

## National Initiative to Increase STEM Graduates Doubles in Members

*25 top research universities join effort to develop stellar teaching skills in future faculty*

Forty-six research universities that produce one-third of U.S. doctoral degrees in science, technology, engineering and mathematics (STEM) now are members of the Center for the Integration of Research, Teaching and Learning (CIRTL), established in 2003 with support from the National Science Foundation to improve the teaching skills and increase the diversity of future STEM university faculty.

CIRTL, operated within the Wisconsin Center for Education Research (WCER) in the University of Wisconsin–Madison’s School of Education, added its 25 newest members as a result of its third expansion. As CIRTL members, universities commit to developing local learning communities that promote proven teaching and mentoring techniques for STEM graduate students.

CIRTL is increasing the number and diversity of STEM professionals by improving the STEM learning of students at all U.S. colleges and universities. CIRTL’s member universities develop their own programs, all built on the CIRTL core ideas of teaching-as-research, learning communities and learning-through-diversity.

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For more information, visit [wcer.wisc.edu](http://wcer.wisc.edu).



*Christian Hernandez credits his success to professor Lokuta, a CIRTL mentor who has worked with UW–Madison’s Delta Program.*

# Re-Making the World of Education: A Learning Revolution Coming to a Space Near You

By Lynn Armitage

Pancake-making robots. A mechanical horse. A life-sized mousetrap. No, these aren't highlights from the latest episode of "Shark Tank." But they are real-life inventions of a burgeoning community of artists, do-it-yourselfers and entrepreneurs known as "makers"—pioneering tinkerers and problem-solvers who are inspiring some educators to bring more hands-on learning into the classroom.

"Bringing the maker movement into the education conversation has the potential to transform how we understand 'what counts' as learning, as a learner and as a learning environment," explains Erica Halverson, associate professor of curriculum & instruction at UW–Madison's School of Education and a researcher at its Wisconsin Center for Education Research (WCER). She is discovering that a lot can be learned by studying how people create. "The idea behind the maker movement is that people learn best by sharing, creating and producing things together."

Of course, using ingenuity to innovate is nothing new. But looking at a maker environment as a place to promote 21st-century learning is a novel perspective, one that Halverson believes is sorely needed in formal education if students are going to develop the skills and habits of mind necessary for success.

"All their lives, students have thought of learning as demonstrating what they know on a series of progressive instruments," she says. So instead of making robots, students are learning robotically. "As a result, young people are shying away from careers that require creativity and problem-solving because we haven't offered opportunities for them to engage in those activities."

Halverson, also an actress and visual storyteller, is hoping to reverse that course with a little help from kindred spirit Kim Sheridan, an associate professor of educational psychology and art education at George Mason University, and a painter and sculptor, as well. "People in academic circles kept telling us that we should meet," recalls Halverson, and in 2012 they developed a mutual interest in studying the Maker Movement and its role in education.

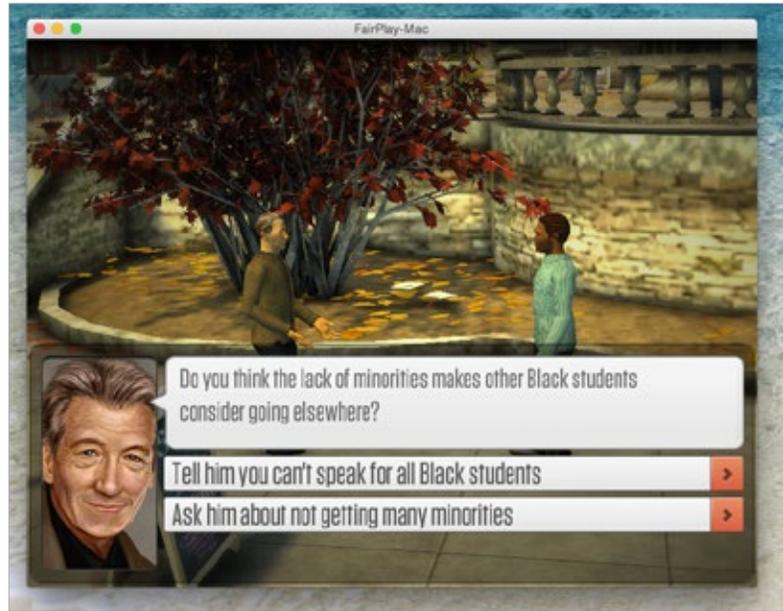


*Researcher Erica Halverson, with help from daughter Grace, explores how making affects learning.*

Since then, this research tour-de-force has made great strides in creating a research framework for studying makers and making spaces. Currently, they are among a small group of education researchers in the country who were the first to combine arts-based approaches, like making, with learning, claims Halverson. While that research field has become much broader in the last few years, Halverson is proud of her pioneering work. "There is now a growing body of evidence we helped start."

Together, Halverson and Sheridan have collaborated with other researchers on three maker studies and co-authored several works on making and learning published in the *Harvard Educational Review*. The National Science Foundation has funded two of their studies, including a three-year empirical study of maker spaces in museum settings. In one design experiment at Children's Museum of Pittsburgh, researchers observed how well children made things with and without constraints.

A maker-turned-mom, her greatest creation is her 9-year-old daughter, Grace, who—no surprise—has become a maker, like her mother, writing and producing movies. "She feels empowered to pick up something new because she knows what it is to use tools to create."



Left: Brett Woods, associate professor in biology at the University of Wisconsin–Whitewater, experienced racial bias in graduate school. Right: Screen shot from “Fair Play.”

## STEMMING the Tide of Bias: Video Game Teaches Professors How Discrimination Feels

By Lynn Armitage

Brett Woods knows all too well what racial bias feels like. “When I was in graduate school, it was made clear to me that the only reason I was there was because I was fulfilling an affirmative-action requirement,” recalls Woods, who is African American. “And on more than one occasion, I was assumed not to be a person of knowledge or authority in situations where I actually was.”

Those unfortunate experiences are why Woods, now an associate professor in biology at the University of Wisconsin–Whitewater, feels a kindred spirit with Jamal Davis, a fictional African-American graduate student who experiences racial bias on the road to a doctoral degree in the video game “Fair Play.”

“It’s like watching a video of my own life,” Woods say. “Only I don’t require a video game to know that this really happens.”

“Fair Play” is the brainchild of Molly Carnes, a professor in UW–Madison’s School of Medicine and Public Health, who worked with the Games+Learning+Society Center to create the game with funding from the National Institutes of Health (NIH).

With a new \$1.6 million, five-year NIH grant, Christine Pribbenow, director of the LEAD Center in the UW–Madison School of Education’s Wisconsin Center for Education Research, is using the video game to teach university professors to feel empathy for their students and to adopt their perspective.

This really resonates with Woods, who says much of the bias he encountered in graduate school came from non-minority professors in positions of power. “The real issue is subtlety,” Woods says. “What is so dangerous about biases is that many people are not aware that they even have them.”

Pribbenow and the “Fair Play” staff will conduct up to 20 workshops for university educators at UW–Madison and across the country over five years using Carnes’ video game. “We are hoping that empathy and perspective-taking does make a difference in the way that teachers interact with students,” Pribbenow says, adding that everyone is biased in some way and that this prejudice carries over subconsciously into the classroom.

“Teachers have the best intentions to treat people equally based on their merit, but we don’t always do it.”

## Recent Findings

### Reading Students' Lives: Literacy Across Time

In a 10-year study, WCER researcher Catherine Compton-Lilly followed eight students and their families to study literacy in high-poverty communities. She found that many parents and students in this study believed that many teachers were not interested in the children as people or learners.

### “Whose Responsibility Is it to Stop Bullying?”

In a three-year study, WCER researcher Amy Bellmore discovered that theoretically based, multi-tiered, multi-component school interventions show promise for reducing school bullying.

## News

### Wei LAB Announces 5th Annual International Colloquium on Black Males in Education

*Landmark conference to be held Oct. 4-7 in Bermuda*



In partnership with Bermuda College, the 5th Annual International Colloquium on Black Males in Education (ICBME) will be held in Hamilton, Bermuda, on October 4-7, 2016. Registration information, invitations to participate and the theme will be announced in the coming weeks.

### \$2.1 Million Grant Will Help Gifted, Low-Income Middle School Students

“Supporting Smart Spaces,” a project of the Wisconsin Center for Academically Talented Youth (WCATY) and the Wisconsin Center for Education



Research (WCER) at the University of Wisconsin–Madison School of Education, has been awarded a \$2.1 million grant by the Jacob K. Javits Program through the U.S. Department of Education.

This funding will make it possible to improve curriculum and educational programs for approximately 800 academically advanced 6th- and 7th-grade students in Wisconsin. Public schools in Milwaukee, Madison and Adams-Friendship, as well as the Green Bay Catholic Diocese, will adopt the “Smart Spaces” blended online courses for two consecutive years, targeting their gifted, low-income and minority students.

### WCER Launches Evaluation Collaborative to Help Educational Organizations in Wisconsin

*Special outreach targets smaller programs with limited budgets*



In response to increasing need within Wisconsin's pre-kindergarten through secondary education system to understand how educational interventions work and may be improved, the Wisconsin Center for Education Research, part of UW–Madison's School of Education, has created the Wisconsin Evaluation Collaborative (WEC).

WEC is a growing community of experienced program evaluators from UW–Madison who work in partnership with school districts, professional associations, CESAs, state and federal agencies, and foundations to determine the effectiveness of education initiatives and how they can be continuously improved.

### DPI and UW–Madison Education Researchers Team Up in \$5.2 Million Grant to Reduce Gaps in Opportunity

A \$5.2 million U.S. Department of Education grant will fund the largest research collaboration to date between Wisconsin's Department of Public Instruction and its flagship university. Education researchers at DPI and the Wisconsin Center for Education Research, part of UW–Madison's School of Education, will mine longitudinal data from Wisconsin schools to identify proven practices that teachers can use to narrow gaps in student opportunity and achievement levels across all racial and ethnic backgrounds, and family income levels.

For more news, events and lectures, visit: [wcer.wisc.edu](http://wcer.wisc.edu).



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