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Science

SCIENCE IN MIND

Learning science concepts using the iPad

By Carolyn Y. Johnson | GLOBE STAFF DECEMBER 16, 2013

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A study at Bedford High found that using iPads in a lesson resulted in students' improved ability to answer questions about the solar system.

Technology is often seen as a powerful way to improve education, but just handing out the latest gadgets won't by itself improve how children learn. That's something educators and administrators are wrestling with, as schools experiment with rolling out iPads and tablets.

Enter Matthew Schneps, a researcher at the Harvard-Smithsonian Center for Astrophysics who studies dyslexia and has long been intrigued by technology's potential to help people with this learning disability, who often struggle in an education system dominated by the textbook. The discoveries he has been making about how people with dyslexia analyze blurry images and read faster on hand-held devices led him to wonder about what kinds of non-text-based learning might be enabled by technology.

Perhaps, he thought, the touch-screen ability to pinch and squeeze and navigate through a model system on an iPad could be a better way to learn about concepts such as the scale of the solar system — something students are notoriously bad at comprehending. The iPad might provide a different and more accurate way to learn about complicated scientific concepts that often include time and length scales that are far outside the typical window of human experience.

In a study at Bedford High School, he found that a simple iPad lesson resulted in improvement on students' ability to answer questions about the solar system — such as the relative size and distance between the planets. The study was published in the journal Computers & Education.

He thinks this kind of learning could be used in all kinds of situations, often found in the sciences, where verbal descriptions may be aided by 3-D exploration.

Sometimes, Schneps says, the abstracted ways that diagrams appear in textbooks contributes to the misconception.

Schneps thinks teaching needs to use both approaches:

"It's a little bit like the difference between reading about the Taj Mahal and visiting the Taj Mahal," Schneps said. "You have to read about it so you know what it is and why it was built and this stuff you can't tell just by looking at it. But if you never visited it, you're going to miss something."

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