Unit – Animals' Needs For Survival

How can animals be grouped based on their needs for survival? (Identifying & Classifying)

Knowledge Progression

-Find out about and describe the basic needs of animals, including humans, for survival (water, food and air).

Skill Progression

-Asking simple questions and recognising that they can be answered in different ways
-Identifying and classifying
-Using their observations and ideas to suggest answers to questions
-Gathering and recording data to help in answering questions

Key Learning

-know that all animals (mammals, birds, fish, amphibians, reptiles) need **air, water, food and shelter to survive**
-Amphibians **live on land and in water**
-Amphibians **do not have scales on their bodies**.
-Reptiles **need direct heat to survive**
-Fish have **gills that they use to breathe**.
-Reptiles have **dry scales on their bodies**
-A **mammal has fur or hair** on its body
-Humans are mammals.

Vocabulary

-mammal, fur, carnivore, herbivore, omnivore
-bird: feathers, beak, insect, wing
-fish: scales, gills, fin
-amphibian: webbed feet, frog, toad, newt
-reptile: scales, carnivore, herbivore, omnivore
-mammal: adult, baby, shelter

Misconceptions

-humans are not animals
-insects are not animals
-all 'bugs' or 'creepy crawlies', such as spiders and worms, are part of the insect group
-amphibians and reptiles are the same.
-Children may think that all mammals live on land. Discuss whales and dolphins to help address this misconception.
-Children may use the term "fish" to describe all animals that live in water.
-Children may think that fish do not breathe because they live underwater.
-When grouping, children may sort animals into mammals, fish and birds rather than on their needs for survival.
-Children may think that amphibians have scales or gills like fish.
-Children may think that all reptiles are small.

-Children may think that reptiles do not live in the United Kingdom.

Prior Knowledge

-In Year 1, children identified familiar mammals and described their basic structure. In this small step, children build on their knowledge as they explore mammals' needs for survival.
-They will need to recap the terms "carnivore", "omnivore" and "herbivore" so they can differentiate between different dietary requirements

Future Learning

-Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food. (Y2 - Living things and their habitats)
-Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals. (Y6 - Living things and their habitats)
-Give reasons for classifying plants and animals based on specific characteristics. (Y6 - Living things and their habitats)

Possible Activities/Evidence

-Ask children to put images or small figures of mammals into groups, based on different categories, such as dietary requirements, whether they inhabit land or sea, or where they would find shelter.
• Create an area within the school grounds to provide food and water for a range of mammals. Whilst creating this area, children should explain why and how this area helps local mammals meet their needs for survival.
• Invite a local vet into class, or arrange an online meeting, to discuss a range of mammals' needs for survival and identify whether their needs are similar or different.

-Carry out a bird spotting survey in the local area. Children can identify and count the number of birds they spot. This could be repeated in different seasons to see if there are any patterns or trends in data.
• Create bird feeders to hang in the school grounds to help birds to survive in colder months. Encourage children to discuss why the bird feeder will help birds meet their needs for survival.

-Provide a whole fish for children to explore up close. Children can find and identify its fins, scales and gills. They could use hand lenses to observe the fish closely, then draw and label any findings.
• Use large hoops to sort and group images or small figures of fish, birds and mammals based on their needs for survival. Children should be encouraged to group the animals in more than one way

• Create a mini-pond to help children further understand amphibians' needs for survival. Put some rocks, pebbles and sticks in a container. Fill the container with water and observe the mini-pond over time to see if it attracts any amphibians. Ensure children are discussing why the mini-pond will meet the needs of amphibians.
• Continue to sort and group images or small figures of amphibians, fish, birds and mammals based on their needs for survival.

-Children continue to sort and group images or small figures of amphibians, fish, birds, mammals and reptiles based on their needs for survival.
• Play games with children to help them identify animals and their needs for survival. One child thinks of an animal but keeps it secret from others playing. The other children must guess the animal they are thinking of by asking yes/no questions about the animal's characteristics and needs for survival.

Invite a parent with a baby into class. Allow children to ask questions to help them further understand the baby's needs for survival. • Children could present their answers to the enquiry question in a range of ways. Suggestions are given below. • Create a pop-up museum in the classroom where children can present their understanding about animals' needs for survival. • Create a "vet's area" within the classroom where children can help to take care of animals. Children could identify the animal, the animal group, its needs for survival and what need is not being met. A doctor's area could also be created where children can learn about caring for humans.

MCQs

MCQ 1: Which things do all animals need to survive?
(Select all that apply.)
☐ Air
☐ Water
☐ Food
☐ Shelter
☐ Toys
Correct answers:
☑ Air
☑ Water
☑ Food
☑ Shelter
Follow-up discussion questions
- Why do all animals need these things?
- Can different animals meet these needs in different ways?

MCQ 2: Which statements about animal groups are correct?
(Select all that apply.)
☐ Humans are mammals.
☐ Fish breathe using gills.
☐ Amphibians have dry scales.
☐ Mammals have fur or hair.
Correct answers:
☑ Humans are mammals.
☑ Fish breathe using gills.
☑ Mammals have fur or hair.
Follow-up discussion questions
- Why might someone think humans are not animals?
- How are amphibians different from reptiles?

MCQ 3: A frog lives in a pond and also on land. Which group does it belong to?
A) Fish
B) Reptile
C) Amphibian
D) Mammal

MCQ 4: Which statements about fish and reptiles are true?
(Select all that apply.)
☐ Fish use gills to breathe.
☐ Reptiles need direct heat to survive.
☐ Fish breathe air using lungs.
☐ Reptiles have dry scales.
Correct answers:
☑ Fish use gills to breathe.
☑ Reptiles need direct heat to survive.
☑ Reptiles have dry scales.
Follow-up discussion questions
- Why might people think fish do not breathe?
- Why do reptiles like to warm themselves in the sun?

MCQ 5: Which is the best way to group these animals if you are thinking about their needs for survival?
A) By their colour.
B) By whether they are mammals, birds, fish, amphibians or reptiles.
C) By which animals are your favourites.
D) By whether they are big or small.
Correct answer:
☑ B
Follow-up discussion questions
- Why do scientists group animals in different ways?
- Could there be more than one correct way to group animals?

Correct answer:
☑ C) Amphibian

Follow-up discussion questions

- What features make a frog an amphibian?
- Why might someone think a frog is a reptile?

Digging Deepers:

Digging Deeper 1 (Early in the unit – linking prior learning)

Question

A whale lives in the sea, but it is a mammal. Explain how you know it is a mammal and not a fish.

Prompts / hints

Think about:

- Does it have fur or hair?
- How does it breathe?
- How does it feed its babies?
- Which animal group does it belong to?
- Use these words:
    - mammal
    - fish
    - gills
    - lungs
    - fur/hair

Model answer

A whale is a mammal even though it lives in the sea. Mammals breathe air using lungs and feed their babies milk. Fish use gills to breathe underwater. Scientists classify animals by their characteristics, not where they live.

Digging Deeper 2 (End of the unit – bringing together all learning)

Question

A vet is caring for a frog, a fish, a rabbit and a snake. Explain what each animal needs to survive and how their needs are similar or different.

Prompts / hints

Think about:

- What do all animals need?
- Which animal groups do they belong to?
- How do they breathe?
- Where do they live?
- Do any need heat or water?
- Use these words:
    - mammal
    - fish
    - amphibian
    - reptile
    - survival
    - shelter

Model answer

All four animals need air, water, food and shelter to survive. The rabbit is a mammal and has fur. The fish uses gills to breathe in water. The frog is an amphibian and lives on land and in water. The snake is a reptile with dry scales and needs warmth from the Sun. Although they all have the same basic needs, they meet those needs in different ways.

Unit – Uses of everyday materials (Y2 Unit)

Enquiry Question:Which material would be the best for an umberella?

Knowledge Progression

-Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses.
-Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Skill Progression

-Identifying and classifying.
-Use simple features to compare objects, materials and living things and, with help decide how to sort and group them.
-Asking simple questions and recognising that they can be answered in different ways.
-Observing closely, using simple equipment.
-Using their observations and ideas to suggest answers to questions.
-Performing simple tests.

Key Learning

-Objects can be made from different materials.
-**Some materials are natural, such as sand, wood and wool.**
-**Some materials are human made such as plastic and cardboard.**
-**Some materials are recyclable and can be used again and again.**
-Paper and cardboard are made from wood.
-Wood, paper and cardboard come from trees.
-There are different strengths of wood, paper and cardboard.
-Wood, paper and cardboard can be recycled and used again.
-**Rock is a natural material.**
-Bricks are human made material.
-Rock and brick can be used to build houses, buildings and walls.
-Glass is hard and brittle.
-Plastic can be flexible or hard.
-Some plastic can be recycled.
-All glass is recyclable.

-**Metal comes in many forms and colours.**
-Some metals are flexible and can easily change shape.
-Some metals cannot change shape easily.
-Metal can be used to make many different objects.
-**Fabrics can be natural.**
-**Fabrics can be human made.**
-Fabrics have different uses.
-Materials have particular uses.
-Some objects can be made from different materials.
-Some materials are suitable for an object.
-Some materials are unsuitable for an object.
-Some materials can change shape and some cannot.
-Some materials can be bent.
-Some materials can be twisted.
-Some materials can be stretched.

Vocabulary

Material, natural material, human-made material, recycle, recyclable, smooth, rough, flexible,rigid,rock, stone, pebble, brick, brittle, flexible, transparent, opaque,hard, flexible, rigid, shiny, dull, fabric, flexible, tough, lightweight, tough, hard, soft, bend, squash, twist, stretch, waterproof, strong, breakable, independent variable, dependent variable, controlled variable.

Misconceptions

-Children may think that the term ‘material’ is only used for objects inside the classroom such as toys or equipment. (Allow children to identify materials outside in ntheir local area to address this misconception).
-Children may think that all materials are human-made. Show children examples of common natural materials such as wood, wool and sand.
-Children may think that all paper has the same thickness and texture. (Provide a wide range of different paper and card for children to test such as tracing paper, sugar paper and cardboard).

-Children may think that all wooden objects are heavy.
-Children may think that all rocks are heavy.
Children may think that all rocks are hard and cannot be broken easily.
-Children may think that rocks and stones are different materials. Explain to children that a stone is a word used to describe smaller rocks.
-Children may think that glass and plastic are the same material as they have a lot of similar properties.
-Children may think that all plastic is hard.
-Children may think that all metals are silver in colour. An easy way to avoid this misconception is to allow children to explore different coins. Children could identify the different coins and sort them into groups.
-Children may think that all metals are rigid. Aluminium foil is a familiar material that can be used tpo show children that some materials can change shape easily.
-Children may think that all metals are heavy.
-Children may think that fabrics are not materials.
Children may think that natural fabrics, such as wool and cotton are not fabrics.
-Children may think that objects can only be made from one material. Show them three water bottles-plastic, glass and metal. Discuss the similarities and differences between the bottles.
-Children may think all solid materials are hard.
-Children may think that all solid materials are heavy.
-Children may think that no solid materials will change shape if a force acts on nthem.
-Children may think that if a solid material changes shape, it cannot change back to its original shape.
-Children may need to recap how to use a pipette correctly.
-Children may need support when ranking materials from least to most suitable. They should refer to the properties of an umberella to support their findings.

Prior Knowledge

-Distinguish between an object and the material from which it is made. (Y1- Everyday materials)
-Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. (Y1 - Everyday materials)
-Describe the simple physical properties of a variety of everyday materials. (Y1 - Everyday materials)
-Compare and group together a variety of everyday materials on the basis of their simple physical properties. (Y1 - Everyday materials)

Future Learning

-Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (Y3 - Rocks)
-Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (Y3 - Forces and magnets)
-Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. (Y5 - Properties and changes of materials)
-Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. (Y5 - Properties and changes of materials)

Possible Activities/Evidence

-Can name an object, say what material it is made from, identify its properties and make a link between the properties and a particular use
-Can label a picture or diagram of an object made from different materials
-For a given object can identify what properties a suitable material needs to have
-Whilst changing the shape of an object can describe the action used
-Can use the words flexible and/or stretchy to describe materials that can be changed in shape and stiff and/or rigid for those that cannot

-Can recognise that a material may come in different forms which have different properties

-Classify materials.
-Make suggestions about alternative materials for a purpose that are both suitable and unsuitable
-Test the properties of materials for particular uses e.g. compare the stretchiness of fabrics to select the most appropriate for Elastigirl's costume, test materials for waterproofness to select the most appropriate for a rain hat

-Can sort materials using a range of properties
-Can explain using the key properties why a material is suitable or not suitable for a purpose
-Can begin to choose an appropriate method for testing a material for a particular property
-Can use their test evidence to select appropriate material for a purpose e.g. Which material is the best for a rain hat?

White Rose Activities:

Step 1-
-Carry out a material hunt outside. What materials can children identify? Repeat the material hunt in the classroom. What materials can children identify inside? How are they similar to or different from the materials outside?
- Allow children to sort and group materials based on different categories. Use large hoops to help them sort and group correctly.
-Play games with children such as "Guess the material" to challenge their thinking. Children give clues by describing the properties of the material for other children to guess.

Step 2-
-Children carry out simple tests on wood, paper and cardboard to learn more about their physical properties. They should try to change the shape of the materials by folding, squashing and tearing.
-Encourage children to think of their own categories for testing.
-After testing the materials, children should discuss the suitability of each material for making different objects.
-Ask children which material would be the most appropriate in different scenarios, for example, sending a parcel, writing a letter or making a chair.

Step 3-
-Children carry out a walk in their local area to observe, draw and label buildings or structures made from brick or stone. This wall is made from stones. This house is made from bricks.
-Ask children to design houses using labelled drawings. They should explain why the materials they have chosen are suitable for the purpose.
-To challenge learning, children could correctly label any 2-D or 3-D shapes used within their design.

Step 4-
-Ask children to perform tests on glass and plastic to further understand their properties. Encourage them to suggest and choose some of their own categories for testing, for example: • Can it change shape? • Can it bend, fold or twist? • Does all plastic float? • Does all glass sink? • Is all glass/plastic transparent?
Children should then think about the suitability of the materials for different uses.

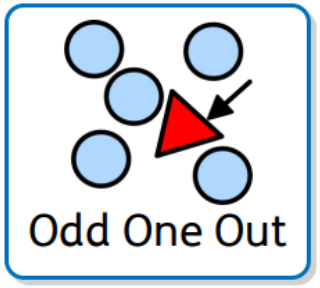
When glass is used in the classroom, it needs to be managed carefully as it can shatter.

Step 5-
-Allow children to observe a range of metallic objects. Ask them to sort and group the objects in different ways. Encourage them to group the objects in more than one way. Play games when sorting the objects such as “Odd one out”. Ask questions to develop their thinking. For example, “Would foil be the best material for a key?”
-Children explore their classroom, school and outside area to find where metal is used.
They record their findings using labelled drawings.
Encourage children to use key vocabulary to describe the metal objects they identify.

Step 6-
Children perform simple tests to choose the best fabric for a particular purpose, for example, a PE kit.
A PE kit needs to be lightweight, flexible and easy to wash and dry.
Children compare the flexibility of a range of materials by twisting and turning the materials to see if they move easily.
They add a stain to each material to see which can be removed the quickest.
They choose a material that best meets the criteria set out and explain why they have chosen that material.

Step 7-
Show the same objects made from different materials.
Ask children to spot the similarities between the objects.
What materials are the objects made from?
Why is wood a good material for disposable cutlery?
Why is metal a good material for cutlery?
Ask children to think of a material that would not be suitable for a set of cutlery, such as paper or fabric, and ask them to explain why. Repeat with other objects.

Step 8-
Ask children to test materials to see if they change shape through bending, squashing, twisting and stretching.
They should name the materials and sort them into different groups based on whether they think they would bend, squash, twist or stretch.
Discuss any examples that could fit into more than one group.
Children should record their findings in a simple results table.



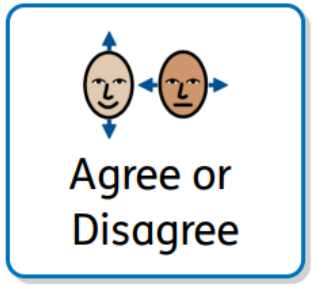
DIGGING DEEPER

Which object is the odd one out?









DIGGING DEEPER

Brick is the best material to use to build a house.