



CLASSROOM VERMICOMPOSTING

Grade Level

K-8

Length of Lesson

Ongoing

Objective

By the end of this lesson, students will have a better understanding of vermicomposting and soil health.

Materials Needed

- (2) large, opaque plastic containers
- Replacement drain for cooler
- Drill & drill bits
- Newspaper
- Small amount of compost or soil
- 1/4 lb red wiggler worms
- Copy of the Weekly Log Sheet (optional)

Standards**NGSS**

K-2-ETS1-1; K-LS1-1; 4-LS1-1-2; 4-ESS3-1; 5-LS2-1; MS-LS2-3

Lesson Summary

This lesson is a fun, hands-on activity designed to introduce students to the exciting world of vermicomposting—making compost with the help of worms! Students will help construct and maintain a classroom vermicomposter. As an alternative or supplemental lesson, students can make their own “desktop” composters as well.

Suggested Sequence of Events:

1. **Set Up:** Assemble all necessary materials. Teachers may want to mostly prepare the vermicomposting tubs beforehand and have students help with adding the worms.
2. Read through the IAITC Soil Ag Mag to learn more about soil health! Interactive online versions can be found on our website.
3. To prepare the composting bins, follow these steps (diagrams can be found on the Teacher Resources page):
 - Use the drill and a 1” drill bit to cut two holes near the top on each long side of one of the tubs. These holes will serve as ventilation for the worms.
 - Then, use the same 1” drill bit to drill a hole near the bottom on the short side of the other tub.
 - Attach the cooler drain through this hole. This will allow you to drain any liquid “worm tea” that collects in the bottom tub. Worm tea can be added to gardens and planting containers as fertilizer as well.
 - Return to the initial tub with the ventilation holes and flip the tub over. Switch to a 1/8” drill bit and drill a series of holes in the bottom of the tub. The holes should be large enough for liquid to drain, but not large enough to allow the worms to travel out of the tub.
 - Place this tub inside of the other tub to complete your vermicomposting bins!
4. To set-up your vermicomposting bins, follow these steps:
 - Have students tear the newspapers into small pieces.
 - Add the newspaper and compost/soil to the bin with the drain holes. Then, add a small amount of food waste. Avoid meat, dairy, and citrus products in your worm composter.
 - Finally, add the worms to your bin. Depending on how you received your worms, you may need to follow the directions included with them to “re-hydrate” the worms before adding them to your bin.
5. Your worm composter is now complete. Read the attached Teacher Resources page to learn more about maintaining your classroom composter.

TEACHER RESOURCES

- Watch our video about building our own vermicomposter on YouTube: <https://youtu.be/U7d7zek6IEM>

Maintenance:

- A vermicomposter takes little work to maintain in your classroom. Follow these tips to help your worms do their best work:
 - Add approximately the same weight in food as you have worms in your bin. For instance, if you start with 1/4 lb. of worms, add about 1/4 lb. of food scraps every week.
 - Food scraps that are in small pieces will be easier for the worms to digest quickly. Adding scraps of varying sizes may be a fun experiment to test how long it takes the worms to break down different materials.
 - Add shredded newspaper bedding as needed to keep the food scraps covered and help the pile retain moisture.
 - Burying the food scraps in the bin will help the worms digest the materials more quickly and will also eliminate the chance for bad smells.
 - The worm bin should have similar moisture to a damp sponge. Additional liquid should drain into the bottom bin, though this often isn't even necessary.
 - The worms will self-regulate their population. As the population grows, you will need to add more food each week. Eventually, the worm colony can be split to create an additional worm bin.

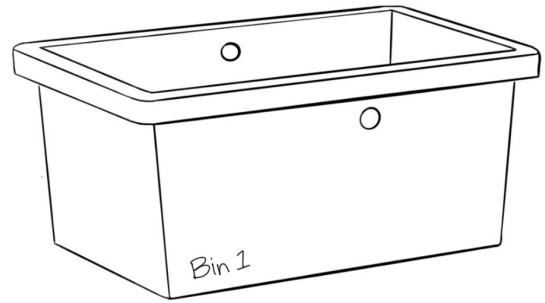
Extension Ideas:

- Students can perform various experiments and inquiry activities with the vermicomposter:
 - Use the attached weekly log for students to fill out with what they added to the worm bin, what they noticed inside the worm bin, what the worms are currently decomposing, etc. Assign different students to fill out the log each week.
 - Weigh the worms at various points in time to determine how quickly they are multiplying.
 - Experiment with adding different size food scraps to see how quickly the worms can decompose them.
 - Once the worms are creating compost, extract some and use it with garden or container plantings. See how plants grown with the vermicompost grow differently than plants grown with other types of soils.
 - Take a sample of your vermicompost and submit it for a soil sample to see what nutrients are present in the worm castings. Compare this with a soil test taken from soil around the school yard.
 - Have students research the benefits of vermicomposting and composting.
- Variation: Students can also create their own “desktop” vermicomposters using large plastic cups with lids. Worms prefer to work in the dark. Use construction paper to make a collar to block the light from the cup. Then, students can remove the collar to view the worms and their progress.
- Go to agintheclassroom.org to contact your County Literacy Coordinator for free classroom sets of our Ag Mags!

TEACHER RESOURCES

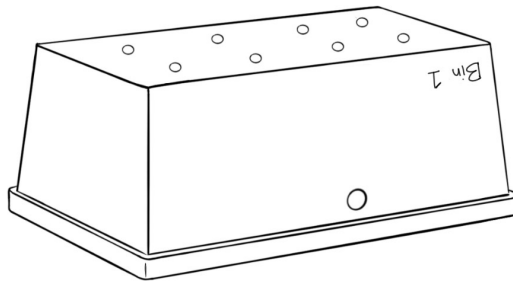
HOLES FOR VENTILATION

1" drilled holes
Top, 2 sides of the first bin



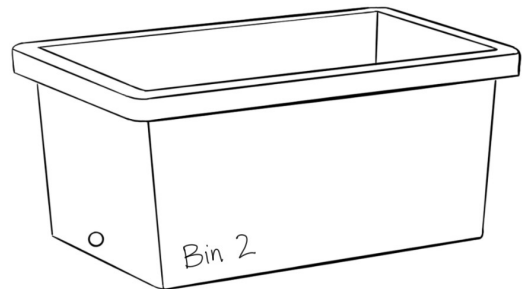
HOLES FOR DRAINAGE

1/8" drilled holes
Bottom of the first bin

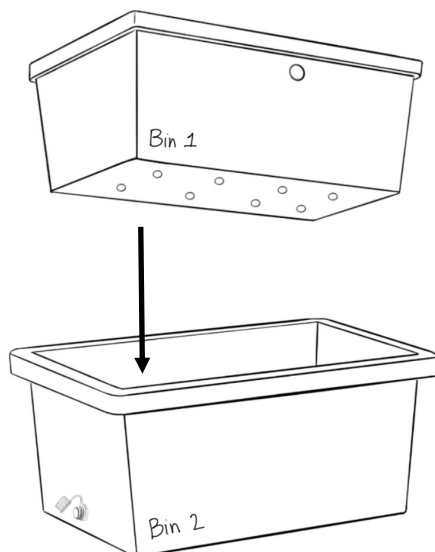


HOLE FOR COOLER DRAIN

1" drilled hole
Bottom edge, 1 side of the
second bin



(Cooler Drain)



ASSEMBLY

Secure the cooler drain in the hole drilled at the bottom of the second bin. Then, place the first bin into the second bin.

Your vermicomposter is ready for its materials and tenants!



Science

CLASSROOM VERMICOMPOSTING

WEEKLY LOG

DATE	FOOD SCRAPS BEING ADDED	OBSERVATIONS OF COMPOST