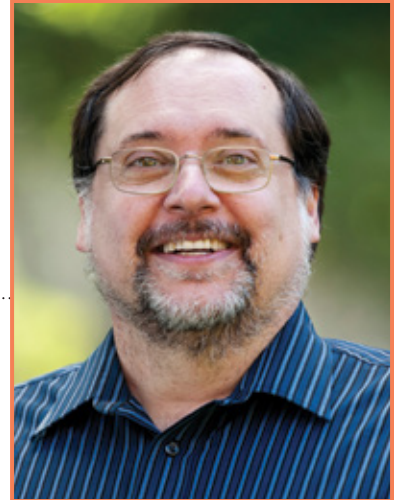


# Neuroscience and Education

Best-selling author **Dr. John Medina** provides insight into how we can improve education using neuroscience

Keynote sponsored by  UnitedHealthcare



The worlds of education and neuroscience intersected briefly at the State Education Convention and the result was a fast-paced, entertaining keynote address by Dr. John Medina, who explored how what we know about brain function might apply to teaching and learning.

Medina, an affiliate professor of bioengineering at the University of Washington Medical School in Seattle, is the author of many books including the bestselling *Brain Rules*.

He began by humorously announcing his skepticism that there were any connections between education and neuroscience.

“Your world and my world don’t get together very often,” he said, adding that most of what people think they know about the brain is wrong.

“Contrary to what you may have heard, we don’t know very much about how the brain works,” Medina said.

But enough is known about the way the brain functions to raise some questions about current teaching models. Medina noted, for instance, that scientists know that the brain was designed to solve problems in order to survive in an outdoor environment with uncertain meteorological conditions while the body is in

near constant motion. That means the brain is not best designed to solve problems while sitting in a controlled indoor climate such as a classroom, he wryly noted.

He then turned to what scientists know about the way memory works, especially “declarative memory” or what we know as facts. Experiments show that people can hold seven pieces of declarative memory in their mind for 30 seconds. If the information is not repeated within 30 seconds, the memory is erased.

If it is repeated, the information can be held for up to two hours. But if it is not repeated within the two hours, the memory will be discarded.

For educators, this means that “homework is not review, homework is new learning,” Medina said. Instead of teaching high school students seven subjects in one-hour blocks, he suggested dividing each hour into three 20 minute periods then repeating the schedule throughout the day.

“Would that improve math scores? We have no idea,” he said, acknowledging that this approach has not been researched, but clearly intrigued by the idea.

He also discussed the effect of stress on memory, using humorous examples from a website where

teachers post students’ amusing but wrong answers on tests. Although some stress can be good for you, constant stress prevents learning from happening. And in individuals who are under extreme, constant stress and, more importantly, feel as if they have no control over the source of the stress, actual brain damage can occur.

With stress a constant in education, he did have a suggestion based on scientific evidence. Research shows that de-stressing therapies such as yoga or meditation may help some people, but have no effect on others. One therapy, however, a mindfulness training developed by John Kabat-Zinn — Mindfulness-Based Cognitive Therapy — has been proven to reduce anxiety and depression and also boost brain function. The therapy and its affects are described in a book, “Mindfulness” by Mark Williams and Danny Penman, which he recommended to the audience.

“If you introduced mindfulness training, I wouldn’t introduce it to the students first, I would introduce it to the educators,” Medina said. “And when you can work it, introduce it to the students and you can say it’s brain science.” ■

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