as needed, per instructions. Set timers on lighting & pump systems. Because grow lights can be quite bright, keep them turned off until planting is finished. Also, keep pump turned off to avoid splashing during activity & turn on after planting. Discuss with teacher ahead of time about what to expect for the 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 seedlings/rock wool pods to plant per group.
3. Walk small group to the hydroponic system & introduce activity. Ask the group if they recall what they did in previous session – seed sowing. Show seedling growth & make the connection from how they started as tiny seeds to the seedlings now ready for planting. (If group had been growing seedlings in the classroom, they may already have been monitoring plant growth.)
4. Explain the step-by-step instructions of planting seedlings in the hydroponic system. Discuss how plant needs are met through various features of the hydroponic system (water & nutrients feed plants through a circulating pump system, supplemental lighting, etc.), pointing out these features as they are discussed. Relate to self needs, as age appropriate. In the Tower Garden system, a net pot is "planted" into each grow slot on the tower.
5. Then plant a seedling into the net pot. The net pot holds seedlings in place, keeps it from falling through the slot into water tank below, & allows water/nutrients to access roots.

6. Taking turns, plant the net pots onto the tower so they are securely snapped in place. To make sure that each person has the opportunity to "plant" something, participants can first "plant" the net pots into the tower, then different participants "plant" the seedlings into the net pots. Explain that the net pots act as a necessary support system for the seedlings, so emphasize that the "planting" of the net pots is just as important as the "planting" of the seedlings. If trying to stretch out tasks so each participant has something to do, have participants do one or the other task —planting net pots or seedlings, but not both tasks, unless there is enough for each person to do both. Then plant the seedlings into the net pots.
7. Add existing plant label(s) to their planted seedlings. Create & add new labels to seedlings as needed.
8. Repeat activity with each small group until everyone has had a chance to plant & all pods are planted.
9. Turn on grow lights & pump when finished planting. Give participants a heads-up so they can adjust their eyes to lights. With young children, demonstrate & invite group to form hands into imaginary binoculars & watch the plants as the practitioner turns on the lights. This shields participants' eyes from the light while inviting them to make observations. Invite group to watch plant growth over next few weeks.
10. Maintain hydroponic system according to guidelines. Add water/nutrients to tank, & check ph regularly.

APPLICATIONS FOR POPULATIONS: 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, water resources, farming and agriculture, the scientific method and observations, biophilia and the people-plant connection, and more concepts as part of school curriculum. To increase opportunities for building confidence and social skills through peer mentorship, organize older students to guide and mentor younger students on planting and harvesting activities with the hydroponic system. Growing in a hydroponic system extends indoor grow times through lengthy cold/hot seasons and offers many opportunities to tailor therapeutic goals and outcomes for different groups. As part of a multi-session program, the class (or grade with 2+ classes) adopts a hydroponic growing system. Seed sowing and planting activities occur during previous sessions. Once seedlings have grown and plants are ready for harvesting after a few weeks, the practitioner comes back to work with the class to harvest off the tower. Harvested produce can be used in other sessions, such as food sampling within the class or other grades, 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.

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

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, maintenance time involved, 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:

Eason, H. (2020, April 9). Set it and forget it hydroponics. *UF IFAS Extension Orange County.*
Ebba, J. (2023). Hydroponics at home. *University of New Hampshire Extension.*

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