

**UTeach
STEM
Educators
Conference
2018**

Program

June 28–29, 2018 • Commons Learning Center • Austin, Texas

Conference Program Committee

Thanks to the Program Committee for their thoughtful input and guidance.

Stephanie Klenzendorf
UTeach Austin, 2004

Andrew Lowry
UTeach Austin, 2006

Spencer Martin
UTeach Austin Master's Program, 2014

John McMahon
FSU-Teach, 2012

Finny Philip
UTeach Dallas, 2013

Janice Trinidad
UTeach Austin, 2006

Featured Speaker

Brianna Rapini

UTeach Austin, 2005

The One Creating Is the One Who Is Learning



When we provide opportunities for our students to create, we are providing a powerful way for students to connect deeply with the content we teach. But how can we involve students as classroom creators more frequently, and how do we

overcome obstacles such as limited time or resources? This presentation will explore many of the lessons about meaningful creating that Brianna and her sister have learned in their five-year adventure of working on the YouTube channel The Amoeba Sisters and how this can be relevant to our work with students in the classroom.

Brianna received her B.S. in Biology from The University of Texas at Austin and is a 2005 UTeach Austin alumna. She received her master's degree in educational administration from Sam Houston State University. Brianna has been an AP Biology/Biology teacher, science instructional specialist, science program coordinator, and instructional technology specialist. She was awarded Professional Support Staff of the Year at Klein Collins High School in 2015–2016.

In 2017, Brianna switched to full-time work with her sister (Sarina Peterson) on The Amoeba Sisters YouTube channel in order to complete a project called the Unlectured Series. This project is designed as an alternative to traditional classroom lecture using the Amoeba Sisters videos. She has plans to return in some capacity to public school education, as that remains where she finds the most inspiration.

2018 USEA Award Winner

Outstanding Alumnus Award: Jennifer West

UTeach Arlington Graduate, Pre-AP and AP Chemistry Teacher
Irving High ISD



Jennifer West completed the UTeach Arlington program in 2014 as part of the program's first graduating class. After graduation, she began her teaching career at Irving High School, a Title I school in the Dallas–Fort Worth area. She was instrumental in recruiting a large number of UTeach alumni to work on the campus, which currently employs 15 UTeach graduates. After her first year of teaching, she was promoted to Chemistry subject head and continues to serve in this role on her campus.

In 2017, the Irving Independent School District Curriculum Department invited Jennifer to serve as a curriculum writer, having noted her leadership and ongoing work to create and share inquiry-based lessons. In this role, and as Chemistry subject head, Jennifer has worked to increase inquiry-based teaching throughout the district. She spearheaded the project to rebuild the high school Chemistry curriculum from scratch, embedding 5E cycles for each of the Texas Essential Knowledge and Skills.

This year, she ran professional development sessions for each of the 12 Chemistry units, ensuring that each teacher in the district was comfortable conducting the labs, had a foundational understanding of the 5E process, and was ready to bring this into their classroom instruction.

She has received feedback from teachers who have traditionally done no inquiry, letting her know that they are implementing inquiry-based teaching in their classrooms. She would like to thank her family, friends, professors, and coworkers—the impact they've had is immeasurable.

Playground Exhibitors

Carolina Biological

www.carolina.com

Four hands-on science kits have been donated! Stop by to enter a drawing and peruse the catalogs.

Garden 2 Desk

garden2desk.weebly.com

Garden 2 Desk combats food deserts in Austin through creating elementary school gardens built by middle school volunteers. High school students also volunteer to educate the elementary students about how to stay healthy through gardening.

HHMI BioInteractive

www.hhmi.org/biointeractive

Our FREE short films, virtual labs, apps, and learning materials are created using primary literature, real data, and science practices. The materials are developed, vetted, and field-tested by educators and scientists—and are all tied to major curriculum standards.

IDEA Public Schools

ideapublicschools.org

IDEA Public Schools is a high-performing charter management organization that serves students from PK–12 and exists to close academic and economic gaps by preparing students for success in college and citizenship. IDEA operates 61 schools, serving 36,000 students in Austin, San Antonio, and the Rio Grande Valley. Since 2007, IDEA has maintained a 100% college acceptance rate. High expectations for students coupled with a focused college-prep curriculum and outstanding classroom instruction have shown what is possible when adults in the system get it right for kids.

Keynote Speaker – Brianna Rapini, Amoeba Sister and UTeach Austin Alumna

www.amoebasisters.com

Ask the keynote speaker, Brianna Rapini your questions about creating for your students and more.

Kira Lowery – UTeach Maker Fellow

www.klowerymakered.weebly.com

Explore Kira Lowery's Maker showcase featuring her teaching philosophy, and projects. Learn how she incorporated Making into her classroom, her cell structure and function maker lesson and how you can bring Making into your classroom.

Knowles Science Teaching Foundation Fellowship Program

www.knowlesteachers.org

The Knowles Teacher Initiative supports new STEM teachers in their first five years through ongoing professional development, classroom financial support, and a nationwide network of educators. Find out more about this wonderful opportunity directly from 2014 Knowles Fellow Sarah DiMaria.

MathHappens

www.mathhappens.org

MathHappens has a number of exciting math materials made through digital fabrication. They will showcase their newest additions, including “mirror books,” a unit circle guide—a handy visual aid for students wanting to grasp trigonometry—Koch fractal pieces that demonstrate each iteration of a fractal starting from a triangle, land surveying chains making connections between geometry and Texas History, shadow puppets as alternative ways to communicate information, and more! Also view their tried-and-true materials, including golden ratio calipers, Fibonacci Sequence problems, and navigational quadrants. The “mirror books” are great for learning about regular polygons and interior angles. We hope educators see these tools and yearn to use them in their classes!

National UTeach Alumni Network

alumni.uteach.utexas.edu | connect.uteach.utexas.edu

Get the scoop about benefits available through the National UTeach Alumni Network. Hear about UTeach Nation Virtual Network, leadership opportunities, and more.

Squarecap

www.squarecap.com

Squarecap is an easy-to-use classroom response system that allows teachers to engage every student in the room using any available device through multiple question formats. Squarecap teachers can provide instant personalized feedback to students during lessons and can automatically form student groups for peer instruction and discussion using personalized seat maps. Students can submit questions through Squarecap at any time, which can be then answered by the teacher and anonymously seen and voted on by other students. Using Squarecap, teachers can easily sort data and identify learning gaps to determine targeted remediation for students who need help.

Texas Section of the American Association of Physics Teachers

texas.aaptsections.org

TSAAPT is an organization dedicated to physics teaching at all levels. The organization holds two meetings each year that include presentations on research into the many aspects of physics instruction. Presentations include both invited speakers who are recognized nationally as leaders in physics education research and contributed papers by any teacher who has something interesting to report. TSAAPT was established in 1930 with the fundamental goal of ensuring the “dissemination of knowledge of physics, particularly by way of teaching.”

Tokyo Electron

www.tel.com

Tokyo Electron Limited (TEL), established in 1963, is a leading global company of innovative semiconductor and flat panel display (FPD) production equipment worldwide. All of TEL's semiconductor and FPD production equipment product lines maintain high market shares in their respective global segments. TEL has located research & development, manufacturing, sales, and service locations all over the world.

UTeach Computer Science

uteachcs.org

UTeach CS Principles is a College-Board endorsed, classroom-ready curriculum and comprehensive teacher materials that are flexible and easy for teachers to use in a variety of high school classroom and school settings. Find out about some terrific professional development offerings—not just for CS teachers!

UTeach Maker

maker.uteach.utexas.edu

UTeach Maker is an endorsement program that supports passionate UTeach students interested in bringing innovative practices and skills into their STEM classrooms. This program is for pioneers who want to bring project-based, constructionist, Maker education to learning spaces. Stop by to learn more about this work and hear from UTeach Maker Fellow Kira Lowery about her showcase that captures her teaching philosophy, community, projects and how she incorporated making into her classroom.

UTeach Professional Development

pd.uteach.utexas.edu

UTeach Professional Development offers UTeach alumni a special opportunity to enhance your professional learning and your résumé. The Academy of Innovative Teaching and Learning is a series of online courses for K–12 teachers. Teachers can earn a certificate of completion from the Academy by completing three courses and can then apply to become an instructor in future course sessions.

UTeach STEM Educators Association

usea.uteach.utexas.edu

The UTeach STEM Educators Association (USEA) unites all UTeach teacher preparation programs, UTeach alumni, and other organizations interested in promoting STEM literacy for all students. Find out more about the association and how to get involved!

Thursday, June 28

12:00–1:00 p.m. Registration / Check-In

Lobby

1:00–2:30 p.m. Keynote

Auditorium, 1.110

The One Creating Is the One Who Is Learning: Brianna Rapini will speak about the need for creating in the classroom.

2:30–4:00 p.m. UTeach Playground

3.102

Discover some favorite tips or tricks for engaging students from fellow alumni. Learn about great classroom resources and visit our exhibitors while you mingle with UTeach Nation.

4:00–6:00 p.m. Welcome Reception

Dining Room

Reconnect with your classmates, make new friends, and participate in relevant roundtable discussions at the welcome reception. The event includes appetizers and two complimentary drink tickets.

Friday, June 29

8:00–9:00 a.m. Breakfast and Registration / Check-In

3.102

9:00–10:00 a.m.

Hands-On Models of Math Concepts for K-12 Inquiry-Based Instruction: Efficient, Engaging, and Fun | 3.108

Abdulkarim Bora, Project Manager, MathHappens

Marcus Flores, Intern, MathHappens

Halle Herzog, UTeach Maker, UTeach Austin

Aminadab Morales, UTeach Maker Teaching Fellow, Cedars International Next Generation High School

MathHappens innovates the M in STEM through Making. We will showcase engaging tools that enhance a range of topics and explore their use for instruction in K–12 and beyond. We will also share ideas for exciting math field trips.

Bringing CS to Your School (Even if You Don't Know CS) | 3.110

Carol Ramsey, UTeach Computer Science Manager, UTeach Institute

Ninety percent of parents want their kids to take Computer Science but only 40% of U.S. schools teach even one Computer Science course. The availability of K–12 CS is also an equity issue—access to CS is

available more often to advantaged students, widening the opportunity gap.

You can make a difference, even if you haven't written a line of code in your whole life! Learn about the K–12 CS landscape and what steps a school can take to add CS.

Equity in the STEM Classroom: Strategies for Inclusion | 3.122

Tatiane Russo-Tait, PhD Student, University of Texas at Austin STEM Education

Ursula Nguyen, PhD Student, University of Texas at Austin STEM Education

Gareth Gingell, PhD Student, University of Texas at Austin STEM Education

Participants will explore their different social identities and how these can shape students' educational experiences. Issues discussed include unconscious bias, micro-aggressions, and stereotype threat. Participants will be introduced to strategies for transforming their classrooms into more inclusive and equitable spaces.

10:15–11:15 a.m.

Best Practices in Math Project-Based Learning | 3.110

Janice Trinidad, Mathematics and Science Teacher, Cedars International Next Generation High School

Sarah DiMaria, Mathematics Teacher, Cedars International Next Generation High School

We have developed Project-Based Learning (PBL) courses in 8th Grade Math, Algebra I, Algebra II, Geometry, Statistics, and AP Calculus. Mathematics standards are bundled into PBL units that integrate math concepts and skills with authentic contexts,

problems, and skills. Students in our courses learn mathematics by using new math skills and understandings to design collaborative products that resolve complex problems and to present their findings to community stakeholders.

Some PBL successes we have experienced firsthand include widespread closure of achievement gaps in state tests, high student levels of interest in STEM careers, and positive classroom cultures where it is normal to appreciate (maybe even love) math. We will share best practices in designing, facilitating, scaffolding, and assessing PBL math projects.

Common Challenges and Appropriate Solutions to Improve Classroom Instruction with Technology | 3.122

Sata Sathasivan, Founder, Squarecap Inc. and Senior Lecturer, University of Texas at Austin

This session will introduce both low-tech and high-tech solutions to transform teaching. Participants will get to consider evidence-based, practical, and inexpensive solutions to some of the major challenges in classrooms. They will be given time to brainstorm in groups and share strategies with their peers. The classroom engagement technology, Squarecap, will be used to collect responses and give feedback and will allow comments and questions from participants.

Make and Take: Paper Circuits | 3.108

Maisha Rumman, Biology Teacher, Del Valle High School

Looking for something that lights up your students' ideas (literally)? We'll build our own paper circuits and discuss how paper circuits can be used to connect to biology, chemistry, and physics content (for example, making connections between body systems/organs in biology). The session will include a discussion of the Maker movement and how to incorporate making into lesson plans, as well as the associated challenges and benefits.

11:30–12:30 a.m.

Making Math Meaningful: Art in Geometry | 3.108

Krystal Evans, Teacher, John B. Connally High School, Pflugerville ISD

Participants will have the opportunity to see how I brought writing, reflecting, and Making into my Geometry classroom with the Living Sculpture. I will also be sharing some of the inquiry-based lesson activities I did in these units. Participants will have time to brainstorm and collaborate on how to bring Making into their classrooms.

Teach Biotechnology! A Merging of Career & Technology with Science | 3.110

Jessica Menchaca, Biotechnology and Anatomy Teacher, Del Valle High School, Del Valle ISD

Jennifer Lazare, Adjunct Science Instructor, Austin Community College and Anderson High School, Austin ISD

Certified in Science 8–12? Want to teach dual credit? Start your own biotech program, obtain funding, articulation, and market to students for sustainability. We will share the Texas state standards, training opportunities, and free course resources.

Integrate Engineering Design in Your Math and Science Classrooms | 3.122

Mariam Manuel, Alumna, Master Teacher, teachHOUSTON, University of Houston

Jacqueline Ekeoba, Science Instructional Coach, Katy ISD

Hallie Eichen, Chemistry Teacher, Fort Bend ISD

Participants will explore their roles within the dynamic field of engineering education and how engineering skills can support the mathematics and science curriculum. We will provide a brief context of the nation's history of K–12 engineering education, including arguments for and against content standards for K–12 engineering education and leveraging current standards to improve engineering education experiences in secondary mathematics and science instruction. Engineering fundamentals and design methods will also be addressed through examples of engineering design challenges utilized in secondary math and science classrooms. Audience members will participate in an engineering design activity and will be provided samples of engineering design projects used in mathematics and science coursework.

12:30–1:30 p.m. Lunch

3.102

1:30–2:30 p.m.

Small Group Structure and Lesson Design in Secondary Science | 3.108

Lisha Haughton, Biology Teacher, Allen ISD

Erica Harvey, Science Teacher, Allen ISD

Presented in a small group format, this session will equip attendees with the skills to design a complete small group lesson for their class. Focus will be given to all aspects of the lesson planning including how to foster a culture of differentiation with your students using several field-tested methods; how to go about making groups that best support the goals of your lesson; and different activity styles to achieve those goals.

Blended Learning for Classroom Engagement, Structure, and Routine | 3.122

Charles Martinez, Mathematics Teacher, Lanier High School, Austin ISD

Victoria Dominguez, Mathematics Teacher, Lanier High School, Austin ISD

The session will include opportunities for attendees to participate in learning platforms that can be used to enhance engagement and student-paced learning, as well as explore how to improve daily structures, routines, and individualized lessons by using a learning management system such as Canvas.

How the NGSS Can Help You, Even When Your State Doesn't Use Them | 3.110

Spencer Martin, Science Curriculum Instructional Coach, Kansas City, Kansas Public Schools

It doesn't matter what standards you use, the Next Generation Science Standards (NGSS) can help you with your instructional practice. They are built around three dimensions of science learning. This session will be an introduction into the NGSS and how they can provide resources, project ideas, assessment ideas, and ways to shift science instruction to be more student centered. Many of the resources being created right now are "NGSS aligned" so this can open the door for more resources in your classroom. We will have an overview of the NGSS and then talk about how you can use them regardless of the standards your state uses.

2:45–3:45 p.m.

Meow-tations: Using Cats to Study Population Genetics and Evolution | 3.108

Finny Philip, Biology Teacher, Austin High School, Austin ISD

High school genetics concepts are often oversimplified and perpetuate common myths. Participants will learn how to use Petfinder.com to

survey a large population of cats for specific phenotypes. The data is compiled and compared to known allele frequencies to answer the question, "Are the cats in [city] evolving with respect to [allele]?" This session is intended for all teachers who teach genetics and evolution in a school with access to computers, and who strive to dispel long-standing myths about genetics.

Designing a Magic Folding Cube | 3.110

John McMahon, Math Instructor, Immokalee High School, Collier ISD

Participants will be introduced to the folding cube, a device which, at first glance, seems like an eye-catching fidget toy, but actually provides many opportunities to discuss aspects of the designing process. Participants will be given a brief overview of a very low-cost, "simple" design to help spark ideas. Then we'll work together to build a single folding cube to experience the fundamentals of building a cube that can fold. Finally, we'll brainstorm how the cube can be used to engage students to develop problem solving strategies and engineering skills to help them push the possibilities of the folding cube as well as their imaginations.

Using Data Points to Build Data Literacy | 3.122

Helen Snodgrass, Science Director, YES Prep Public Schools, HHMI Ambassador

Engage in strategies to help students develop their data literacy skills by analyzing figures from peer-reviewed scientific journal articles. During the session, participants will explore free resources from HHMI BioInteractive.

3:45–4:30 p.m. Closing General Session
Auditorium, 1.110

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