

Teaching Methods at Single Sex High Schools



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Educ 400: Senior Research Project

Educational Studies Program

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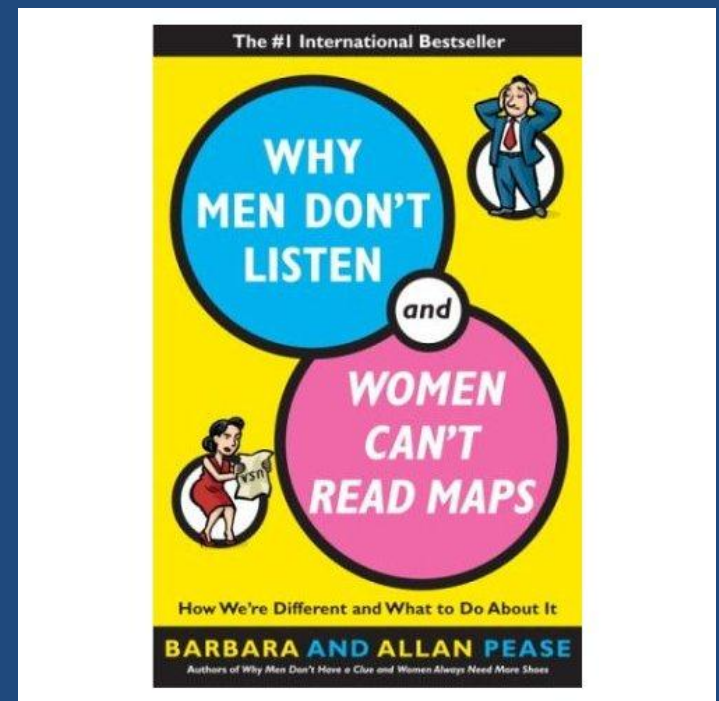
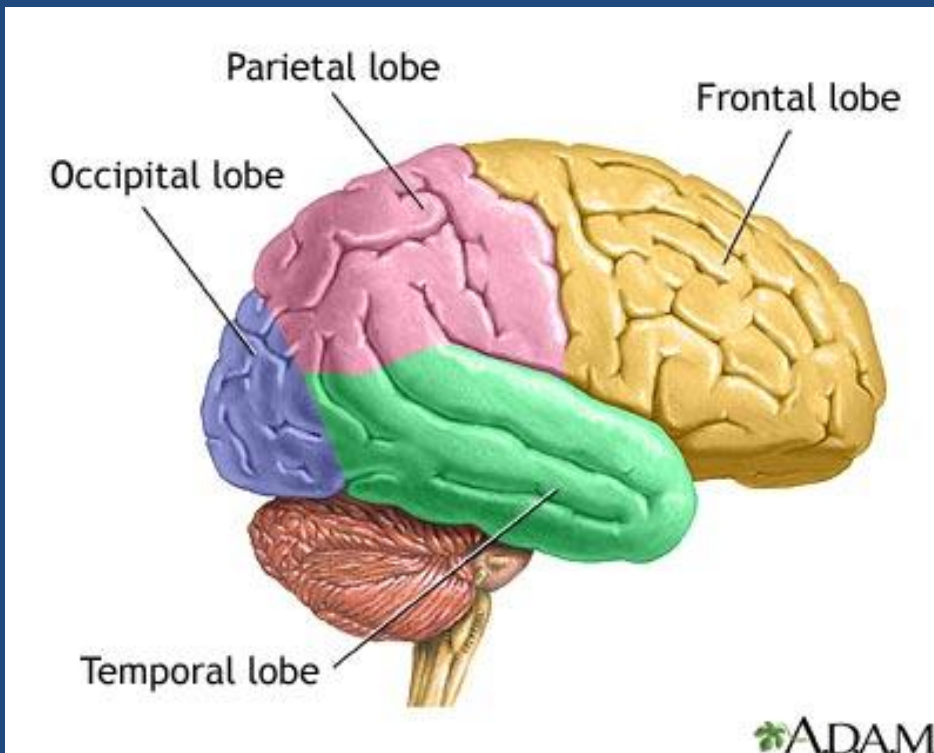
Fall 2010

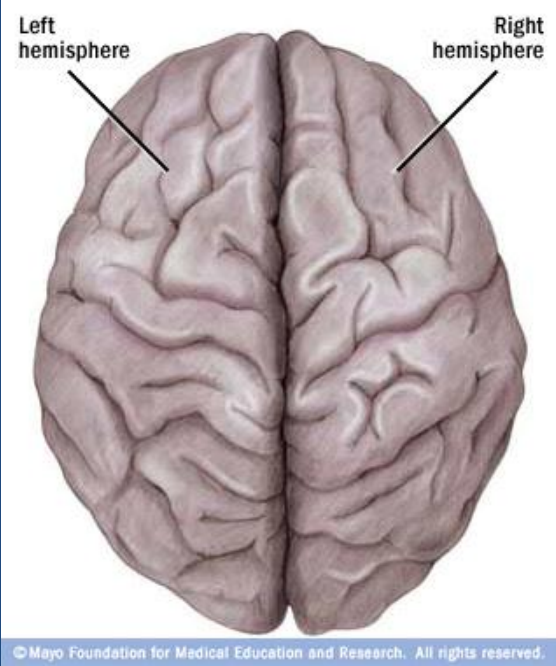
Background

- Attended an all-girls high school
- Brother attended an all-boys high school
- Psychology Major

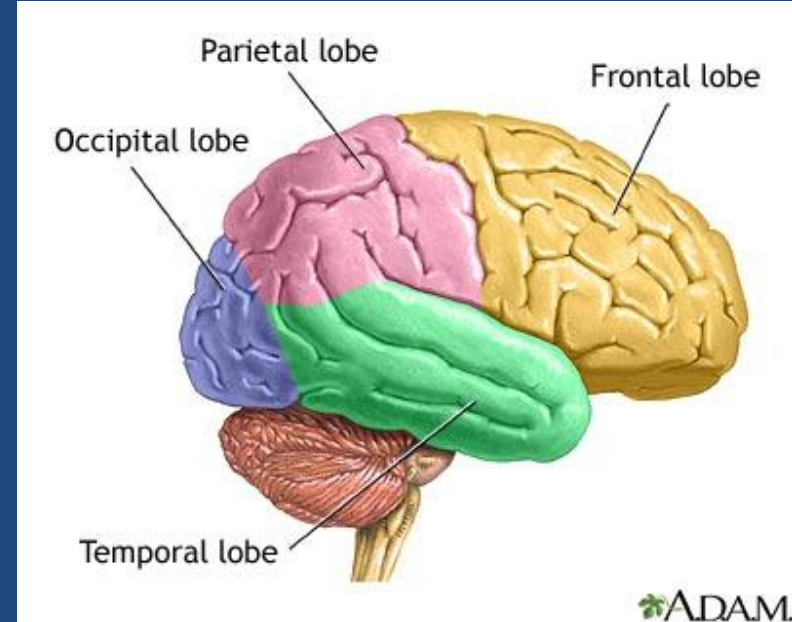
Literature

- Research states that boys and girls have biological differences in the brain:

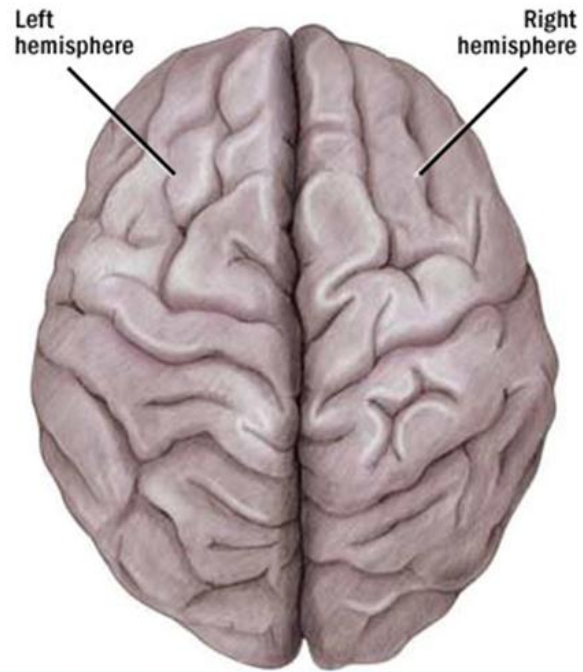




Boys

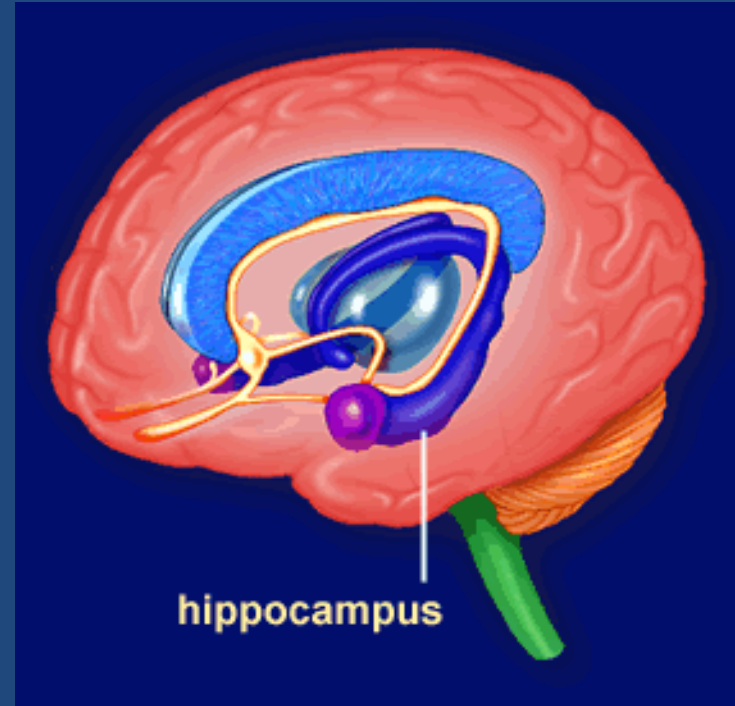


- Decreased lateralization (less communication between hemispheres)
- Smaller frontal lobes (increased impulsiveness)
- Less sensitive sensory receptors
- Increased Testosterone (spatial tasks; aggressive and kinesthetic propensity)



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Girls



- Increased lateralization
- Better developed left hemisphere
- Larger Hippocampus (memorization ability)
- More sensitive sensory receptors
- Decreased Testosterone

Seen in Brain Scans:

Figure 1:

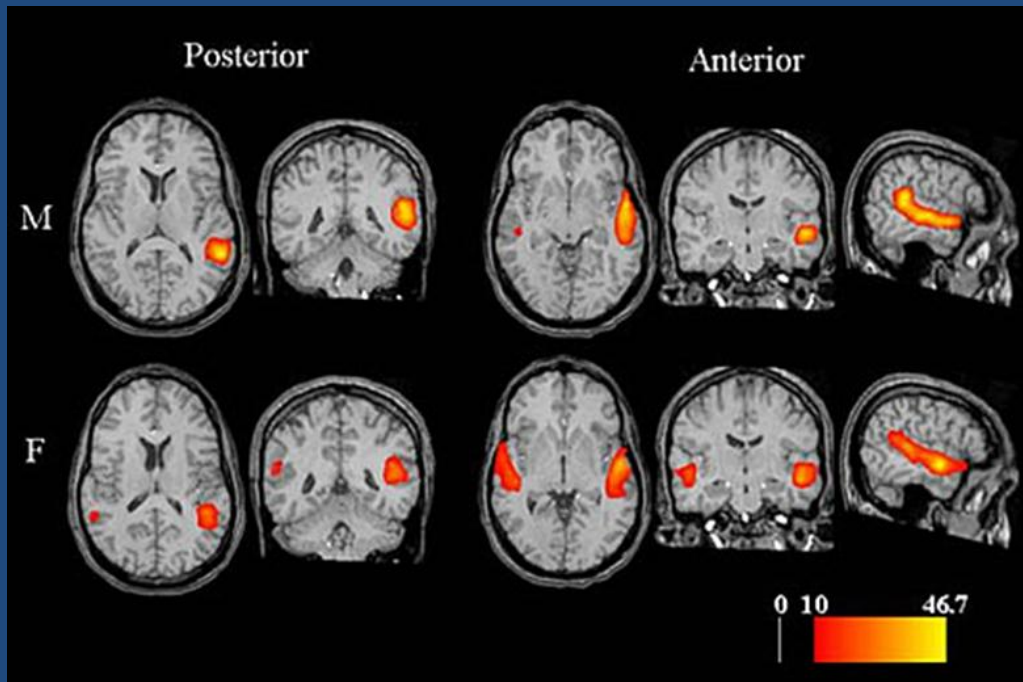
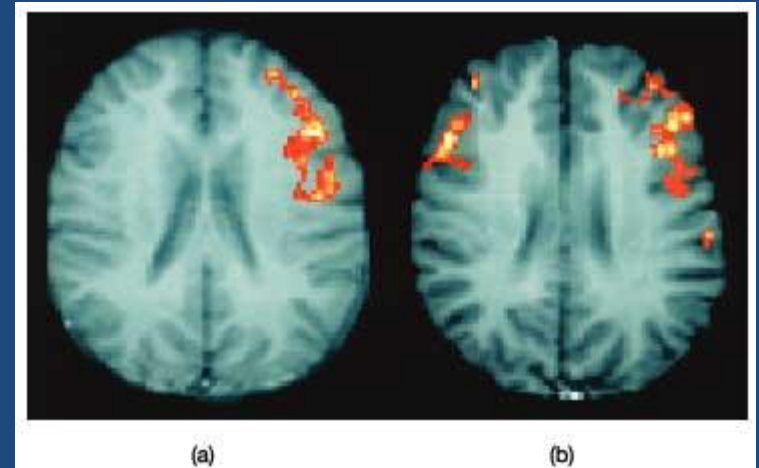


Figure 2:



Literature

- Research shows that because of these biological differences, boy's and girl's ideal learning environment is different:

Boys	Girls
<ul style="list-style-type: none">- Competition-based- Vibrant/Fast interaction- Short-term targets- Spatial mechanical manipulation- Kinesthetic (movement; learning by doing)- Slight criticism fro teacher	<ul style="list-style-type: none">- Language reasoning- Collaboration (group discussion)- Challenge (not competition)- Warm, soft environment fostered by teacher- Memorization tasks

Research Question:

How closely are teaching methods at single sex high schools correlated with the cognitive differences between each sex?

Method

- Electronic survey administered to full-time teaching faculty at 2 all girls and 1 all boys boarding high schools
- A total of 58 people completed the survey
 - 28 girl's school, 30 boy's school
- Survey asked teachers to rate the frequency with which they used certain teaching methods
- Teaching methods were then analyzed with a t-test analysis of means

Teaching Methods Measured

- Volume of Voice
- Visual Aids
- Media
- Language and Comprehension based instruction
- Handouts
- Kinetic Learning
- Experiential Learning
- Socratic Method
- Structure
- Collaboration
- One-on-one
- Peer Instruction
- Multiple Stimuli
- Competition and Peer Grading
- Formality
- Association with real world
- Rote memorization

Results

- The frequency rating used was a 5-point scale, where 1= often (daily), 3 = sometimes (once a month), and 5 = never
- Two of the 17 measures were significant, but each in the opposite direction predicted:
 - Formality: $t(54) = 2.568, p = .013$
 - Memorization: $t(54) = -3.506, p = .001$
- The hypothesis that teaching methods would correlate with sex differences was refuted on two levels:
 - 1) Lack of significance
 - 2) If significant, opposite predicted direction

Teacher Comments

- Open-ended questions
- Comments paralleled prediction:

Boys School Teachers	Girls School Teachers
<ul style="list-style-type: none">- “unpredictable and fast-moving”- “authoritative”- Relation to life experience (sports)- Critique	<ul style="list-style-type: none">- Use of Socratic Method- Group work and collaboration- “Gentle”- “Encouraging”

- Disparity between open ended self report and categorized self report is not unique to this study (IBSC Teaching Boys Study, 2009)

Analysis

- Quantitative measures were insignificant
- Qualitative measures paralleled previous research (IBSC, 2009)
- Insignificance may be due to:
 - 1) Sample size (approaching significance)
 - 2) School demographic
- Participation in seminars?

Conclusion

- Trends can be identified that support teaching methods conducive to cognitive differences and learning styles
- No significant conclusions can be made about the significance of teaching methods in single-sex classrooms

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