

WHAT DOES AN EARTHWORM DO?

Key information:

An earthworm can be replaced with any other animal that the children are able to observe at first hand, for example, a bee, woodlouse, beetle or caterpillar.

You should adapt the activities accordingly, with a focus on how the particular animal looks and behaves – see Science Photos 9–12 to help with this.

ACTIVITY SUMMARY:

Children learn about how earthworms move, what they eat and about their habitat through close up, first hand observation, asking their own questions and collecting evidence to answer them. The focus should be firmly on observable features and behaviour. Children explore the natural habitat of earthworms in the school grounds and also build or use a wormery where they can observe the earthworms above and below ground. It can take up to two weeks to see any changes in the wormery, and up to a year to see the soil created by the worms forming at the bottom of the wormery.

Learning intention:

Children can talk to an adult about what earthworms are like and what they do.

EYFS cross curricular links:

- Physical development: Movement – Can you move like an earthworm?
- Expressive arts and design: Observational drawing – Can you use the magnifying glass to look carefully at an earthworm and draw what you see?

RESOURCES (FOR FOCUS ACTIVITY):

- Wormery: this can be made from a clip top bin or purchased specifically from a specialist provider, such as www.greenfingers.com or www.wiggos.com.
- Clear container in which to layer sand, soil and leaf litter.
- Kitchen waste: a list of dos and don'ts for wormeries can be found on many websites, such as www.wormcity.co.uk.
- Earthworms: best sourced from your local area but can be purchased from several places, such as www.wormsdirectuk.co.uk.

RESOURCES (FOR INDEPENDENT ACTIVITIES):

Magnifying glasses (plastic), containers to view earthworms, Science Photos 1–8, Resource sheet (Word bank), non-fiction books.

EXPLORE:

Display the Story slideshow and play the story to the children. Ask them to describe the earthworm Billy is holding. Do they notice the rings?

Ask: *Are there any clues to show where it might live?*

Ask them to talk to their friends about a time when they have seen an earthworm. Where did they find it? What did it look like? How did it move? Did it have eyes? Did it have a tail?

Ask: *Does anyone know what earthworms eat? Is it good to have earthworms in a vegetable patch? What or who would help us to find out?*

Take the children on an 'earthworm hunt' to look at earthworms in their natural habitat. Ask them where they think the best place will be to find earthworms. Were they right?

ENQUIRE (FOR FOCUS ACTIVITY):

As a class, spend time looking closely at an earthworm. Encourage children to touch it, hold it and observe it. Ask the children what they notice. Tell them that the 'rings' are the separate 'segments' of an earthworm and that the 'lump' in the middle is called a 'saddle'. Ask them if they can tell which end is which.

Set up a wormery that can be added to over time, somewhere in the outdoor area. This may be a part of the wider school garden. Visit the wormery regularly throughout the rest of the year to observe what is happening. Take photos that the children can use to retell the story of their wormery. Encourage them to notice how the earthworms are mixing the garden soil and kitchen waste together.

Health and safety:

Be Safe!, page 14 (composting), pages 20–21 (safe animal handling)

Key information:

Charles Darwin described earthworms as ‘nature’s ploughs’ because of the way that their activity causes soil layers and organic matter to mix. The mixing improves the fertility of the soil by allowing the organic matter to be dispersed through the soil and the nutrients held in it to become available to bacteria, fungi and plants.

While building the wormery, and in the first few days afterwards, focus on observing what earthworms do.

Ask: *Where in the soil do earthworms live? What else lives there? How is the earthworm like other animals that live in the garden? How is it different? Can earthworms see in the dark? What animals might eat an earthworm?* (You can introduce the term predator if appropriate.)

Encourage children to think of their own questions about earthworms.

In the short term, layering sand, compost and leaf litter in a see-through tank and introducing some worms will enable the children to see the ‘mixing’ in action.

Encourage the children to return to the wormery regularly over the next months and to talk about what they observe happening. Can they answer their own questions now?

ENQUIRE (FOR INDEPENDENT ACTIVITIES):

Sand tray: What animals live in the soil? Use small toys of animals that might live in the soil and add compost and leaves. Encourage children to move the animals through the soil and to talk about what else might live there.

Interactive display of the wormery: What is happening in the wormery? Place the clear-sided, layered wormery in an area that the children can access all the time. Make available a camera or tablet, drawing equipment, non-fiction books and magnifying glasses.

Malleable materials: Can you make an earthworm? Can you make the longest / shortest / fattest / thinnest earthworm? Can you make it wriggle?

Writing area: Can you write about the wormery? Cut out the word bank cards from the Resource sheet. Science Photos 1–8 can also be displayed. Encourage children to use them to write about how to make a wormery. Ask them to make labels for the wormery.

REFLECT AND REVIEW:

Spend time looking at the wormery over subsequent weeks with small groups of children. Talk about how the earthworms are moving. Show them a photo of what the wormery looked like at the start of the activity.

Ask: *What is different? What is the same? What have the earthworms been doing?*

EVIDENCE OF LEARNING:

Listen to children’s descriptions of how an earthworm moves and what it does. In the short term, children should be able to talk about how an earthworm wriggles through the soil, that it eats leaf litter, that an earthworm feels soft, slimy or silky, and that some birds and moles like to eat them. In the longer term, children may also be able to talk about how worms are helpful to gardeners as they mix up the soil.

SCIENCE AT HOME:

Can they find an earthworm on their way home from school? Can they find an earthworm in their garden or in a local park? If they have a compost heap can they see any earthworms in it? Can they tell their parents or carers what earthworms do? Can they hold an earthworm charming championship with their family? Information on how to run one can be found in the ‘free packs’ section, under the ‘muddy good fun’ link at www.naturedetectives.org.uk.

WHAT DOES AN EARTHWORM DO?

Cut out the cards along the dotted lines. Use the cards to help you write about a wormery.



Wriggle



Earthworm



Soil



Mix



Leaves



Segments



Compost



Saddle



Worm charming



Garden waste



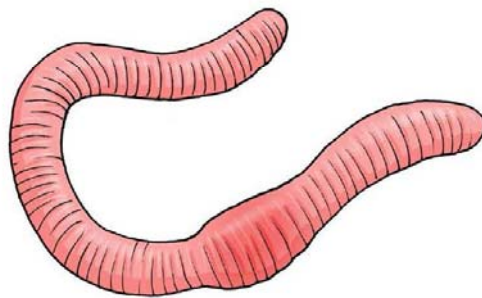
Wormery



Kitchen waste



What does an earthworm do?



1 / 6



Billy found a wriggly earthworm.



2 / 6



Billy carefully picked it up.



3 / 6



Billy looked at it closely.



4 / 6



Billy wondered where the earthworm lived.
Do you have any ideas?



5 / 6



What does an earthworm do?



6 / 6



EARTHWORM

①



D. Kucharski K. Kucharska/Shutterstock

SADDLE OF AN EARTHWORM

②



Sarah2/Shutterstock

COMPOST

3



Atelier_A/Shutterstock

WORMERY

1



Dorling Kindersley Ltd/Alamy

SOIL

5



Madlen/Shutterstock

LEAVES

6



Uroš Medved/Shutterstock

GARDEN WASTE

⑦



Simone Andress/Shutterstock

KITCHEN WASTE

⑧



Ulrich Mueller/Shutterstock

BEE

1



Peter Waters/Shutterstock

WOODLOUSE

10



Martin Pot/Shutterstock

BEEBLE

11



irin-k/Shutterstock

CATERPILLAR

12



Potapov Alexander/Shutterstock

WHAT HAPPENS WHEN YOU MIX IT?

Key information:

The term 'material' is used in this context as a name for everything that is to be mixed, whether solid, liquid or gas, as a pretext to learning in Key Stages 1 and 2 about properties and states of materials.

Health and safety:

Be Safe!, pages 8, 9 and 34 (avoiding putting substances or small objects in the mouth)

ACTIVITY SUMMARY:

This activity generates a wide range of opportunities for children to observe and talk about what happens when they mix different dry and wet materials together. The act of mixing and the changes that occur during the mixing process are the focus of this activity rather than the achievement of a particular final mixture. Scientific language related to the changes that occur should be encouraged, including descriptive and comparative vocabulary about how something looks, feels and smells.

Learning intention:

Children can use comparative and descriptive language to talk about what they notice when they mix two or more materials together.

EYFS cross curricular links:

- Expressive arts and design: Painting – Can you mix different colours? What happens when you add white? What happens when you add black? What happens when you add water? What happens when the paint is too runny or too thick?
- Mathematics: Capacity – Which container holds the most? Which container holds the least? Investigate the capacity of different containers.

RESOURCES (FOR FOCUS ACTIVITY):

- Range of dry and wet materials, for example, poster paint, powder paint, flour, mud, sand, salt, glitter, cooking oil, sugar, water, pebbles, sawdust, cooked pasta, dry pasta, washing-up liquid, porridge oats. Children should be encouraged to add their own ideas to this list and may wish to include leaves, twigs, grass, etc. if working outside.
- Range of mixing containers of different sizes and shapes, for example, plastic bowls, plates, buckets.
- Range of mixing implements, for example, wooden spoons, sticks, metal spoons, hand whisks, forks.
- Range of measuring tools, for example, scales, spoons and scoops.
- Aprons, coveralls, table coverings as appropriate.

RESOURCES (FOR INDEPENDENT ACTIVITIES):

Several of the materials, mixing containers and tools used for the focus activity can be reused for the independent activities.

Sieves, measuring cylinders, plastic tweezers, trays, writing materials, magnifying glasses, Resource sheet 1 (Mix or Miss game).

EXPLORE:

Display the Story slideshow and play the story to the children. Ask them to describe what is happening in Billy and Rubina's bowl.

Ask: *What do you think will happen next?*

Show the slide of Rubina, Jamil and Eliza.

Ask: *What will happen when they mix it?*

Demonstrate to the group mixing water and washing-up liquid with a whisk.

Ask: *What can you see? What is happening?*

Add some oil.

Ask: *What is happening now? What happens when we mix it? What happens when we stop mixing?*

Ask them to talk to their friends about a time when they have mixed two materials. Why did they mix them? Did they use a spoon, or a fork? Or something else? What did they mix them in? Was it suitable? Why not? How did the mixture feel? Was it hard or stiff? Was it soft or sloppy? What happened to the materials?

ENQUIRE (FOR FOCUS ACTIVITY):

Share the range of materials with the children and explain to them that some materials are wet and some are dry. Do they know which is which? Ask them to think of words to describe the difference between wet and dry materials. Ask the children to help you sort the materials into wet and dry groups.

Tell the children to choose two materials they want to mix together. Encourage them to select their own equipment and materials. Allow them to measure the materials if they wish to do so and to mix with their hands rather than with a mixing tool if they prefer.

Encourage the children to describe what they notice.

Ask: *What is happening? What does the mixture feel like? What does it smell like? What does it look like?*

Tell them to pick a third material to add to their mixture. What do they think will happen now? If they have only used dry or wet materials until this point, suggest that they try adding a material from the other group.

Encourage the children to look closely each time a new material is added and to notice how their mixture changes. Ask them what might happen if they add more of the same material. What if they had added less? What if they stirred less or more? What happens when they stop stirring?

ENQUIRE (FOR INDEPENDENT ACTIVITIES):

Mud kitchen: Can you make a mix for a mud pie? Can you make a mix for a mud milkshake?

Writing area: Can you write or draw a list of what you need for your mix?

Role play, Chemistry lab testing station: Can you mix like a chemist? (Remind the children that they may have seen the CBeebies TV programme *Nina and the Neurons*.) Make available a range of mixing equipment for the children to use independently. Include measuring cylinders, jugs, plastic tweezers and mainly dry materials. Also, a range of sieves and trays to allow them to start to separate mixes that they make.

Sand tray: What happens when you mix? Keep the focus on mixing materials together, but change the materials, utensils and containers available each day for a week. Include, for example, pebbles, shavings, shredded paper or marbles to be mixed with sand.

Water tray: What happens when you mix? Keep the focus on practising mixing and looking at the consistency of materials, but change the materials, utensils and containers available each day for a week. Include, for example, Gelli Baff, fake snow, shaving foam or bubbles to be mixed with water.

Mix or Miss game: Children play this game in pairs using the cards cut from Resource sheet 1.

REFLECT AND REVIEW:

Ask the children to describe what happened when they made their mixture and to give the mixture a name.

EVIDENCE OF LEARNING:

Notice the language that children use to talk about their mixtures. Do they refer to materials mixing, being wet or dry and changing? How do they describe what happens when they mix materials together? Do they talk about changes in texture, stiffness, consistency? Observe the children's use and manipulation of tools. Are they able to handle tools with confidence and accuracy?

SCIENCE AT HOME:

What can they mix at home? Can they invent a new mixture with their family? Can they make a yummy mixture to eat? Can they tell you one way that they have seen a grown up make a mixture at home? Can they make a milkshake for their family? Give the children the simple recipe (Resource sheet 2) to take home, and encourage them to investigate what happens with different fruit and other ingredients.

WHAT HAPPENS WHEN YOU MIX IT?

Cut out the cards along the dotted lines. Place them face down to play Mix or Miss.

Turn over one card and say the name of the material. Is it wet or dry? Turn over a second card. Is that wet or dry? What would happen if they were mixed together?



Milk



Cornflakes



Water



Marbles



Sand



Pebbles





Washing-up liquid



Tomato sauce



Sugar



Dry pasta



Mud



Cooking oil



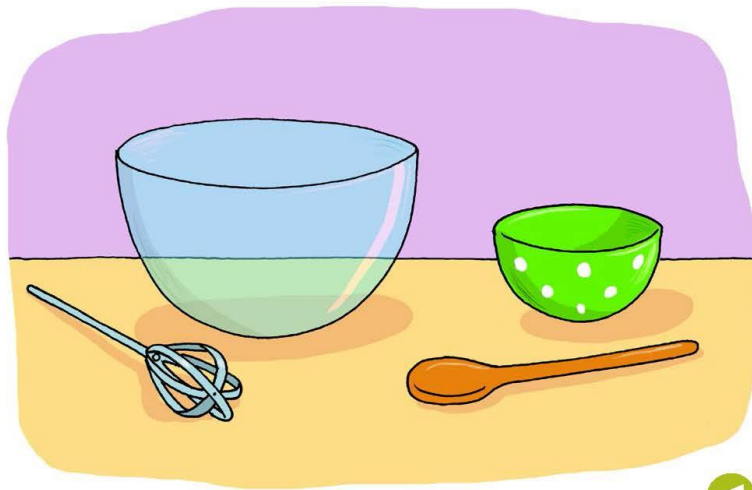
Flour



Leaves



What happens when you mix it?



1 / 6



Billy and Rubina are mixing.



2 / 6



Rubina has a turn.



3 / 6



Jamil and Eliza are mixing outside.



4 / 6



Rubina wants to add washing-up liquid to Jamil and Eliza's mixture.



5 / 6



What happens when you mix it?



6 / 6



MIXING BOWL

①



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WOODEN SPOON

②



Bernd Schmidt/Shutterstock

MEASURING JUG

3



M.Unal Ozmen/Shutterstock

WATER

4



Coprid/Shutterstock

COOKING OIL

5



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FLOUR

6



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WASHING-UP LIQUID

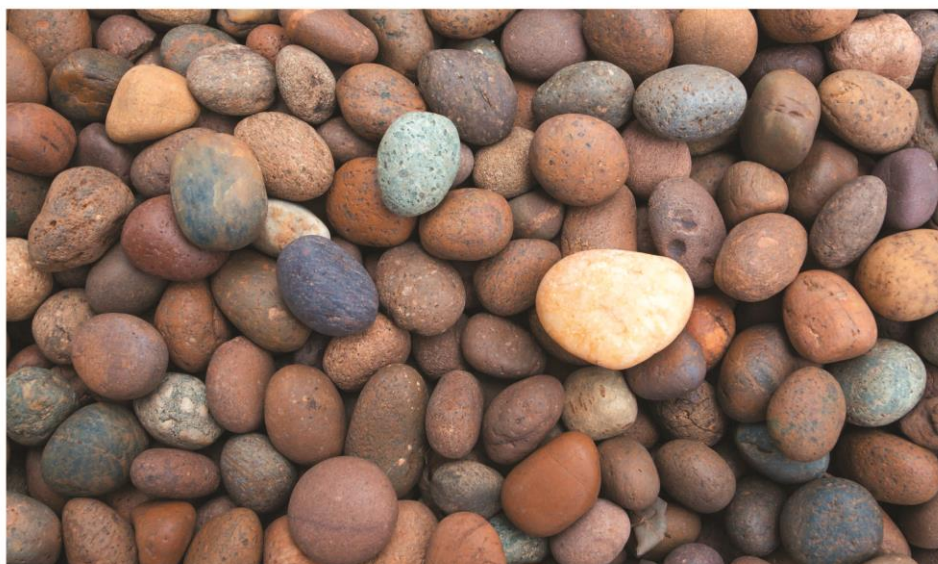
7



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PEBBLES

8



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GLITTER

9



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DRY PASTA

10



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