Key Stage 3 – Adapt or extinct?

Notes for teachers

At a glance

Finding ways for people and wildlife to co-exist can be tricky, especially if the wildlife is bigger than a typical car. The large size of an elephant means they need to roam over large areas to find food, water and refuge. Researchers studying elephants in Mali, are looking at how elephants and humans adapt in order to co-exist.

Learning Outcomes

1. Recap ecosystem knowledge and describe common resources that organisms compete for

2. Determine how organisms can adapt, particularly to their environment

3. Apply adaptation to extinction and co-existence

Each student will need

- Key Stage 3 – Adapt or extinct? activity sheet.

- Prior knowledge: Students are expected to already understand what is meant by an ecosystem and how to use words such as community, habitat and co-exist in context. (See Oxford Sparks teacher resources on ecosystems and conserving nature.)

https://www.oxfordsparks.ox.ac.uk/content/protecting-elephants-protecting-humans
Possible Lesson Activities

1. **Starter activity:** Recap ecosystem knowledge and describe common resources that organisms compete for

   - *Think, pair, share.* This starter gets students to recall knowledge of ecosystems needed for the lesson. Present the students with the following words and ask them to take a minute to silently *think* about what each one means, then to *pair* with the student next to them and *share* what they thought:
     - **Ecosystem** [Plants and animals (organisms), living in a particular location]
     - **Community** [Particular organisms in an ecosystem. Eg insects, fish, plants]
     - **Habitat** [The particular place that the community lives in. Eg a tree, pond, ocean]
     - **Co-exist** [When different organisms live together in a habitat. Eg birds, bees and bacteria living on a single tree]

   - Once the students have recapped their ecosystem knowledge, cold call students to feed back to the class what they recalled.

   - Get the students to build on their knowledge by asking what it means for animals to *compete* in an ecosystem. You can prompt them by scaffolding with further questions such as “What might two birds compete for?”, “Do birds take part in the Olympics?”, “What does a bird need?”, “Why might birds compete”.
     - Organisms compete in a habitat when there is a limited resources and space. For example, animals can compete for: water, food, space, or mates for reproduction. If unfortunate, an animal may compete for all of them. Plants will not compete for mates or food, but will compete for light and minerals.

   - To lead onto the main activity, briefly introduce the class to the thought that some organisms are more successful at competing than other. “Why is that?”

2. **Main activity:** Determine how organisms can adapt, particularly to their environment

   - When competing for resources, organisms *adapt* to become more successful at getting their resources. Examples include: camels having humps for storing water in a dry habitat, cheetahs being capable of running fast to catch prey, and the roots of a plant spreading out to collect water from a large area. Adaptions are the characteristics that allow an organism to be successful in competition.

   - As a class discussion, ask the students if the following are adaptations or not:
     - A baboon’s bright red backside? [It could be to sit on, or it could be to attract a mate.]
     - The stripes on a zebra? [It certainly doesn’t look like camouflage and research has suggested the black and white stripes could be to regulate temperature.]

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3. Plenary: Apply adaptation to extinction and co-existence

- This plenary is to get students thinking about the importance of humans adapting to other organisms in an ecosystem. Start by explaining extinction in the context of the lesson.
  - If an organism is unable to adapt, then it runs the risk of dying before reproducing. When all of a particular organism has died and there isn’t any of them left in the world at all, then that organism is **extinct**.
  - As explained in the animation humans can pose a threat to elephants, despite the elephants adapting their migration to urbanisation, conflict and farming. Other factors that can cause extinction includes disease and new competition.

- The research group at Oxford are looking at how humans and elephants can co-exist and stop extinction from occurring. Writing on different coloured sticky notes, ask students to answer the following based on what they learnt from the video (they can use as many sticky notes as they need!):
  - “How could an elephant adapt to humans?”
  - “How could humans adapt to elephants?”

- CHALLENGE students to use keywords from the lesson, such as biotic, extinct and habitat.

- Once they have written their answers, they can stick them on the whiteboard and compare their answers with other students.

https://www.oxfordsparks.ox.ac.uk/content/protecting-elephants-protecting-humans
Web links

- Oxford Sparks animation on Protecting elephants, protecting humans: https://www.oxfordsparks.ox.ac.uk/content/protecting-elephants-protecting-humans
- Oxford Sparks teacher resources on ecosystems and conserving nature: https://www.oxfordsparks.ox.ac.uk/content/conserving-nature—it’s-not-just-about-animals
- UCLA article “Why do zebras have stripes?”: http://newsroom.ucla.edu/releases/why-do-zebras-have-stripes
- Mali elephant project website (the group behind the research): https://www.wild.org/mali-elephants/