

materials

Materials and the environment

Lesson at a glance

Hold up a leaf, paper scrap, foil and plastic wrapper and take quick hands-up guesses about which would still be there after weeks in soil. Teach rot only, then groups predict on the Investigation Journal page and bury equal pieces at the same depth in soil trays, labelling each spot and agreeing a class dig-up plan for 3–4 weeks later. Use the sorting-tree interactive to place eight everyday materials into rot, reuse/recycle or lasting waste, sort two or three new classroom finds into the journal table, and finish with one practical kinder swap written under Our kinder swap.

Learning objectives

- Sort everyday materials by their potential impact on the environment
- Set up a buried-sample observation of whether materials rot
- Propose one practical swap to a kinder material and say why it helps

Before the bell: prep

Day before: cut four equal-sized samples per group (leaf, paper, foil, plastic wrapper), print the Investigation Journal page, and set soil trays (or one shared tray/outdoor patch with group strips). Ready labels, craft-stick markers and reusable non-latex gloves. Keep spare offcuts for Step 5 (pencil stub, cling film, rubber band, cotton wool, yoghurt-pot piece).

**Materials**

Item	Qty	Per	Source	Low-cost substitute
leaf samples (similar size pieces)	1	group	outdoors	torn green garden waste from the school grounds
paper samples (similar size pieces)	1	group	classroom	scrap worksheet paper
aluminium foil samples (similar size pieces)	1	group	supermarket	clean foil from lunch wraps brought from home
plastic wrapper samples (similar size pieces)	1	group	classroom	clean crisp or biscuit wrappers from home
shallow soil tray with damp soil	1	group	school kit	one or two shared class trays, or one shared outdoor soil patch with marked group strips
reusable non-latex gloves (preferred) or thorough handwashing station	1	pupil	school kit	single-use non-latex gloves only when reusable gloves are not available and soil work needs a barrier
craft sticks or waterproof labels	4	group	classroom	lollipop sticks or folded card flags on cocktail sticks
optional teacher-display samples for the board sort (cardboard scrap, clean plastic bottle piece, cotton cloth scrap; safe glass jar or picture card only)	1	class	classroom	IWB sorting-tree cards alone: no physical display samples needed
new classroom finds for consolidation sort (e.g. wooden pencil stub, clean cling-film scrap, rubber band or eraser, cotton wool ball, clean yoghurt-pot piece)	2	group	classroom	photo cards of the same everyday classroom items
Investigation Journal page	1	pupil	provided printable	ruled page with: (1) four predict lines, (2) fair-test/dig-up notes, (3) a small table for new finds, (4) reverse-page stems for one kinder swap



Safety watch-point

Gloves on for all soil work (or thorough handwashing if gloves are short); wash hands after; no tasting; no glass in pupils' hands; return any outdoor minibeasts gently.

Teaching moves

- **Getting Started:** Hold each sample up once and take a hands-up guess only. Do not bury yet and do not settle answers. Ask which might change first and which might still look almost the same, then move on.
- **What does rot mean?:** Project only the short rot line and the oak-leaf example. Hold environmental impact and kinder swap for later steps so the three terms do not blur. Frame predictions as change a lot / a little / hardly at all. Do not promise the leaf will be gone at first dig-up.
- **Bury samples and start watching:** Time-box tightly: ~3 min predictions at desks with gloves off, ~7–8 min glove-up bury and label, ~2 min whole-class dig-up plan on the board. Insist on same size and same depth; once buried, samples stay closed. If trays are short, use the shared-tray front model and send two pupils per group forward in turn. Pupils copy the single class check-back plan into the dig-up plan lines on their journal page.
- **Sort by environmental impact:** Name environmental impact, then open the sorting-tree interactive and reveal one card at a time. Drive the two branch questions: can soil living things break it down fairly easily, then can people reuse or recycle it well. When paper, cardboard or cotton land under rot, briefly say the tree gives one main group for clean comparison even though those materials can still be recycled at home. Leave the three group names up for the next step; do not have pupils copy all eight cards.
- **Tricky finds and hard choices:** Hand each group 2–3 new finds not on the board cards: no glass in pupils' hands. Groups sort on the desk and fill the journal table (material, group, one reason) in about 4–5 minutes. Take only two or three tricky placements to the floor and ask what evidence they used.
- **One kinder swap:** Introduce kinder material swap with the lunchbox-vs-throwaway-bag example. Groups pick one swap the class could really try and complete the three printed stems under Our kinder swap. Share two or three only; skip a whole-class vote if it would crowd out the written page.
- **What you covered:** Pack away with gloves off, hands washed and trays covered or the outdoor patch tidy. Re-state the dig-up date, photograph-beside-ruler rule, and a lot / a little / hardly at all comparison so the buried set-up stays live class evidence, not a finished answer.



What it should show

Over weeks, leaf and paper should soften, fray or shrink first; foil and plastic should look almost the same: full breakdown is slow in a cool Irish tray, so edge-softening still counts as change. On the sort, leaf/paper/cardboard/cotton land under rots fairly easily; foil, glass and bottles under reuse/recycle well; thin wrappers under lasting waste. A strong kinder swap names a real job (lunch, drink, bag) and why it cuts lasting waste. Odd bury results usually mean unequal size or depth: recheck labels before blaming the material.



Misconceptions & interventions

- **Anything we bury just vanishes into the ground.** Retell rot as living things in the soil breaking some materials down so they can become part of the soil again; hold up foil or plastic and say these hardly change, which is why lasting waste piles up.
- **Natural always means kind, and every plastic is the worst choice.** Point at the sorting tree: we sort by whether it rots, whether it reuses/recycles well, and lasting harm. A reusable plastic bottle can beat a throwaway 'natural' wrap for the same job.
- **Paper and cardboard can't go under rot because we recycle them at home.** When those cards land under rots fairly easily, say the tree gives each material one main impact group so the class can compare cleanly; in real life they can still go in the recycle stream.



Differentiation

Emerging	Developing	Proficient
• Give predict stems such as "I think the ____ will rot because..." and pair at the teacher table for bury and label. • Offer the shared-tray route so only two pupils per group handle soil while others check same size and depth.	• Ask groups to name one fair-test rule they kept the same on the evidence lines. • Prompt one journal reason that separates reuse from rotting for a tricky find.	• Ask what would go wrong if one group's plastic piece were half the size of the others. • Early finishers challenge one board placement they still disagree with and say what evidence would change their mind.



Cross-curricular hook

Link to green and brown bin sorting at home and litter on a familiar local park or beach when debating lasting waste.

