How Play and Developmental Toys Support Young Children with Diverse Needs in Early Childhood Education

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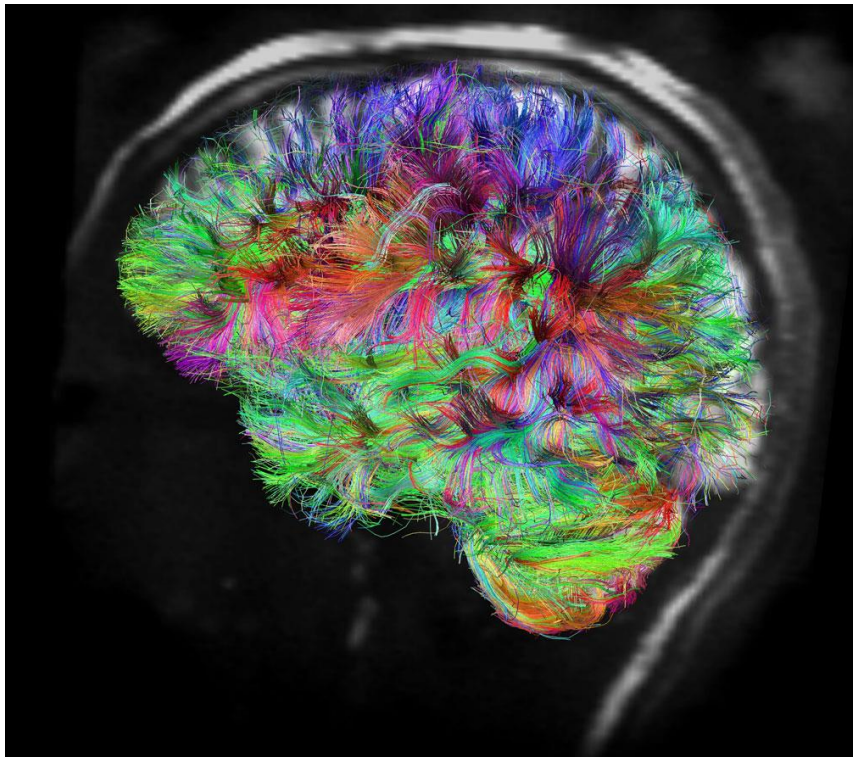
How we **learn** and **memorize**?

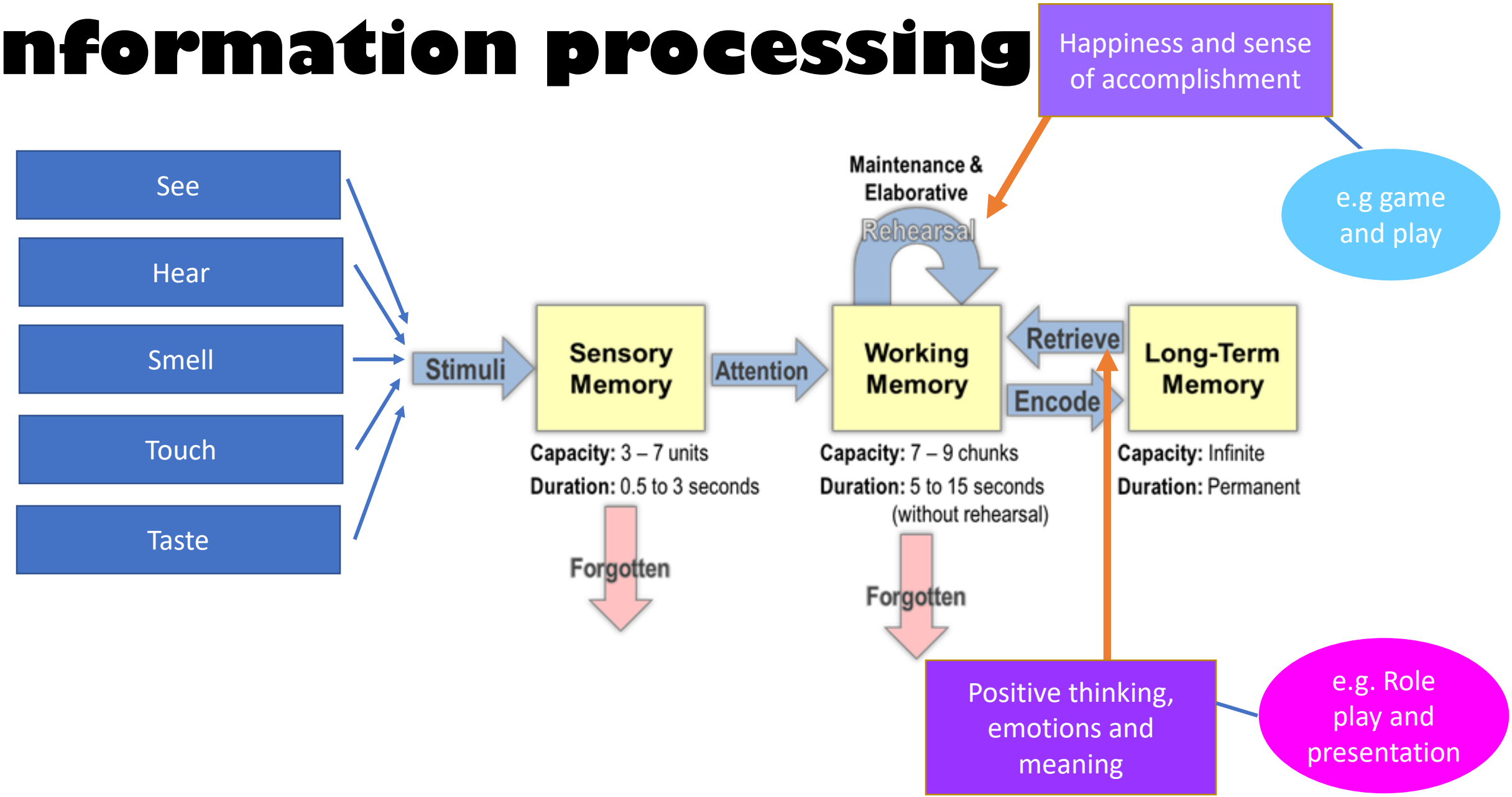
We learn through:

Behaviorism and constructivism

- Sensory stimulation
- Hands-on experiences
- Internalizing and consolidating
- Imitations
- Scaffolding
- Information processing theory
- Executive Function skills
- Working memory skills

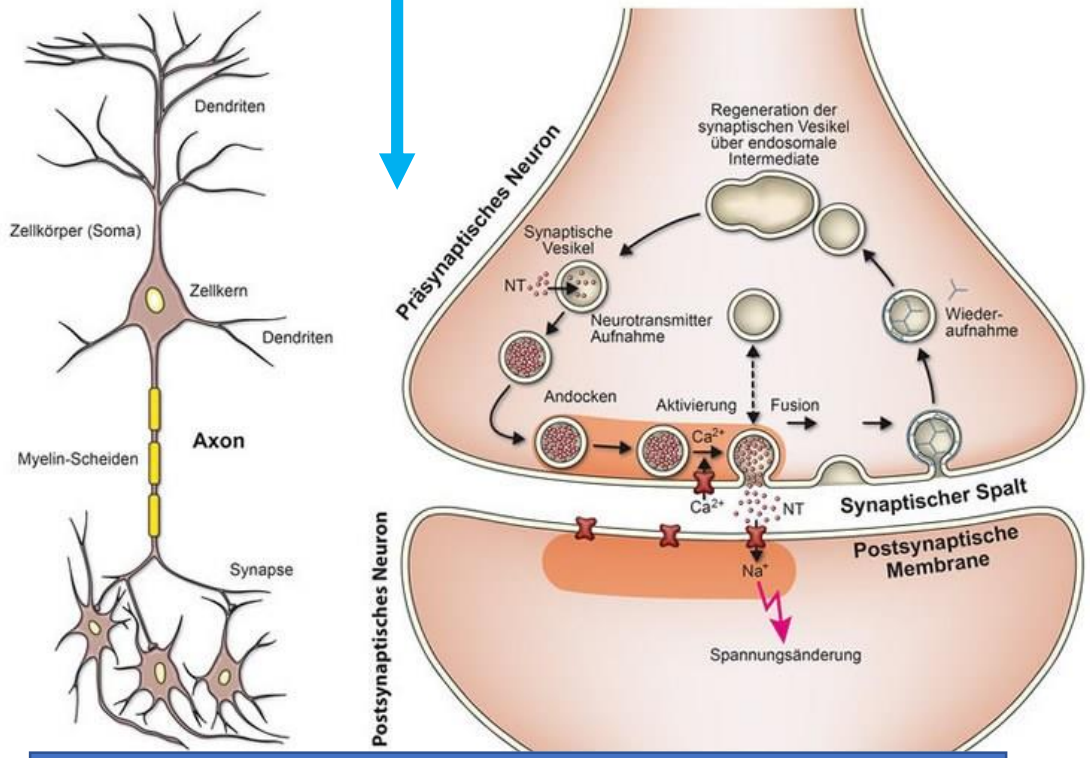


Information processing



Emotions and brain

Synaptic connections inside the brain



Construct knowledge through hands-on experiences, sensory stimulations,

Hippocampus

Toxic stress and cortisol

Converting short-term memories into long-term memories; memory retention and consolidation of new memories

Why neurosciences in ECE?

Young brain is:

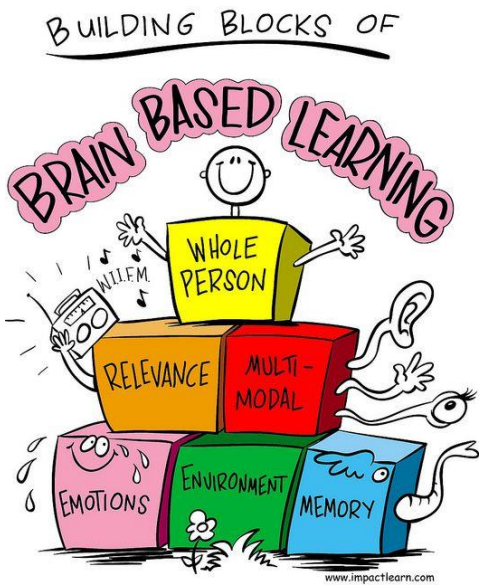
- **Social and Emotional**-caused decisions and behaviors(Cozolino, L. , 2013).
- **Neuro-plasticity**- the brain is hypersensitive to traumatic and environmental experiences, with neural connections and activations growing and being strengthened based on these experiences (positive or negative) (Matthew Lynch, 2019)
- Laying down **neural pathway** by learning and experiencing- the most profound synaptic activity occurs during the **initial five years** of life (Matthew Lynch, 2019)
- **Active and Kinesthetic**
- Curiousity, challenging-based(Timothy et al, 2012), Good stress and Cortisol are arousing internal motivation-Developmental appropriate practice (DAP)

Tips of Learn Through Play

Guided play VS Free Play

Brain based learning in ECE settings

Psychology + Technology + Neurology



Teaching strategies

Strengthening the connections in children brains by activating their prior knowledge when introduce new knowledge

Utilizing tools

Assisting children to represent their thinking:
kinesthetically, visually and phonetically.

(Pritchard, A. 2018)

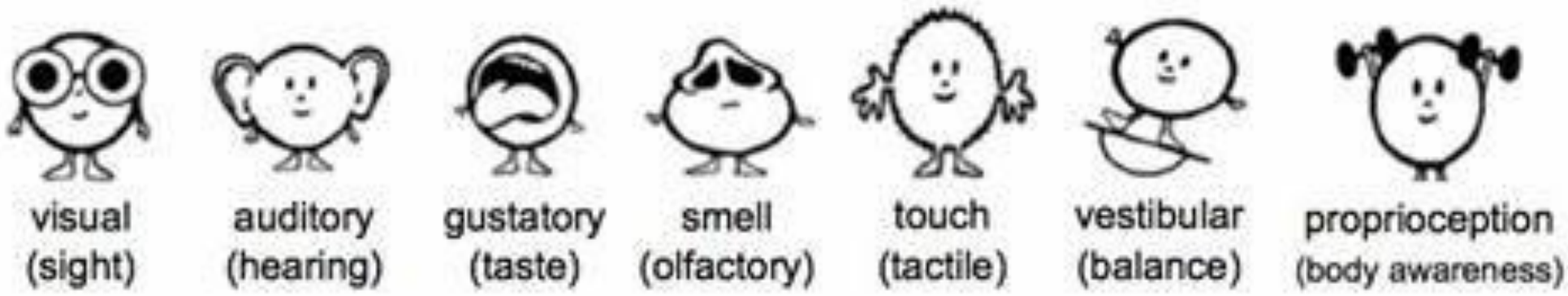
- Engaging diverse learners
- Learning environment with rich stimuli
- Valuable feedback

Reviewing your teaching strategies

Emotions and social	**Bring happiness and sense of accomplishment**
Knowledge, connections 	➢ **Asking relevant questions** ➢ **Associating new knowledge to prior knowledge** ➢ **Time to express-Individual and group presentation (visual + verbal, use picture, words and languages)** ➢ **Interaction-quality feedback from teachers** ➢ **hands-on experiences**
Challenges	**Challenging activities**
Kinesthetic	**Body movement**
Sensory stimulation	**7 senses**

Besides Five senses-7 senses

- **Vision, Olfaction, Audition, Gustation**
- **Tactile sense** (觸覺)
- **Proprioception** (本體覺)
- **vestibular sense** (前庭覺)

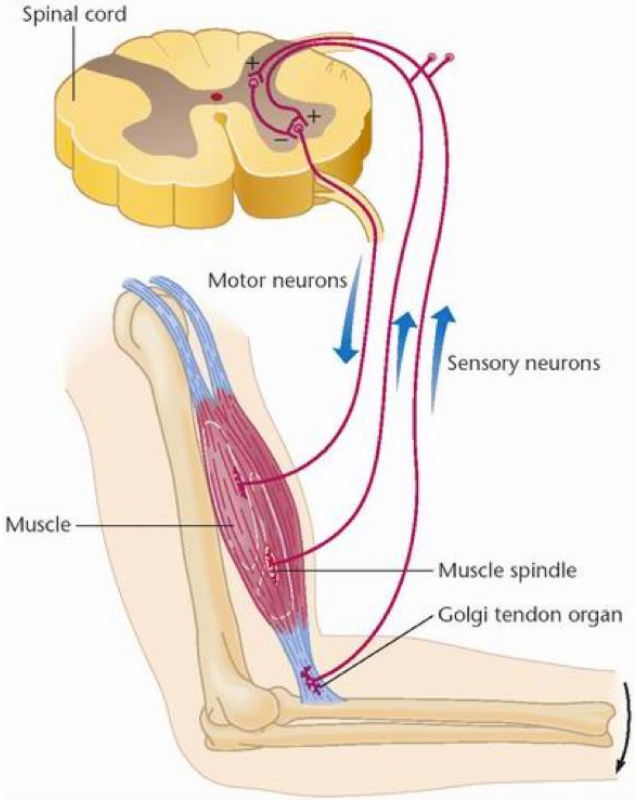


Developing of proprioception(本體感覺)

All levels of learning involve the body and the mind.

- ➢Body awareness
- ➢Brain and body coordination
- *Teaching strategies and utilizing tools

Sensory Integration

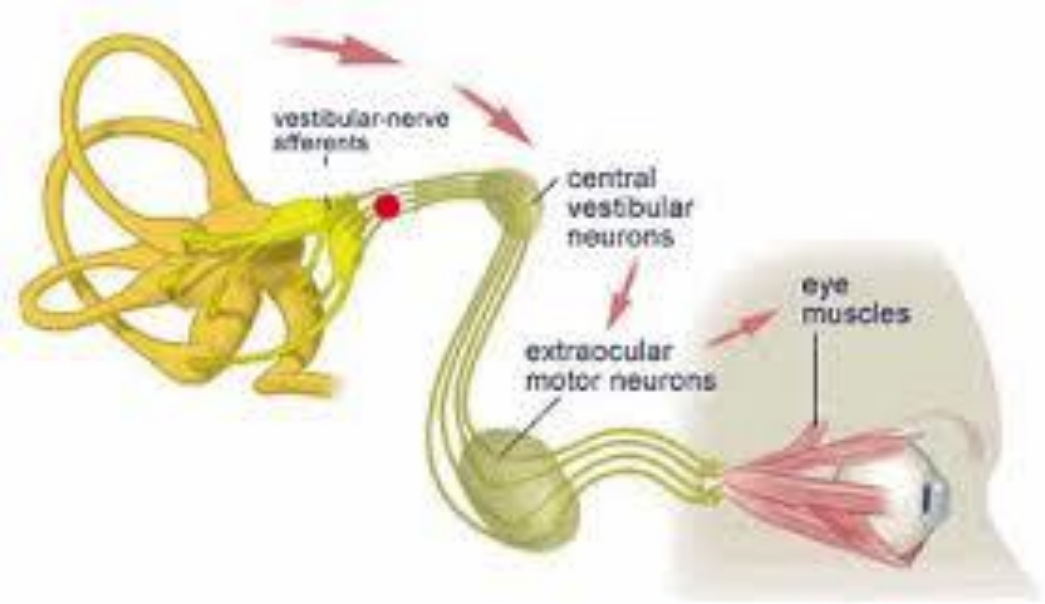


Developing of vestibular sense(前庭覺)

- Balancing skills (sense of motion)
- Brain and body coordination (Head position and spatial orientation)

*Teaching strategies and utilizing tools

Affect the learning, focus and behaviour



See through your brain

- electroencephalogram (EEG)-measure the brain wave pattern and electrical activity of the brain.

Alpha waves: awake and relax; Beta waves: awake and thinking; and Gamma waves: deeply focus on something). Measures the activeness(fires) of Mirror Neurons System(MNS) that reflects the degree of brain activities(by electrical signals) about observational learning, emotion regulations and imitations.

(Honghui Zhang and Joshua Jacobs, 2015)

- Data driven Education-Teachers reactions to echo students' brain status

(Little, M., Cohen-Vogel, L., Sadler, J., & Merrill, B.,2019)

- Cortisol test

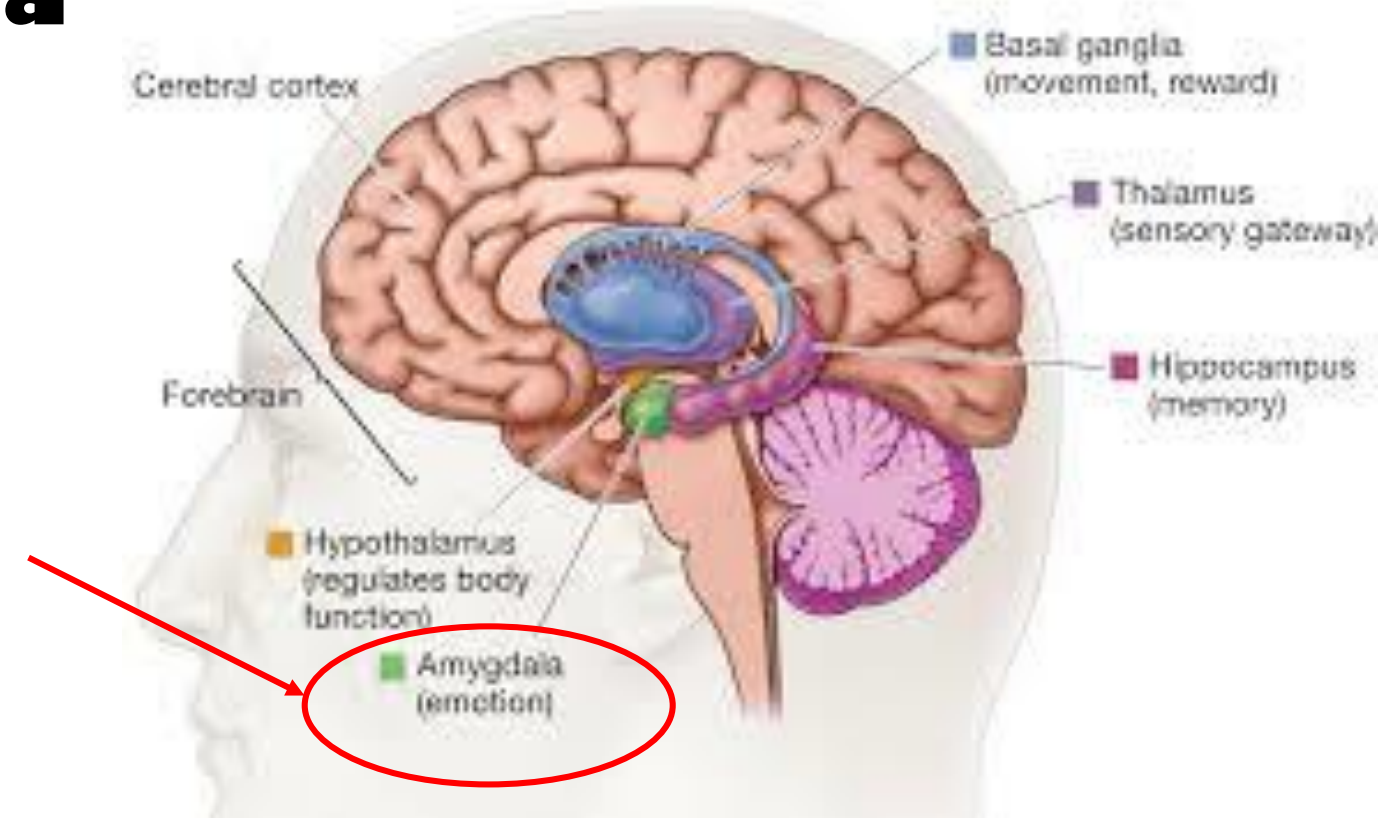
(Doris Bergen and Michael Woodin, 2017)

Tips of Learn Through Play

Guided play VS Free Play

Good stress Vs Toxic stress

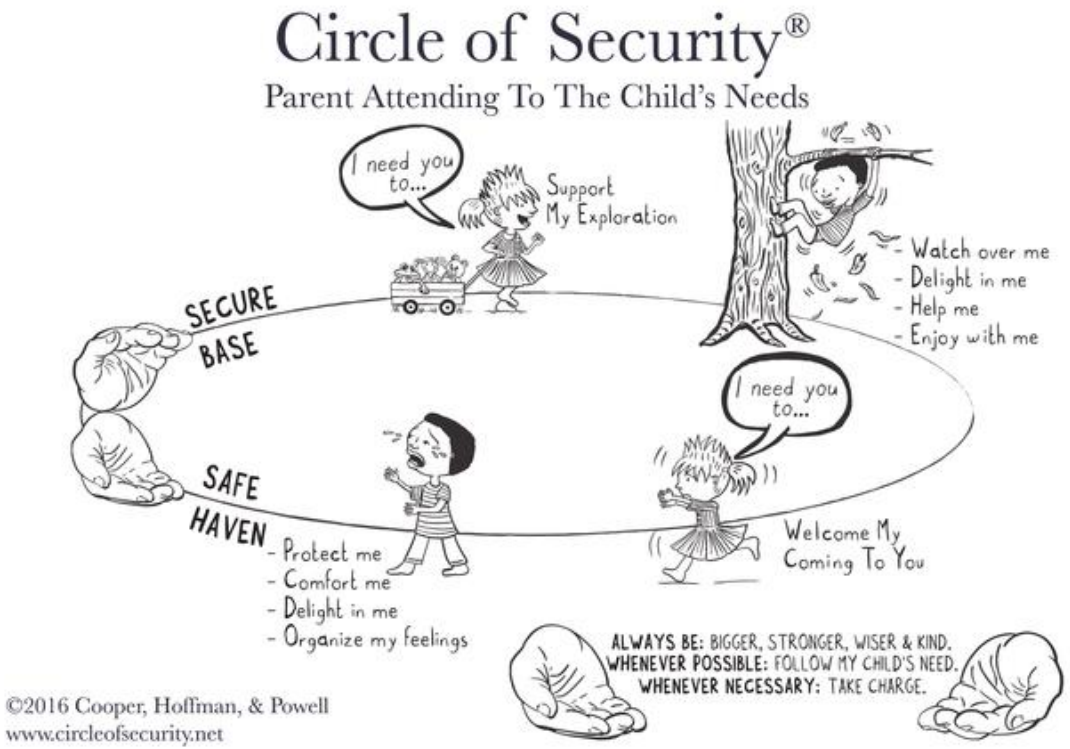
Amygdala

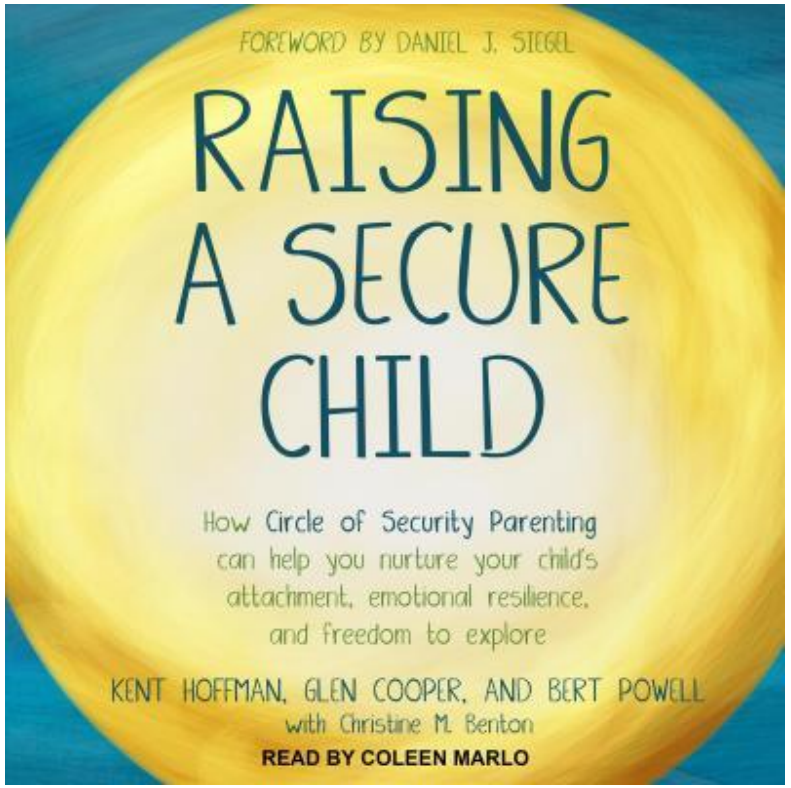


Parents

Emotions support

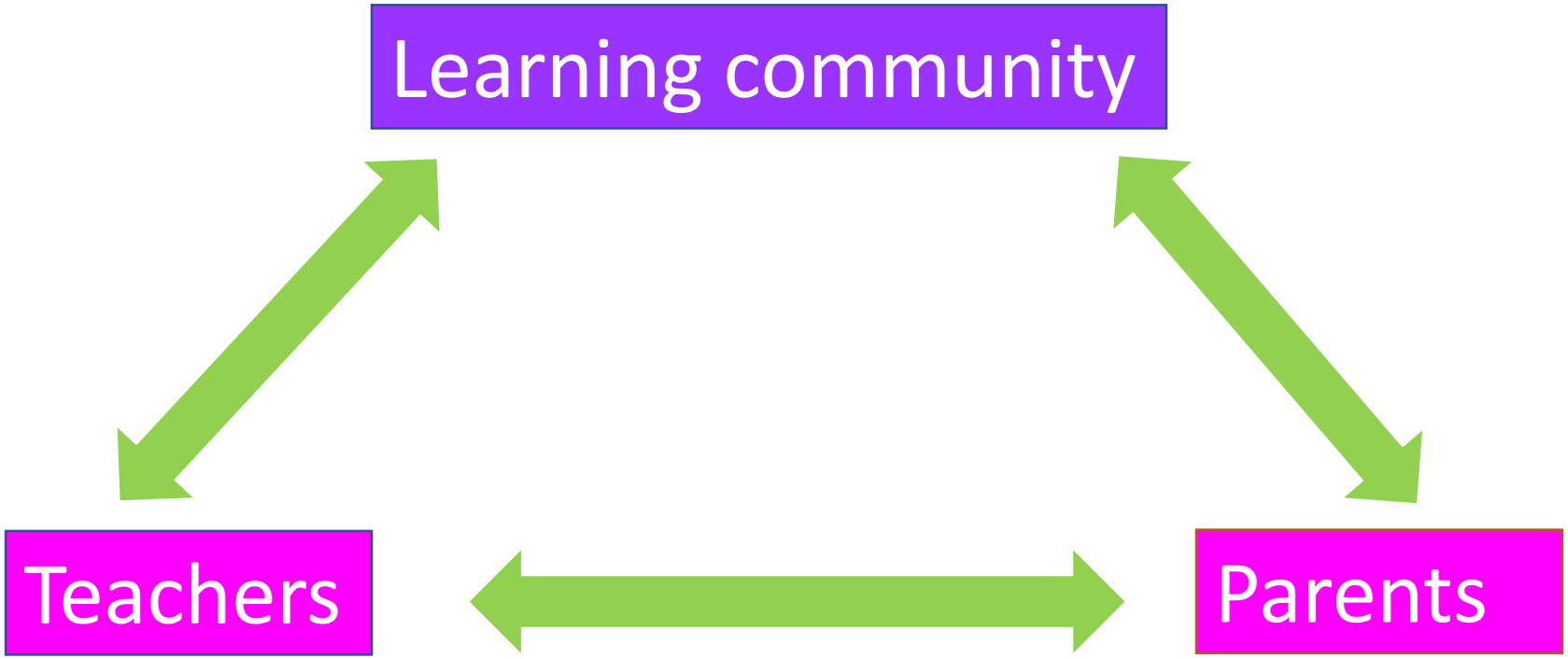
Circle of Security®





Tips of Learn Through Play

Guided play VS Free Play



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