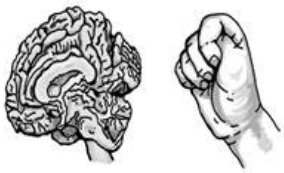
Issue 102

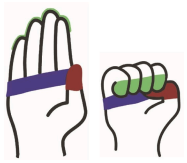
BrainWise Introduces Scientific Research to Nonscientists

Children and youth are growing up in a world defined by rapid change, constant distraction, emotional overload, and an unprecedented volume of misinformation. Previous newsletters have highlighted how leaders in education, health, and parenting agree that critical thinking skills are essential for meeting these challenges, how few resources exist to teach them, and why BrainWise fills this critical gap.

Many books and curricula explain how the brain manages emotions, decision-making, and problem-solving. BrainWise goes further. It teaches how the body's five senses connect to the brain and explains a key scientific truth: We are born with brains that react, not with brains that stop and think**.** *Thinking skills must be learned.*



BrainWise Hand Brain



Stop and Think Gesture

Brain Bumps

BrainWise also introduces the Nobel Prize–winning research of Dr. Eric Kandel and the concept of **neuroplasticity**—the brain's ability to rewire itself in response to experience, effort, and the environment. This scientific foundation helps learners of all ages understand *why* they need the 10 Wise Ways and *why* ongoing practice is essential for strengthening and retaining these skills.

We Are Not Born With Thinking Skills.

This fact is not widely known outside scientific circles and often surprises BrainWise instructors and participants. I myself did not learn about this discovery until 20 years ago, and it ultimately led me to develop BrainWise. Below is a brief history—developed with AI assistance—outlining how scientific

understanding has shifted from believing that thinking skills are innate to recognizing that experience and practice shape the brain.

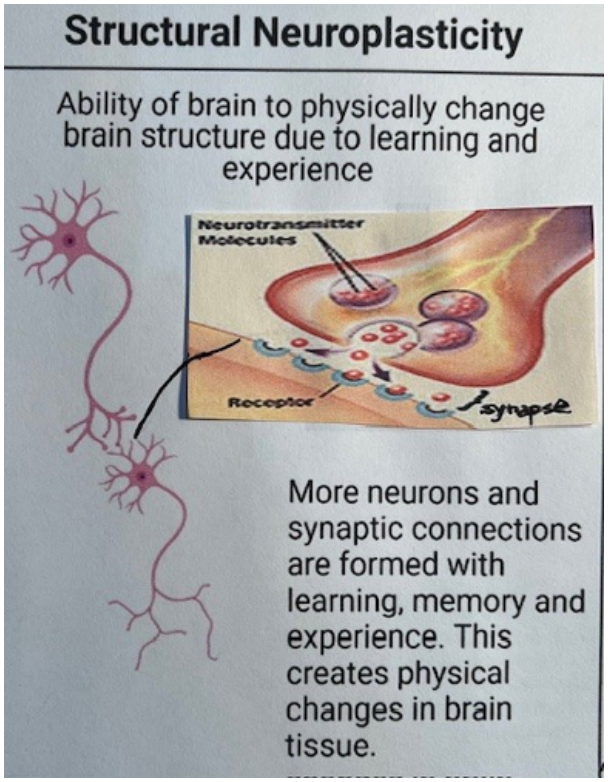
1. **For most of history**, scientists believed the brain was largely unchangeable after birth. Intelligence and thinking abilities were thought to be fixed, with experience playing only a minor role.

2. **Jean Piaget (1920s–1970s)** demonstrated that children construct thinking skills through developmental stages. His work demonstrated that experience—not innate knowledge—drives cognitive growth.

3. **Donald Hebb (1949)** proposed the principle now summarized as *"neurons that fire together wire together."* Research in learning and memory confirmed that practice changes neural activity and that skills develop through repeated experience.

4. **David Hubel and Torsten Wiesel (1960s)** conducted groundbreaking experiments showing that altering visual experience in young animals permanently changed brain organization. Their work provided some of the first clear evidence that experience physically shapes neural circuits and that skills depend on practice and input, not fixed wiring. Their findings remain foundational in understanding how learning builds brain connections.

5. **Eric Kandel (1960s–Present)** made the influential discovery that learning physically alters the brain. His research on memory formation proved that learning strengthens synapses, repeated practice grows new synaptic connections, and skills become more automatic as neural pathways strengthen.These findings laid the foundation for what we now call neuroplasticity.

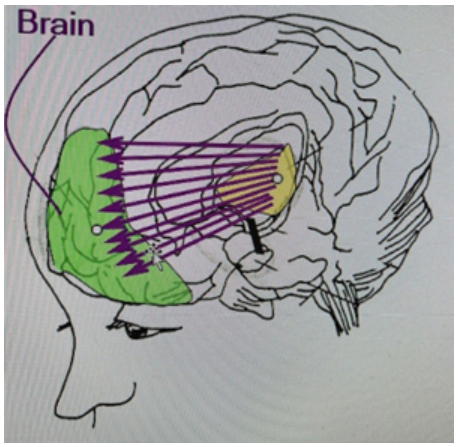


6. 1990s–present: Cognitive neuroscience confirms that executive functions must be taught. Research from cognitive psychology and neuroscience—including work from Harvard's Center on the Developing Child—demonstrates that executive functions (planning, emotional regulation,

decision-making) develop slowly, depend on environmental input and practice, and **are not present at birth.** They must be taught, reinforced, and practiced.

Summary.

Neuroplasticity has become a central concept in both scientific and popular discussions of the brain. BrainWise brings this science to life by asking students to draw lines that represent synapse formation—a simple but powerful way to show how learning the 10 Wise Ways builds brain connections. Seeing a brain filled with strong pathways to the prefrontal cortex, compared with a brain with few or no connections, leaves a lasting impression on learners of all ages.



Brain Showing the 10 Wise Ways

Brain Without the 10 Wise Ways

Recently, a participant at a BrainWise training expressed surprise that thinking skills were learned behavior. This reminded me that this fact is not widespread and inspired this newsletter. In fact, when I initially learned about this discovery, I had an “aha!” moment that helped me understand why many of my students and clients continued to make bad choices, despite wanting to change their behaviors. This finding led me to develop BrainWise. I am grateful for testimonials of graduates that attribute learning BrainWise to helping them change their lives for the better.

Thank you for teaching these skills to others.

With best wishes,
Dr. Pat

On a Lighter Note

Meet Members of the BrainWise Board of Directors.

The next seven newsletters will feature each of the remarkable volunteers who provide the BrainWise nonprofit organization with guidance and direction. It is my pleasure to introduce Board Member Pauline Haberman, a longtime supporter whose decades of service have strengthened every part of the program.

Board Member
Pauline Haberman

Pauline's connection to BrainWise began during her undergraduate years at the University of Colorado, when she worked as a research assistant on early projects with Dr. Pat—work that helped shape the foundation of the program. She has remained deeply involved for more than 20 years, contributing to newsletters, supporting BrainWise trainings, and offering strategic insight.

With 18 years of experience in public communications and government relations—and nine years leading communications for Denver's RTD (Regional Transportation District) transit improvement projects and studies—Pauline brings expertise that has significantly expanded the program's reach and impact.