New research demonstrates cognitive training improves student learning

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New research from Center for BrainHealth at The University of Texas at

Dallas demonstrates that professional development with a focus on neuroscience equips teachers with the tools and confidence to reduce learning gaps in eighth grade students, as measured by State of Texas Assessment of Academic Readiness (STAAR) performance.

The study, "Higher-Order Executive Function in Middle School: Training Teachers to Enhance Cognition in Young Adolescents" was published in a *Frontiers in Psychology* special issue: Understanding Effective Education: Far Transfer from a Sociocultural and Cognitive Neural Perspective.

This research shows that an intensive, ongoing professional development with a focus on neuroscience equips teachers with the tools to reduce learning gaps.

The Strategic Memory Advanced Reasoning Tactics (SMART) cognitive training program teaches selective attention, abstract reasoning, and innovation. It has been shown to strengthen adolescent higher-order executive function. The current study investigated whether cognitive training delivered by educators during regular classes would significantly change students' ability to process information at a deeper level, and resulted in improved academic performance across multiple subject areas, as determined by state-mandated standardized tests.

English Language Arts (ELA) teachers from an urban public middle school on the southern border of Texas participated in the training and subsequently implemented the SMART program in their classrooms during the fall semester. A total of 315 eighth grade students received cognitive training from their teachers as part of the regular curriculum.

Students who received SMART training showed improvements exceeding the statewide average in Reading Mathematics as measured by the STAAR test. Compared to a group of untrained eighth graders from

the same school, students who received the SMART training significantly improved their achievement on the Reading, Math, Science and Social Studies.

The higher scores among the SMART-trained students showed that boys and girls improved equally.

Lead author Jacquelyn F. Gamino, Ph.D., Director of the Adolescent Reasoning Initiative at the Center for BrainHealth, stated, "The teachers who were trained to implement SMART helped students thrive by fostering innovative thinking and reasoning. When teachers are given opportunities to learn promising evidence-based methods, we can improve the teaching experience and students' learning and test scores. Our research over the past two decades demonstrates that teaching students how to learn can improve achievement across all academic areas. Demonstrating that SMART training has immediate and long-term academic benefits."

More information: Jacquelyn F. Gamino et al, Higher-Order Executive Function in Middle School: Training Teachers to Enhance Cognition in Young Adolescents, *Frontiers in Psychology* (2022). DOI: 10.3389/fpsyg.2022.867264

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