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 110-11 class project was to present syntheses of related literature on pertinent topics to K-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?

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.

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

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