COMPOST IN A JAR

The problem with making compost in an outside compost bin or static pile is that you can't see what is going on easily. Let's have a close up look at the process of decomposition by making compost in a jar.

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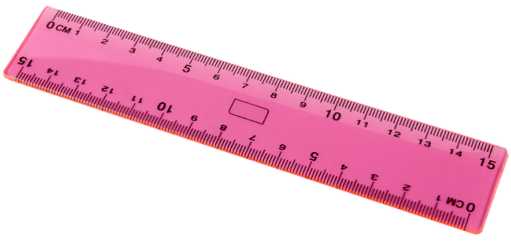
COMPOST IN A JAR

WHAT YOU NEED:

- a large glass jar (you could use a clear plastic jar or even a big, clear plastic bottle with the top cut off)
- garden soil (not bagged potting mix - you need something alive so a scoop from a garden bed is best)
- organic waste - kitchen scraps (vegetable and fruit scraps only), grass clippings.
- shredded/ripped paper or cardboard, dried brown leaves
- water - rainwater or tapwater (not seawater)
- ruler



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COMPOST IN A JAR

WHAT YOU DO:

1. Recap on the 4 ingredients of compost - nitrogen, carbon, water and air. Sort your organic ingredients into piles of nitrogen and carbon.
2. Moisten the soil by sprinkling over the water. It should be about the wetness of a damp sponge. Too wet and it will be muddy with dripping water, too dry and it won't hold together.
3. Add a 5cm layer of soil to the bottom of your jar.
4. Add a 2cm layer of nitrogen (kitchen scraps). They will decompose faster if they are chopped into small pieces.
5. Add a 1cm layer of soil.
6. Add a 2cm layer of carbon (shredded paper). They will decompose faster if they are ripped into small pieces.
7. Add a 1cm layer of soil.
8. Repeat the layers, alternating the nitrogen and carbon layers with soil in between. You can use any of the types of nitrogen or carbon in each layer.
9. Finish with a layer of soil approximately 3-5cm deep.
10. Cover the jar with a loose-fitting/breathable lid - a paper towel held on with a rubber band works well.

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WHAT YOU DO NEXT:

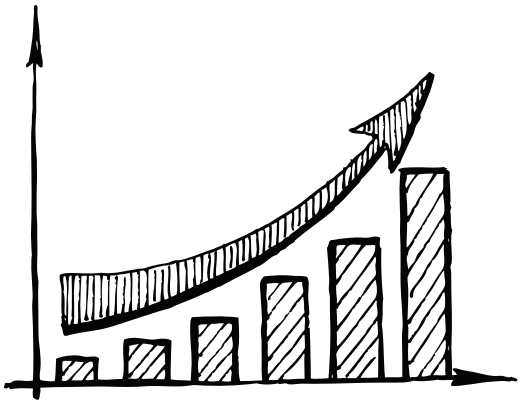
1. Discuss what you predict will happen. You might like to record this in words or pictures. Remember to include why you think that will happen.
2. Decide how you will record what happens. You could:

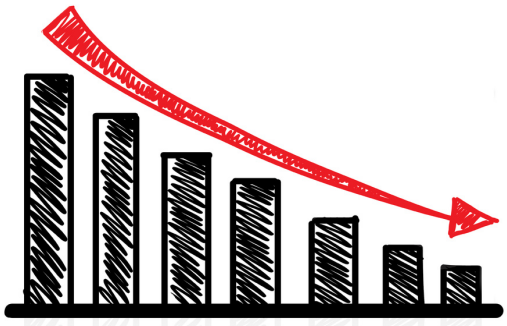
- measure the height of the compost mixture every 4 days
- measure the temperature of the compost mixture every 4 days
- photograph or draw the changes
- compare to food waste in landfill - see separate note

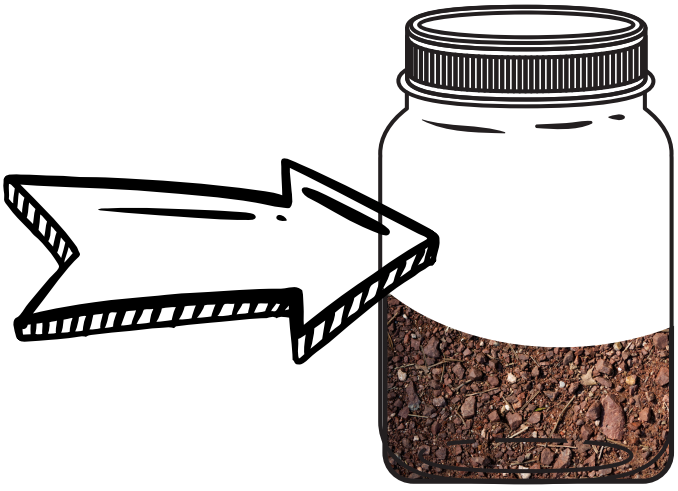
3. Present your results. You could:

- present a graph showing your temperature and height measurements
- show your drawings in sequence
- make your photos into time-lapse video

4. Explain what happened







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WHAT IS DECOMPOSITION?

Decomposition is a natural process where organic materials rot or decay - breaking down into simpler parts. It is Nature's way of recycling so that the simple parts can be used when new things grow.

WHAT HAPPENED IN OUR JAR?

When we layered our materials in our jar, we were layering the ingredients of soil - nitrogen, carbon, water and air. When we put alive soil in there, we also added microbes (fungi and bacteria) that help with decomposition (that's why we used rain water - so the chlorine didn't upset the microbes at work). Those microbes started breaking down the organic matter, eating the organic waste, eating each other, pooing out the waste and then eating each other's poo. As the ingredients got broken down into smaller pieces, they could fit into less space and so the height of our compost kept decreasing. As the microbes had a feast of party food, it got a bit like the school disco in there, sweaty and hot, so the temperature increased. In a bigger compost pile this can get quite hot. Microbes need oxygen to do this.

Does this agree with your prediction? What is different?

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WHAT ELSE COULD YOU DO?

1. Compare the decomposition in a natural setting to decomposition in landfill. In landfill the waste is so tightly packed that there is little oxygen to help the decomposition process. Make up one jar in a similar way to the original jar, but pack the jar very tightly and put an airtight lid on the jar at the end. Make up another jar using the original instructions. Compare the process of decomposition in the two jars. You could include some other materials in the landfill jar to see how they decompose over time.
2. Move your learning outside and start a static compost pile outside. It needs to be at least 1m x 1m to get really hot from decomposition. Gather all of your materials together, then layer up in the same way as your jar. Cover your pile with something breathable like a hessian sack to stop it drying out.

Links to the NZ Curriculum

Related Achievement Objectives can be found in Science - Making Sense of the Living World, the Material World and Planet Earth and Beyond looking at recycling common materials, initiating environmental projects, trophic relationships and micro-organisms.

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www.gardentotable.org.nz