

Gender



Gender Differences in Learning

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*In the day that God created man, in the likeness of God made he him;
Male and female created he them; and blessed them... Genesis 5:1-2*

Brain Differences between Genders

Structural Differences

- Corpus Callosum (dense bundle of nerves connecting two hemispheres)
 - Denser and larger in females, resulting in increased cross-talk between hemispheres
 - Girls generally better at multitasking than boys (such as watching, listening, and taking notes simultaneously)
- Brain Stem (responsible for “fight or flight” responses)
 - Males’ greater amount of spinal fluid allow messages to move more quickly from brain to body)
 - Boys tend to be more poised for fight or flight and for a physical response when they feel threatened or emotionally charged
- Limbic System (amygdala processes emotions and hippocampus converts information from working memory into long-term memory)
 - Hippocampus tends to be larger in females, resulting in increased memory storage
 - Amygdala tends to be larger in males, helps make males more aggressive
- Cerebral Cortex (controls thinking, decision making, and higher intellectual functions)
 - Males have later frontal lobe development, so tend to be more impulsive
 - Female brain has about 20% more blood flow and more neural connections
 - Girls may process and respond to classroom information faster
 - Girls may find it easier than boys to transition between lessons
- Cerebellum (“doing center” of brain controls messages between brain and body)
 - Boys often learn better when their bodies are in motion
 - Sitting can frustrate boys; make them fidget

Processing Differences

- Language Processing Areas
 - Females process language in both hemispheres; males only in one
 - Girls have more access to verbal resources, and are better able to verbalize feelings
 - Girls develop language earlier than boys, and are generally more interested than boys in verbal tasks
 - Females use twice the number of words (on average) than boys
 - Girls learn to read and write earlier, creating gender gaps that sometimes persist throughout school

- Spatial Processing Areas
 - Males have increased resources for spatial reasoning
 - Males are better at:
 - mental manipulation of objects
 - gross motor skills
 - mathematical and abstract reasoning
 - processing symbols and pictures
 - navigation
 - Boys need more space in which to function while learning
 - Boys are generally more interested than girls in spatial tasks
- Sensory Systems
 - Girls generally see better in dim light, hear better, have a better sense of smell, and take in information tactilely.
 - Girls have stronger neural connectors in temporal lobes, so tend to
 - take in and recall more sensory information
 - include more sensory detail in their writing and conversation
 - Boys may have more difficulty hearing certain ranges of sound, especially from the back of the room (such as a higher pitched teacher's voice)

Chemical Differences

- Testosterone (male sex and aggression hormone)
 - Boys have increased aggression, competitiveness, self-assertion
 - Boys are motivated by competition in the classroom, even games that allow all to succeed by having students compete against themselves
- Estrogen (female sex hormone)
 - Levels may be affected by seasonal variations, such as length of daylight hours
 - Puberty can bring volatile mood swings and more aggressive behavior
- Serotonin ("feel good" chemical that affects mood, anxiety, relaxation)
 - Girls' levels are about 30% more than boys, so they are less likely to react with a fight response
 - Boys have less serotonin to help them back off and calm down
- Dopamine (neurotransmitter that stimulates motivation and pleasure circuits)
 - Boys need a "dopamine rush" for learning, but in a structured environment so their enthusiasm can be managed
- Oxytocin ("tend and befriend" hormone related to social recognition, trust, and bonding)
 - Females have higher levels than males throughout life
 - Girls are more motivated to establish relationships with teachers and peers, will often try to please the teacher
 - Boys may not see connection between their behavior and relationships

Strategies to Help Boys (and Girls) with Learning

Incorporate More Movement

- Make lessons experiential and kinesthetic, and use manipulatives.
- Put words and punctuation on large cards, have students arrange along floor or chalkboard ledge to form sentences.
- Have children each hold a letter and arrange themselves to spell words.
- Four corners: have students walk to each corner of room to discuss different questions or complete different math problems.
- Allow students, especially boys, to walk freely around the room, squeeze stress balls, deliver papers to the principal's office, or *build* a report instead of write one.
- Incorporate frequent stretch breaks and/or 60-second movement breaks.

Make Use of Spatial and Visual Representations

- Have students draw pictures first, like storyboards, and then write stories.
- During pre-writing brainstorming, allow the students (if they choose) to use colored pencils to draw what they are going to write about, so they will have more sensory detail when they begin writing.



Offer Choice of Topics

- Allow students more choice in what they have to read and write; boys tend to like non-fiction, science fiction, escapism, humor, sports, and literature with action, aggression, competition, and superheroes.

Include Single-Gender Learning Activities

- Allow boys to work with boys and girls with girls on certain projects, and let them choose their preferred method for assessment.

Provide Audiences for Reading and Writing Assignments

- Encourage students to read what they write to parents, extended family members, people they look up to.
- Provide opportunities for students to read their writing at school assemblies, or for recording and placing on the school's web site (podcasts).



Introduce Male Role Models

- Invite speakers to visit your class, especially those whose careers involve reading and writing, such as journalists, authors, lyricists, or lawyers.
- Involve parents, grandparents, and volunteers from the community in your classroom activities; one avenue of involvement is reading to and with the younger students.



Time Challenges

Challenge students to do a task in a certain amount of time; for example, ask them if they can do five math problems in two minutes. Boys tend to be more competitive and respond well to challenges.

Drawing

Allow students to draw as you read to them.



Roller Derby



Play music and allow students to walk around the classroom while they recall three to five concepts/ideas just taught and tell these to a partner. This keeps the brain primed for learning (blood flow to brain), and keeps declarative knowledge connected to procedural knowledge (brain-body connection).

Mingling Scrabble (vocabulary or spelling)

Put students in groups and give each a card with a letter of the alphabet printed on it. Tell the group their task is to *arrange themselves* to create words and to try to use every letter in the group.

- For younger students, you may wish to give them a list of words they can try to make with their cards.
- For older students, require that every letter be used, but let them come up with either more short words or a few longer words.
- Make sure to include a proportionate number of vowels to consonants, and either do not use, or use very few, X's, Q's and Z's.

Content-Integrated Movement

- **Ball (or Koosh) Toss Review**
The student tossing the ball asks a question; the student catching it answers, and then the process is repeated.
- **Beach Ball Review**
Write math problems or phonics sounds on the panels of a beach ball (or purchase at a teaching store). Students toss the ball and must state the solution or a word using the sound as indicated on the ball.
- **Continent Scramble**
Designate different parts of room as continents, presidents, etc. Provide clues and ask students to figure out where to go.
- **Vote with Your Feet**
Ask students to stand along an imaginary line according to whether they agree, disagree, or are neutral regarding a controversial topic, and to state why they took that position.
- **Walkabout Review**
Students walk around with a partner while discussing content or reviewing for a test.

Resources for Brain, Gender, Movement, and Boys' Literacy

Gurian, M., Stevens, K., & King, K. (2008). *Strategies for teaching boys and girls- Elementary level*. San Francisco: Jossey-Bass.

James, A. N. (2007). *Teaching the male brain: How boys think, feel, and learn in school*. Thousand Oaks, CA: Corwin Press.

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Learning Station. (1997). *Tony Chestnut & Fun Time Action Songs*. Melbourne, FL: Kaladon Publishing.

O'Malley, K. (2005). *Once upon a cool motorcycle dude*. NY: Walker Publishing Co.

Sax, L. (2006). *Why gender matters: What parents and teachers need to know about the emerging science of sex differences*. New York: Broadway.

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Tyre, P. (2008). *The trouble with boys: A surprising report card on our sons, their problems at school, and what parents and educators must do*. NY: Crown.

Brain Articles, Research, and Resources – www.dana.org

Brain Breaks – <http://www.emc.cmich.edu/BrainBreaks/>

Energizers - http://www.ncpe4me.com/pdf_files/K-5-Energizers.pdf

Literacy for Boys - www.guysread.com

Neuroscience for Kids - <http://faculty.washington.edu/chudler/works.html>

PBS Site on Raising Boys - <http://www.pbs.org/parents/raisingboys/>

Single Sex Education – www.singlesexschools.org