CURIOSITY

SESSION 1:

- Set up an experience to provoke curiosity. This could involve telling the opening few sentences of a story, laying out some objects, games or toys or even sending them out on a curiosity mission to find something that sparks their interest, bring it back and talk to the class about it.
- Curiosity is a feature of the human brain (and the brain of many other species). Ask students to speculate on why the human brain evolved to be curious; in what ways does it benefit us?
- Ask students to think about the relationship between curiosity and learning.

1. I am at my best as a learner when…

- Make sure students are clear about what the word 'learning' means (!) there is a definition on the slides.
- Ask students to think about **all** the different areas of their lives where they are engaged in learning (specifically ask them to widen their thinking beyond school).
- Ask students to identify the times when they enjoy learning most deeply – suggest to them that this may or may not be at school. Ask them to think carefully about the conditions that are present when this learning is happening. Where are they? Who are they with? What is the activity? How much autonomy/control do they have over what is learned? How do they feel? How much noise is there and what kind of noise? How long do they stay engaged in the activity? How challenging is the activity? Does the level of challenge remain constant?
- Ask students to work in pairs and share their stories. Ask them to identify any similarities between their stories about the conditions present when they learn best.

2. I love learning because…

- Ask students to complete the sentence 'I love learning because…' as many times as they can.
- Feedback the reasons they come up with to paint a picture of the benefits of learning.
- Ask students to call to mind someone they know who is really good at a particular discipline they admire. Ask them to speculate about what it must be like to have mastered a discipline through continually learning about it.
- Finish by asking whether the discussions in this lesson have made them think about learning in a different way, or reinforced what they already thought about it.

SESSION 2: The virtues of learning.

1. Barriers to learning.

- Ask students to identify the different barriers that can sometimes get in the way of their learning. Some of these barriers will be internal to them (e.g. not getting enough sleep, not eating properly, thinking thoughts like 'that's too difficult', 'I'll never be any good at X') and some of the barriers will be external to them (e.g. a disruptive class, an unskilful teacher, a community with low aspirations).

2. Virtues and learning.

- A virtue is a disposition to act in a particular way. Virtues enable us to act in ways that successfully pursue good ends. There are virtues that will enable us to enjoy and succeed at learning. Provide students with learning scenarios. Ask them, for each scenario, to identify a response that will perpetuate learning and a response that will stifle it.

- Ask students to investigate what happens when learning gets stifled: assuming that all humans have curiosity and a desire to learn built in, what happens when we allow opportunities to learn to be stifled or stopped? Why is it sometimes easier to give up on learning?
- Ask students to reflect on their own experiences of overcoming barriers to learning. What barrier did/do they overcome, how do they do it and what does it feel like to overcome the barrier and keep learning?
- For examples of maintaining a desire to learn or overcoming barriers to learning, ask students to work out which of these virtues: Courage, Justice, Honesty, Compassion, Self-discipline, Gratitude, Humility are involved and how (e.g. asking fellow students to stop being disruptive requires courage).

3. Making myself a better learner.

- Ask students to recall the thinking they did in session 1 about the benefits of learning (including acquiring qualifications, a by-product of learning rather than its end): ask them to develop a very clear picture of how continuous, lifelong learning will benefit them.
- Ask students to identify two or three areas where their learning slows down or is blocked.
- Ask them now to identify what they need to do in those situations and which virtues they can call upon to assist them in continuing to learn and experiencing the benefits of learning.
- Ask students to identify what will make it easier for them to do this: what internal resources do they need and what external resources (including people) will they need to call upon to keep learning happening?

SESSION 3: The brain and learning.

Resources:

- *The Little Book of Big Stuff about the Brain* by Andrew Curran
- *A User's Guide to the Brain* by John Ratey
- *Flow* by Mihalyi Csikszentmihalyi

1. Neuroplasticity: changing your brain through learning.

- There is a good, brief explanation of neuroplasticity here: https://www.youtube.com/watch?v=ELpfYCZa87g [available 02/15].
- Ask students what the implications are for them to know that the brain shapes itself according to our experiences and what we habitually do; what does it mean for their habits of learning?

2. The conditions for good, effective learning.[1]

- Introduce students to the conditions for getting the brain to learn, included as an endnote. (For more detail, see the books by Curran and Ratey mentioned above).
- Ask students, in small groups, to find ways of applying these conditions to school life. What would it take to make as many brains in a school ready for learning as possible (including the brains of the teachers)?

3. Flow: getting absorbed in the things you love.

- A Flow State is where our ability and the challenge we face are so perfectly matched that we become completely absorbed in what we are doing, lose

track of time and even lose our sense of self. When we are bored, it's because we are not challenged enough, when we are anxious, it's because we aren't skilful enough. Having the ability to get into flow requires the ability to increase challenge or increase skill. Flow is essential to learning and creativity. There's a short video stimulus about it here: https://www.youtube.com/watch?v=AXwLsba2TOY [available 02/15].

- Give students an opportunity either to experience flow or to talk about times when they have been in flow states. The best way to get them into flow is to give students games, toys and stuff to play with (avoid electronic stimulus).
- Ask students to describe what it felt like to be absorbed in a task: what emotions did they notice in themselves and others?

4. Next steps.

- Virtuous behaviour emerges from habits. Habits are formed in the brain through repetition. Ask students to think about 2 or 3 new learning habits that they need to form through repetition, how they are going to form those habits and whose help they are going to enlist in forming them.

[1] THE CONDITIONS FOR GOOD, EFFECTIVE LEARNING

1. Stay Positive. The chemical most needed for learning is dopamine and it needs to be released from the substantia nigra compacta in controlled doses. It does this best when you are in a positive emotional state. If you are angry, stressed, anxious or afraid you will not learn effectively.

2. Chill out. Stress causes the release of excess dopamine - adrenaline which drives our memories into unconscious parts of the brain where they can't be accessed - and steroids which kill off cells in the hippocampus, needed for working memory. Learning does not happen under stress.

3. Go on, treat yourself. Dopamine is released through reward and through the anticipation of reward. To learn properly you either need to learn things you enjoy for their own sake, or promise yourself rewards at the end of the learning process. If you enjoy maths, you will have no trouble learning it because you enjoy it. If you don't enjoy it so much, reward yourself after working at it and your brain will release dopamine as it waits for the reward.

4. IT IS NEVER TOO LATE TO LEARN MANY THINGS. The brain is PLASTIC and always changing. So long as dopamine is around, the brain can form new synaptic links and it can learn, especially academically. The brain can also find ways around damage: stroke victims are able to find new ways to move and speak. There are limits: if a baby is born with cataracts in its eyes, unless they are removed before 6 months, the neural networks for eyesight never form.

5. The more you do something, the better you get. The more you think or do something, the stronger those neural networks become. Eventually you'll not be able to forget because it's hardwired (e.g. riding a bike).

6. Use it or lose it. Ever crammed for an exam and then forgotten the stuff a few weeks later? That's because the brain only held that information for as long as you needed it and then used those neurons for other things. If you don't use a skill or a piece of information, you'll forget.

7. Move. Exercise. Play musical instruments. Do new things. Hang around intelligent people. All of these things have been shown to encourage the growth of new neural networks, which increases brain power. Churchill built a wall and painted. Einstein played the violin.

SESSION 4: Mindsets.

Resources

Mindsets by Carol Dweck

Bounce by Matthew Syed

1. The tortoise and the hare

- Ask students to remind each other of the story of the tortoise and the hare.
- Ask students to do a character analysis of both the tortoise and the hare: what are they like as individuals, what words best describe them?
- Now ask the students (without naming names) what kind of people in the school are represented by the hare and what kind of people are represented by the tortoise. Ask them also what kind of learner is represented by the tortoise and the hare.

2. The theory of mindsets

- The theory of mindsets is a theory concerning the impact of our beliefs about intelligence on our ability to learn and master a discipline. Carol Dweck has demonstrated that if we believe intelligence to be fixed, our learning reaches a plateau early. She has also demonstrated that if we praise or value individuals for being clever, they become more concerned with appearing clever than doing the learning that will lead to mastery.
- There are some good online resources to help to explain Carol Dweck's theory of mindsets. There is a good 10 minute TED talk here on the theory: https://www.youtube.com/watch?v=Yn966v5INaI [available 02/15] and a website with a very clear graphic showing the effects of each mindset here: http://qedfoundation.org/fixed-vs-growth-mindsets/ [available 02/15].
- It might be helpful at this point to introduce students to current research on where talent comes from: that it is made rather than born in to us. Matthew Syed's book Bounce has some useful examples, as does this short video: https://www.youtube.com/watch?v=I1K6bOG8mj8 [available 02/15].

3. Revisiting the tortoise and the hare

- Go back to the tortoise and the hare. Ask the students to re-evaluate the story according to the theory of mindsets. How can the theory help us to better understand various features of the story such as the hare's willingness to take on an easy challenge, his complacency and the tortoise's lack of fear of failure?

4. Getting into the growth mindset

- Ask students to analyse whether or not the growth mindset might be considered a virtue.
- Ask students to work out what they will need to do to get themselves into the growth mindset.

SESSION 5: Reflections.

1. Learning and the virtues.

- For each of the virtues (Courage, Justice, Honesty, Compassion, Self-discipline, Gratitude, Humility) ask students to imagine what that virtue looks like when enacted in terms of learning (e.g. compassion to the self when we find learning hard, but courage and self-discipline to persist with it; courage and honesty to challenge ideas we disagree with; gratitude for those who help us to learn).
- Ask students to think of icons representative of the learning process and also to think of which virtues they employ to learn (e.g. Nelson Mandela was famously humble in prison when learning from fellow prisoners and those who guarded him; the courage of Rosalind Franklin who is now credited with discovering the DNA double helix, David Beckham's self-discipline in learning how to play football).

2. My journey with learning.

- Ask students to look back over the previous four lessons on learning. Ask them to re-visit the goals they set themselves for each of these aspects of learning and to evaluate how well they have done with beginning to achieve their associated goals.
- Ask students to think about which virtues they need to employ to keep learning and how the icons they identified in the previous section can inspire them to keep trying to become better learners.