HOW THE BRAIN LEARNS TO READ WITH PHONICS

BEFORE

A BRAIN BEFORE IT LEARNS HOW TO READ

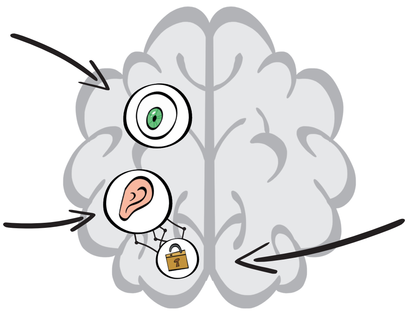
AGED 0–3

VISUAL CORTEX

The **visual cortex** is where the brain 'sees' things. It helps us see and identify objects, shapes, pictures, and people.

AUDITORY CORTEX

The **auditory cortex** is where the brain 'hears' things. It processes sounds.



WERNICKE'S AREA

The **Wernicke's area** is where the brain understands what things 'mean'. It maps the words we hear to their meaning and helps us to process sentences. Before we learn to read, the Wernicke's area helps us bring meaning to spoken language. This is why talking to your children is important. Oral literacy comes before written literacy.

Before we learn to read, the parts of the brain related to connecting letters to sounds are disconnected.

AFTER

A BRAIN AFTER IT LEARNS HOW TO READ THROUGH PHONICS

AGED 3+

VISUAL CORTEX

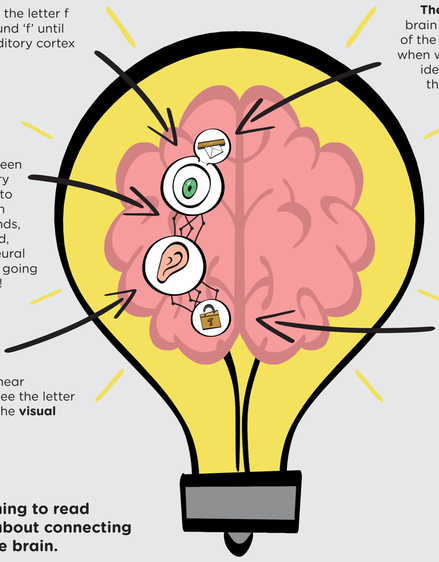
The **visual cortex** can see the letter f but it cannot hear the sound 'f' until a connection with the auditory cortex is formed.

NEURAL NETWORKS

Neural networks are the connections formed between the visual and the auditory cortex connecting letters to sounds. The more we train connecting letters to sounds, the more neurons we build, and the stronger these neural networks become. So get going with our phonics practice!

AUDITORY CORTEX

The **auditory cortex** can hear the letter f but it cannot see the letter *f* until a connection with the **visual cortex** is formed.



The process of learning to read through phonics is about connecting different parts of the brain.

THE LETTERBOX

The Letterbox does not exist in the brain of a newborn child. It is an area of the visual cortex that develops only when we develop neural networks that identify letters and map them onto their sounds. After lots of practice mapping letters to sounds, this information is stored in this area, making the process of reading gradually automatic.[1]

WERNICKE'S AREA

The **Wernicke's area** starts to change as the brain masters reading. It learns how to map written language, not just oral language, to meaning. Thus, we read the word 'funny' and map it to its meaning. We can also interpret sentences such as 'Bogart's bulging bug eyes are funny!'.

[1] See Dehaene, S. 2013.

WITHOUT

A BRAIN THAT IS LEARNING TO READ VIA THE WHOLE-WORD METHOD, RATHER THAN THROUGH PHONICS

VISUAL CORTEX

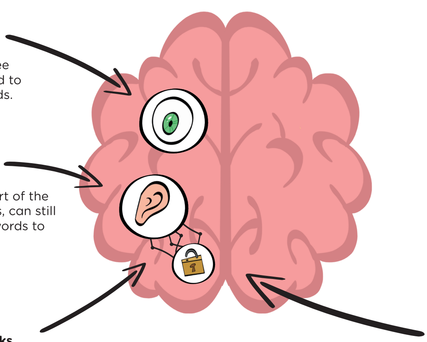
The **visual cortex**, the part of the brain that helps us see things, can still be employed to see and identify whole words.

AUDITORY CORTEX

The **auditory cortex**, the part of the brain that processes sounds, can still be used to connect whole words to their corresponding sound.

NEURAL NETWORKS

However, the **neural networks** which connect letters to sound are underdeveloped. As a result, children won't be equipped to read words they haven't seen before.



THE LETTERBOX

When a child learns how to read via the whole-word method, reading engages parts of the right hemisphere of the brain and the activity of the left hemisphere associated with fluent reading is missing.[2] Thus, the **letterbox**, the part of the brain that develops when we build connections between letters and sounds and lives in the left hemisphere, doesn't develop.

WERNICKE'S AREA

Wernicke's area: This area that maps words and sentences to their meaning is still used to interpret whole words.

[2] See Yoncheva et al., 2015.