

Words and Meaning

An understanding of the physiology of reading was crucial to the development of the perfect electronic screen. How we read:

START AT THE EYES

Written words are essentially images that have to be decoded by the brain. Reading begins with seeing the image of a word.

*All the world's a stage,
And all the men and women
merely players;
They have their exits and
their entrances.
And one man in his time
plays many parts.
His acts being seven ages, as
first the infant,
Mewling and puking in the
nurse's arms,
Then the whining school-boy,
with his satchel*

Word recall: After a child is familiar with a word, he forms a neural model that allows instant recognition

Foveal vision:

To read a word, the eye must bring it into this range, where the resolution is greatest

Perifoveal vision: Resolution is less clear in this area. The eye uses it to find the next word it must focus on.

Retina: Light passing through the cornea and lens creates an image on the retina, triggering nerve impulses. These impulses are assembled and relayed to the brain.

Inferior frontal gyrus
Brain
Occipital-temporal region

FROM IMAGES TO MESSAGES

Parieto-temporal region
To comprehend a written word, the brain must translate the word's image into its individual sounds.

Visual cortex: The entry point for data sent by the retina. It sends visual information to other parts of the brain to be processed.

Inferior frontal gyrus: Involved in linking letters to their sounds and analyzing them to identify the word they make up

Parieto-temporal region: Also helps with word analysis. In less skilled readers, this is a necessary step in determining how to articulate and understand a word.

Occipital-temporal region: Used more in experienced readers, it reacts to familiar words almost as symbols, instantly recalling their pronunciations and meanings.

EYE MOVEMENT: STOPS AND STARTS

Saccades: When a person reads, the eyes do not move smoothly, but in a series of jumps, or saccades

Fixations: The brain processes the material during pauses between saccades, called fixations



Newsweek, November 26, 2007. "The Future of Reading." Article about the physiology of reading and the development of Amazon's Kindle.

Sources: "Overcoming Dyslexia" by Dr. Sally Shaywitz; Dr. Bennett Shaywitz; Southwest Educational Development Laboratory, "The Magic of Reading" by Bill Hill; graphic by Kevin Hand, Text and research by Marc Bain for Newsweek.

Words and Meaning

From images to messages

Written words are essentially images that have to be decoded by the brain. Reading begins with seeing the image of a word.

To read a word, the eye must bring it into this range, where the resolution is greatest

*All the world's a stage,
And all the men and women
merely players;
They have their exits and
their entrances.
And one man in his time
plays many parts.
His acts being seven ages. At
first the infant,
Mewling and puking in the
nurse's arms.
Then the whining school-boy,
with his satchel*

Word recall: After a child is familiar with a word, he forms a neural model that allows instant recognition

Perifoveal vision: Resolution is less clear in this area. The eye uses it to find the next word it must focus on.

Retina: Light passing through the cornea and lens creates an image on the retina, triggering nerve impulses. These impulses are assembled and relayed to the brain.

Inferior frontal gyrus

Occipital-temporal region

FROM IMAGES TO MESSAGES

Parieto- To comprehend a written word, the brain must translate the word's image into its individual sounds.

Visual cortex: The entry point for data sent by the retina. It sends visual information to other parts of the brain to be processed.

Inferior frontal gyrus: Involved in linking letters to their sounds and analyzing them to identify the word they make up

Parieto-temporal region: Also helps with word analysis. In less skilled readers, this is a necessary step in determining how to articulate and understand a word.

Occipital-temporal region: Used more in experienced readers, it reacts to familiar words almost as symbols, instantly recalling their pronunciations and meanings.

EYE MOVEMENT: STOPS AND STARTS

Saccades: When a person reads, the eyes do not move smoothly, but in a series of jumps, or saccades

Fixations: The brain processes the material during pauses between saccades, called fixations

*And one man in his time
plays many parts.
His acts being seven ages. At
first the infant,
Mewling and puking in the
nurse's arms.
Then the whining school-boy,
with his satchel*

SOURCES: "OVERCOMING DYSLIXIA" BY DR. SALLY SHAYWITZ, DR. BENNETT SHAYWITZ, SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY; "THE MAGIC OF READING" BY BILL HILL, GRAPHIC BY KEVIN HAND, TEXT AND RESEARCH BY MARC DAIN FOR NEWSWEEK

Words and Meaning

An understanding of the physiology of reading was crucial to the development of the perfect electronic screen. How we read:

START AT THE EYES

Written words are essentially images that have to be decoded.

Foveal vision:

To read a word, the eye must bring it into this

To comprehend a written word, the brain must translate the word's image into its individual sounds.

Inferior frontal gyrus

Brain

FROM IMAGES TO MESSAGES

Parieto-temporal

To comprehend a written word, the brain must translate the word's image into its individual sounds.

Visual cortex: The entry point for data sent by the retina. It sends visual information to other parts of the brain to be processed.

Inferior frontal gyrus: Involved in linking letters to their sounds and analyzing them to identify the word they make up.

Parieto-temporal region: Also helps with word analysis. In less skilled readers, this is a necessary step in determining how to articulate and understand a word.

Occipital-temporal region: Used more in experienced readers, it reacts to familiar words almost as symbols, instantly recalling their pronunciations and meanings.

EYE MOVEMENT: STOPS AND STARTS

Saccades: When a person reads, the eyes do not move smoothly, but in a series of jumps, or saccades.

Fixations: The brain processes the material during pauses between saccades, called fixations.

Word recall: After a child is familiar with a word, he forms a neural model that allows instant recognition.

Perifoveal vision: Resolution is less clear in this area. The eye uses it to find the next word it must focus on.

Retina: Light passing through the cornea and lens creates an image on the retina, triggering nerve impulses. These impulses are assembled and relayed to the brain.

SOURCES: "OVERCOMING DYSLLEXIA" BY DR. SALLY SHAYWITZ, DR. BENNETT SHAYWITZ, SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY; "THE MAGIC OF READING" BY BILL HILL, GRAPHIC BY KEVIN HAND, TEXT AND RESEARCH BY MARC DAIN FOR NEWSWEEK

Words and Meaning

An understanding of the physiology of reading was crucial to the development of the modern reading curriculum.

START

Written images are processed by the brain with the help of the visual cortex.

All the words in the world are stored in the brain. And a mere thought can bring them back. They are there, waiting. And they are ready to be used. His first words were "Mama" and "Dada". Then the words "Mama" and "Dada" were used to describe the mother and the father. Then the words "Mama" and "Dada" were used to describe the mother and the father.

Inferior frontal gyrus

Inferior frontal gyrus

Brain

Parieto-temporal region

Occipital-temporal region

Visual cortex

FROM IMAGES TO MESSAGES

Parieto-temporal region

To comprehend a written word, the brain must first process the word's image.

word's image

ual sounds.

The entry sent by the visual information parts of the brain is processed.

ed in linking the words together.

alyzing them up

helps with reading, this is how a word is processed.

ed more in the brain to familiarly recall meanings.

EYE MOVEMENT: STOPS AND STARTS

Saccades: When a person reads, the eyes do not move smoothly, but in a series of jumps, or saccades.

Fixations: The brain processes the material during pauses between saccades, called fixations.



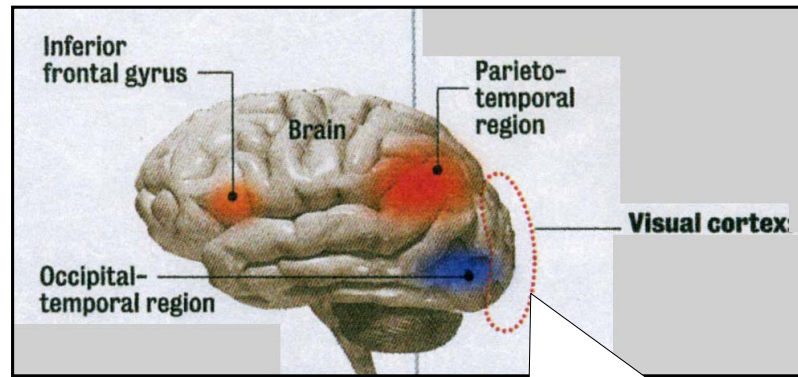
Word recall: After a child is familiar with a word, he forms a neural model that allows instant recognition.

Perifoveal vision: Resolution is less clear in this area. The eye uses it to find the next word it must focus on.

Retina: Light passing through the cornea and lens creates an image on the retina, triggering nerve impulses. These impulses are assembled and relayed to the brain.

SOURCES: "OVERCOMING DYSLLEXIA" BY DR. SALLY SHAYWITZ, DR. BENNETT SHAYWITZ, SOUTHWEST EDUCATIONAL DEVELOPMENT LABORATORY; "THE MAGIC OF READING" BY BILL HILL, GRAPHIC BY KEVIN HAND, TEXT AND RESEARCH BY MARC DANK FOR NEWSWEEK

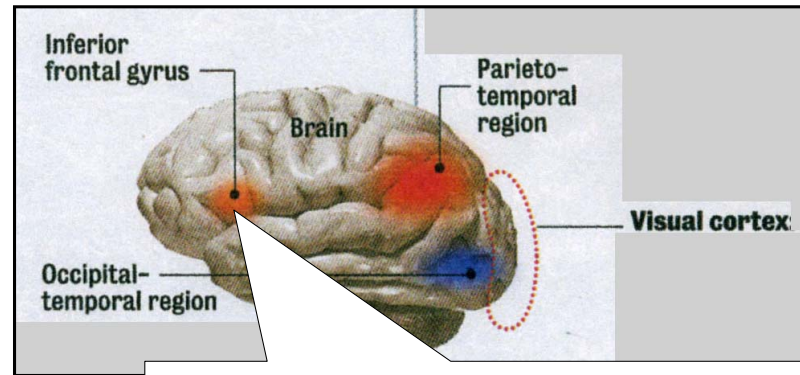
The Nature of the Brain



Visual cortex:

The entry point for data sent by the retina. It sends visual information to other parts of the brain to be processed.

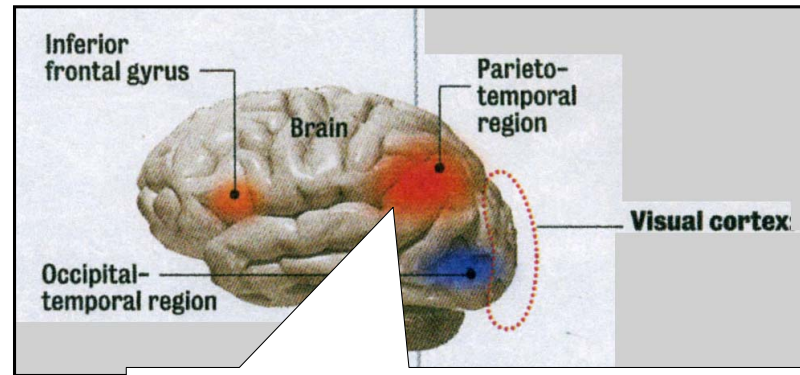
The Nature of the Brain



Inferior frontal gyrus:

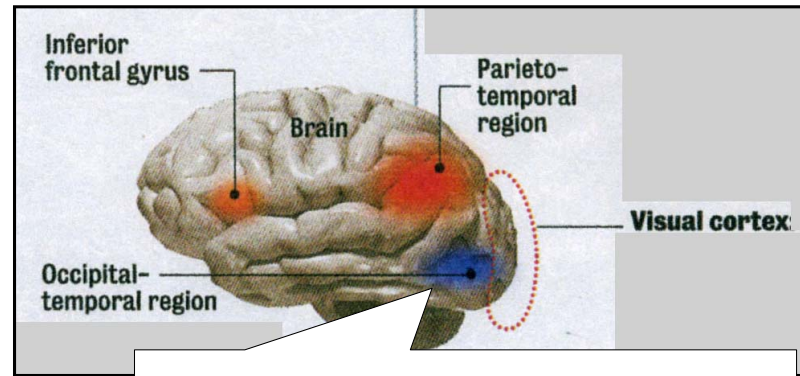
Involved in linking letters to their sounds and analyzing them to identify the word they make up.

The Nature of the Brain



Parieto-temporal region:
Also helps with word analysis.
In less skilled readers, this is a
necessary step in determining how to
articulate and understand a word.

The Nature of the Brain



Occipital-temporal region:
Used more in experienced readers.
It reacts to familiar words almost as
symbols, instantly recalling their
pronunciations and meanings.