

Academic Highlights

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Dr. Andrew Budson, ACOS-E at the VA Boston Healthcare System (VA Boston), Dr. Katherine Turk, Director of Graduate Medical Education for Neurology at VA Boston, and their colleagues have discovered a possible biomarker for long term learning which may help reshape how students learn and how they are taught.

Budson and Turk believe their breakthrough may lead to different educational techniques to improve long-lasting learning in the classroom, the wards, and the clinic.

"In medicine, long-term learning is essential as life and death decisions may be based on information learned years earlier during medical school. At this time, there is no good biomarker that has been correlated with retention of long-term learning," explained Budson, who is Chief of Cognitive & Behavioral Neurology at VA Boston and Professor of Neurology at Boston University School of Medicine (BUSM).

The researchers studied first-year BUSM students undertaking an introductory anatomy class. They measured students brain responses to anatomical terms using electroencephalography (EEG) before starting the course, immediately following the course, and six months after the completion of the course. "We found that a spike in the parietal regions of the brain correlated with one's ability to retain the anatomical information long-term," said Turk, corresponding author and Instructor in Neurology at BUSM.

According to the researchers, this brain-wave biomarker has the potential to allow educators to try out different educational techniques to improve long-lasting learning by measuring the results using special EEG event-related tests. Thus, these findings may have relevance for educational curriculum development. "Our results allow for various teaching methods to be tried in a classroom setting and measured immediately at the end of the course--possibly even at the end of a particular lesson," added Turk.

Further implications of this discovery may result in incorporating teaching techniques in the classroom that produce the greatest parietal spike. Use of such biomarker-proven teaching techniques could facilitate education that will last for a lifetime.

These findings appear in the Journal of Cognitive Neuroscience.