Inquiring Boys: Using brain based strategies to develop learning skills

Abigail Norfleet James, Ph.D.
IBSC
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The development of boys’ brains

• Left vs. Right
  – Right side first, use both sides for spatial skills
  – Use only left side for verbal skills
• Amygdala vs. Hippocampus
  – Amygdala develops first, not connected to verbal center
• Corpus Callosum
  – Connection between two sides, perhaps smaller in boys
• Frontal lobes – late development
  – Executive decision maker

Effect of right/left brain development on learning

• Verbal skills develop later
  – Words may not be best method to learn
  – Stereotype of non-verbal boys
  – Boys get idea they are not readers
• Spatial skills develop sooner
  – Pictures may be best method to learn
  – Words are 2-D, they are more interested in anything that is 3-D
  – Targeting
  – Need to get physically involved in activity
Amygdala v. Hippocampus

- Amygdala, part of limbic system
- Hippocampus, part of long term memory

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<thead>
<tr>
<th></th>
<th>Left (girls first)</th>
<th>Right (boys first)</th>
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<tbody>
<tr>
<td>Hippocampus</td>
<td>Memory of nouns</td>
<td>Memory of pictures &amp; topography</td>
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<td>(girls first)</td>
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<tr>
<td>Amygdala</td>
<td>Spelling, reading words, verbal intellect, vocabulary</td>
<td>Mathematical calculation &amp; performance</td>
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<tr>
<td>(boys first)</td>
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Frontal Lobes

- Male frontal lobes may not fully mature until individual is 25 (or 30!)
- What do frontal lobes do?
  - Reasoned decisions
  - Control impulses
- Effect on cognitive processes
  - Planning
  - Attention
- Sophisticated cognition
  - Seeing the larger picture

Memory

- Memory, attention, and inhibition thought to have a common neural circuitry (ADHD?)
- Differential brain maturation
  - Young children use more of brain for memory probably due to lack of sophistication
  - Visual working memory matures before auditory working memory
- Gender differences
  - Boys mature later
  - Boys have quicker responses, more impulsive → more memory errors
What does a boy do when asked to study?

- Glances at the book
- Underlines the material (usually examples)
- Answers questions (under duress)

What is the problem with this?

- Reading all the assigned material takes too long
- Inactive method of studying – impulsive student does not pay attention
- Does not provide any organization for review
  - Has no plan
  - Cannot see the big picture – does not promote concept development

What gets in the way of studying?

- Boys think that ability not effort is what gets the best grades
- Fight-or-flight – boys learn best when they are stimulated, being quiet does not help
- Peer activities center on recreation not reading
- Anti-intellectualism of peer group and of society
- Anything else is more interesting

What should a boy do to study?

- Use energy bursts
  - Impulsivity can be a plus if student studies in short segments
- Use visual cues
  - Focus on pictures in text to provide retrieval cues for information
  - Visual display of information to enhance memory
- Develop memory skills early
  - Lyrics are easily acquired,
  - Link information to area of interest
Step 1: Develop Intention to Study

• Motivation?
  – This only works if boy wants to study
  – Boys will do what they find interesting
• Self-handicapping
  – Time wasters – TV, computer, i-Pod, cell phone, athletics
  – Needs to be aware that wasting time is intentional
  – Find out why and deal with it
• Nothing succeeds like success

Step 2: Learn to Organize Information

• Notes - readable
  – Small bits of information
  – Review frequently
  – Take notes from notes
• Underlining/text notation
  – Learn difference between concepts and examples
  – Learn to use book/notes as a framework for studying
• Set goals

Step 3: Use Time Effectively

• Schedule study time and free time
• Study until concentration limit is reached, then shift gears – make sure that student does not spend too much time on easy subjects
• Learn to use “lost time”
  – Commuting, waiting in line, waiting for an appointment
• Use calendar function of computer or phone to remind about upcoming events
Teaching strategies to help boys learn

• Do not start with words
• Incorporate movement
  — Preferably student movement
• Start with activity linked to subject
  — Show pictures/graphs/charts
  — Hands-on activity
    • Touch materials
    • Manipulate materials
  — Relate subject to current/real events
    • Provides visual hook for information

Language Arts strategies

• Tie material to examples where men use reading skills in the real world
• Learn vocabulary by writing definitions
• Focus on the action in the material first, characters second
  — Battles before politics
  — Plot before theme
• Use technology to ease transition into writing
• Design learning materials with the end in mind

Other strategies

• Spatial Skills
  — Maps, flow charts, scale models
  — Perceptual speed – slow reading and reading out loud (standing)
• Mechanical Reasoning
  — Use appropriate items to teach how to take things apart and put back together – words in sentences, sentences in paragraphs
• Peer Influence – use group challenges
• Humor
• Let them be in charge
Boys will learn

• Get them engaged – whatever it takes
• Teach them the skills, many boys don’t study well because they don’t know how
• Use cooperative groups (well supervised) for long term projects
• Structure your course so that it provides room for movement and action
• Teach older students how to translate teacher instructions into actions that work well for them