



RESEARCH ON LEARNING AND THE BRAIN



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Standards for the teaching profession emphasize the importance of awareness, understanding, and integration into practice of current research in education. The goal of the EDT 110-HI class project was to present syntheses of related literature on pertinent topics to p-12 education. Our research focuses on the brain's role in learning in the areas of gender differences and the arts.

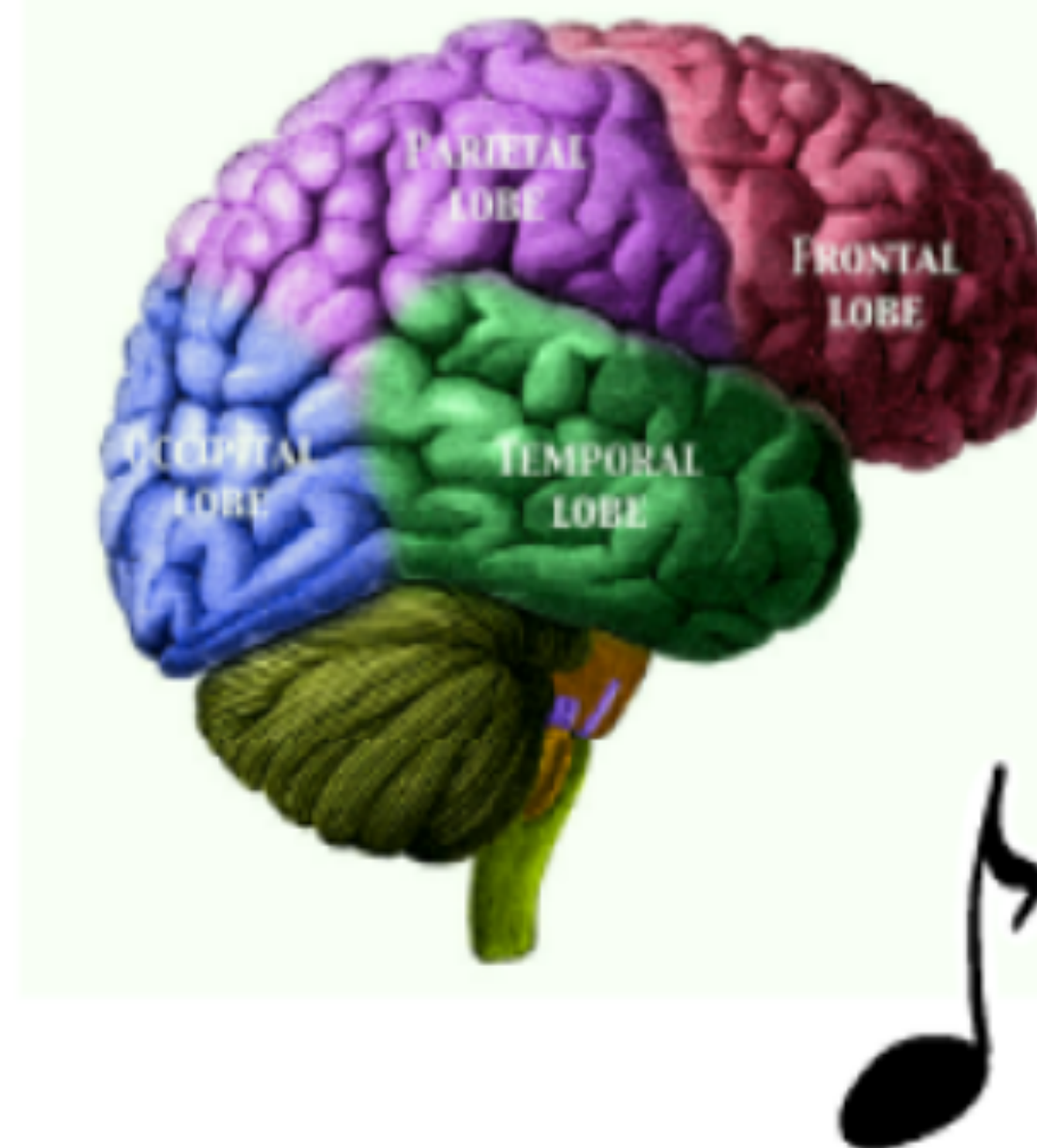
RESEARCH

QUESTIONS

- How do differences in the male and female brain structures affect learning, and how can teachers address these differences?
- Do the arts contribute to brain based learning, and if so, how?

Academic Specific Skills
Math:
-SAT scores avg. 38 pts higher for students w/ 4 years arts training
-Music helps visual spatial skills

Language:
- music builds aural pathways
-dance helps early literacy
-drama develops semantic skills



General Skills for Learning:

memory, abstract reasoning, critical thinking, information manipulation and more
-greater receptivity of info in general
-improved attention network



Environmental and Emotional Benefits

- Arts improve self-esteem and conflict resolution skills
- success in juvenile detention
- better oral expression and risk taking
- Helps teachers feel more creative

CLASSROOM APPLICATIONS

- Music strengthens the brain's response to auditory cues and uses the same areas associated with language, therefore, using music in the classroom can help boys develop better verbal skills.
- Music helps students with visual-spatial awareness, especially in areas related to geometry, and so can be used to increase spatial skills in girls.
- Drama encourages use of language for more expressive skills, allows for development of semantic memory in both genders, but especially in girls.
- Music training allows students to block out irrelevant stimuli; this can be especially helpful for girls.
- Students studying visual arts were better at metacognition, which includes connecting abstract ideas to concrete representations, which allows boys and girls to develop alternative methods of reasoning.



Brain

- Larger Amygdala
- More Gray Matter
- Testosterone
- More Spatial
- Better visual response
- Deductive Reasoning
- Abstract thought



Brain

- Larger Corpus Callosum
- More White Matter
- More active Broca's and Wernicke's areas.
- Estrogen
- Better auditory response
- Inductive Reasoning