

THE WINTERTON FEDERATION MEDIUM TERM PLAN SCIENCE Spring 1 YEAR 6

Classifying Critters	Learning Objective	Activity – Switched On Science	STEM Activities	Success Criteria
Session 1	<p>To understand how living things can be classified into groups scientifically.</p> <p>To know the difference between vertebrates and invertebrates.</p> <p>To observe similarities and differences and use them to classify living things.</p> <p>To decide on the best way to present evidence.</p>	<p>Q:- What features make a plant different to an animal?</p> <p>Ask the children to group themselves by hair colour and give each group a name for their colour. Then split these groups by eye colour and give them names. The hair colour name should be placed on the floor and the children move away from it, so that you are starting to produce a branching key on the floor with the group names. Continue splitting the groups until you have at least one person on their own and can give them a name. Discuss the type of questions, and what they focused on (features of their appearance they can't change). Look at the cards on the floor and photograph them. Use this in class for further discussion on keys and in other sessions.</p> <p>On the board start to produce a branching key with 'living thing' at the top, then five branches off. Discuss the first two splits that you could have to identify any living thing (animals and plants) and what would come under animals from previous work they have done (vertebrates and invertebrates). Explain that the children are now going to use their grouping of the pictures to help produce a key for identification. Remind the children of what sorts of questions they should be asking to make the divisions in the key (ones with yes/no answers). Say that sometimes scientists 'cheat' a bit and ask questions that have a number (ask the children for an example, e.g. how many legs/wings/ body segments does it have?).</p> <p>Dvide the pictures into smaller and smaller</p>		<p>I can describe how living things are grouped.</p> <p>I can group living things on the basis of careful observations.</p> <p>I can explain how vertebrates and invertebrates are different.</p> <p>I can group invertebrates and vertebrates into small groups and recall the names of those groups.</p> <p>I can choose and justify a way to present my evidence. I can make a branching key.</p>

		<p>groups with questions until they get to the smallest group they can (or even a single picture, which they name). Class consolidation: Each group shares the keys they have produced. Have they been able to identify their living things? Do you agree with them? Go through the taxonomic names for the groups that scientists use, e.g. mammal, reptile, fish, etc.</p>		
Session 2	<p>To know that fungi are one of the five kingdoms of living things.</p> <p>To find out what yeast needs to live.</p> <p>To interpret observations and use them to develop explanations.</p> <p>That moulds are a type of fungi, as is yeast.</p> <p>That microbes and fungi can be helpful and harmful.</p>	<p>Put glitter on hands and shake over the room – demo to introduce the idea that bacteria are classified as tiny, single-celled organisms – and can easily transfer. Inside, they are quite different from plants, animals and fungi. They reproduce by splitting themselves into two. Challenge: Some bacteria, such as E. coli which causes food poisoning, double in number every 20 minutes. If one got inside you, how many would there be after three hours? What about 12 hours? Discuss this as part of NHS campaigns such as ‘Coughs and sneezes spread diseases’ and ‘Catch it, bin it, kill it’ that have been used recently. How quickly and far has the glitter/microbe spread? What should you do to prevent it? You could also show this video: http://webarchive.nationalarchives.gov.uk/+www.nhs.uk/Video/Pages/catch-itbin-it-kill-it.aspx. Although it relates to the flu virus, it is also relevant to bacteria in terms of transmission.</p> <p>Find out about Edward Jenner and his cure for cow pox as an example of how microbes are helpful.</p> <p>Show some images of compost heaps and explain how microbes can be very helpful at getting rid of waste. We use them in things like Yakult to help our digestive system process our food and produce waste, but they can also help compost heaps get rid of waste.</p>		<p>I can observe and interpret what I see scientifically. I can explain my observations and investigations using scientific vocabulary. I can explain how microbes and fungi can be useful or bad for us.</p>

		<p>The children choose some things to see which can be decomposed by bacteria and then bury them. This will need to be revisited after about two weeks to see the products.</p>		
<p>Session 3</p>		<p>Recap branching data. Provide a range of mushrooms. Are they plants or animals? How can you tell? In pairs, the children cut one up and draw it (practises observational drawing). Explain that it is neither plant nor animal. It is part of a completely different group called fungi. Fungi are not like plants: they cannot make their own food (they don't photosynthesise). Fungi do not make pollen like plants do; they reproduce by making spores. They are not green. Explain that the group of fungi can be further divided and that yeast and moulds are types of fungi. Discuss with the children what happens when food goes mouldy. In pairs describe what it looks like. Is this mould good or bad? Show the children a jar of pickled onions. Ask them if they know why people pickle food? Would pickled onions last longer than fresh onions? Ask them to discuss some of the different ways people used to preserve their food, e.g freezing, refrigerating, pickling, cooking, salting, drying, etc. Investigate – why did the sandwich go mouldy? Set this up by showing them a mouldy sandwich. They should discuss and come up with a plan. Higher attaining children could consider whether moisture has anything to do with food going mouldy and add this as a variable and spray water into the bag, or use dried-up bread/toast. Discuss what type of investigation you are carrying out</p>		

		(observation over time). Children should press their hand down flat onto each of the slices of bread, then put one slice into each sandwich bag. Close each bag up and label one bag 'normal', one 'cold' and one 'warm'. Place the warm bag in a warm place and the cold bag in a freezer. Check the bags every couple of days and see how much mould has grown. DO NOT OPEN THE BAGS! Safety: Once sealed, the sandwich bags must never be re-opened. Mould spores can be very dangerous. Dispose of the finished bags carefully. Do not overseal the bags.		
Session 4	To explore the reasons for a classification system. To recognise that there are more than two kingdoms. To investigate ways in which plants can be classified.	Show the branching key on the board and discuss which of the groups you haven't yet looked at. What is the difference between a plant and fungi? Show tree images and ask if the children can name them. Discuss the different shapes of the trees and how these help to name the trees. But we can't always see the whole tree. Show the children the images or real leaves you have collected and say that we are going to identify these and produce a key for others to use. But first we need to find out more about leaves and be scientific about the language we use. Provide pairs with a different leaf/ image. Discuss the features, e.g. shape. Ask: is it serrated or not, does it have lobes, is it a single leaf or lots? Name the parts of the leaf and include the veins. The pairs discuss their leaves and the differences. What questions could you ask for Yes/No answers to produce a key? Discuss why it is important to know what plants are called – link this to poisonous plants.		I can explain why we have a classification system. I can name the five kingdoms. I can recognise differences between some plants and classify them. I can use research skills to find out about famous scientists. I can present my findings for others to see. I can make a branching key and explore other key types.
Session 5		Carl Linnaeus Discuss what the world would be like if we didn't have names. Explain that		

		<p>there is a very famous man whose work you have been using for the last couple of lessons, but let's find out more about him. This video could be useful: http://science.discovery.com/tv-shows/greatest-discoveries/videos/100-greatestdiscoveries-classification-of-species.htm#/100-greatest-discoveries-classification-of-species.htm Discuss what a fact file should contain about a person. Set this as a criteria for peer assessing each other later. Get into groups: The children research more about Carl Linnaeus and produce a fact file on him. Challenge them to find out something that they think will be different from other groups, e.g. about the way he named things or about the classification system he developed.</p>		
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