



IGNITE STEM  
NEW YORK CITY | 4.25.19

# WELCOME

Dear IgniteSTEM Educator,

Welcome to IgniteSTEM 2019! We are incredibly excited to have you attend our flagship conference today, and have been working hard to make this an event that is both enjoyable, impactful, and actionable. In the sessions and workshops we've lined up for the day, we hope you'll find the resources, ideas, and community you need in your quest to make STEM education more exciting, relevant, and innovative for students -- a quest that could not be more important and meaningful to us!

IgniteSTEM is a movement that empowers leaders in education to disrupt STEM learning environments with hackathons, project-based learning, design-thinking. We see IgniteSTEM as the TED for education, and truly believe that it will be the catalyst to starting the next big movement in education. Over the past three years, we have researched the effects of hands-on learning on STEM education and the big picture is astounding: PBL initiatives drastically improve student engagement, diversity in upper-level STEM classes, and help develop skills that are truly relevant in 21st Century.

In addition the above benefits of PBL, Design Thinking, and Hackathons, improving STEM education is also an endeavor that's very personally meaningful to us. Both of us have had teachers play enormous roles in shaping our lives, and have a lot to owe to those who have taught, guided, and inspired us. As we're sure you know, the classroom is a powerful place for influencing students and their perspectives of the world. We want to help you uncover in your students the excitement and curiosity about the world that comes from learning, a process that is incredible to experience from both ends.

We also want today to not only be informative, but also hands-on and fun! All of us on IgniteSTEM are here because we're excited about the mission, and we want to bring that same energy and enthusiasm to today as well. We want to make sure you have the best day possible, so if there is anything that we can ever help with just let us know. Feel free to flag down someone wearing an IgniteSTEM jersey at any time, chat with us, or shoot us an email us at [almejia@princeton.edu](mailto:almejia@princeton.edu) or [kywu@princeton.edu](mailto:kywu@princeton.edu). This conference is entirely dedicated to you (and by extension your classrooms and students) and we want to make sure the experience is great.

Finally, the work, ideas, and momentum from today shouldn't stop when the conference ends. The educators you've met today are your awesome partners in crime in tackling the shared mission of revolutionizing education: stay in touch, and keep learning from each other. On our part, IgniteSTEM is excited to launch our educator network to help facilitate these connections and collaboration from our educator community. And, in addition to the hack-in-a-box we'll be putting the talks, content, and interviews from today online for your use and help. We'll be sending out more information on this, so stay tuned!

Know that IgniteSTEM is more than happy to help in anyway we can. In addition to your liaison, please never hesitate to reach out to us via email or social media. As a student-run team, we can't express how important IgniteSTEM's mission is to us personally and to students everywhere: Thank you for your role in being a leader in this movement!

"Education is not the filling of a pail, but the lighting of a fire." -- William Butler Yeats

Let's light the fire, and ignite education!

Sincerely yours,  
Austin Mejia and Kevin Wu  
Directors, IgniteSTEM

# SCHEDULE

# WELCOME

APRIL 25, 2019

9:00AM	Registration & Casual Breakfast	8th Floor Atrium
9:45AM	Opening Remarks	Room 8.21
10:00AM	Keynote: Janet Raloff, Chief Editor of Science News for Students	Room 8.21
10:50AM	Design Thinking Workshop: Christopher MacPherson, Princeton University Makerspace Workshop: Godwyn Morris, Founder, Dazzling Discoveries	5th Floor Rooms 7th Floor Rooms
11:50AM	Break/Transition	
12:00PM	Workshop Choices  Katie Olsen: Project Manager, TeachAids Brianna Gray: Head of Curriculum, Kodable Caitlin Stanton: Hackathon Prodigy, Cornell Lauren Milord: Head of Partnerships, Dreamup Kelli Wells: Founder, STEM Leadership Alliance	Space 5.19A Space 5.19B Space 7.18A Space 7.18B Space 7.18C
1:00PM	Break/Transition	
1:10PM	Lightning Talks: Bart Epstein, Founder & CEO, Jefferson Education Exchange Lightning Talks: Noah Freedman, Founder & CEO, Nucleos	Room 8.21
2:00PM	Lunch	Dining Area
3:00PM	Workshop Choices  Katie Olsen: Project Manager, TeachAids Brianna Gray: Head of Curriculum, Kodable Jamie Wittenberg: Product Manager, Major League Hacking Denise Bressler: Research Fellow, Penn GSE Bart Epstein: Founder & CEO, Jefferson Education Exchange	Space 5.19A Space 5.19B Space 7.18A Space 7.18B Space 7.18C
3:50PM	Break/Transition	
4:00PM	Keynote: Zoe Bachman, Head of Curriculum, Codecademy	Room 8.21
4:30PM	Debrief with IgniteSTEM + Awards Ceremony	Room 8.21

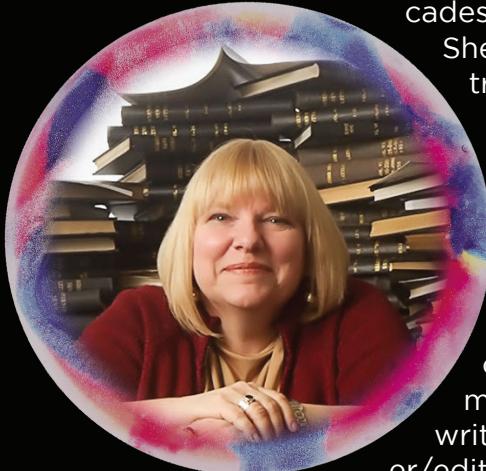
# SPEAKERS

### **Janet Raloff**

Editor Janet Raloff has been reporting at Science News for more than three decades on the environment, energy, science policy, agriculture and nutrition.

She was among the first to give national visibility to such issues as electromagnetic pulse weaponry and hormone-mimicking pollutants, and was the first anywhere to report on the widespread tainting of streams and groundwater sources with pharmaceuticals. Her writing has won awards from the National Association of Science Writers, International Free Press Association and the Institute of Food Technologists. Over the years, Janet has been an occasional commentator on NPR's "Living on Earth" and her work has appeared in several dozen publications. She is also a founding board member of the Society of Environmental Journalists. Before joining Science News, Janet was managing editor of Energy Research Reports (outside Boston), a staff writer at Chemistry (an American Chemical Society magazine) and a writer/editor for Chicago's Adler Planetarium. Initially an astronomy major, she

earned undergraduate and graduate degrees from the Medill School of Journalism at Northwestern University (with an elective major in physics). She interned with the Office of Cancer Communications (NIH), Argonne National Laboratory, the Oak Ridger in Tennessee and the Rock Hill Evening Herald in North Carolina.



### **Bart Epstein**

Bart Epstein is an educator, entrepreneur, investor, mentor, and leading national voice for empowering teachers. After teaching math and analytical reasoning early in his career, Bart spent ten years helping to build, run, and sell the world's largest online tutoring and homework help company -- Tutor.com. Bart then launched the University of Virginia's education technology accelerator that after several years evolved into an ambitious nonprofit known as the Jefferson Education Exchange, focused in documenting how EdTech initiatives are implemented and used in real school environments. Bart serves or has served as a mentor to most of the EdTech incubator and accelerator programs and as a judge for numerous EdTech startup business plan competitions. He served for years as the managing director of a venture fund focused on investing in education technologies. Bart is also a research associate professor at the University of Virginia Curry School of Education and Human Development, an activity he balances with serving on the board of ASCD, the nation's largest non-profit, non-union, non-partisan organization dedicated to teacher advocacy and professional development.



### **Denise Bressler**

Denise creates and studies innovative STEM learning experiences in formal and informal environments. Her most notable work is the creation of School Scene Investigators, a series of mobile augmented reality games designed for middle school science education. A firm believer in the power of student engagement, Dr. Bressler's projects promote enjoyment, scientific practice, and collaborative learning. Her particular interests include game-based learning and mobile learning. On these topics, Dr. Bressler has published several journal articles and book chapters. She has also spoken about her work at a variety of national and international conferences.



## **Christopher MacPherson**



Christopher MacPherson is the Associate Director of Applied Data & Intelligent Systems at frog. Christopher joined frog in September 2016 and focuses on the design and application of data, technology, and experience to enable transformational change. Christopher came to frog from the global macro-hedge fund Bridgewater Associates, where he designed and built a talent research team. Prior to Bridgewater, Christopher spent over a decade focusing on national security issues for the US government. He is trained as a computer scientist, and holds degrees from Hamilton College, Princeton University and the National Intelligence University. Currently, he divides his time between his work in NY and Princeton, where he is an attaché to the Keller Center for Innovation in Engineering Education and teaches the flagship undergraduate course on Design Thinking.

## **Lauren Milord**

Lauren Milord brings her belief that a learner's early educational experiences can make or break their pathway to STEM to her role at DreamUp, where she focuses on expanding access to space-based educational opportunities. Prior to joining DreamUp, Lauren was Community Engagement Specialist in the Office of Engagement at Boston Public Schools where she engaged all sectors of the BPS community in conversations about district policy changes and ensured that community-based and faith-based organizations partnered successfully with BPS schools. Lauren earned her Bachelor of Arts in International Relations with a concentration in International Security at Tufts University. When she's not inspiring dreamers, you can find Lauren Irish dancing wherever a good wooden floor can be found.



## **Kelli Wells**



Kelli List Wells is a consultant with over 25 years of experience serving non-profits and corporations with strategic planning. She most recently was the Executive Director for Global Education and Skills at the GE Foundation, where she designed and executed a portfolio that focused on building education, skills and training initiatives to prepare the next generation for the demands of the workforce. List Wells has done extensive work in the K-12 education systems which has reached more than 10,000 teachers and 1.3 million students across more than 2,000 K-12 public schools, and has also saved school districts more than \$20 million. Wells is also a member of various education-focused non-profit organizations, and has an appointment by the Massachusetts Governor to the state STEM Advisory Council.

### **Katie Olsen**



Katie is a Project Manager at TeachAids, a world-leading educational technology social venture specializing in designing, producing, and distributing health education to solve persistent problems in prevention around the world. Today, its interactive and immersive software experiences are being used by governments, NGOs, and educational institutions in 82 countries. It is supported and funded by numerous institutions, including UNICEF, Barclays Bank, Google, and many national governments around the world. Prior to TeachAids, Katie was at Facebook leading a computer science education initiative for underrepresented high school students. The program aimed to inspire students to explore CS and tech careers with cutting-edge technology projects and events. She led the program launch to over 500+ schools in Arkansas and Washington and collaborated across both tech and educational professionals to implement Virtual Reality into schools. Katie graduated from Stanford University with a degree in Management, Science and Engineering and competed on the varsity swim team.

### **Brianna Gray**

As the Director of Customer Success at Kodable, Brianna Gray supports teachers in over half of US elementary schools. Brie developed Kodable's K-5 Computer Science curriculum to provide a teaching structure around the coding concepts taught in the Kodable app. This included leading a team of educators in the writing and development of Computer Science standards based on the K-12 Computer Science Framework in 2017. Brie's current role at Kodable is supporting teachers with ready-made tools to bring Computer Science to over 18,000,000 students globally. Before joining Kodable, Brie taught elementary school for 5 years and has nearly a decade of experience working in education. As a Teach for America alumni (Bay Area, '12), Brie believes all kids should have equal access to enriched learning experiences, including Computer Science education- regardless of race, gender, age, or economic background. With a passion for early childhood development, Brie's goal is to build a CS mindset in kids early, preparing them for the opportunity to influence technology later in life.



### **Caitlin Stanton**



Caitlin Stanton is a current junior at Cornell University pursuing a degree in electrical and computer engineering, with minors in computer science and business. On campus, she's the founding president of the Beta Chi chapter of Alpha Omega Epsilon engineering sorority and a vice president for Women in Computing at Cornell. Outside of Cornell, Caitlin is a Girls Who Code alumna, an ambassador for #BUILTBYGIRLS, a mentor for ProjectCSGirls and She++ #include, and the co-founder for several hackathons. She's held software engineering internships at AOL/Oath, IAC, Girls Who Code, and Qualcomm, and will be interning this summer as an electrical engineering intern at Microsoft. When she isn't studying in Duffield Hall at Cornell, she can be found blogging, fiddling with Arduinos and Raspberry Pis, and watching Vine compilations while drinking boba.



**Jamie Wittenberg**

With nearly a decade of teaching experience, and having worked in variety of educational formats including traditional pre-k-12, bootcamps (Wyncode and Flatiron), online (Codecademy), and peer-to-peer (MLH Localhost), Jamie Wittenberg has seen it all. At Major League Hacking, she works with companies like Google, Slack, Twilio, AWS, and Microsoft to educate new coders. Jamie speaks English, Spanish, Portuguese, JavaScript, and Python. In her spare time, Jamie spends too much time on the internet.

### **Godwyn Morris**

Godwyn Morris is the Director of Dazzling Discoveries, a STEM after school and camp program. Godwyn has been working and creating with children for more than 20 years and has extensive experience with hands-on learning methods and practice. She recently opened a second facility, Skill Mill NYC, a creativity center for people of all ages. Equipped with 3D printers, laser cutter, sewing machines and a wide assortment of electronics and craft supplies, Skill Mill NYC provides design and production services as well workshops and classes.



**Zoe Bachman**

Zoe Bachman is the Senior Curriculum Developer at Codecademy, and a former lead teacher with Girls Who Code. She's working to change the tech landscape through creative interventions and education initiatives. At Codecademy, she uses her experience as a creative technologist to find new ways to make learning to code more accessible and engaging. She holds a masters degree from the Interactive Telecommunications Program (ITP) at NYU.

### **Noah Freedman**

Noah Freedman is the CEO & Founder of Nucleos, a for-profit social enterprise dedicated to improving learning outcomes for students all over the world. Nucleos' hybrid learning platform serves students with adaptive educational experiences, online and offline, and is committed to making implementation of personalized learning easy for schools and teachers. Noah comes to Nucleos with extensive experience both in mobile technology in education as a fellow at the Stanford School of Education and President of Third Eye Labs, as well as a concern for the educational needs of underdeveloped countries through engagements with Ashoka India and the non-profit Seeds of Empowerment.



# WHAT WE DO

**OUR MISSION:** EMPOWER K-12 EDUCATORS WITH THE SKILLS, RESOURCES, & NETWORK THEY NEED TO IMPLEMENT PROJECT BASED LEARNING IN PUBLIC SCHOOLS AROUND THE WORLD

## 5 CONFERENCES

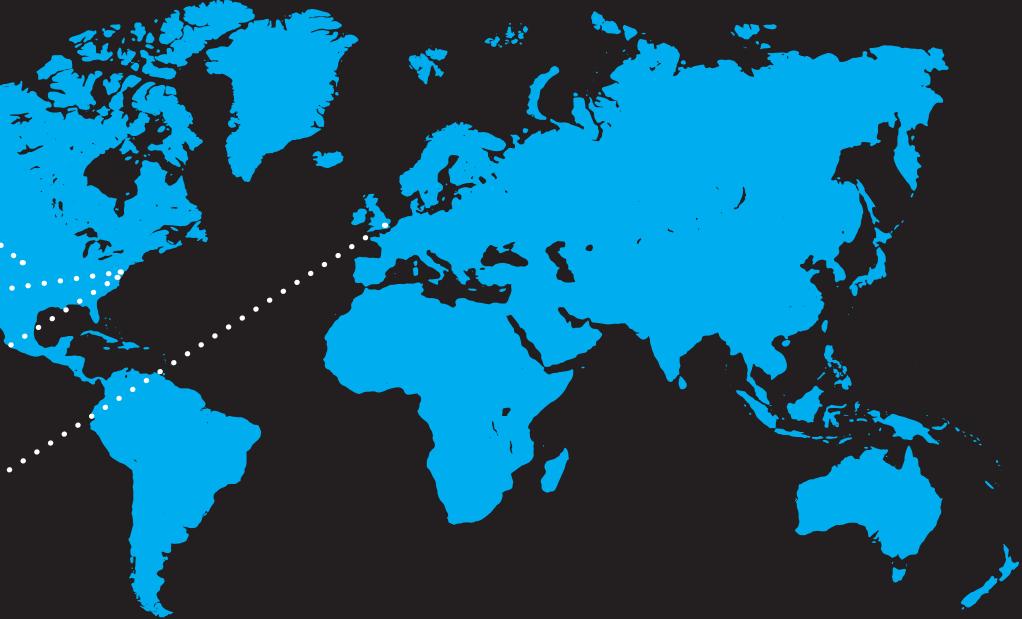
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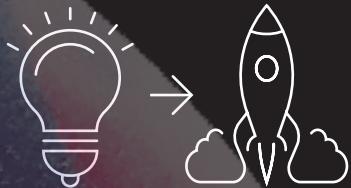
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## 3 PROJECT-BASED LEARNING TARGETS

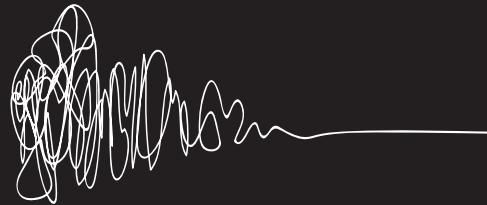
### HACKATHONS



#### FROM IDEA TO LAUNCH

Hackathons are marathon creation events. Whether its science, technology, humanities, or the arts-- hackathons bring students together to collaboratively create unique solutions to the problems they care about.

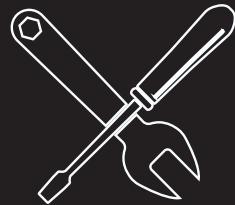
### DESIGN THINKING



#### RESEARCH. CONCEPTUALIZE. DESIGN.

Design Thinking draws upon logic, imagination, intuition, and systemic reasoning, to solve complex problems, find desirable solutions, and explore possibilities of what could be.

### MAKER MOVEMENT



#### GRASSROOTS INNOVATION

Makers are creative, resourceful and curious, using digital design and manufacturing technologies to develop projects that demonstrate how they can interact with the world around them.

**1 MISSION: IGNITE EDUCATION ACROSS THE WORLD**

# WHY THIS MATTERS

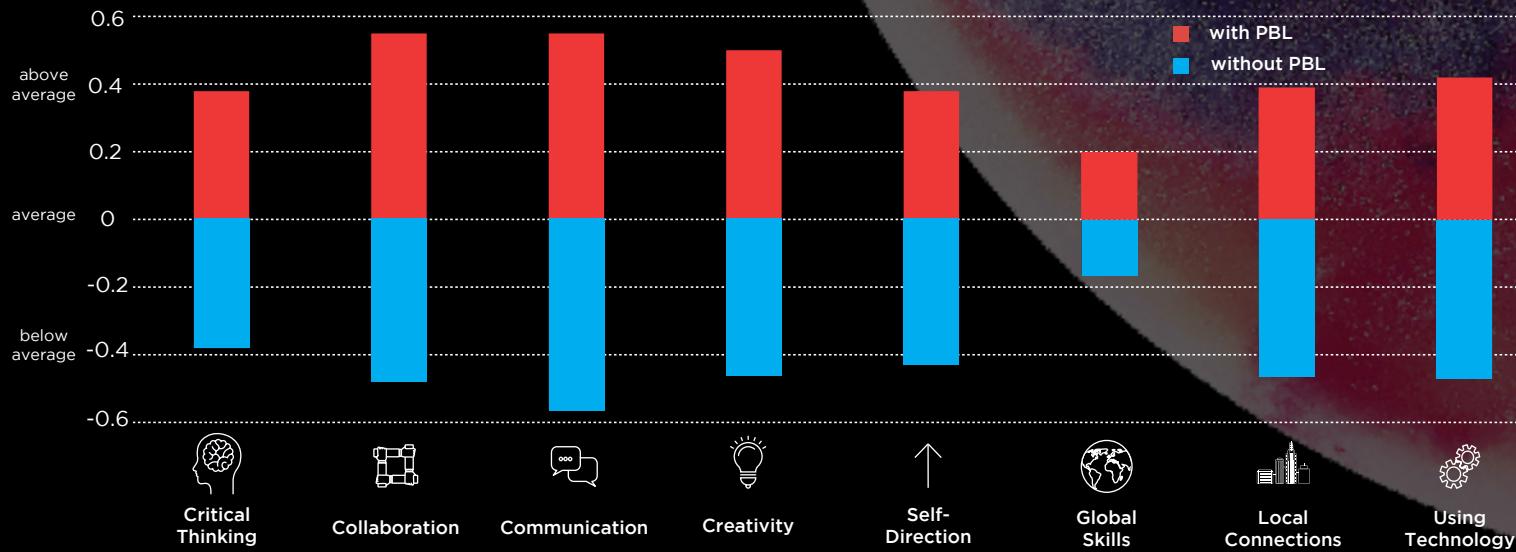
HANDS ON LEARNING AND ACTIVELY PRACTICING “INNOVATION” WILL ALLOW CHILDREN TO BECOME MORE RESILIENT AND LEARN “HOW TO THINK”, IGNITING LEADERS WHO HAVE THE CAPABILITIES TO TACKLE REAL WORLD PROBLEMS.

## 5 EDUCATION GOALS...

- 1 construct an extensive and flexible knowledge base
- 2 develop effective problem-solving skills
- 3 develop self-directed, lifelong learning skills
- 4 become effective collaborators
- 5 become intrinsically motivated to learn

## ...AIMED AT STRENGTHENING VITAL 21<sup>ST</sup> CENTURY SKILLS...

In a paper presented at an Annual Meeting of the American Educational Research Association, researchers found that Project Based Learning (PBL) caused a measurable increase in performance across critical 21<sup>st</sup> century skills:



## ...AND EMPOWERING EDUCATORS...

...SO THAT STUDENTS CAN DEVELOP RESILIENCY, CONFIDENCE, AND A LIFELONG LOVE FOR LEARNING.

“Being resilient helps youth navigate the world around them, and the iterative process of hackathons, design thinking, and making help ignite this resiliency.”

“The main thing about meaningful choice is that it engenders willingness. It encourages people to fully endorse what they are doing; it pulls them into the activity and allows them to feel a greater sense of volition.”

“EDUCATION IS NOT THE FILLING OF A PAIL, BUT A LIGHTING OF A FIRE.”

- WILLIAM BUTLER YEATS

# Google for Education



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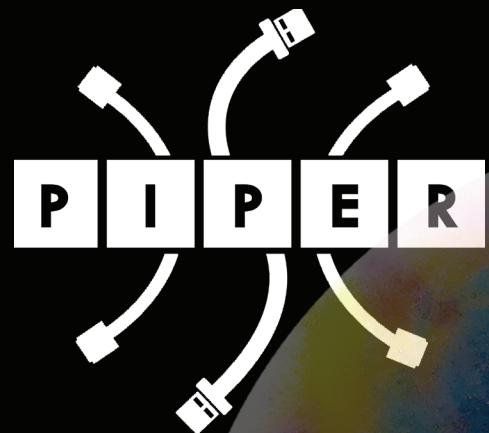
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