Play to Learn: How a board game is able to teach memory to children

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BACKGROUND

Knowledge of basic **neuroscience** is **low** in elementary and middle **school students** (Sperduti et al., 2012)

Properties of **memory** are **poorly understood by** the **public** (Simons & Chabris, 2011)

Hands on, small group science activities have a **positive impact** on young **student interest** in science (Fitzakerly et al., 2013)

Playing **games** based on science topics can be an **effective teaching tool** (Raskurazhev et al., 2021)

INTRODUCING MEMORY

Memory topics addressed:

- Episodic memory
- Short term & long term memory
- Fusiform Face Area
- Emotional memory and the amygdala
- Auditory Memory

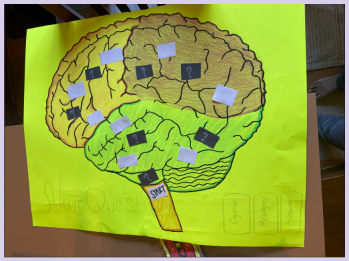
METHODS

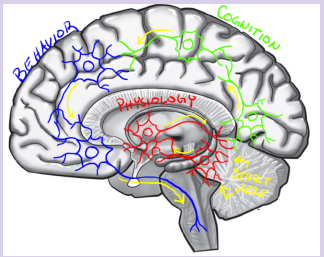
- **Materials:**
  - Cardboard
  - Construction paper
  - Printed graphics
  - Polymer (game pieces)
  - Stickers and candy
  - Timer
- **Audience:**
  - Children aged 5-7
- **Assessment:**
  - Asked about
    - Enjoyment of the game
    - What they already knew
    - Something newly learned
    - Favorite part of activity

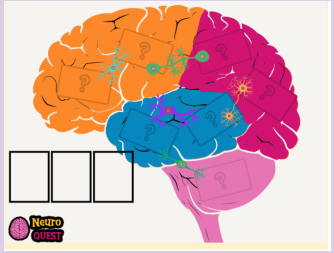
STATEMENT OF CONTRIBUTIONS

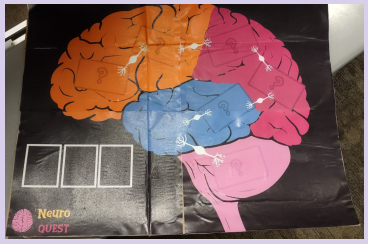
Scan the QR code at right to view our Statement of Contributions

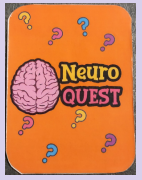
DESIGN PROCESS







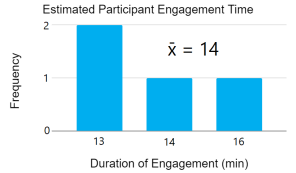




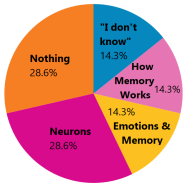
LINK TO ACTIVITY MANUAL

Design Aspect	Initial Design	Final Design	Reason for Change
Audience	Secondary School	Primary School	Age of audience available
Topic Focus	Epilepsy	Memory	Audience education level
Board Materials	Laser-cut plywood	Graphic design	Eye-catching design for audience
Player Progression	Dice roll	Step-by-step	Focus on learning aspect of game

RESULTS



What is something new that you learned from this game?



DISCUSSION

Captivation
- leads to learning (Pope, 2021)

Engagement
- an innate feeling of competition and a reward system encouraging students to keep participating

Previous examples
- *Neuropoly* was a precedent (captivating challenge cards) (Raskurazhev et al., 2021)

Outreach findings
- We noticed higher engagement levels when players physically moved pieces and interacted with game elements

Future uses
- The universality of our game makes it great for future neuroscience outreach of varying topics

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