

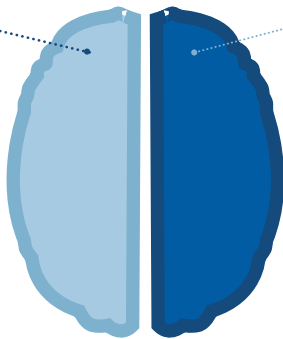
Wilmette Junior High School  
**Brain Fitness Day**  
presented by Marbles: The Brain Store  
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Coordinator Marbles MindMatters Program

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### Brain Facts

Two hemispheres (right and left) each perform different tasks and each contains one of the four lobes, which in themselves have unique functions.

**Left hemisphere**  
where we see letters and data. Often referred to as the logical side and controls the right side of the body's motor functions.



**Right hemisphere**  
tends to be referred to as the creative side and controls the left motor functions of your body. Feelings, imagination, intuition and rhythm are tuned in here.

### Nature vs Nurture

- Your genes have info re: traits – not blueprints
- How genes translate depends on environment and other genes
- One does not have a destiny, however everyone has potential
- Good brain health is learning how to fail, taking risks and applying yourself

*(The Genius in All of Us, by David Shenk, Random House, 2010)*

### Impact of Mobile Technology

- The world now allows our tools to interrupt us constantly
- This often occurs before something we need to do goes through a process
- Interferes with our ability to have deep and potential relationships

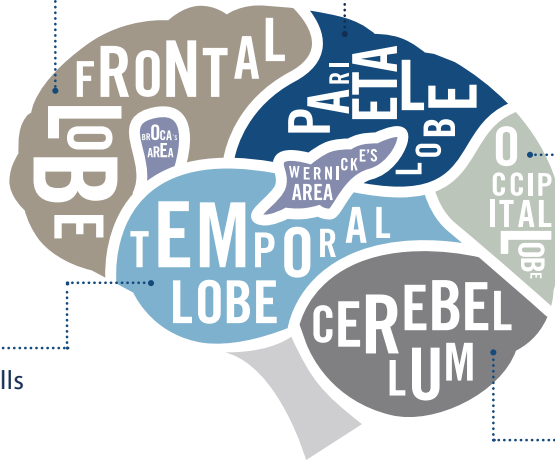
### Five Areas of the Brain's Responsibilities

#### Critical Thinking

The ability to make decisions, plan strategy and create solutions lies primarily in our frontal lobes which is the largest area of the cerebral cortex averaging 41% of the brain.

#### Memory

This is our ability to recall skills and make connections from stimuli. The temporal lobes provide access to memory recall and contribute to emotional response, hearing and language.



#### Word Skills

We comprehend letter patterns and vocabulary using our parietal lobes, which also translate many sensory responses. The temporal lobes also hold a lot of language storage.

#### Visual Perception

This function occurs mostly in the occipital lobes. Spatial awareness, creativity and observation are brain functions generated through the occipital lobes.

#### Coordination

Cerebellum is part of the cerebral cortex, it expands across both hemispheres, however is not a lobe. Motor skills, balance, and muscle tone are some of its functions.

Almost three decades ago, an educator named Howard Gardner developed a theory that suggested there are many forms of intelligence not measured by most school testing. (See his *Frames of Mind, The Theory of Multiple Intelligences*. New York: Basic Books, 1993.) Following are his categories of intelligence with a few examples of what each means.

**Check off all the strengths you see in yourself.**

**Do any surprise you?**

### **Spatial Intelligence:**

- You seldom get lost.
- You like to design new arrangements of furniture.
- You can imagine what something will look like after it is built.
- You like to do jigsaw puzzles.
- You know whether or not a glass will overflow if you empty the rest of the milk bottle into it.

### **Musical Intelligence:**

- You sing, hum or whistle often.
- You remember tunes easily.
- You hear rhythm in everyday sound.
- You play one or more instruments.
- You have composed music.

### **Logical-Mathematical Intelligence:**

- Puzzles and games are very easy for you to master.
- Doing math is fun for you.
- You are fascinated by machines.
- You tend to win arguments.

### **Linguistic Intelligence:**

- You love words.
- Poetry is like music to you.
- You have a large vocabulary.
- You have written short stories, poetry or a novel.
- You speak, read or understand several languages.

### **Bodily-Kinesthetic Intelligence:**

- You enjoy activities where you can move about.
- You seldom injure yourself while exercising.
- You learn dance steps quickly.
- You would rather make something than read about it.
- You prefer to play sports rather than watch others play.

### **Intrapersonal Intelligence:**

- You understand who you are.
- You know your strengths.
- You know your weaknesses.
- You know what you want.
- You are in control of your emotions most of the time.

### **Interpersonal Intelligence:**

- You understand other people very well.
- You often become the leader in any group you join.
- Other people tend to come to you for advice.
- You want to improve the human condition.
- You work well in a group.

### **Naturalist Intelligence:**

- You notice patterns in nature.
- You know what the weather is supposed to be like.
- You know the names of many animals and plants.
- You recognize and classify minerals.
- You know what the phase of the moon is.

*(adapted from Mind Games by Kathryn Wetzel, Ph.D. and Kathleen Harmeyer, MS, Albany, NY: Delmar Publishing, 2000. ISBN 0-7668-1280-4)*

## **Neuroplasticity**

Neuroplasticity is the lifelong ability of the brain to reorganize neural pathways based on new experiences. As we learn, we acquire new knowledge and skills through instruction or experience. In order to learn or memorize a fact or skill, there must be persistent functional changes in the brain that represent the new knowledge. The ability of the brain to change with learning is what is known as neuroplasticity. **Simply remaining active does not by itself sustain brain health, if "active" means the daily use of already-mastered skills and abilities. This is not optimal brain health.**

Mental stimulation supports neuroplasticity. The **three "tys"** of mental stimulation are:

1. **Novelty**-doing something new, preferably every day, whether it is simple or challenging
2. **Variety**-mixing up your new learning so different areas of the brain are stimulated
3. **Complexity**-learn new things that are challenging in order to optimally stimulate the brain



## Games played today and what the Brain Health Experts Say

### Pathwords

A game that uses the tetromino shapes of Tetris® in new, brain-boosting ways. This single or multiple player game has 40 challenge cards from beginner to expert. Players select a challenge and then place the tetromino pieces onto the game grid so that the letters under each piece spell a word either forward or backward. Start out easy and work your way up to expert status. Along the way, you'll strengthen the parts of your brain responsible for reasoning, visual perception and word skills.



### Brain Health Expert Says:

*"This game helps you improve your vocabulary and your ability to think and act quickly. Broca's and Wernicke's areas, which are important for speech production and comprehension, will be activated as you think creatively to form words and say them out loud."*

*Areas of the brain engaged during this exercise: Frontal Lobes-reasoning, Occipital Lobes-visual processing, Parietal and Temporal Lobes-sensory response and memory of words and language.*

### InStructures

Think of InStructures as an all-you-can-learn, brain-building buffet. In less than an hour, you can exercise your critical thinking, problem solving, communication, listening and spatial skills while having fun. Here's how it works: Break into teams and appoint a foreman. Each foreman gets a set of matching blueprints and instructs their construction crew to build a structure using only verbal instructions. No hand gestures allowed. The first crew to build the structure and pass a building inspection by the other crew wins.



### Brain Health Expert Says:

*"Spatial processing centers of your brain will be activated as you direct players to correctly build 3-D shapes depicted on the 2-D game cards."*

*Areas of the brain engaged during this exercise: Occipital Lobes-spatial and visual awareness, Cerebellum-hand/eye coordination in stacking, Frontal Lobes-finding the solution, Temporal and Parietal Lobes-sensory response to team while giving and receiving directions and listening to others.*

### References

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