Chronicle / Toolbox

The History of the World in an App

The popular EarthViewer app breathes life into all 4.5 billion years of the place we call home.

Part of that mission, developing educational resources for the classroom, including a short film about the Mesozoic extinction and a DVD package of materials on the history of life on our 4.5 billion-year-old planet. But HHMI wanted to create something interactive, to really engage students, says Satoshi Amagai, a senior program officer in the Educational Resources Group. “We [wanted to have] an app that could [bring users] through time to see how the Earth has changed,” he says.

The EarthViewer app does just that. Designed for high school students to tap and pinch their way through billions of years of history, the app showcases everything from a century’s worth of climate change data to the changing oxygen levels over four billion years. Students can spin a virtual globe to zoom in on specific areas of the planet to study fossil records and solar luminosity, for example, and dig deep into the raw data if they want more information. Like a Swiss Army knife, the app houses many different tools that can be used for a variety of purposes.

For high school science teacher Dave Kenyon of Paw Paw, MI, the app gives new depth to his lessons about how continents shift over time. For years, he has shown students Petoskey stones—fossilized coral that’s native to Michigan—to help illustrate the idea that parts of the state were once located in warm, shallow salt water. Now, he enhances that lesson by showing students the EarthViewer app. They can see that Michigan was located south of the equator hundreds of millions of years ago, and then drag their way through the timeline to see how the land shifts thousands of miles to its current location. “Before the app,” says Kenyon, “students would nod their heads [when I explained continental shift] and say, ‘Okay, yeah.’ But now they can really see that change. They get it.”

With a scrollable, zoomable timeline on one side of the app and a spinnable three-dimensional globe on the other, students can select the things they’re most interested in tracking—from world temperature to locations of modern cities to carbon dioxide levels—and watch them shift over time. They can check out information on specific fossil sites and study in-depth features of major geological events in Earth’s history. Students can even layer on different types of data—continental shift and atmospheric conditions, for example—to get a more holistic understanding of how the world has changed over time.

So far, the app seems to be resonating with students and teachers: When HHMI released the iPad app in January 2013, it was featured in the iTune App Store, and it rocketed up the charts. “If you get featured on the iTunes Store, fasten your seatbelts,”

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jokes Mark Nielsen, a science education fellow at HHMI who, among others, helped to develop the app. By the end of 2013, the app, which became available for Android tablet computers in September, had more than a quarter-million downloads.

For Laura Dinerman, who teaches environmental science at Sherwood High School in Sandy Spring, MD, the app offers an easy and effective way to dispel common misperceptions that students have about climate change. “Students who start the unit [convinced] that our current warming trend is normal and cyclical can immediately discover the cycles of carbon and temperature through time and note the current irregularity in the rate of warming,” she says. “Because the app lets students discover and analyze independently, it prepares them to make the leap to ‘what’s next’ without a political or moral agenda.”

Based on early feedback from teachers, the team is updating the app and adding new features. Nielsen is developing a virtual scavenger hunt so that students can explore the different features of the app, and the team may add new data so that students can take a closer look at sea level change over time. HHMI is also considering adapting the app so it can be used on the Web. “This has been so popular, we’re starting to think about other apps in completely different areas,” Amagai says.

—Erin Peterson