

Closing the loop on organic waste

Game instructions



Acknowledgements

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Background information for teachers

When schools take part in earth-cycling activities like composting and worm farming, these actions turn our unavoidable food waste scraps into a resource we can use to grow more food. To learn how to set up these systems, visit [WasteSorted Schools fact sheets](#).

Schools can have a role in reducing environmental impacts, such as the production of harmful greenhouse gases, by processing their unavoidable food waste onsite using worm farms and composting systems. See [WSS Food waste curriculum guide](#) to find out how to address this learning in the classroom.

The *Closing the loop on organic waste game* visually explores the circular economy process of closing the loop on unavoidable food waste. Teachers can use this game to introduce earth-cycling or to consolidate earth-cycling actions and processes.



Learning objectives

After completing these activities, students will be able to:

- ☑ follow the process of unavoidable food waste scraps being used to create compost for edible gardening
- ☑ identify different earth-cycling systems (e.g. worm farms and composting)
- ☑ identify what food scraps can go into which system
- ☑ apply these learnings to support existing school systems.

Age range

- Years 1–2 – play without cards as a dice and move game
- Years 3–6 – add cards to game and remove more advanced questions

Prior learning

Students should have a basic understanding of how composting systems and worm farms function. They should also be aware of avoidable and unavoidable food waste and its impacts on the environment when it ends up in landfill.

Game set-up

- Conduct activity in multiple small groups (maximum five students).
- Sit around a table or on flat ground.

Resources required per group

- *Closing the loop on organic waste game board*, printed A3 size
- Set of *Closing the loop on organic waste game cards*
- One dice
- Individual counters – bottle top lids can be a good example of reuse when making your own counters. Organic waste icons (see Appendix 2) can be glued onto the bottle top

NOTE: Consider laminating the game board if activities will be repeated for multiple classes.

Activity instructions

Introduction

This is a game to introduce/consolidate how our unavoidable food waste can be earth-cycled to grow more food. When we reuse our food scraps in this way, we are 'closing the loop' on this waste by turning it into a new resource.

Explain the following terms to students:

- **Earth-cycling** – the natural process of transforming our food scraps and garden waste into raw materials with nutrient value and energy to grow new life
- **Composting** – a form of earth-cycling
- **Closing the loop on organics** – a method of recycling nutrients and organic matter back into the soil. For example, a carrot begins as food growing in the soil. Once it is eaten, the carrot top can be placed into a compost system. As it breaks down, it turns back into nutrients and energy for the soil to use, which can help grow more carrots
- **Resource** – something we value
- **Organic** – an item that is made from 100% natural substances
- **Unavoidable food waste** – inedible scraps from food items (e.g. banana skin)
- **Avoidable food waste** – items of food that are edible but are thrown away because of age, appearance or taste preferences, e.g. throwing away a whole banana because someone doesn't like eating them



Optional discussion questions

Think-pair-share activity

- What are some examples of avoidable food waste?
- What are some examples of unavoidable food waste?
- Where do unavoidable food waste items go when we are finished with them?

Closing the loop on organic waste game

How to play

1. Students choose a counter and place it at the start of the board.
2. Each student gets a turn to throw the dice and the highest dice throw starts.
3. Students take turns to make their way around the board.
4. If they land on an earthworm, turn over a card and answer the question correctly to move forward. (See answers in Appendix 1.)
5. Teacher to move around the class to help with correct answers.
6. The first student to throw the dice with the exact number to land on the finish square wins, **but must also answer a question card correctly at the end.**
7. Play until each student gets to the finish.

Consolidation

Play the game a second time to allow more students the chance to answer question cards.

Run a quiz with the leftover question cards between the small groups. Groups can buzz in to answer the question and tally the scores on the board.

Taking it further

Sort the avoidable and unavoidable food waste icons (Appendix 3) into the correct earth-cycling monster characters – FOGO, worms and compost (Appendix 4).

Pre-teach what worms cannot eat (citrus and onion) and what food scraps FOGO can take that are different from compost (processed foods).

Appendix 1

Answer key to question cards

1. You put your snotty tissue in this bin (FOGO) – good or bad?

Bad because snotty tissues have germs and are not wanted in a school FOGO or compost system. Place snotty tissues in your general waste bin instead.

2. You rake up a very damp pile of autumn leaves – where can they go?

In your compost bin or compost pile; they add good carbon to help with decomposition.

3. Your lunch paper bag is made of carbon so you can tear it up and put it in where?

You can put it in your compost bin or your worm farm, depending on which one has the lower carbon content.

4. You go on a picnic and have leftover crusts and orange peel – where can they go?

Your compost bin is the right place for small amounts of crusts and orange peel, unless you have a FOGO bin that accepts processed food (like bread). Worms do not like citrus and have no teeth to process bread.

5. Dad is about to add onion and orange peel to the worms – is this good or bad?

Bad because worms cannot digest citrus or onion.

6. You make a salad and have some leftover peelings. Where can they go?

In the compost bin is best. If you cut them up, the worms can also digest them.

7. You finish cleaning up a water spill with paper towels. Which bin will you throw the paper towels in?

If you have a FOGO bin, the paper towel can go in there or you can tear it up and add it to your compost bin as a carbon source.

8. You go on holiday and leave your worm farm in the sun with no water. Is this good or bad?

Bad – worms need moist, dark and cool settings to survive – they breathe through their skin so can easily die in the heat with no water.

9. You throw away a whole apple in the compost bin, including the sticker. Is this good or bad?

Bad – the sticker is plastic so it will not break down in the compost bin and a whole apple is better eaten by you! If it is bruised then cut it up and place it in the compost.

10. Cardboard and shredded paper make great bedding for chooks. Where else can we put these items?

They provide carbon for both compost and worm farms and are great bedding for guinea pigs too.

11. Your mushed fruit scraps have gone mouldy in your worm farm. What could be the problem?

You may have overfed them and they are unable to digest all the food.

12. Can you put meat bones and processed foods in your compost bin?

No, this is not ideal as these items can attract rats.

13. When chooks poop and scratch up the soil, this helps to make good compost. True or false?

True – chook poop and scratchings provide nitrogen and food for the micro-organisms so are good to add to the compost heap. Remember to add this in small amounts to maintain the carbon to nitrogen balance (3:1).

14. It is good to crush eggshells for earthworms because they have no teeth. True or false?

True – they have no teeth. Crushed egg shell helps earthworms digest their food as it sits in their gizzard and the shell grit breaks the food down.

15. A good compost bin needs water and aeration as well as green (nitrogen) and brown (carbon) food sources. True or false?

True – compost needs to be stirred which provides the air, and needs to be damp like a wrung out sponge. It also needs the nitrogen and carbon food sources to attract the compost creatures and good bacteria that help turn these foods into rich compost.

16. You can feed your chooks a variety of meat and dairy. True or false?

False – chooks may eat some of these products, but this food does not provide a balanced diet for them.

17. Red wigglers are composting worms that can live in ordinary soil too. True or false?

False – generally they cannot live in ordinary soil as they thrive in moist organic matter, near the surface.

18. Items that can be composted are carbon and nitrogen based. Are grass clippings one of these?

Yes, grass clippings can be both carbon and nitrogen rich, dependent on how green or brown they are.

Appendix 2

Organic waste icons for game counters



Appendix 3

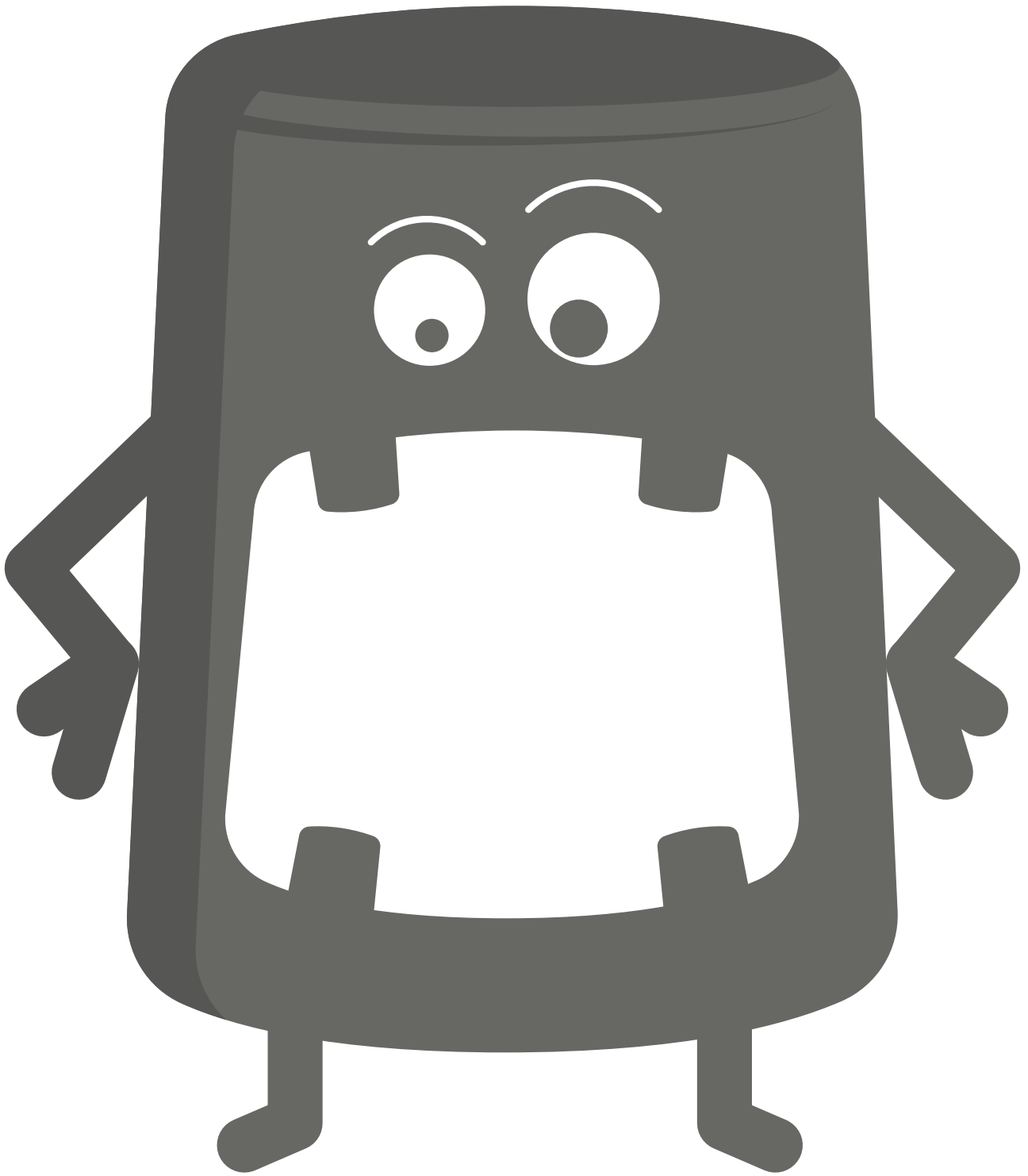
WasteSorted Schools Food & Organic Waste Icons to use when sorting items into earth-cycle bins



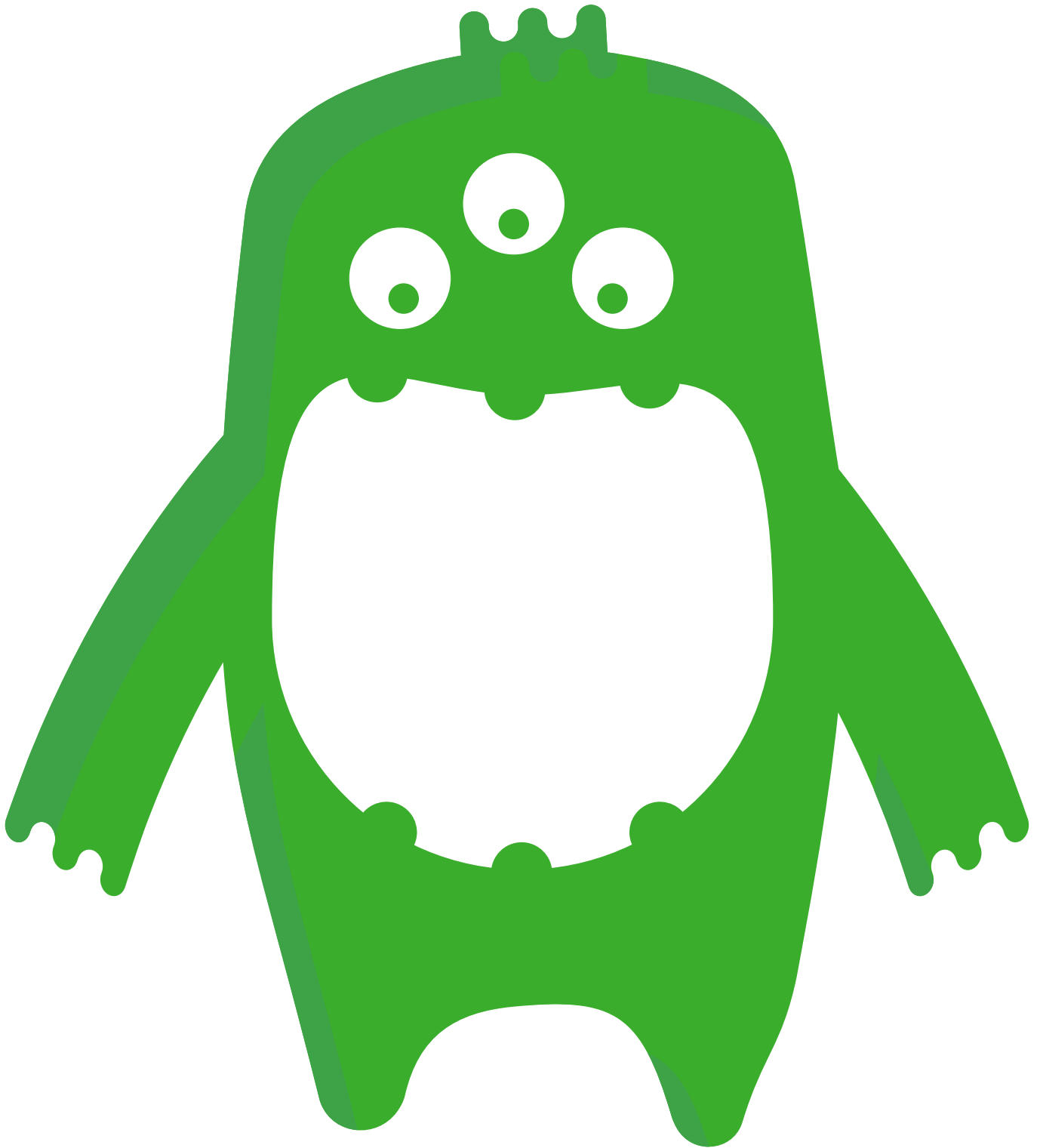
Appendix 4

WasteSorted Schools earth-cycle bin characters

On the following three pages.

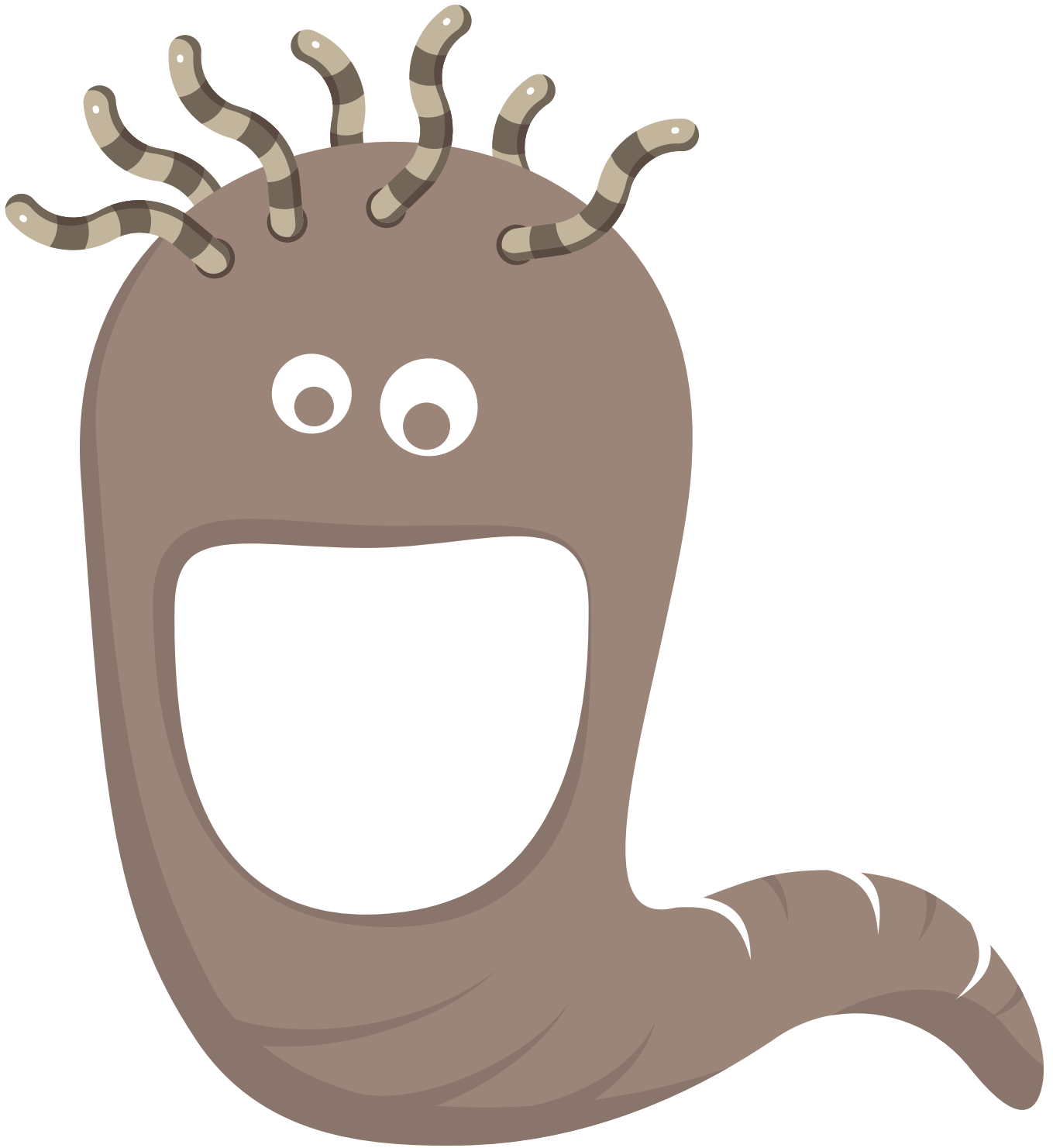


**Feed me your fruit
and veggie scraps.**



**What you don't chew,
I do.**





**We snack on your fruit
and veggie scraps.**



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