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OPENING DOORS FOR CREATIVITY: Geoff Winningham emphasizes that being authentic is the key to producing art.

Through the Eyes of Children

Nearly half a century ago, Geoff Winningham '65 found his place in the world by focusing on photography. Since 1969, he's been imparting his artistic passion to his students at Rice, where he is the Lynette S. Autrey Professor of Humanities and teaches photography.

Over the last six years, he expanded his reach to include elementary and middle school students from Houston through a nonprofit organization, the Pozos Art Project, that he and his wife, artist Janice Freeman, created. The project offers free workshops in the visual arts to children.

"I don't view this as charity," he said. "I view it as a very interesting artistic experience to work with kids and see how they instinctively photograph."

Rice's Department of Visual and Dramatic Arts,

Continued on Page 2 >>

Determining the Needs of Children

In partnership with Houston Independent School District (HISD), Rice University's Baker Institute for Public Policy is launching the largest-of-its-kind study to assess the health needs of the district's 215,000 students, three-quarters of whom are considered economically disadvantaged. Many of these children are more likely to suffer from health problems, impaired development and low performance in school.

Quianta Moore, a scholar in health policy at the Baker Institute, plans to conduct a needs assessment of the physical, social and mental health of children within the district. "This project is an opportunity to not only determine the health needs of children within HISD, but also to use this data as a representative sample of the needs of children within all of Houston," said Moore, the project's

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Inside:



ELECTRIFYING FUN:

Rice University students contribute to the "Shocks and Jolts" exhibition at the Children's Museum. See story on Page 6.

Winningham *Continued from Page 1*

in conjunction with the Pozos Art Project, is presenting the exhibition, “In the Eyes of Our Children: Houston, An American City,” that will feature photos and mono-prints. The exhibition will be on view March 7–31, 2017, at the Rice Media Center. A 240-page book that includes many of the works on display will accompany the exhibition. The book is scheduled to be out in December.

The exhibition will showcase about 200 pieces of art that reflect the history and diversity of Houston. “What we sense in these photographs and prints is the archetypal innocence, curiosity and authenticity of the child,” wrote Winningham in the book’s preface. “There is a total lack of ego, artistic posturing or striving for ‘self expression.’ Instead, the city, in all its rich diversity, is pictured here with a sense of wonder.”

Some of the pieces were created this summer at Rice, where 132 students, rang-

ing from kindergarten to eighth grade and representing various ethnic groups, attended photography and printmaking workshops. Winningham and Rice undergraduate students guided the students and took them on field trips to photograph the city with \$100 Canon point-and-shoot cameras. They went to Chinatown, to the East Side and to Third Ward and other historic places. “We covered the city, and some real good photographs came out,” Winningham said.

Sophia Vu, a sixth grader at Baines Middle School, has taken classes from the Pozos Art Project since she was in kindergarten. “I learned how to hold the camera and find the perfect angle,” she said. “I had lots of fun. I liked going on field trips. My favorite trip was when we went to the zoo.”

Most of the pieces in the show were selected from works done in various schools over a period of six years. Rice senior Abbi Gutierrez was in charge of the Pozos

Project at Mark Twain Elementary, where she taught photography one hour a week on Fridays and accompanied the children on trips to photograph the city.

“The children themselves were challenged to really take a look at the world around them,” Gutierrez said. “By photographing their families and their city, I think many of them began to look at things differently. They taught me that if you photograph with your heart as much as your eyes, you take a chance at dancing with life, and it may dance back.”

Winningham views the exhibition and the book as a culmination of his many years of work with the project. He and his wife came up with the idea of creating the nonprofit after they built a house with a darkroom and art studio in Mineral de Pozos, a former mining town of 3,000 in northwest Mexico. Freeman helped a local orphanage there by teaching some of the boys the art of printmaking. Her efforts



ARTIST? PROFESSOR? MENTOR? ALL OF THE ABOVE: Winningham loves teaching children because of how they look at the world with wonder.

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— **Abbi Gutierrez**

were so successful, Winningham decided to do something similar with photography.

In 2007, Winningham was invited to have a show at the Jung Center as part of Houston’s FotoFest. Winningham knew that his photos would not be ready in time, so he recruited eight Rice students to help him arrange a series of photography workshops with children from Mineral de Pozos. Over the course of three visits to Mexico, the students taught the children photography, and the creations from those sessions were exhibited at FotoFest. “For me, this was the most rewarding and satisfying project I had ever done,” Winningham said.

Winningham and Freeman were so encouraged by what the kids from Mineral de Pozos had accomplished, they established the Pozos Art Project in 2011 as a way to continue offering free workshops to local children. Since then, the project has worked with the Houston Grand Opera Community Outreach in presenting a major show at the Museum of Fine Arts, Houston, and now offers workshops at five elementary and middle schools, including Love and Mark Twain, throughout the academic year.

Linda McNeil, co-director of Rice’s Center for Education, helped connect Winningham with HISD schools. McNeil said that Winningham has created a condition in which children can have wonderful ideas. “Geoff is not teaching children to be creative. He is teaching them ways to discover their own creativity.”

Winningham found his own creativity in 1961, when he was a freshman at Rice University. As he walked across campus one day he happened to read a notice that said the Campanile, the school’s yearbook, was looking for a photographer. It was a paid position and offered training in the use of a darkroom. Winningham already knew the basics of photography and darkroom use, so he jumped at the opportunity.

“All of a sudden I had a place,” he said. “All of a sudden I was on a football field photographing, taking a portrait of the president, taking pictures at parties. Whatever happened at the university, I had a reason to be there,” he said. “A very trying, stressful, unhappy freshman year suddenly turned happy.”

In his many years as a photographer, Winningham has learned that the archenemy of all art is pretense, and the greatest friend is authenticity. That’s why he loves working with children.

“Kids are almost incapable of being pretentious, and authenticity is their stock and trade,” he said. “That is what they are. The ego has not developed and they love to look at the world with wonder.” ■

DAVID D. MEDINA

Director
Multicultural Community Relations
Public Affairs

principal investigator. Obtaining this information is the first step toward improving access to health and social services and ultimately improving child health in Houston.”

Assata Richards, director of the Houston-based Sankofa Research Institute, serves as co-investigator of the first phase of the study, which is supported by the Houston Endowment and began at the start of the school year.

The three-year study will analyze about 250 schools within HISD. The researchers will survey fourth through 12th-grade students, school staff and parents via an online questionnaire, hold focus groups and use community-based participatory research to conduct an in-depth survey of a representative sample that includes 70 schools.

Moore said the results of the study will guide the appropriate allocation of resources and investments into improving child health in Houston and can be used by the HISD board, school administrators and principals to make decisions about nurse staffing and health services within schools.

“A needs assessment is needed to inform and guide health service decisions so that finite dollars can be invested appropriately within our city,” she said. “Moreover, this needs assessment will identify gaps in access to care within neighborhoods and opportunities for increased health care and social services. Overall, this project has the potential to be replicated and impact child health policies within other school districts, cities and statewide.”

Moore’s research focuses on developing empirically informed policies to advance the health of children. Specifically, she focuses on access to care in vulnerable populations through school-based clinics, telehealth and health education. Her most recent work involved identifying and making policy recommendations to address access to HIV prevention for high-risk adolescents. ■

JEFF FALK

Associate Director of National Media
Public Affairs

¡Ponte los pilas! — ‘Let’s get started!’

The Rice Office of STEM Engagement (R-STEM) has created an innovative program designed to help Spanish-speaking students learn about careers in science and technology.

The program, the Science Technology Engineering Mathematics Fabrication Academy (STEMFab), uses Spanish and English to help students with limited English. Students learning English often confront a number of academic challenges, such as greater barriers in preparing for college and careers.

As STEM-related employment and career opportunities rapidly expand, R-STEM seeks to educate and engage all members of the community in opportunities that facilitate meaningful experiences, connections, awareness and empowerment.

The Houston Independent School District (HISD) has established a strong partnership with R-STEM. HISD recruited 30 students from Furr, Milby and Austin high schools for a two-week STEMFab program. The district also provided transportation and additional support for the program.

A major goal of the STEMFab program is to expose students to careers in STEM by providing them with a basic understanding of computer programming and electrical engineering through rapid prototyping and circuitry.

First, students were introduced to electric circuits and then they applied their knowledge to manipulate Arduino®, a microcontroller that runs on open-source code. The students used the Arduino® to wire and control circuits so that they can program LED lights to blink, turn small motors and produce sound effects.

Once the students were comfortable with the hardware side of things, they learned the basics of computer-aided drafting using web-based software, such as Tinker CAD, to complete design challenges. Toward the end of the two-week program, the students learned how to operate a 3-D printer and practiced making objects. This led to the creation of a culminating project that implemented

the technology that was learned while attending both sessions: a 3-D printed owl that was powered by an Arduino®.

Dan Marincel, a postdoctoral research associate in chemical and biomolecular engineering, and Isaias Cerda, assistant director for R-STEM, lead the program with Rice sophomore undergraduate teaching assistants Brennan Han, Nia Stallings and Nick Wolf.

To help connect the STEMFab experiences to real-world applications, students went on several campus tours that included a visit to the Oshman Engineering Design Kitchen, which serves as the hub for engineering design at Rice, and the Rice University Chevron Visualization Laboratory, which enables users to display and analyze data in 3-D. “The STEMFab program gives students the opportunity to use their natural artistic and creative abilities while familiarizing themselves with current technology.”

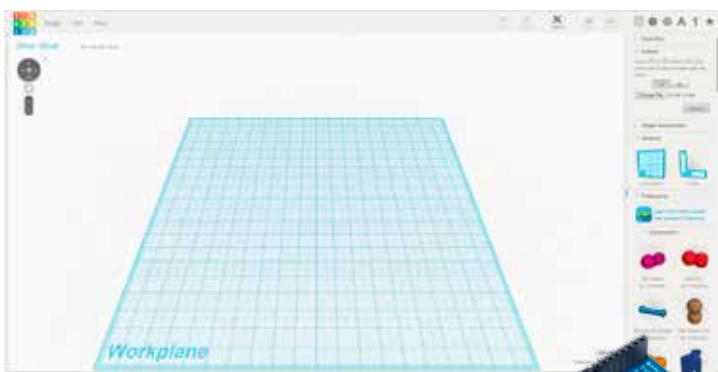
— Isaias Cerda

“The information that is learned here can really impact their future.”

For more information about this and other programs, please visit <http://www.rstem.rice.edu> ■

ERICKA LAWTON

Assistant Director
Elementary STEM Education
Rice Office of STEM Engagement



WISE OWL: STEMFab students present their final project, a 3-D printed owl with blinking eyes.



Online Games Promote Health and Science

For nearly a decade, students around the world have learned from Web Adventures, an award-winning, online science and health game site created by Rice University's Center for Technology in Teaching and Learning (CTTL).

Now, thanks to the Rice University School Mathematics Project (RUSMP), future generations of young scientists will continue to be challenged and motivated by these adventures.

Web Adventures was created by the CTTL as part of the organization's mission to undertake research that makes technologies for learning more productive, accessible and engaging, especially through the use of games in science and health education. RUSMP is now proud to host these online activities as part of its commit-

ment to providing the community with resources that promote science, technology, engineering and mathematics (STEM).

The suite of games, available online at <http://rusmp.rice.edu/webadventures/>, includes "Virtual Clinical Trials," which explores advances in neuroscience; "Cool Science Careers," providing students with experiences as scientists; and "CSI: The Experience," which introduces students to forensic science. Also included are "MedMyst," which encourages students to explore medical mysteries; "N-Squad," which heightens student awareness of alcohol-related crime; and "The Reconstructors," which explores the science behind drug and alcohol addiction and abuse. "CSI: The Experience" (2009) and "Virtual Clinical Trials" (2013) were awarded the prestigious Interactive Media Award for outstanding achievement.



The CTTL games are important resources that have encouraged countless students to pursue STEM careers. RUSMP is honored to continue CTTL's legacy of inspiring students' interest in STEM.

— Anne Papakonstantinou

These games were developed with funding from a variety of sources, including the National Institutes of Health Blueprint for Neuroscience Research, National Institute on Drug Abuse, National Center for Research Resources, National Institute of Allergy and Infectious Diseases, National Institute on Alcohol Abuse and Alcoholism, and National Institute on Drug Abuse.

Anne Papakonstantinou, director of RUSMP, said: "The CTTL games are important resources that have encouraged countless students to pursue STEM careers. RUSMP is honored to continue CTTL's legacy of inspiring students' interest in STEM." ■

RICHARD PARR

Executive Director

Rice University School Mathematics Project

Rice Library Serves as Patent and Trademark Resource Center

Rice University's Fondren Library interacts with the Houston-area public by serving as a Patent and Trademark Resource Center (PTRC) for the U.S. Patent and Trademark Office (USPTO). The Rice PTRC is one of six in Texas. The others are in College Station, Lubbock, Austin, Dallas and San Antonio.

The Rice PTRC, located in the basement of Fondren Library, is part of the Kelley Center for Government Information, Data and Geospatial Services. Inventors and entrepreneurs can find information through



and online resources; however, legal advice cannot be provided.

Siu Min Yu (government information librarian) and I, have received training at the USPTO in Alexandria, Va., and teach beginning-level patent search classes one Saturday a month. We work under the supervision of Katherine Hart Weimer, head of the Kelley Center.

Trademark search classes also are available on request. The following online patent and trademark research guides are available through Fondren Library to help clarify the patent and trademark processes as well as reinforce information covered in classes:

- Patent resources for area inventors provide background information and tutorials (http://libguides.rice.edu/patents_area_inventors).
- Patent information for Rice University researchers and classes spotlights Rice patents, patent data and statistics, and historic patents (http://libguides.rice.edu/patents_university_researchers).
- Patente, marcas registradas, y derechos de autor información en Español (Patent, trademark and copyright information for Spanish speakers) provides patent, trademark and copyright information in Spanish (http://libguides.rice.edu/patents_trademarks_Spanish).
- The Trademark LibGuide has a step-by-step tutorial for trademark searching plus links to brief informative and entertaining trademark videos from the USPTO (<http://libguides.rice.edu/trademarks>).

Class schedules offered to the public are available at the Kelley Center homepage at <http://library.rice.edu/gov> and include driving and parking directions. Links to social media sites, which help keep the public informed about upcoming events or key patent and trademark topics, are also available on the Kelley Center home page.

Kelley Center staff members also are available to work with people who want to use patents as a source of primary information, discovering how various machines or processes work.

Contact us for an appointment at govhelp@rice.edu. ■

LINDA SPIRO

Government Information Librarian
Fondren Library

Children Explore the Fascinating World of Electricity

In lieu of a dry lecture on the wonders of electromagnetism, a team of Rice University students built a contraption that combines elements of an automotive solenoid and a pinball machine for the Children's Museum of Houston.

"The idea is to get the kids curious and make them wonder: How does that projectile move up the tube? What makes the light go on? It's not magic. It's electromagnetism," said Rachel Nguyen, a sophomore in electrical and computer engineering at Rice and a member of the design team that built a device for the museum's "Shocks and Jolts" exhibit.

Assembled in Rice's Oshman Engineering Design Kitchen, the exhibit was installed in the museum in May. The museum calls the Rice creation the "electromagnetic launcher." The interactive device is simple in design: Two transparent plastic tubes are angled at 45 degrees on a laser-cut wooden frame. In each tube are three coils of copper wire connected to a power source, and small lightbulbs at the top of the tubes.

By pushing the first of three buttons, each corresponding to one of the coils, a museum visitor electrifies the first coil and releases the magnetized projectile up the tube. As the projectile reaches the second coil, the object is to press the second button and electrify the coil, which in effect becomes a solenoid and sends the object further up the tube. The same follows with the third button and coil. If the visitor times the button pressing successfully, the projectile will reach the top and turn on the light, and the visitor wins the game.

"The coils become temporary magnets. The direction of the coils determines the poles of the magnet," said Nguyen, who grew up in Houston and visited the Children's Museum as a child.

"The biggest thing we wanted to get across was the relationship between electricity and magnetism, but doing it in a fun way," said Saad Yousaf, a sophomore in mechanical engineering. All team members are sophomores who met their freshman year in the Introduction to Engineering Design class taught by Rice lecturer Matthew Wettergreen. The other team members are Sammi Lu and Karen Vasquez, both in bioengineering.

Keith Ostfeld, the museum's director of digital learning, explained how the launcher complements the rest of the "Shocks and Jolts" exhibit.

"We discovered kids typically aren't introduced to electricity in school until the fourth or fifth grade, and then they don't study it again until high school," Ostfeld said. "It's a real shame because kids live in a world of electricity and electronics and are fascinated by it. So we created a space where families and kids of any age can immerse themselves in electrical explorations."

The museum attracts 800,000 visitors each year. The team sponsors are Harrell and Carolyn Gurklis Huff '63 and the students' faculty adviser is Gene Frantz, professor in the practice of electrical and computer engineering at Rice. ■

PATRICK KURP

Science Writer
Brown School of Engineering

Robots Introduce STEM to Latinas

Rice University's computer science department is inspiring young Hispanic women to embrace science, technology, engineering and mathematics (STEM) courses and careers by introducing them to the world of robotics.

This summer, 10 girls from the MANA de Texas Gulf Coast's Hermanitas Program spent a day at Rice to learn more about

"The girls were very interested in biologically inspired robots," Kingston said. "They asked questions about the feasibility of things like robotic skin to cover exposed components and provide sensing."

Moll and Kingston broke the group into teams of three or four girls and asked each team, "If you designed a robot, what would it do?" The girls discussed their ideas while Moll and Kingston answered their questions.

"I want to build a dog robot," said

Kavraki is dedicated to encouraging women and girls to enter computer science. She is a mentor for the Rice Robotics Club and the Women in Computer Science Club. Kavraki, as well as several members of her laboratory, participate in outreach activities.

Kingston said, "When presented an opportunity to do outreach, it's a chance to inspire those who wouldn't have considered an interest before and let them explore within the space. Anybody could have the ability to excel at robotics and computer



When presented an opportunity to do outreach, it's a chance to inspire those who wouldn't have considered an interest before and let them explore within the space. Anybody could have the ability to excel at robotics and computer science, but you first have to give them the experience.

— Zak Kingston

opportunities that STEM has to offer. MANA is a national organization dedicated to empowering Latinas and their families, and the hermanitas (little sisters) are part of the group.

The girls took a tour of Rice and attended a robotics presentation by researchers in the lab of Lydia Kavraki, the Noah Harding Professor of Computer Science and professor of bioengineering.

As the girls arrived, they were greeted by Mark Moll, a senior research scientist and adjunct assistant professor in computer science, and Zak Kingston, a graduate student in computer science. Moll and Kingston, who work in the Kavraki Lab, gave short presentations about their research.

one girl. Her team explored ideas for a pet-finding robot that could conduct search-and-rescue missions using the animals' implanted chips.

The other teams discussed using robots to distribute medicine after hurricanes and other natural disasters and decoy robots in military maneuvers. Moll said, "I suggested a robot that could do chores, and one of the girls said it was a bad idea because it would make people lazy."

The girls were also interested in STEM opportunities. One of them asked, "Do girls build robots, too?" Another wondered about local opportunities. "Do the robotics teams at school build robots?" she said. "I need to start studying more if I want to do that."

science, but you first have to give them the experience."

Kelly Samora, one of the hermanitas' mentors and coordinators, agreed. She said the group looks forward to more STEM opportunities at Rice. "I cannot tell you how happy it makes us mentors to see our young hermanitas get excited about STEM. I come from a long line of engineers. My sister and I were encouraged to pursue math and science and both of us ended up going into those fields." ■

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AT LARGE



INSIDE THIS ISSUE: Young Latinas learn about STEM and the opportunities it offers by studying robots at a Rice summer camp. See story on Page 7.

David D. Medina, Director, Multicultural Community Relations, Office of Public Affairs

