

# The Science and Art of Teaching Boys

## brain basics for the classroom

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### First Task

- Each group will list as many behaviours or attitudes noticed about boys as learners, good or bad, as all can think of. Once the list is made, the group should decide the five most common attitudes or behaviours and the group should come to consensus about the items on the list.

### Accepted Knowledge

- Girls are more verbal
  - Fluency not intelligence
  - Boys will always be behind in spelling and grammar
- Boys are better at spatial relations
  - Connection to some math skills
- Boys are more active
  - Puberty brings even more activity
- Boys are more aggressive
  - Need to roughhouse, helps social skills

### Do Male and Female Brains Differ?

- ▶ Male brain is larger, but has fewer connections
- ▶ Right side develops sooner in males, left in females
- ▶ Pre-frontal lobes develop more slowly in males
- ▶ Amygdala vs. hippocampus

	Left (girls first)	Right (boys first)
Hippocampus (girls first)	Memory of Nouns	Memory of pictures & topography
Amygdala (boys first)	Spelling, reading words, verbal intellect, vocabulary	Mathematical calculation & performance

### Physical Differences

- Girls enter puberty around 1.5 – 2 years before boys = differences between ages 10 – 15
  - Size
  - Interests
  - Sleep
- Boys more active
  - Play involves larger groups
  - Play involves aggression
  - Rough-and-tumble play

### Hearing Differences

- Males have longer cochlea
  - Fractionally delayed hearing, less sensitive
  - Do not hear very high/soft sounds
- Males more likely to have had inner ear infections
  - Problems with phonemic awareness
- Males have hearing loss sooner
  - They need to learn to protect their ears from loud music and engine noises

## Vision Differences

- Color Difference
  - Color blindness more common in males
  - Females report more colors
- Gazing Difference
  - Males prefer objects, females prefer faces
- Males' gaze is attracted by motion
  - Attention will go to anything in motion particularly if it is unintentional
  - Larger saccades

## Touch Differences

- Higher pain threshold
  - Learned or real? "Boys don't cry."
  - Males may not ask for help until problem is severe
- Greater tolerance for cold
  - Males may get drowsy in warm rooms
- Touch to learn
  - Males learn best when instruction involves hands-on activities – touch helps memory, females may be content to observe
  - Experiential learning taps into the same phenomenon

## Cognitive Differences

- Verbal Skills
  - Knowledge recall – emotionally driven
  - Verbal strategies, will develop over time
  - Communication skills will develop in single sex environment
- Spatial Skills
  - Directions
  - Graphics as key to memory
- Learning Modalities
  - Kinesthetic/iconic vs. verbal/auditory

## Emotional Differences

### Fight or Flight – adrenalin

- Increase in heart rate, breathing, blood sugar, blood floods muscles and brain, pupils dilate ➡ movement

### Tend and Befriend – oxytocin

- Decrease in heart rate, breathing, blood sugar, blood goes to core, pupils constrict ➡ freezing

### The problems of global praise or discipline

- Without specific references, failure results in boys getting angry and girls becoming anxious
- What is seen as bad behavior may be impulsive not purposeful

## Trait Differences

- Characteristics of individuals that are inborn and stable
  - Extraversion, openness, conscientiousness
- Source may be biological – some consideration for genetic connections
- Gender differences:
  - Women higher on social closeness and constraint
  - Men higher on achievement and aggression

## ADHD and LD

- ADHD – not lack of attention, lack of ability to fix attention
  - More males due to social bias?
  - Cause of inattention may be something other than learning problem
- Dyslexia –
  - More males – problem smaller in orthographic language?
- Dysgraphia/Dyspraxia –
  - more males – but is it due to social expectations?
- Dyscalculia –
  - Actually a problem with memory
  - Boys will avoid math

## Dyslexia in Reading Chinese

- Study of Hong Kong children indicate that in Chinese, 1.6 to 2 times as many boys as girls identified with dyslexia
- Problems identified specifically in orthographic knowledge and in naming speed
- The problems got worse with age indicating a need for early intervention
- Is there a difference between reading a character-based language (logographic version) and reading an alphabet-based language?

## The Brain in Education

- **Sensory differences** – boys learn better when material is presented visually or they are allowed to interact with the lesson
- **Cognitive differences** – boys learn better when lessons take advantage of their spatial and kinesthetic skills
- **Physical Differences** – boys learn better when they are given opportunity for exercise & engagement in lessons
- **Emotional Differences** – boys learn better when boundaries are clear and they are encouraged to interact with peers

## The Science and Art of Teaching Boys: strategies for the classroom

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## Boys' academic attitudes

- Ability is more important than effort, image is the most important
  - Motivation suffers as a result – “too cool for school”
- Boys overestimate their academic competence
  - Even in the face of lack of success
  - Probably due to drive for competition
- Math, science, and sports are male domains
  - In spite of gains for women in STEM areas
- Influence of Peers
  - Very important socioemotional influence on boys

## Academic effect of attitudes

- Boys are clueless as to their standing in a class
  - Belief of success is centered on ability
  - Failure is teacher's fault
- Boys have few skills in self motivation
  - If it doesn't work they way they do it, they have no resources to change
- Boys become defensive when they can't compete
  - Result is that boys belittle importance of school success
- Boys exaggerate the importance of success in sport or other nonacademic areas
  - In spite of evidence that success in sports is rare

## Motivation in Hong Kong Students

- Academic stress connected to performance goals
- Boys do not believe that they have good metacognitive learning strategies which may affect exam results
- Teachers can help by:
  - Promote higher achievement goals
  - Develop realistic & positive self-concept of abilities
  - Strengthen metacognitive skills

### What characteristics of boys should make school easy?

- Natural inquisitiveness
  - Need to know how things work
- Emphasis on details/facts
  - Boys know lots about subjects they like
  - Geography bee winners
- Competitive nature
  - Need to focus on indirect and cooperative and not on direct competition
- Ability to work in groups
  - Boys very peer oriented, what one does, his mates will do

### 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, so use music
  - Link information to area of interest

### Strategies for Hearing Deficits

- Train the ear
  - Phonemic awareness techniques
  - Phonic Phun – esp. blends and split syllables
    - Transformers/ Earobics
- Dictation
  - Early, write what is said
  - Later, give synopsis of what is said – preparation to take notes
- Use rhythm and music
  - Memorize poetry
  - Academic songs
- Do you agree with his answer?

### Strategies for Visual Deficits

- Patterning
  - Physical training both hands and feet
  - Tessellations and fractals
  - Building with blocks or other building pieces
- Vision training
  - Problem is saccades
  - Mix up where they focus

### Disembedding in Algebra – when the words get in the way

If 3 times a number is increased by 7, the result is the same as when 72 is decreased by twice the number.

### Using Physical Skills

- Standing to answer/ask questions
  - Controls blurring out
  - develops attention skills
- Cuisenaire Rods – use with base 10 block sets
- Standing at the board to do math
  - Improves concentration
- Writing vocabulary to learn both spelling and meaning
- Battle of Gettysburg

## Use Their Curiosity

- Problem Solving
  - Logic puzzles, chess, jigsaw puzzles, scavenger hunts (literary references), 24
- PEMDAS
  - 8 3 11
  - 8 3 10 6 5
- Reality Projects
  - Work in pairs, present to class
  - Investment club, sports statistics,

## Use Competitive Spirit

- Debate
- Academic Basketball (choose your sport)
- Help boys develop indirect competition – personal best
  - Keep track of all grades
  - Periodically (but regularly) review grades to determine what is easy and what needs work

## Review and Extra Help

- The problem with reviewing material
  - They know just enough to not hear what they don't know – make them teach a section to the class
- The problem with asking for help
  - They don't know what it is they don't know
  - “Coach” instead of teach
    - Focus on skill development
    - Use Pregrading
      - hand out the grading rubric for projects and papers

## Proofreading and Checking Work

- Boys won't check or proofread because they can't find their errors – poor perceptual speed
- Proofreading
  - Read a paper out loud to self or other
  - Time will help – put paper away for a week
- Checking Work
  - Do problems over again, compare answers
  - Casting out 9's
  - Work problems backwards

## 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
- Boys will do the work, if they are successful

## Second Task

- **Using your list generated earlier, discuss how some of the strategies presented in the lecture are applicable in a boys' classroom. Each group should come up with at least one strategy for each of the five top items on the list from the start, but please feel free to come up with other strategies as well.**

## **The Science and Art of Teaching Boys:**

### **The special problem of reading and writing**

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### **Why Do Some Males Hate Reading?**

- ▶ Their verbal skills developed more slowly than did those of girls
- ▶ Many beginning readers have feminine themes
- ▶ In the past, reading has not been a successful way to learn
- ▶ Reading is a passive way to acquire information
- ▶ Reading in school means sitting in a chair
- ▶ Do not necessarily come from a culture of reading for leisure

### **Confidence in reading English**

- Girls in grade 4 have more confidence and more skill in reading Chinese
- Boys who have good attitudes toward reading English and who think they are good at reading English are as good as the girls
- While encouragement to learn English and Chinese will help, pressure does not – the key is to assist students to develop a positive attitude
- Help students develop self-awareness, self-confidence and self-motivation

### **Strategies for Language Deficits (reading)**

- Develop language fluency
  - Read to them
  - Get students to read out loud
  - Work in cooperative groups
- Use strengths to compensate for weaknesses
  - Graphic novels, magazines, and web sites
  - Book Bingo, Bookmarks,
  - Books that are exciting, realistic, gory, scary, and plot driven

### **Strategies for Language Deficits (writing)**

- Make sure dysgraphia/dyspraxia is not present – use computers if it is
- Grammar games
  - Grammar rummy
  - Vivid verbs or abundant adjectives
  - Personal paragraphs, punctuation passages
- Short writing
  - Headlines, First/last lines
  - Dice
  - Serial story

### **Deconstruction of Writing**

- How to teach boys to write without lifting a pencil!
- Sentences
  - Two consecutive sentences, use punctuation for elementary students
  - Focus is on grammar and word placement
- Paragraphs
  - Two consecutive paragraphs
  - Focus is on shaping a paragraph, writing style, getting the meaning across to the reader

### Writing Poetry

- Use Haiku, Cinquains, Limericks, or Sonnets
  - Advantage for boys is the mathematical format
- Let them find the format
  - Give them several of the same variety
  - Have the students find out what the poems have in common
  - Use color on white/smart board to make rhyme scheme obvious
- Use poems with topics of interest to boys
  - *At Shark Reef Sanctuary* by Counsell, *Haunted Seas* by Rice, and *In A Breath* by Sandberg
  - [www.poemhunter.com](http://www.poemhunter.com), [www.poets.org](http://www.poets.org)

### Use Visual Skills

- Help turn the lesson into some form of graphical representation
- Weaving a story
  - Connecting characters with plot
- Comic strip
- Time lines – swap for review
- Family trees
- Story web or concept web
- Good underlining techniques – find the concept

### Literary Scavenger Hunt

- Finding something hidden in literature – trains proofreading skills and pattern location
- Easter Eggs – hidden treasures
  - Either hidden ideas, or hidden people
- Pirate treasure hunt
  - Maps are involved, either real ones, or those made up from the book – compare Robin Graham to Captain Cook
- I Spy
  - You define the categories, students find the exemplars

### Conclusion

- Male and female brains are different from the beginning
- The female verbal advantage can give little boys the impression that school is not a place for them
- Schools for boys help students understand how they learn and how they can fit into school

### Third Task

- Each participant should develop a strategy based on the information presented in the lecture that can be used in his/her class. Be specific as to the behaviour or attitude which is being addressed and how the strategy will help with that problem in class. Write the strategy on the sheets provided for the purpose. The sheets will be collected and the strategies will be shared with all.