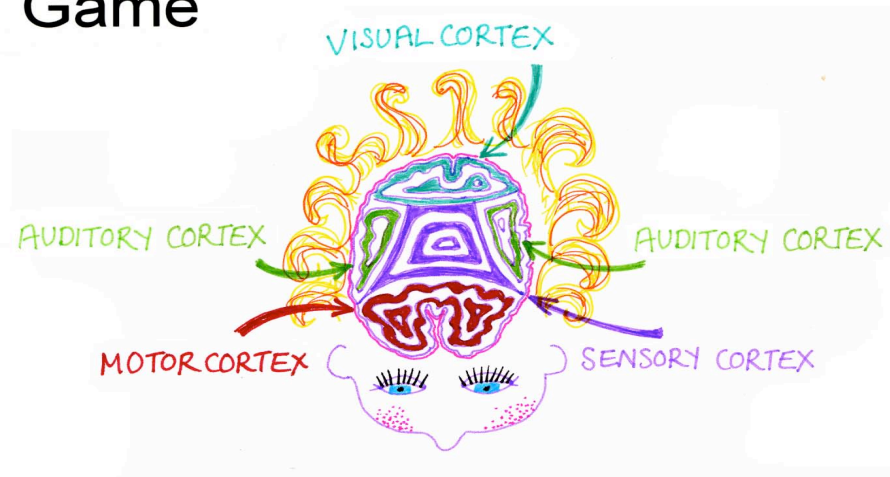# Brain Game

Brain Game 1

outside in the playground

Key Question

How do you pick up different messages and send them to different areas of your brain?

Key Words and Definitions

- **Neuron –** are electrically excitable cells in the nervous system

- **Cortex –** an area of the brain
- **Visual cortex**, **–** the part of the brain that is involved in visual functions
- **Auditory cortex –** the part of the brain that is involved in audio functions
- **Sensory cortex –** the part of the brain that collects messages from the sense of touch
- **Motor cortex –** the part of the brain that involved in movement functions

What will the children learn?

- To understand how the senses work by picking up messages and sending them to different parts of the brain

- To know the names of the different parts (cortices) of the brain
- To know what each cortex is for
- To know what a neuron does
- To explore how messages are sent to the different cortices

Teacher Instructions for the game

Draw a large brain shape in chalk on the playground (as in diagram):
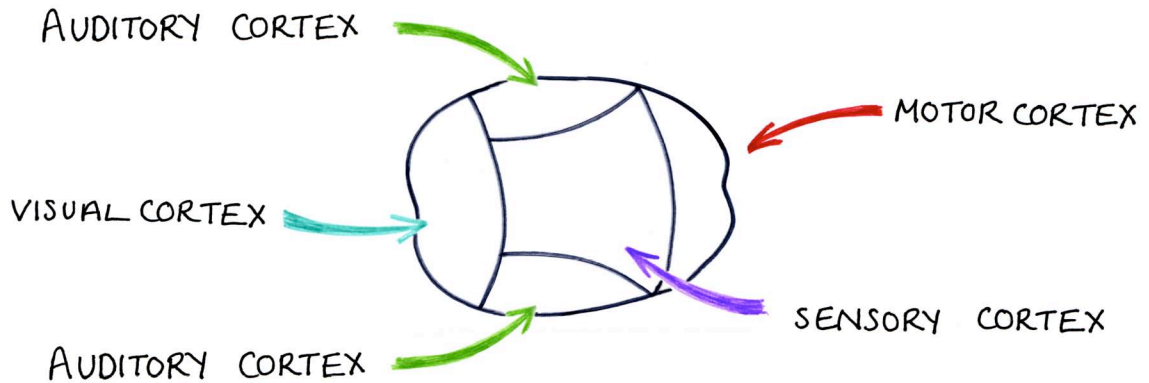
Choose four volunteers and divide the rest of the class into four groups. The four volunteers will each represent four sensory functions:
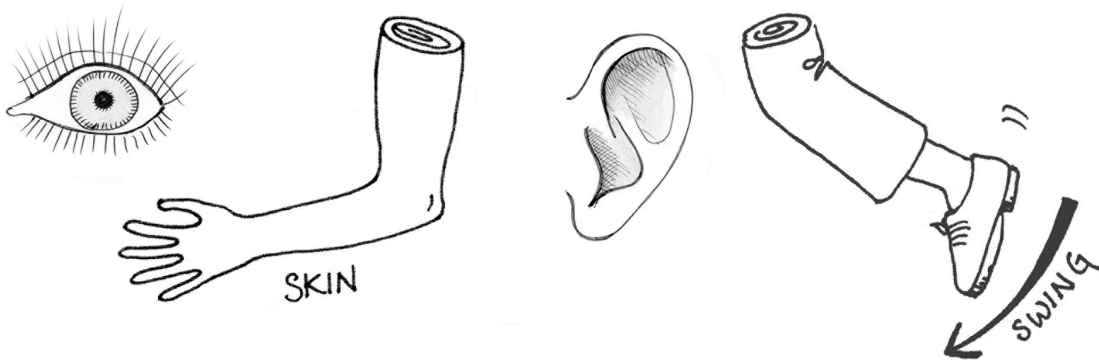

The four groups represent neurons in four areas or cortex of the brain, shown on the diagram above (note that the Auditory cortex has two parts):

- **visual cortex**
- **sensory cortex**
- **auditory cortex**
- **motor cortex**

1. Stand half of each group in their brain area.

2. Spread the rest of each group around the other areas of the brain.

3. Explain to the children, using the cue cards / props, how each sense function should link to each cortex i.e.:

skin ----------------------------------- sensory cortex
eye -------------------------------------- visual cortex
movement (leg) --------------------- motor cortex
ear --------------------------------------- auditory cortex

4. Ask one group at a time to raise hands and randomly join hands with other members of their group to form a tangled chain. The desired effect is a chaotic mess of handholding that is under the surface organised into four distinctive groups: the visual cortex, sensory cortex, auditory cortex, motor cortex.
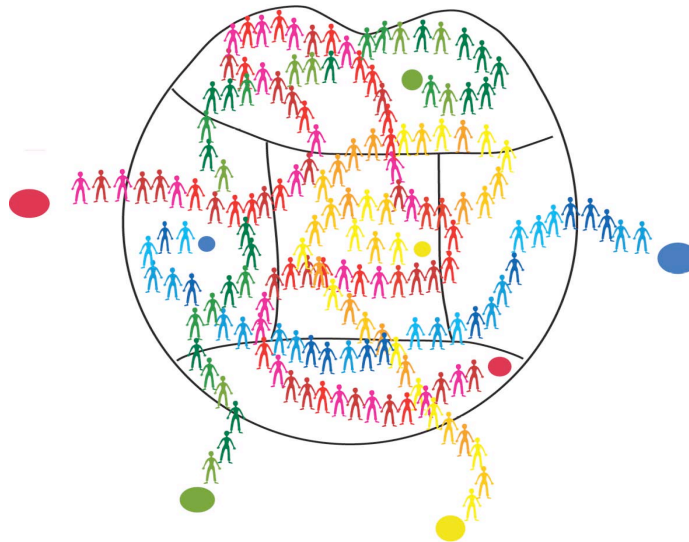
There will be a free hand at each end of the hand chain, one end located in one of the cortexes, the other end, outside the brain, ready to join onto the appropriate sense function,
e.g. skin, eye, body, ear.

To demonstrate, ask Volunteer **Skin** to join hands with the hand that is free at the end of the **sensory cortex chain** and send signals, by squeezing, to the next child and the next and so on.
As each function is stimulated by the teacher, the children should wait until they feel their hand squeezed before passing on the message. Ask the last child on the chain to shout "got it in the sensory cortex!" when the signal reaches him/her.

The teacher then activates each sense function e.g.
Show volunteer **eye** something (visual stimuli)
Tap volunteer **touch** on the shoulder
Ask volunteer **body** to move or shake
Make a noise that volunteer **ear** can hear

This process can be repeated many times, and when all areas of the brain are fully operational, the teacher can stimulate multiple sense functions at a time as our brains can cope with multiple stimula. The group can explore "brain damage" by breaking the chain within one cortex, i.e. get two children to let go. This way the group can experience how brain damage can affect messages getting through the brain.

Tool kit

In the tool kit will be downloadable graphics (Teaching Tool 1, Teaching Tool 2) that teacher can print out as props for the game and a projectable white board presentation (Teaching Tool 3) that can be used to generate discussion after the activity. A student questionnaire is also available as a download pdf.

Questions to ask the children

- What part of the brain or body where you?
- Where did you stand?
- What did you do to connect with the next neuron or body part?
- How was a signal sent from one part of the brain to the other?
- What does this represent in the real brain?
- What caused the signal to be sent?
- Where would a sound stimulus be received in the brain?
- Can the brain cope with more than one signal at a time?
- What might happen if part of the brain tissue is damaged?
- Can you think of a way to improve this game better?

Evaluation

A question and answer session using the projectable white board presentation (Teaching Tool 3) and a simple checklist/table (Student Questionnaire) to find out what children learnt.