

Miniature Compost Bins

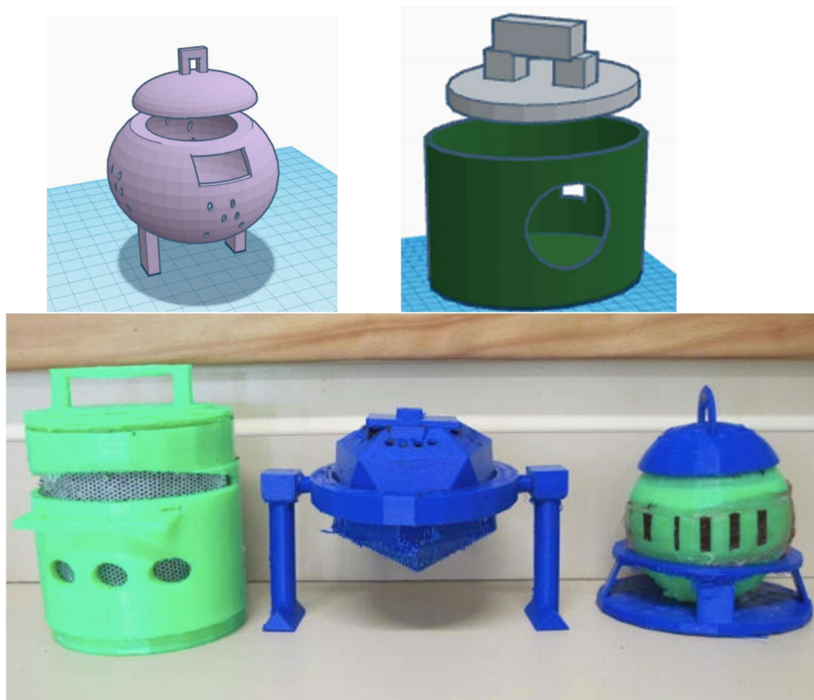
Shared by: Hilary Seager, STEAM Coordinator, Page Elementary School

Specialized tools/technology used:	Experience level required:
TinkerCad	beginner-intermediate
3D printer	

Grade Level (of this example): 5

Topic/Content Standards (for this example): 5th grade ecosystem science standards; measurement

Summary of Project: Students will design a model of an efficient compost bin using Tinkercad or another CAD software program. Depending on the size and complexity of the models, you could print each student's design or print one design per class. Images of finished student work Notes from contributor: This project is part of the STEAMTrax *Designing an Efficient Compost Bin* module. Prior to working through the module, students spent several weeks learning about ecosystems and the flow of energy through an ecosystem. Students (in groups of 4) observed and recorded the physical and behavioral characteristics of the plants and animals in their classroom ecosystems.





Extensions/curriculum:

Student resources included fiction and nonfiction texts associated with the Seeds of Science Roots of Reading: Aquatic Ecosystems unit as well as websites.

As part of the STEAMTrax *Designing an Efficient Compost Bin* module focusing on decomposers, students (in groups of 3) engaged in four learning station activities: What's in a Compost Bin?, Earthworms or Red Worms?, Isopod Response to Stimuli, and Food Chains and Webs in Compost Bins. The first learning station was a Webquest that described what kinds of materials should be placed in compost bins and in what ratio, the role of decomposers in compost bins, and what features a good compost bin should have. Throughout the second and third learning stations, students observed and tested earthworm, red worm, and isopod responses to various stimuli. The fourth learning station consisted of students creating different food chains and webs using Compost Bin Picture Cards of producers and consumers found in a compost bin. Students then used this knowledge to individually design a 3D model of an efficient compost bin meeting size and design criteria. Due to the inability to 3D print fifty-eight compost bins, each of the three classes voted on the best design. The three winning designs were printed and tested using potting soil, cafeteria scraps, newspaper, and our red worms. The STEAMTrax learning centers and compost bin design took approximately 6 hours.

This project was directly related to the 5th grade NGSS life science standards.

Suggested resources

STEAMTrax Modules - <https://about.polar3d.com/steamtrax/>

Seeds of Science Roots of Reading: Aquatic Ecosystems - <https://store.amplify.com/aquatic-ecosystems-c7.aspx>

Webquest sites

<https://www.youtube.com/watch?v=Q5s4n9r-JGU>
https://www.youtube.com/watch?v=V8miLevRI_o
<http://web.extension.illinois.edu/homecompost/science.cfm>
<http://www.compostheaven.com/compost.html>