University of St Andrews
School of Psychology and Neuroscience, and Department of Philosophy

What Kind of Mind?

Lesson 3: Teacher Notes

Lesson 3: Primates	Activity Instructions	Purpose
1	**Recap Lesson 2** **Resources: Slides 1 and 2 of PP** **Instructions:** Recap the main points of Lesson 2 as follows: We saw how Charles Darwin asked interesting and new questions to create his theory of evolution and how he studied finches as part of this. We then thought about different types of finches and how they are suited to their environments. We thought about the scientific method which scientists use in their work and how this was used to test the intelligence of finches. The study of animal minds is quite new and there are still lots of unanswered questions!	To reinforce main ideas from previous lesson.
2	**Evolution – Primates** **Resources: PP Slides 3 – 6** **Whole Group Discussion** These slides show some of our primate relatives. Tarsiers, Woolly Spider Monkeys and Ring-Tailed Lemurs are all primates like humans. Chimpanzees are our closest living relatives, sharing 98% of our DNA. Gorillas and Bonobos are apes, just like chimpanzees and humans. Slide 6 gives an example of a personal family tree. **Background:** One group of animals that researchers have worked on a lot is the primates. This is OUR family. Lemurs, lorises, tarsiers, New World monkeys, Old World monkeys and apes, including humans, are all primates. Primates are mammals which have nails on the hands and feet, a short snout and a large brain. Researchers are trying to create a more detailed idea of human evolutionary history by examining our relations to other species. Our closest ancestors are the chimpanzees; researchers think that chimpanzees and humans had a common ancestor about five or six million years ago. This means that chimpanzees are our closest living relatives: our cousins. Just as the hands and bodies of different species can be similar in some respects and different in others, so might our minds. **Our minds are also the products of evolution.** **Small Group Exercise: PPS Slide 7 - 8; posters of blank Primate Family Tree; accompanying cards with primate images** The object of this exercise is to ask the children to consider where the primate might go on the family tree and it is not essential to have it correct. **Show PP Slide 7.** In small groups, using the posters and the accompanying cards with primate images, ask the children to put the primates on the family tree, so that our oldest primate relatives are at the top of the page.	To encourage discussion about the similarities (and differences) in physical features between humans and other primates, as lead in to considering minds. To show that our minds are also a product of evolution in the same way as our bodies. To reinforce ideas about evolution with particular reference to primates.

	Then show **PP Slide 9** to give the correct layout of the tree for comparison. Where do your relatives go? Can you add them to the tree? Ask them to say what differences and similarities they notice between the primates and themselves. For example: Which parts of our bodies are alike? Which parts are different? Why does the Woolly Spider Money have long arms? (to swing from trees more easily) Why does the Tarsier have such huge eyes? (to see better in the dark, because it is nocturnal). Our human bodies have also evolved to suit our environment, just as these other primates have evolved to suit their environments. We are trying to get a more detailed idea of our evolutionary history by examining our relations to other species. Our closest ancestors are the chimpanzees; researchers think that chimpanzees and humans have a common ancestor about six million years ago. This means that chimpanzees are our cousins. **Whole Group Discussion: PP Slide 10: Primate Hands** Show **Slide 10**: images of primate hands for comparisons. Just as the hands and bodies of different species can be similar in some respects and different in others, so might our minds. Discuss how the hands have evolved to suit the primates' different environments. For example, the gibbon's fingers are elongated to help them grab branches as they swing from tree to tree. The aye-aye has one very long finger to dig in tree bark for grubs in much the same way as the woodpecker finch. **Individual Exercise: PP Slide 11; Primate Hands Worksheet Activity** Show **Slide 11** and give out individual worksheets on primate hands. Ask the children to draw around their own hand and then write down some of the similarities and differences they notice between their hands and those of the primates in the images. They can then share what they have noticed with their group or the whole class.	
3	**Evolution – Primate Tool Use** **Resources: PP Slide 12** **Clip of primates – primate tool use:** https://www.youtube.com/watch?v=5Cp7_In7f88 **Whole Group Discussion: Chimpanzees use tools** Like the woodpecker finches -- and like humans -- some other primates use tools. Historically, many thinkers believed that tool use was uniquely human. But many non-human animals use tools. The clip may prompt	To show that primates use tools and this might be similar to other animals. To show that as primate hands have evolved, so have their minds.

	group discussion of a number of issues: are all the creatures that use tools doing essentially the same thing, or is there something importantly distinctive about human tool use? Does tool use require intelligence? What does a creature have to understand about the world in order to use a tool? These are fairly open-ended questions about which researchers may disagree; many legitimate answers are possible.	
4	**Evolution: Primate Hands and Brains** **Resources: PP Slides 13 - 14** Partners, blindfold for each pair, objects to feel **Paired Activity – How sensitive are your primate hands? PP Slide 13** This activity is designed to help the children think about how just as their hands have evolved, so have their minds. Our minds can interpret the information from our hands and help us to navigate our environments. The ways in which our bodies interact with our world has had an effect on the way we think about that world: our experience has shaped our minds and our thinking. **Instructions:** Primate hands are important to the way they understand the world. How sensitive are your hands? Students are divided into small groups, with one participant at a time blindfolded and presented with an object (a pencil, a pen, a rubber, a book, for example). Can they identify it using only touch? Can we tell what the object is even though we can't see it? Do you think a monkey, or a chimpanzee could? **Whole Group Discussion - Compare primate brains** **PP Slide 14** This slide presents a comparison of primate brains and children are asked to comment on the differences and similarities. We can note that the brains are all of a similar construction and roughly the same shape. However, the differences include that the human brain is the largest, and this is especially interesting when we consider the size of some of the non-human primates, such as the gorilla. The brain to body size ratio is very different.	To think about how our primate hands can be used. To think about how the mind has developed in conjunction with the hands.
5	**Scientific Method: How can we find out about other minds? What is our evidence?** **Resources: PP Slide 15 – 18; Human Babies and Capuchin Monkeys Worksheet; Film in PP Slide 16 and here:** **https://www.dropbox.com/sh/ae2l6f4wb6vusbr/AAC0Y4FYJNNc0zBi-efsc45la?dl=0&preview=Capuchin.mp4**	To think about whether babies and non-human primates can reason about objects in a similar way. To record the findings of the

	Whole Group Discussion: Do babies and monkeys think about objects in the same way as adult humans? Do they think or reason about *kinds* of object? **Instructions:** When we study human infants or non-human animals, we can't just talk to them to ask them how they think. We need to look at what they *do*. What do human babies do? What might this tell us about how they think? You can allude here to the previous session's Much research has relied on measuring how long babies *look* at different things. Babies will look longer at some things than others; this suggests that they find these things interesting or surprising. And if they find something surprising, we can conclude that it wasn't what they were expecting or predicting. This can tell us about how they think about the world. The experiment in the film clip that follows is an example. **Pause the film at the initial question to take a class poll. Then ask again at the end.** Pupils may raise an important question about the experiment: how do you know the monkeys looked again because they thought another object was there? Maybe they would always look again? This is a good place to introduce the notion of a *control condition*. We want to know whether the capuchins act notice when the food that goes in the box is different from the food that goes out; and we hope that this will be reflected in something they do (reaching into the box). But we need a baseline for comparison; we need to know how often they reach in the ordinary case (where what goes into the box is the same as what goes out). This is called the *control condition*. In any experiment, you are trying to compare two different situations: one in which you've manipulated or changed something (the experimental condition), the other exactly similar except without the change (the control condition -- the baseline that we are comparing the experimental condition to). The difference between these conditions is the crucial result. **Human Babies and Capuchin Monkeys Worksheet - Show PP Slide 17** **Individual Exercise –** Children should answer the questions which are based on what they saw in the film. Answers are given on page 2 of the worksheet. **Show PP Slide 18 with the Capuchin experiment mapped out on the scientific method.** This is purely to illustrate how the scientists followed the same scientific method as with other experiments.	experiment on a graph, as scientists do.

6	**Plenary** **Resources: PP final slide 18** **Instructions:** Recap the main points of the lesson as follows: We thought about our primate family and placed them on a family tree. We thought about different primate hands and how chimps can use tools. We thought about how our hands and brains have evolved and how interacting with our environment has shaped human minds. We then thought about whether human babies and Capuchin monkeys might think about objects in the same way.	To revisit key themes of the lesson.