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Rewiring the LEARNING LANDSCAPE

TC IS BREAKING NEW GROUND IN APPLYING TECHNOLOGY TO EDUCATION

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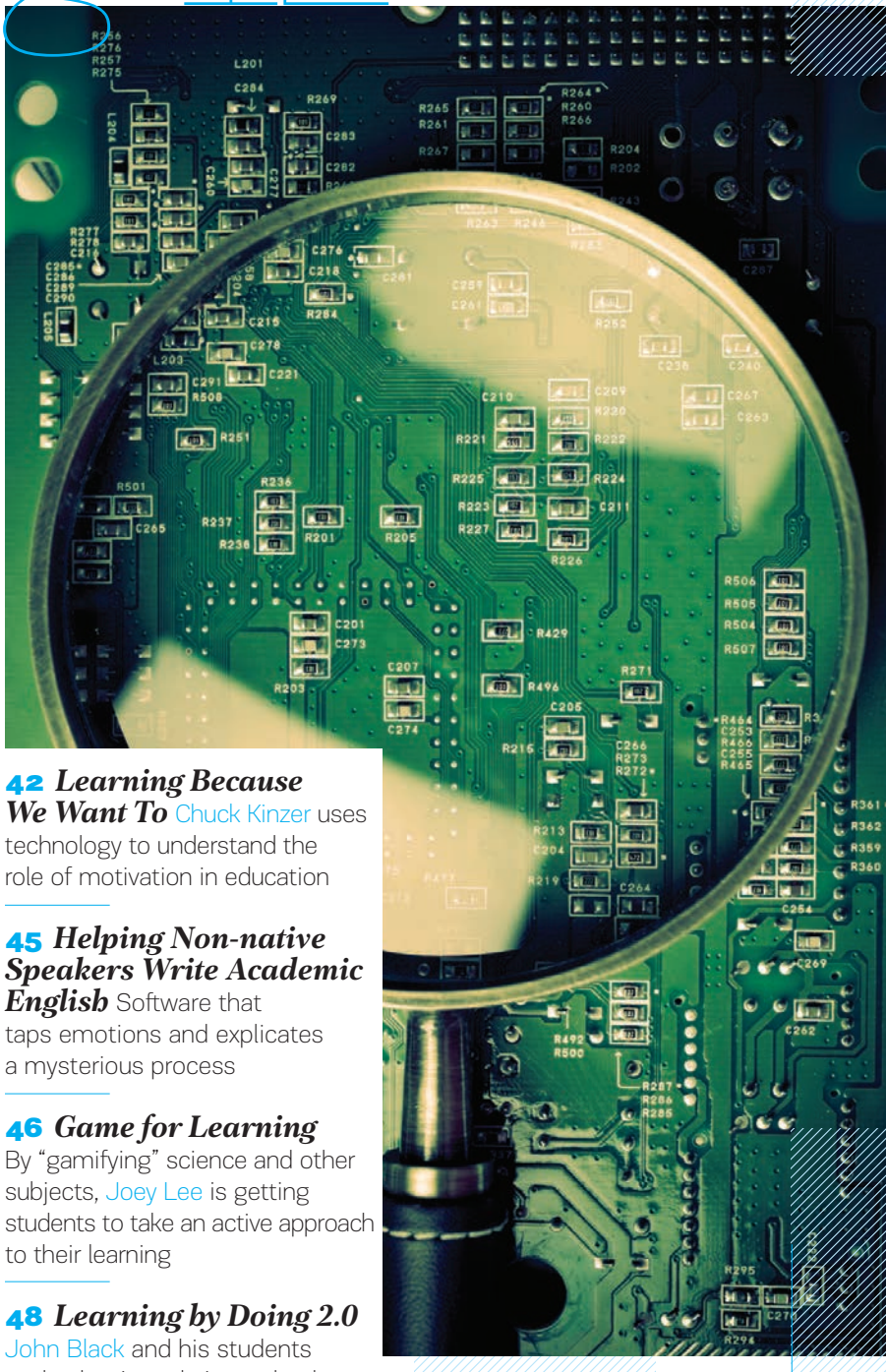
features



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ON THE COVER
Photo illustration by C.J. Burton/Corbis

...there's more!

game FOR LEARNING

By "gamifying" science and other subjects, Joey Lee is getting students to take an active approach to their learning

By Suzanne Guillette

According to a 2008 Pew Center report, 97 percent of teens across the country are avid game-players who invest substantial time in their virtual lives.

"Kids are having intrinsic needs met in well-designed games," says Joey Lee, TC Assistant Professor of Communication, Computing and Technology in Education. "They apply lots of time and energy in game worlds in order to pursue things like mastery, autonomy, purpose, status, social contact, acceptance, curiosity, self-expression and competition. When similar game principles are applied to real-world educational settings, there are rich opportunities for changing the culture of the classroom and shaping identities that are better for learning. There are opportunities to structure and model processes and strategies for success; encourage peer teaching and self-directed learning; offer tailored, customized feedback; provide recognition for academic skills and achievements; and encourage leadership, problem-solving and creativity."

Prompted by that observation, Lee has begun designing what he calls a "gamification" layer for science classrooms: activities that lend a gamelike flair to a space that, despite its seemingly obvious allure, all too often fails to engage kids' imaginations and motivation to learn. His broader goal is to help students form more positive self-concepts and identities as scientists and to cultivate what Christopher Emdin, TC Assistant Professor of Science Education, calls "science-mindedness."

"What if we could raise up winners in real life by taking the same mechanics, elements and processes that have proved vastly successful in commercial games and applying them to traditional classrooms in science and other subjects?" asks Lee, Director of the Real-World Impact Games Lab, part of the Games Research Lab at TC.

This past academic year, Lee, together with Emdin and Jenny Ingber, Director of Science Programs at the Bank Street College of Education, launched a pilot program called the Science City Heroes Gamification Project at two New York City middle schools, one in the Bronx and one in Brooklyn.

The project employed a series of color-coded Pokémon-like cards to help both teachers and students

Joey Lee

TC FILE PHOTO

emphasize and reflect the processes and traits that characterize science-mindedness. For example, a young girl who created a chart depicting the hierarchy in which humans, snakes, mice and other animals function as producers and consumers was recognized with a red "science victory card" for analytical thinking. Green "success" cards were doled out to students who displayed positive academic identities, while blue "action" cards were peer-awarded, a way to promote teamwork and collaboration. Students could then use the cards they amassed to purchase and upgrade buildings, vehicles and parks in a virtual Science City.

"One of our main goals was to get these students to see themselves as scientists," says Lee. "We want to promote learning as a lifestyle, not something that happens only in the classroom."

When the aforementioned student received her red card, Emdin recalls that three male classmates from the Dominican Republic, all of whom had limited English skills, took note. Previously, the trio had spent their time in the classroom talking to one another instead of paying attention. But once they saw that their classmate received recognition for her efforts, they wanted to participate too. They soon created their own charts and won their own red cards.

"Kids who have different ethnic and linguistic backgrounds can become keyed in to play because they want to succeed in the game," says Emdin.

For his doctoral dissertation, Lee explored "identity-supportive games" that use game mechanics to challenge racial and ethnic stereotypes and encourage the player to reflect on his or her self-concept. He was interested particularly in Asian-American culture and the myth of Asian-Americans as the "model minority," a stereotype that has been associated with high rates of depression, suicide and anxiety within the Asian-American community. His dissertation addressed how stereotypes in general create barriers for people aiming to reach their full potential.

"Games are a powerful way to get people to step out of their shoes and into the life of the other," says Lee. "They allow people to have different experiences that they otherwise wouldn't be able to have."

Currently Lee is exploring gamification on other fronts. At TC he's working on a project called Scholar's Quest, an innovative attempt to gamify the graduate school experience in ways that will help students maximize feedback from advisers, build community and share advice with their peers and improve interpersonal and technology skills. "Often, grad students don't use their time in school effectively and wisely," says Sam Ahn, a TC doctoral student in Communication, Computing and Technology in Education who is working with Lee on the graduate school project. "By using gamification, our plan is to make the transition from the undergraduate experience to the graduate experience seamless, engaging and fun."

Lee is also bringing gamification to climate-change education. As part of a $1.2 million grant from the National Science Foundation that brings together TC, Barnard College, the Columbia Climate Center, the Lamont-Doherty Earth Observatory, the American Museum of Natural History and others, he is designing a Real-World Action Game for adults that takes advantage of social networking, crowdsourcing and real-world missions to get adults to learn about and take action on climate change.

The focal point for Lee, in any area he's addressing, is learning. "I've always been interested in how games can make a difference with real-world problems and challenges," he says. "Whether it's shaping identities, changing perspectives or motivating action, the learning that can take place in games is powerful." tc