The best time to learn is during the period when the necessary brain cells are created in the relevant area of the brain and they are hungry to be programmed with new connections.

**OPTIMAL CONDITIONS FOR LEARNING**

**Neurons and Synapses**

- The brain is made of brain cells called neurons that create connections called synapses.

**BRAIN CELLS CONNECT**

- At birth the brain has already grown to 25% of its adult size.
- At age 3 the brain has reached 80% of its adult size.

**FAST GROWTH**

- Every new experience creates new connections in the brain.
- Repeated experiences strengthen the connections.
- Unused connections disappear if not used (forgetting).

**LEARNING BY EXPERIENCE**

- Different areas of the brain handle different functions.
- Higher brain functions become possible as the brain grows.

**Brain Sensitivity**

- The formation of new neurons and synapses is fastest at birth then slows down over time, which is why babies and toddlers can learn so fast compared to adults.

**CRITICAL PERIOD**

- Each neuron connects with, on average, 40,000 synapses.
- All brain cells are not alike. There are as many as 10,000 specific types of neurons in the brain.
- Only 5 minutes without oxygen can cause brain damage.
- No one knows for sure, but the latest estimate is that our brains contain roughly 86 billion brain cells.

**Brain Functions**

- Frontal Lobe:
  - Abstract thinking
  - Problem solving
  - Reasoning
  - Executive functioning
  - Organizing
  - Motor function
  - Regulates emotions
  - Expressive language
  - Organizes thoughts on paper
  - Remembers facts from the teacher
  - Starts and completes tasks
  - Tells stories

- Temporal Lobe:
  - Speech
  - Auditory processing
  - Hearing
  - Behavior
  - Emotions
  - Short-term memory
  - Long-term memory

- Occipital Lobe:
  - Visual system
  - Visual information
  - Processes words on a page
  - Knows shapes and sizes
  - Recognizes letters
  - Knows left from right

- Parietal Lobe:
  - Sensory information
  - Balance
  - Coordination
  - Attention
  - Rhythm
  - Proprioception
  - Vestibular
  - Kick a ball
  - Throw a ball
  - Jump on one foot
  - Ride a bike

- Cerebellum:
  - Balance
  - Coordination
  - Attention
  - Rhythm
  - Proprioception
  - Vestibular
  - Kick a ball
  - Throw a ball
  - Jump on one foot
  - Ride a bike

- Spinal Cord:
  - Motor development
  - Motor control
  - Reflexes
  - Motor development

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- Brain Facts:
  - Each brain cell communicates with 100,000 neurons on average. (Neuroplasticity)
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**EAST GROWTH**

- At both the brain has already grown to 25% of its adult size.
- At age 3 the brain has reached 80% of its adult size.

**CRITICAL PERIOD**

- Different areas of the brain handle different functions.
- Higher brain functions become possible as the brain grows.

**BRAIN CELL DEVELOPMENT**

- Connections grow and disappear over time.
- Unused connections disappear if not used (forgetting).

**LEARNING BY EXPERIENCE**

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**BRAIN CELLS CONNECT**

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