

Neuroscience taught via roaches

'Backyard Brains' co-founder brings experiments to kids

BY RUTH CAMPBELL

rcampbell@oaoa.com

Using legs cut off from South American cockroaches, more than 100 local students, led by engineering and neuroscientist Greg Gage, listened to the insects' brain activity using inexpensive Spiker-Boxes. Gage's appearance at Odessa College was part of Ector County Independent School District's PICK Education initiative, which is aimed at bringing STEM education to life for students. Students selected for the event will be responsible for sharing and training other students at their campuses. One teacher and a campus curriculum facilitator from each school also attended. The hairs on the cockroaches' legs have neurons that send information to the brain, even if the cockroach isn't all together. A volunteer took one of the roughly three-dozen cockroaches out of their container and put it in a bowl of ice water to anesthetize it. A volunteer cut off one of its legs and another pinned it down to listen to.

Gage said students could listen to the brain activity on iPads or their cell phones. When hooked up, static filled the Saulsbury Room of the Electronics Technology Building at OC. There were also experiments where two students were hooked up with electrodes to see how when one moved their hand, the other would respond. Kaleb Luera, a 12-year-old Bonham Middle School seventh-grader, participated in the experiment with Steven Anna, an 18-year-old senior at Plains High School.

"It was cool," Luera said. "I like controlling other people."

Luera said he liked the hands-on activities because it helped him learn faster.

Anna thought it was an interesting experiment, as well. He said he studies biomolecules and basic anatomy on his own, but he has not delved into neurons.

Seventeen-year-old Plains High School senior Mallory Maxwell thought the project was awesome and enjoyed the presentation with Luera and Anna.

She said the cockroach legs didn't freak her out.

He added that PICK Education is exciting because it gives different demographics of students a chance to work and learn together. Osborne said having students blog and share data is something being considered along with Skyping with other schools and having teachers learn how to create lesson plans from other schools and share lesson plans.

A well-known TED speaker and a TED Fellow who also was named a Champions for Change award winner by the White House in 2013, Gage co-founded "Backyard Brains" with Tim Marzullo, a fellow graduate student.

Osborne also received the Champions for Change award.

"Backyard Brains" is a do-it-yourself neuroscience initiative for youngsters that uses off-the-shelf electronics in kits that give insight into the workings of the nervous system, a news release said. ECISD is now in the process of rolling out "Backyard Brains" kits to all its secondary schools.

A TED (Technology, Entertainment, Design) speaker builds a Spiker-Box, a small device that helps kids understand the electrical impulses that control the nervous system.

Gage said he and Marzullo were going to schools to educate students about the brain.

"When I was in school, I never learned about the brain and most people don't learn about the brain. So we thought it was important to do that. That's when we discovered the difficulty of doing these experiments we're doing today in the classroom," Gage said. He added that the SpikerBoxes can be made for under \$100.

The pair submitted the SpikerBox idea to a scientific conference and got a lot of feedback from people who said they should turn it into a company. They post their talks and experiments online.

“This is my first time to ever do this, but I think it’s really cool. I think I could actually do this in the future,” Maxwell said.

Along with the ECISD and Plains students, ECISD Chief Innovation Officer Jason Osborne said some Odessa College students and department chairs. Students from ECISD will be working with students from the college and other districts around the state through partnerships, he added.

“Part of PICK Education is reaching out to other districts and partnering with other districts. Plains is right up the road from us. They also have a very small district, so it will be kind of interesting to tap into that district and see if they want to implement some of the things we’re doing with PICK,” Osborne said.



Greg Gage, center, engineer, neurologist, “Backyard Brains” co-founder, TED speaker and Fellow, who was named a Champions for Change award winner by the White House in 2013, works with students from Wilson and Young Medal of Honor Middle School as they try to observe the brain activity of a cockroach through its leg on a SpikerBox during an ECISD PICK initiative session Thursday morning at Odessa College.

MARK STERKELI ODESSA AMERICAN

[Copyright \(c\)2016 Odessa American, Edition 11/4/2016](#)
[Powered by TECNAVIA](#)
