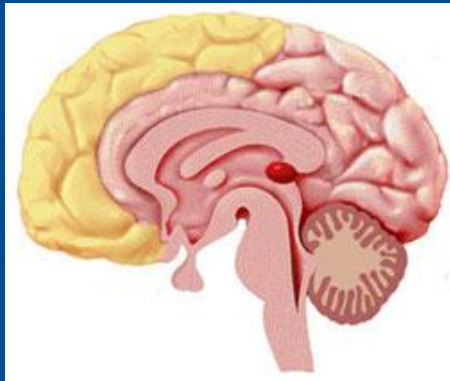


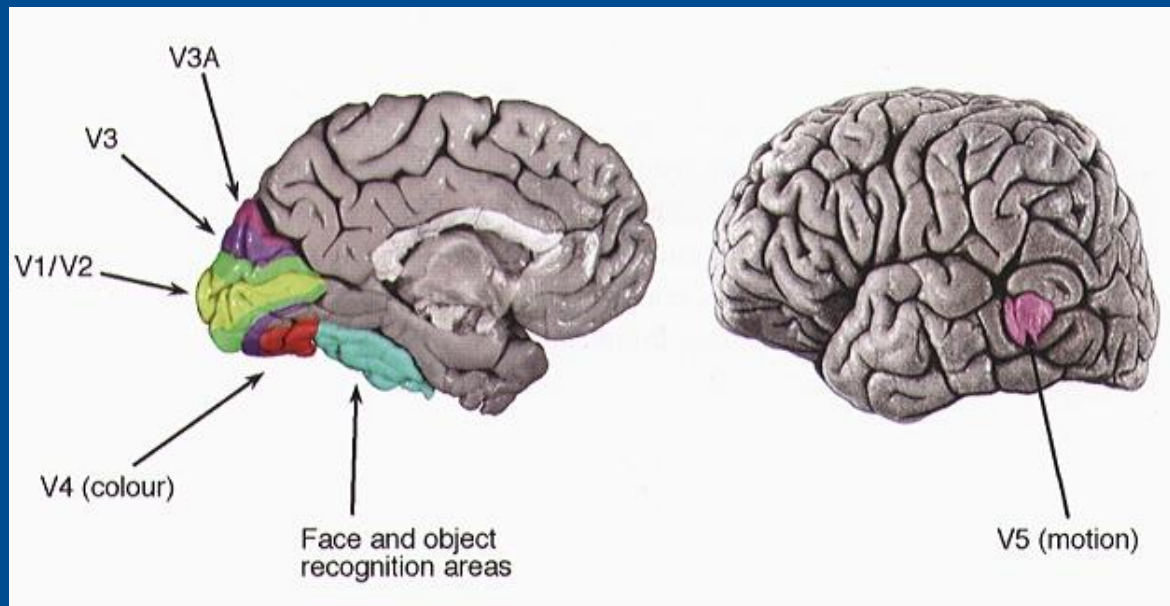
UDL



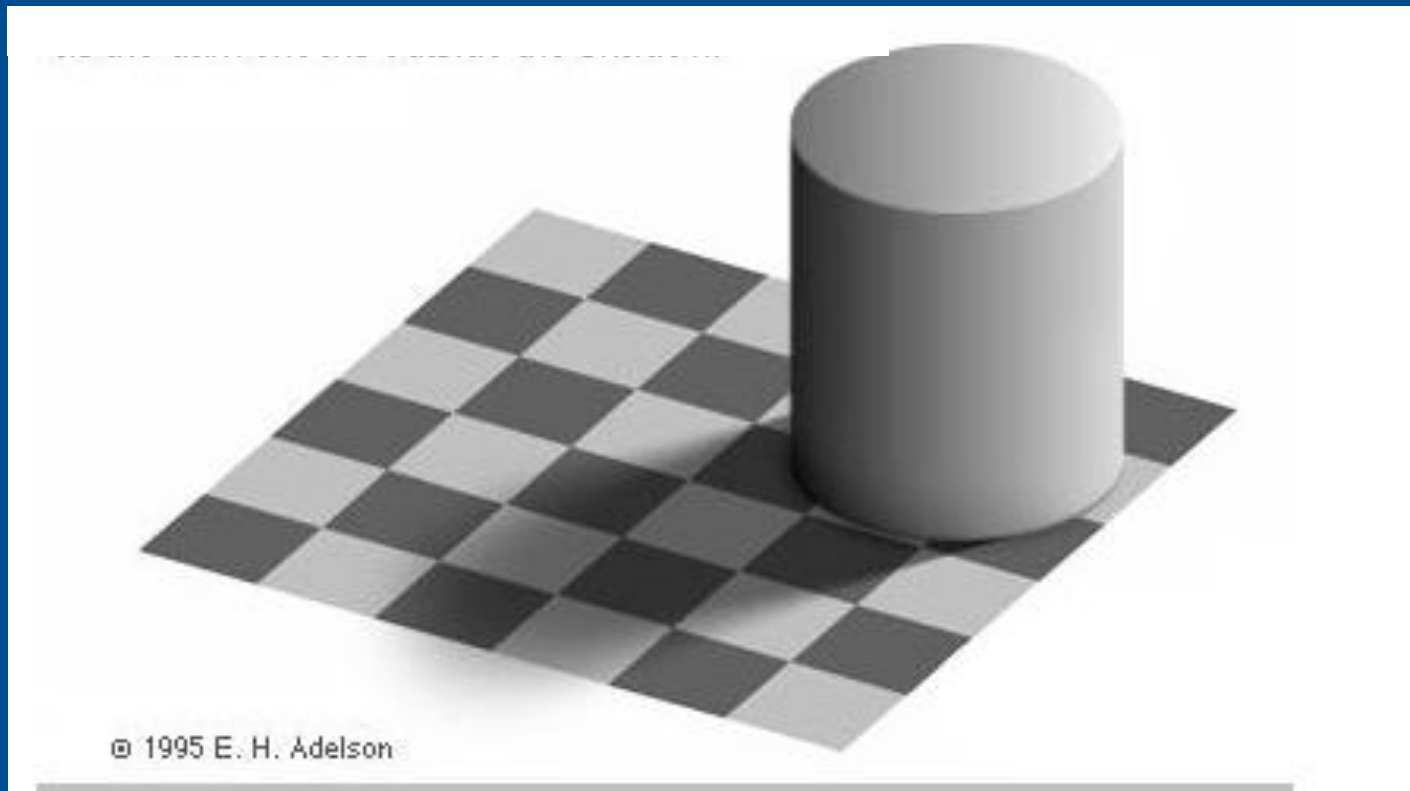
What technology can learn
from the brain

NCTI, 2009

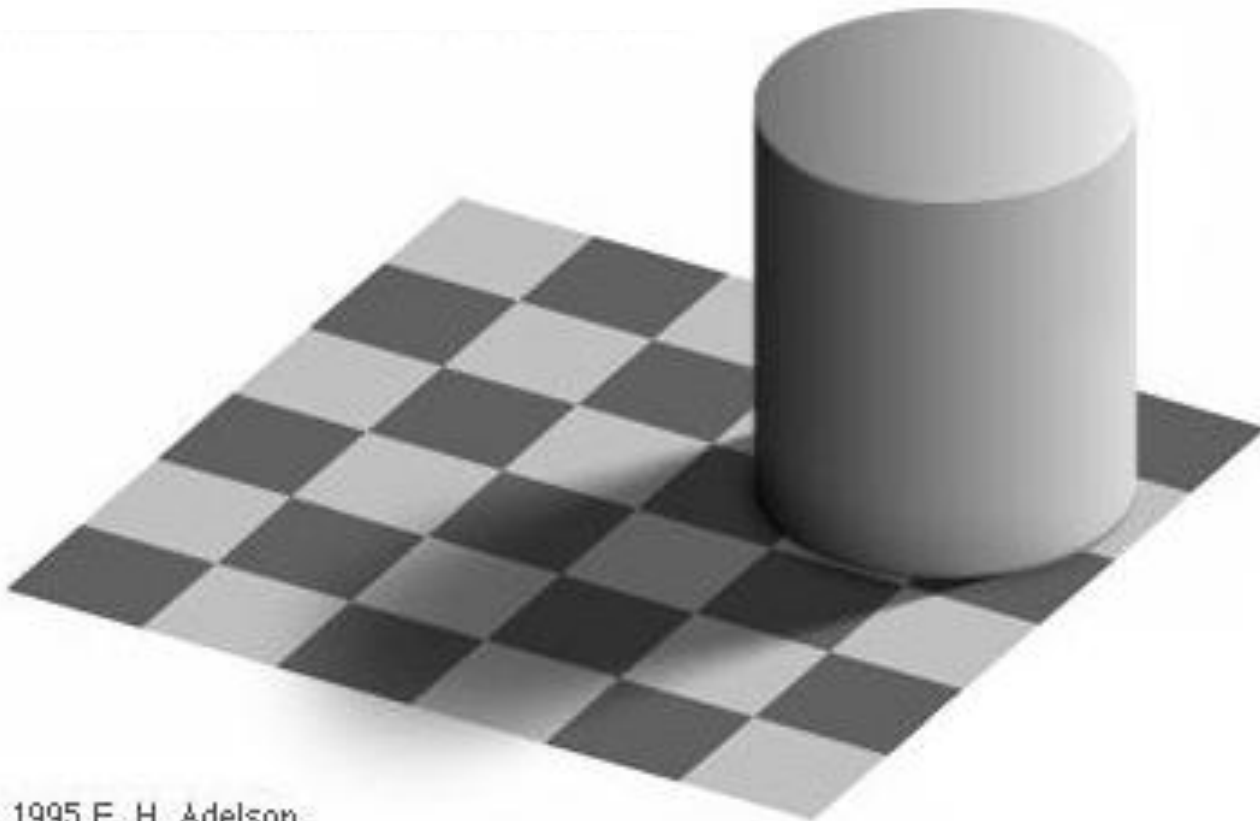
1) Learning is distributed



2) Learning is distributed in a network



UDL



© 1995 E. H. Adelson

Brain as an information network

With many forms of representation
and many interconnections

Many ways of knowing

My dog knows calculus



Professor Penning,
with students

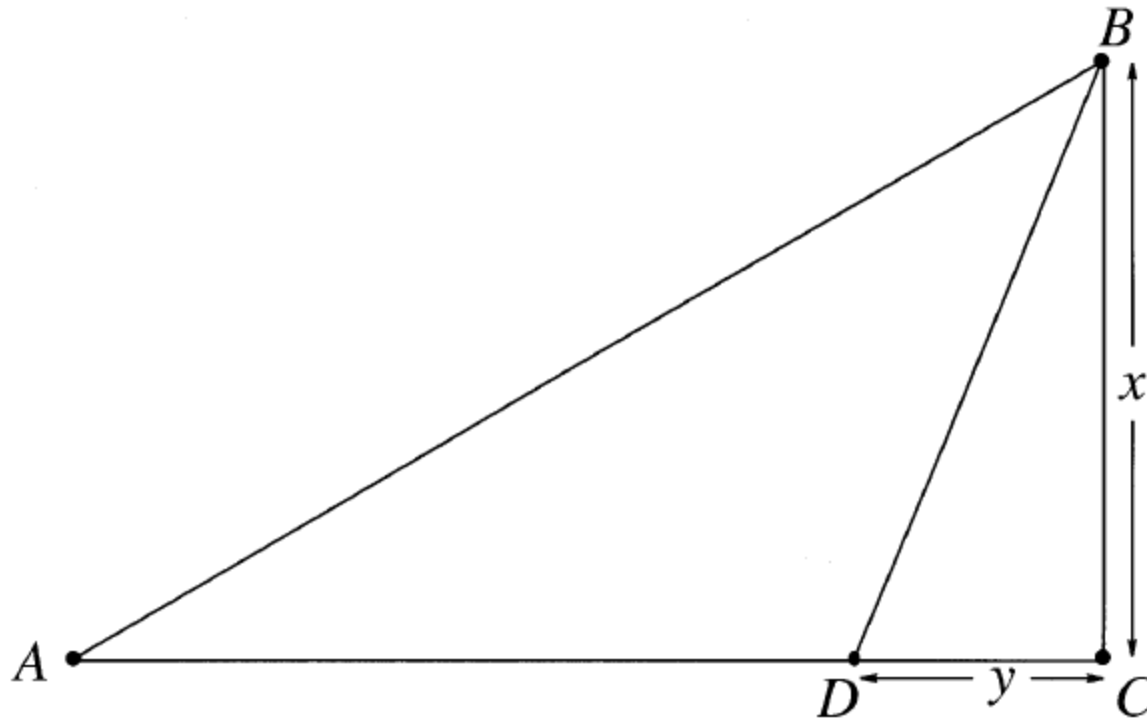


Figure 1. Paths to the ball

$$T(y) = \frac{z - y}{r} + \frac{\sqrt{x^2 + y^2}}{s}.$$

ue of y that minimizes $T(y)$. Of cou
 $= 0$ for y , we get

$$y = \frac{x}{\sqrt{r/s + 1} \sqrt{r/s - 1}},$$

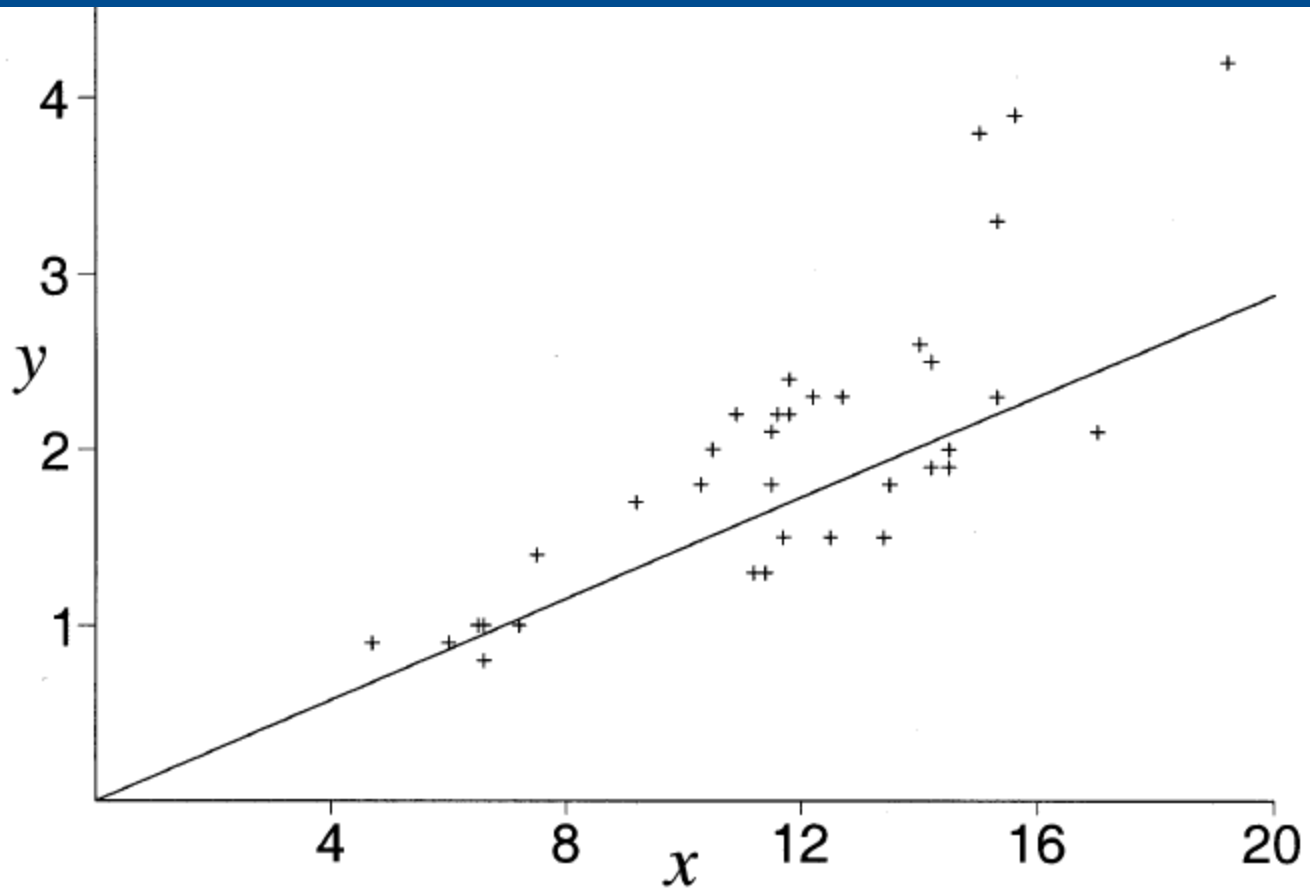
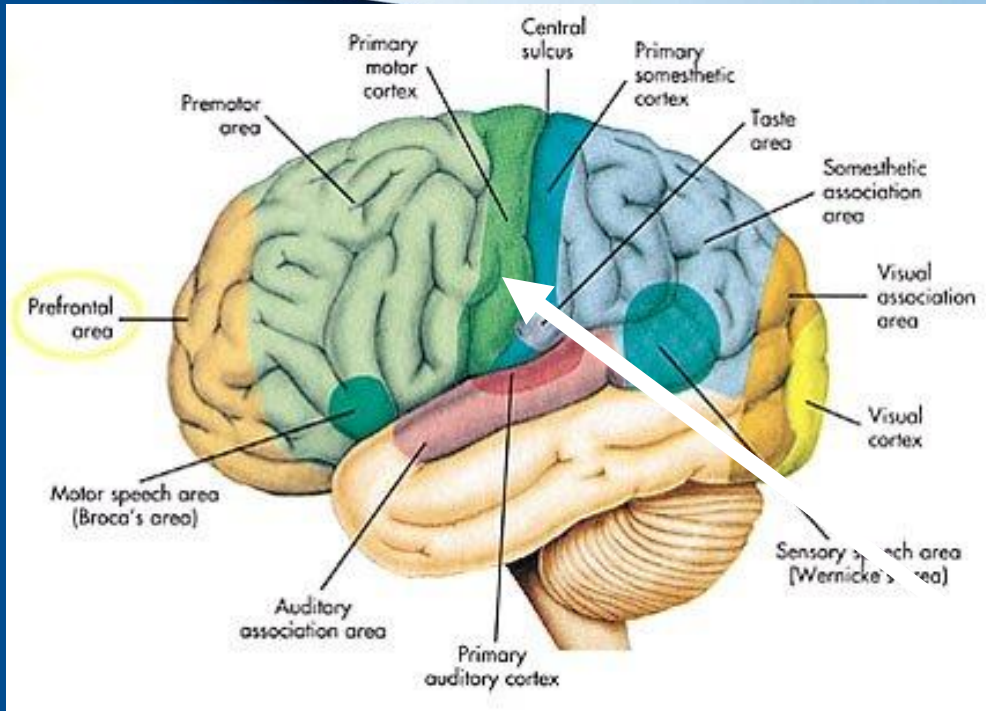


Figure 3. Scatter plot with optimal line

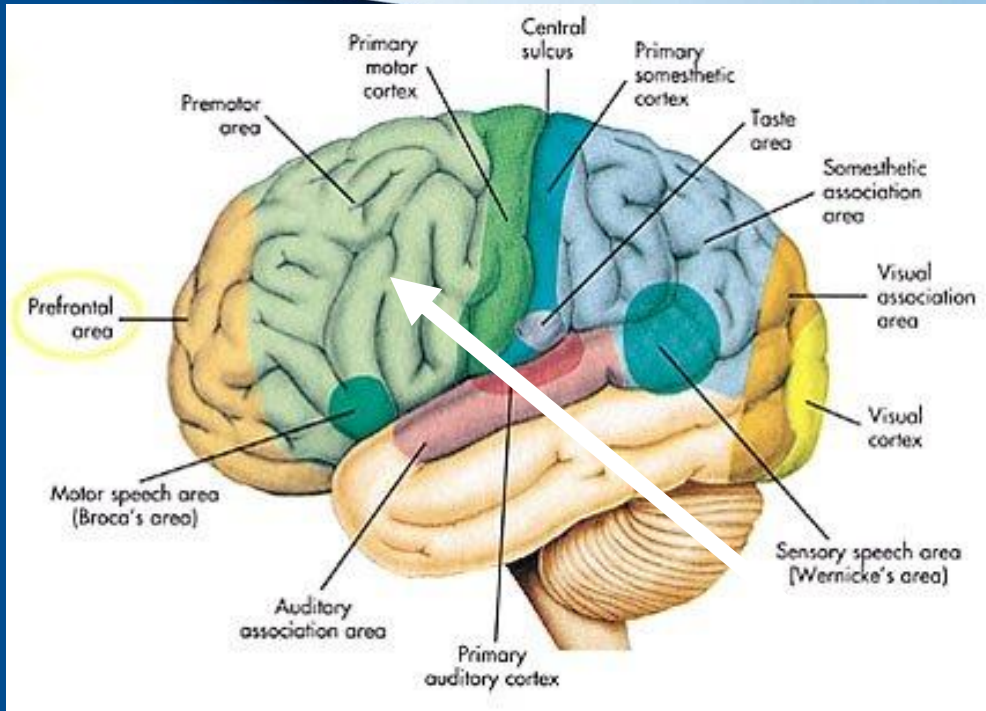


Brain is also an action network

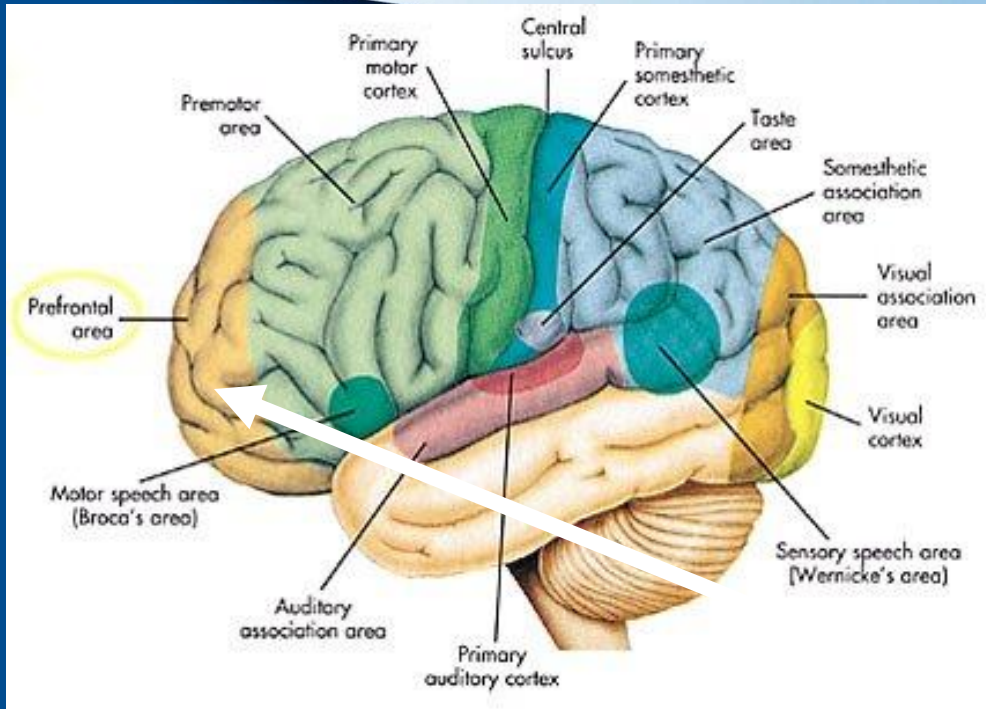
Many ways of knowing how



Physical Actions or Movement



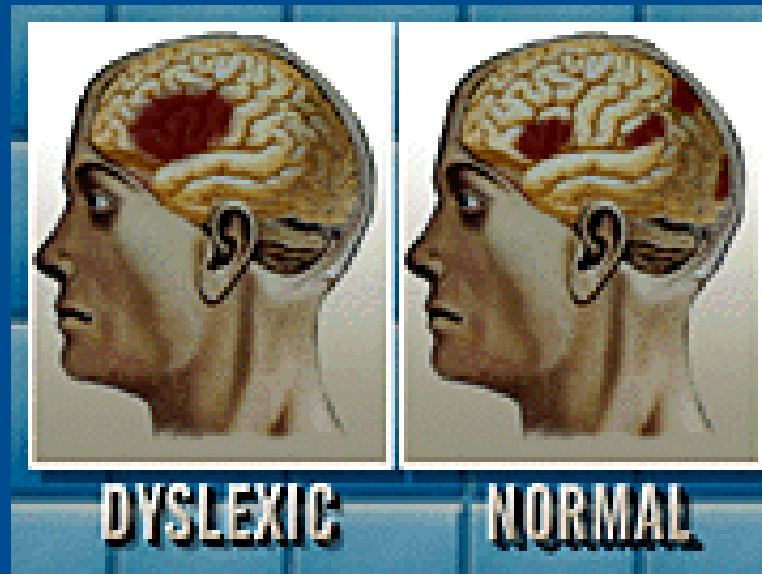
Skills and Fluency

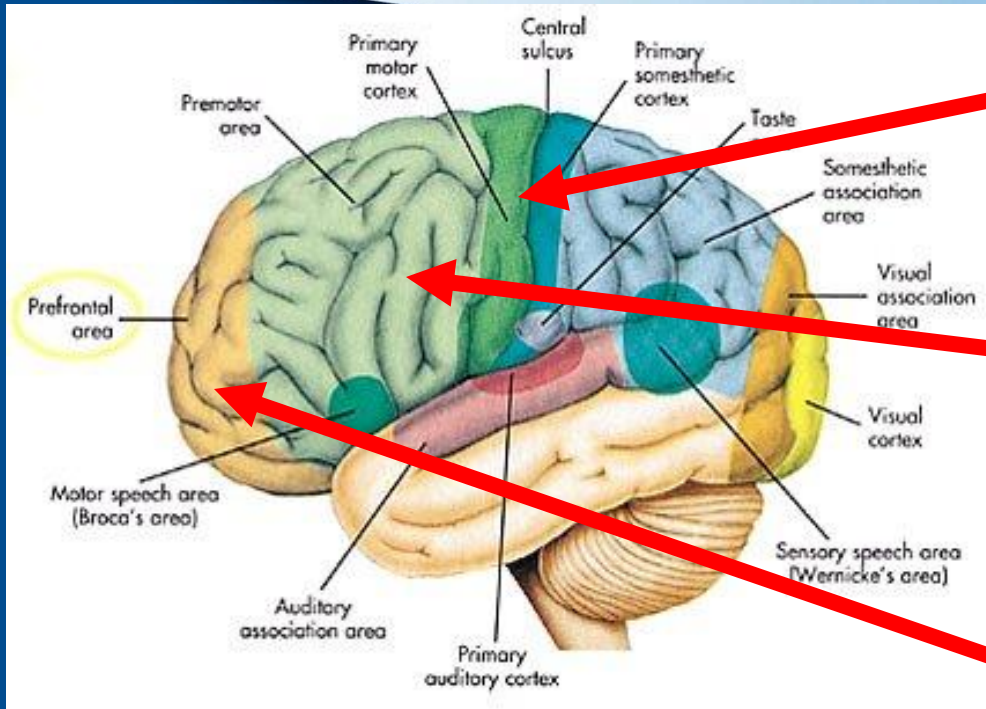


Executive Functions

5) Learning is a affective social network
Capgras Syndrome

3) Learning is individual





II. Expression

Use multiple means of expression

4. Provide options for physical action

- Options in the mode of physical response
- Options in the means of navigation
- Options for accessing tools and assistive technologies

5. Provide options for expressive skills and fluency

- Options in the media for communication
- Options in the tools for composition and problem solving
- Options in the scaffolds for practice and performance

6. Provide options for executive functions

- Options that guide effective goal-setting
- Options that support planning and strategy development
- Options that facilitate managing information and resources
- Options that enhance capacity for monitoring progress



Multiple means of representation



Multiple means of action
and expression



Multiple means of engagement

1) Design for individual differences

Design for Many ways of knowing that
Design for Many ways of knowing how
Design for Many ways of knowing why

UDL

See Full guidelines

4) Learning is ubiquitous