

<p>Science context Synoptic</p> <p>HSW Assessing risk, making observations and carry out group work</p> <p>Mathematics Geometry and measures</p> <p>Where? In and around the school grounds</p> <p>Time 60 min</p>	<p>The egg box</p> <p>Lesson summary This activity focuses on developing group work and working in the outdoors with pupils for the first time. Pupils will be asked to find one object that they consider is a good example for each of the six categories.</p> <p>Cognitive potential This lesson is synoptic in nature, in that it incorporates a range of scientific topics, which can be used to review a pupil's general science knowledge and ability to link scientific principles together. As this lesson may be the first exposure that pupils have to working in science outdoors, the main objective is to encourage safe and effective use of the outdoors, which engages the pupils in active learning, encourages discussion and promotes group work and Cognitive Acceleration.</p> <p>Central theme and skills Synoptic activity – considering a range of science topics Assess risk and work safely in the field; make observations; and carry out group practical work</p> <p>Key resources Egg box with numbered compartments (one per group) Paper and pens</p> <hr/> <p>Setting the scene (10mins) Divide the class into the newly established 'outdoor' groups of threes or fours. Ask the groups to write a list of rules for successful group work. Ask the groups to share some of their thoughts. If you record these on the board you will probably find that they can be split into two separate groups: rules for working safely (e.g. don't run, only go where you are allowed) and rules to support the best group work outcome (e.g. listen to one another, have a role). The first group of rules are important in that the pupils have highlighted themselves, and therefore have illustrated their knowledge of expectations outside. Probing individuals to explain how they might best achieve rules from their second list encourages pupils to consider group roles.</p> <p>Give each group an egg box and the list of categories. Explain the group's task is to decide on the best example from outside to fit each category. With the activity in mind, ask pupils to reflect again on their rules for group work. Suggested categories:</p> <ol style="list-style-type: none"> 1. Something non-living 2. An insulator and a conductor 3. Something where a chemical reaction is taking place 4. Something which is not biodegradable 5. Something which shows an inherited characteristic 6. A solid, a liquid and a gas
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Observations outside (15mins)

Groups should be given a stop clock set to alarm following the allocated time period, and a designated gathering space within the school grounds. Invisible boundaries should also be set. Groups then collect examples of materials for each category. Moving between the groups, questions should be asked to challenge example choices; why is x a better example than y; what scientific processes can you 'observe' in that example; if you could fit a perfect example into the category what would it be?

Sharing ideas and provoking conflict (15-20mins)

Have six sheets laid out with one science category from the egg box list. Each group puts their "items" on to the different sheets. The different groups look in detail at the range of items selected to represent the categories and answer the following questions:

- What questions do you have about other group's choices?
- What is the same and what is different about group's choices?
- Which of the items best reflect the category and why?
- Are there any choices which you are uncertain about?
- Which three things would you like to find out more about and why?
- If you could go beyond the school grounds what else could you add to your collection?

Groups can be asked to explain their decisions. They might be challenged to reconsider the science process they considered to be taking place.

Linking ideas together (15-20mins)

What kinds of things have you been talking about and thinking about today?

What did you find challenging?

Ask pupils to reconsider their group work rules. **What was their role in their group? Do they think they worked well as a group? What other rules could help the group to be more successful outside next time?** These should be recorded.

Mathematical plug-ins

Below is a list of possible mathematical categories.

1. A regular shape with an even number of lines of symmetry (e.g. something square or hexagonal)
2. A quadrilateral with exactly one pair of parallel lines (e.g. something that's a trapezium, maybe a roof)
3. Congruent tessellating shapes (e.g. equal sided tiling)
4. A shape with too many rotational symmetries to count (e.g. anything circular, use this to bring up the idea of infinity in later discussion)
5. Mathematically 'similar shapes' (e.g. a whole window compared to one of its four panes)
6. Something with a small volume and a big surface area (e.g. a leaf)

