



Lesson 6: Plenary	Learning Intention: To recap the main ideas of the What Kind of Mind? Lessons	Purpose
	Activity Instructions	
1	<p>Recap Animal Minds Resources: PP Slides 1-7; Whole Class discussions Instructions: Recap the main points of the project. PP Slide 2 – Philosophers and psychologists have been working together to study animal minds. PP Slide 3 - This slide serves as a prompt to see what the children can remember about the discipline of psychology. PP Slide 4 - This slide serves as an overview and recap of the discipline of psychology (and of neuroscience). PP Slide 5 - This slide serves as a prompt to see what the children can remember about the discipline of philosophy. PP Slide 6 - This slide serves as an overview and recap of the discipline of philosophy, although philosophy is very difficult to define. PP Slide 7 - This slide reminds the children about why the research team are studying animal minds.</p>	To reinforce main ideas from previous lessons.
2	<p>Philosophy - Asking Good Questions Resources: PP Slide 8-9; Questions Worksheet Instructions: PP Slide 8 - Researchers do a lot of creative thinking before setting out to test their ideas. By thinking innovatively, they can discover new and exciting information about our human minds and the minds of other animals. Thinking philosophically about the mind can help us ask better questions and come to a better understanding. They have to use their imaginations and wonder about what we both know and do not know about humans and animals. Therefore, science is both a creative and controlled activity. The photograph is of new chimp at Edinburgh Zoo’s Budongo Research facility. PP Slide 9 - This slide reminds the children that all good research begins with asking well-formed, pertinent questions. These are generated creatively, using our imaginations. In the activity in Lesson 1, when they pretended to be a bat scientists, they thought about how bats would study humans. This activity allowed them to generate some interesting question about what bats would want to know about humans. This time, the children are asked to put themselves in the position of the animal minds researchers and think about the kind of question they asked before beginning their research. The purpose of this is to reinforce the idea that we need to be think carefully about the types of questions we can generate and subsequently research. Use the Questions Worksheet to record their answers and these can be discussed as a class.</p>	To think about the how we generate and ask good, creative questions to inform research.



<p>3</p>	<p>Scientific Method – Resources: PP Slide 10 - 11</p> <p>PP Slide 10 - This slide re-introduces the idea of following the scientific method. The scientific method is repeated throughout the presentation and the experiments are mapped onto this model in the following slide.</p> <p>PP Slide 11 – This slide shows the scientific method and demonstrates the various stages that a researcher will go through to test an idea. The scientific method is the ordered way that scientists will carry out research and try to find answers to their questions. Scientists follow this process when setting out to test their ideas. The order of the steps in the scientific method is important for reliability and allows the research to be replicated if required. This slide reminds the children of the steps in the scientific method.</p>	<p>To reinforce the scientific method as a process which researchers will follow.</p>
<p>4</p>	<p>Psychology / Philosophy – Capuchin Monkeys and Human Babies Resources: PP Slide 12 – 14; Human Babies and Capuchin Monkeys film embedded Also here: https://www.dropbox.com/sh/ae216f4wb6vusbr/AAC0Y4FYJNNc0zBiefsc451a?dl=0&preview=Capuchin.mp4</p> <p>PP Slide 12 - After showing the film: In groups, ask the children to come up with and write down a possible hypothesis which the researchers tested with the capuchins in the experiment. Then, in groups, ask the children to come up with and write down a possible hypothesis which the researchers would test, this time with the babies in the experiment. (The actual hypotheses are on the next slides.)</p> <p>PP Slide 13 – This slide demonstrates how the capuchin experiment can be mapped onto the scientific method. It gives the hypothesis which the researchers tested with the capuchin monkeys. Compare the actual hypothesis with those the groups have written. How close are these? How well did you team do?</p> <p>PP Slide 14 - This slide demonstrates how the babies experiment can be mapped onto the scientific method. It gives the hypothesis which the researchers tested with the babies. Compare the actual hypothesis with those the groups have written. How close are these? How well did you team do?</p> <p>The researchers wanted to test whether the babies would show surprise when there was only one object behind the screen instead of the two they were shown. If the babies demonstrated surprise, by looking longer at the object, then this could indicate that they are able to <u>reason</u> that they were shown two different objects. Researchers tested babies of different ages. The hypothesis: Babies do think about kinds of object. They understand that there should be two kinds of object behind the screen</p>	<p>To think about whether capuchin monkeys and babies may think similarly about objects</p>



	The babies over 12 months old were indeed able to reason and looked for longer when there was only one object behind the screen, after they had been shown two. This means that the hypothesis was supported.	
5	<p>Primates</p> <p>Resources: PP Slides 15 – 16; Materials to make a poster</p> <p>PP Slide 15 - This slide shows some of our primate relatives. This is OUR family. Lemurs, baboons, tarsiers, and apes, such as gorillas and bonobos, and 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.</p> <p>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.</p> <p>PP Slide 16 - This poster activity is designed to help groups of children focus on a particular primate and do some research into its body and mind.</p> <p>Primate Poster Activity:</p> <p>Allocate a specific primate from this slide to a team. Ask them to create a poster to show off the primate. The questions should be used as prompts for the poster activity and the posters should give the answers to these. They should include a picture or drawing of the primate on the poster.</p> <p>Questions for Activity:</p> <p>Where does it live? What does it eat? How is this primate suited to its environment? How is this primate’s body similar to yours? How is this primate’s body different to yours? How might this primate’s mind be similar to yours? How might this primate’s mind be different to yours?</p>	To revisit the evolution of primate bodies and minds.
6	<p>Psychology – Do chimps have language?</p> <p>Resources: PP Slides 17 -18 with film embedded</p> <p>Also here: https://www.dropbox.com/sh/ae2l6f4wb6vusbr/AAC0Y4FYJNNc0zBi-efsc45la?dl=0&preview=Chimps.mp4</p> <p>PP Slide 17 – These images are of chimps at Edinburgh Zoo.</p> <p>Resources: PP Slide 17 with film;</p> <p>This slide asks the children to consider whether chimp communication is similar to language.</p>	To consider whether chimps may have language like humans; To think about how chimps communicate.



	<p>Show the film and ask the children what they notice about the ways chimps communicate in the film. Ask them to think about whether the chimps can communicate what they want effectively.</p> <p>Is chimpanzee communication like language? What is similar? What might be different? There are different philosophical views about the nature of mind and language.</p> <p>PP Slide 18 - This slide asks the children to think about the chimp gestures they saw in the film.</p> <p>Ask for volunteers to act out the gestures they saw and discuss what they might mean.</p> <p>How did researchers know they meant this? (The researchers observed the gestures and subsequent behaviour over a period of time.)</p> <p>Could they be mistaken for something else? (Some gestures are unclear or they are used with other gestures, which may change the meaning.)</p> <p>Are chimps using language like humans? (This is not clear: human language has grammar which the chimp communication seems to lack. It could be the case that we do not understand chimp grammar yet!) There are different philosophical views about the nature of mind and language and researchers do not have the full picture yet.</p>	
7	<p>Philosophy – Curiosity</p> <p>Resources: PP Slide 19</p> <p>Whole Class Discussion</p> <p>PP Slide 19 - Do you ever wonder about things? Do you ever wonder about things you don't know?</p> <p>The human mind has an amazing super power: it can be aware that it does not know something! Can you think of something you don't know? What is that? How can your mind know that it does not know something? When you are wondering, your mind is in a state of curiosity. Curiosity is a strong feeling or a wish to know something.</p> <p>When we are curious and wonder about things, we ask questions. Curiosity and wondering are the motivators for asking questions: they force us to ask questions. We ask questions in order to find out what we desire to know.</p> <p>Curiosity is the driving force behind research in science, technology, engineering, philosophy, psychology and even areas such as art or music. Curiosity also drives us to have new experiences, such as trying a new kind of milkshake. We enjoy being curious. So maybe being curious and wondering are really valuable qualities of the human mind. Animal minds might also have curiosity and researchers try to study this.</p>	To think about what curiosity may be.
8	<p>Psychology – Parrots</p> <p>Resources – PP Slides 20 – 23 with film embedded</p> <p>Also here:</p>	To think about whether parrots are curious; To demonstrate the



	<p>https://www.dropbox.com/sh/ae216f4wb6vusbr/AAC0Y4FYJNNc0zBi-efsc451a?dl=0&preview=Parrots.mp4</p> <p>PP Slide 20 - This slide shows an illustration of the way birds may have evolved from dinosaurs.</p> <p>PP Slide 21 - How might birds think? Their brains are much smaller than those of primates, but they have a large density of neurons. Neurons are the cells that make up the brain. Birds are distant relatives to humans, but some species may have evolved dense brains (lots of brain cells) <i>convergently</i>. This allowed them to <i>adapt</i> to their environment, just as primates did.</p> <p>PP Slide 22 - Are parrots curious? Do parrots wish to find things out about the world? Can parrots play with objects?</p> <p>After showing the film: In groups, ask the children to come up with and write down a possible hypothesis which the researchers tested with the parrots in the experiment.</p> <p>PP Slide 23 - This slide demonstrates how the experiment with the parrots can be mapped onto the scientific method. It gives the hypothesis which the researchers tested with the parrots.</p>	<p>intelligence of parrots.</p>
<p>9</p>	<p>What Kind of Mind? – Bringing it full circle</p> <p>Resources: PP Slides 24 – 26; What Kind of Mind? Poster and image cards; Questionnaires</p> <p>PP Slide 24 - These questions serve as the final input for the series of lessons and return the children to the very first activity they undertook about animal minds. The aim is to see whether their ideas about intelligence and mindedness have changed as a result of what they have learned.</p> <p>The questions link to the lessons in the following way:</p> <p>Is it that they can learn? – In all three films, there was evidence of learning. The babies and capuchins learned to expect more than one object; the chimps learned gestures and calls; the parrots learned about the block by interacting with them.</p> <p>Is it that they are social and live in groups? – The primates all live in social groups and learn survival skills within them. The chimps are social and communicate within the group.</p> <p>Is it that they can find food? – Chimps used tools to find bugs and grubs, as did the finches in the evolution lesson: this may be evidence of intelligence. The capuchins searched for more food during the experiment.</p> <p>Is it that they can react to something? – The babies showed a reaction of surprise when there was only one object. Chimps react to each other’s gestures.</p> <p>Is it something else? – This type of research is very recent and so we have a lot more to find out about intelligence in humans and non-human animals. Therefore, intelligence could include areas which we have not yet even considered.</p>	<p>To recap the aims of the project and how we can study the mind; To think about whether the children may have changed their minds about what is intelligence.</p>



PP Slide 25 - This is the image of the poster and cards for the small group activity.

Small Group Activity with shared reporting to whole class

In small groups, ask the children to place the pictures of animals and objects onto the poster, thinking about which are intelligent and which are maybe not intelligent. The children should be encouraged to give a reason for their choices. There is no right or wrong arrangement of the cards for this task.

Ask the children if they have changed any of their ideas about which things are intelligent, after the lessons on animal minds. They should give a reason for their answer.

Why do we think that some are cleverer than others? What is our evidence? What do these things do that tells us how clever they are? Some possible considerations that pupils might invoke include: the ability to learn (as opposed to responding automatically), reacting to the world, brain size, having a goal, maybe other things like emotion, creativity, biological similarity to humans.

In the end, there is no one right answer; there may be many interesting notions of intelligence or ways things might be intelligent. Some students may also raise considerations that might make us sceptical that a creature is intelligent: perhaps its behaviour is just a reflex or instinct, something automatic and not intelligent. These considerations should also be encouraged: in many cases, it is very difficult to tell whether a particular behaviour is intelligent or not, and even experts may disagree.

PP Slide 34 - This slide asks the children to reflect on their learning experience. **Please ask the children to complete the questionnaire about our research and lessons.** Thank you for all your help with this project.