

This I Believe  2



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STEM & LEADERSHIP
Teaching Fellowship Program

This I Believe

*The Struggles, Joys & Motivations
of 49 STEM Educators*

#MSUrbanSTEM, 2015-2016

Michigan State University



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*Your beliefs become your thoughts,
Your thoughts become your words,
Your words become your actions,
Your actions become your habits,
Your habits become your values,
Your values become your destiny.*

- Mahatma Gandhi

This book is dedicated to educators everywhere.



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Wisdom begins in wonder
~ Socrates ~

#MSUrbanSTEM

IN BROKEN IMAGES

He is quick, thinking in clear images;
I am slow, thinking in broken images.

He becomes dull, trusting to his clear images;
I become sharp, mistrusting my broken images,

Trusting his images, he assumes their relevance;
Mistrusting my images, I question their relevance.

Assuming their relevance, he assumes the fact,
Questioning their relevance, I question the fact.

When the fact fails him, he questions his senses;
When the fact fails me, I approve my senses.

He continues quick and dull in his clear images;
I continue slow and sharp in my broken images!

He in a new confusion of his understanding;
I in a new understanding of my confusion.

Robert Graves

Preface

William James famously wrote, “Psychology is a science, and teaching is an art” highlighting the “magic” as it were in the act of teaching. He goes on to say that the “sciences never generate arts directly out of themselves. An intermediary inventive mind must make the application, by using its originality.” The point that James seeks to highlight is that there is no one road to good teaching. All the psychological research in the world cannot produce “definite programs and schemes and methods of instruction for immediate schoolroom use.” James argues that, “A science only lays down lines within which the rules of the art must fall ... but what particular thing he (sic) shall do positively within those lines is left exclusively to his own genius. One genius will do his work well and succeed in one way, while another succeeds as well quite differently.”

Good teaching requires, James suggests, inventiveness and ingenuity, combined with tact and sympathetic observation. Teaching builds on the teacher’s connection to the subject matter to be taught; as well as their care for the learners in their classrooms. Research on exceptional teachers has highlighted the importance of this alignment of the personal with the professional. It is a uniquely personal pursuit, built on a foundation of knowledge and expertise, scaffolded by deeply held values and beliefs. And of course, this knowledge, expertise and beliefs are not set in stone. Instead they are continually evolving, as teachers engage with the world, with learners and with each other as they maintain their commitment to the intricate art of teaching. This book is a documentation, in their own words, of 49 STEM educators, of their continual engagement, evolution and growth, as they participated in a year-long professional development program.

For the past year, the 49 educators who are featured in these pages have been engaged in an inventive, integrated year-long graduate certificate experience aimed at building STEM teachers' capacity to lead and inspire innovative practices in urban K-12 schools. They were selected by the *College of Education at Michigan State University* through a rigorous process based on their commitment to teaching in urban schools, knowledge of content, their prior achievement and evidence of promise in the field. This book is the culmination of their year-long experience. Through their writing, our teacher-leaders share the thoughts and ideas that have challenged their way of thinking as well as inspired their educational development about the nature of leadership in their disciplines.

We are excited to share this diverse collection of thoughtful, inspiring statements. In each case, they look back—reflecting on a rewarding yet challenging career as well as the past year; *and* look forward—to an exciting future. They also share with us a book that inspired them, a quote that motivates them, and provide links to their websites and twitter accounts. Finally—taking a page from the NPR play-book—each piece concludes with a response to the prompt “This I believe...”

We believe, that these 49 articles can serve as both a resource and inspiration to those seeking to follow in their footsteps. As you peruse the pages of this book, it is our sincere hope that you are inspired by the passion that emanates from each fellow's words. At the core of it all is a genuine love for students, the STEM disciplines, the art of teaching and learning, and vision for the future of education.

Enjoy!

Acknowledgements

This book (and the program that helped create it) is the result of the hard work and effort of a large team of people. First and foremost, none of this would have been possible without the generous financial support of *Wipro Ltd.* and their commitment to education in the STEM disciplines, particularly in urban districts such as Chicago. We would specifically like to thank Anurag Behar and Kapil Sharma of Wipro and the *Azim Premji Foundation* for their efforts in making this project a reality. We are also grateful to Dr. Jim Ptaszynski and Jacqueline Russell of *Microsoft* for their donation of *Surface Pro* tablets for the first and the second cohorts of teachers in our program.

We would also like to thank *Chicago Public Schools* for their partnership. In particular we would like to mention Alan Mather, *Chief Officer of College and Career Success*; Aarti Dhupelia, former *Chief Officer of College and Career Success*; Dakota Pawlicki, *Director of Strategic Partnerships and Projects*; and Litrea Hunter, *Chicago based recruitment and sustainability coordinator*. This has been a genuine partnership between MSU and CPS and these individuals are among many who have made this possible. We would also like to extend a special gratitude to Judy Sunvold and her team at *Loyola University* for their help with accommodation and classroom spaces for our fellows and instructors.

There are numerous people at *Michigan State University* and the *College of Education* who have helped in ways large and small in making this project a reality. We would like to specifically thank former dean Don Heller and current dean Bob Floden for their support; Marcy Wallace for helping navigate the intricacies of budgets and other red-tape; and Jessica Pham and Heather Johnson for administrative support.

The planning, technology, and evaluation team at MSU consisted of (in alphabetical order) Inese Berzina-Pitcher, Swati Mehta and Christopher Seals. This book was the brain-child of Punya Mishra and the instructional team, which includes Missy Cosby, Akesha Horton, Candace Marcotte, Rohit Mehta, and Kyle Shack. Swati Mehta took the lead in providing feedback and shepherding the writing process, cleaning up and organizing all the documents, photos, text in consistent form. Jonah Magar, *Espresso Book Machine* coordinator at *MSU Libraries*, helped with the printing, and kept his calm even under tight deadlines. The book was designed by Punya Mishra with input from Smita Sawai. We would also like to thank the leadership team at MSU: Dr. Punya Mishra, Dr. Sonya Gunnings-Moton and Dr. Leigh Graves Wolf. Their commitment to excellence in teaching in general, and to urban education in specific, can be felt in every aspect of the program.

Finally, a heartfelt thanks to the 49 teachers who are the second cohort of the 2015-16 MSU-Wipro Urban STEM Teaching and Leadership fellows. This project runs on their shoulders. The 49 reflections in this book are testimony to their creativity, passion, and concern for excellence in STEM learning. They often work in challenging contexts with multiple pressures on their time and energy. It has been our privilege to work with them and learn from them and we thank them for giving us this opportunity.

Sincerely,

The MSU-Wipro Urban STEM Fellowship 2015-16 Teaching Team
(Punya Mishra, Missy Cosby, Akesha Horton, Candace Marcotte,
Rohit Mehta & Kyle Shack)

May 2016, East Lansing MI

*Additional resources related to this book
and the project can be found at
MSUrbanSTEM.org*

Delora Washington Jeffrey E. Erickson Juven Macias

Andrew Stricker

Fitzgerald Cram Valia Thompson

DAPHNE J Moore

Marianna Jennings
Sandra Jackson Melinet Ellison

Lucas Smith Lucy Young

Gretchen M. Brinza Choi, Eu Hyun

Albert Lang

~~Pattuca Kaleo~~ Aurora E. Tyagi

Shugrana Lovett

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Leigha L. Ingham

Janettra Bretziss Stephen Tow

Besse M

Laura Frcka

Tracey Walker-Hines

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The Fellows



Bethany Blackwood

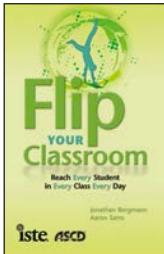
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Everybody knows something, but nobody knows everything - Anonymous

Bethany Blackwood

Bethany has taught high school math at DeVry University Advantage Academy since 2012. Currently, she primarily teaches Honor Advanced Algebra/Trigonometry and AP Calculus AB, although she also mentors students at her school taking online French 2 and Geometry. She is an Instructional Leadership Team member, a Math Teacher Leader, a card player, a traveler, and an Ultimate Frisbee enthusiast. She spent one year volunteering and teaching English in Kigali, Rwanda in 2011-2012 and she is a graduate of Chicago Public Schools and Messiah College. As an MSUrbanSTEM fellow, she seeks to more effectively teach math in an urban setting.



Book recommendation

Flip Your Classroom by Jonathan Bergmann and Aaron Sams provides a practical and inspirational introduction to flipping your classroom. Personally, this book encouraged me to spend time creating instructional videos that students watch at home to learn new content. The payoffs? Sufficient time for in-class practice, increased teacher-student interaction, and higher student performance overall. Now I can finally do the rigorous problem solving activities in class that I've always wanted to do!

The past, the present & the future

Looking back: I was inspired to become a teacher in CPS because I wanted to help high school students learn math and be able to achieve their dreams for the future. I came into teaching highly idealistic, wanting to foster problem solving skills and ensure each of my students had a bright future. Now, I am aware of the challenge it is to create independent and empowered learners, but I genuinely enjoy the task of supporting my students in their mathematical journey. I try to make math meaningful and engaging, so each student is able to learn and grow. I hope to instill a growth mindset and a positive attitude about math in each of my students, as well as the belief that they can learn the problem solving skills necessary to help them in this class and beyond.

Where I am now: During this past year with MSUrbanSTEM, I have been challenged in many good ways. I am reflecting deeply about the work my students are doing and how well they are understanding the concepts that I teach. I question how actively engaged my students are, and I now flip my classroom to more fully support my students' growth as problem-solvers. I am trying to take student ownership and problem solving to the next level in my classroom, which has led me to develop a problem solving rubric with my students, and teaching primarily through group work and asking questions. I share this with my department at my school and feel myself growing into the math teacher leader role more fully.

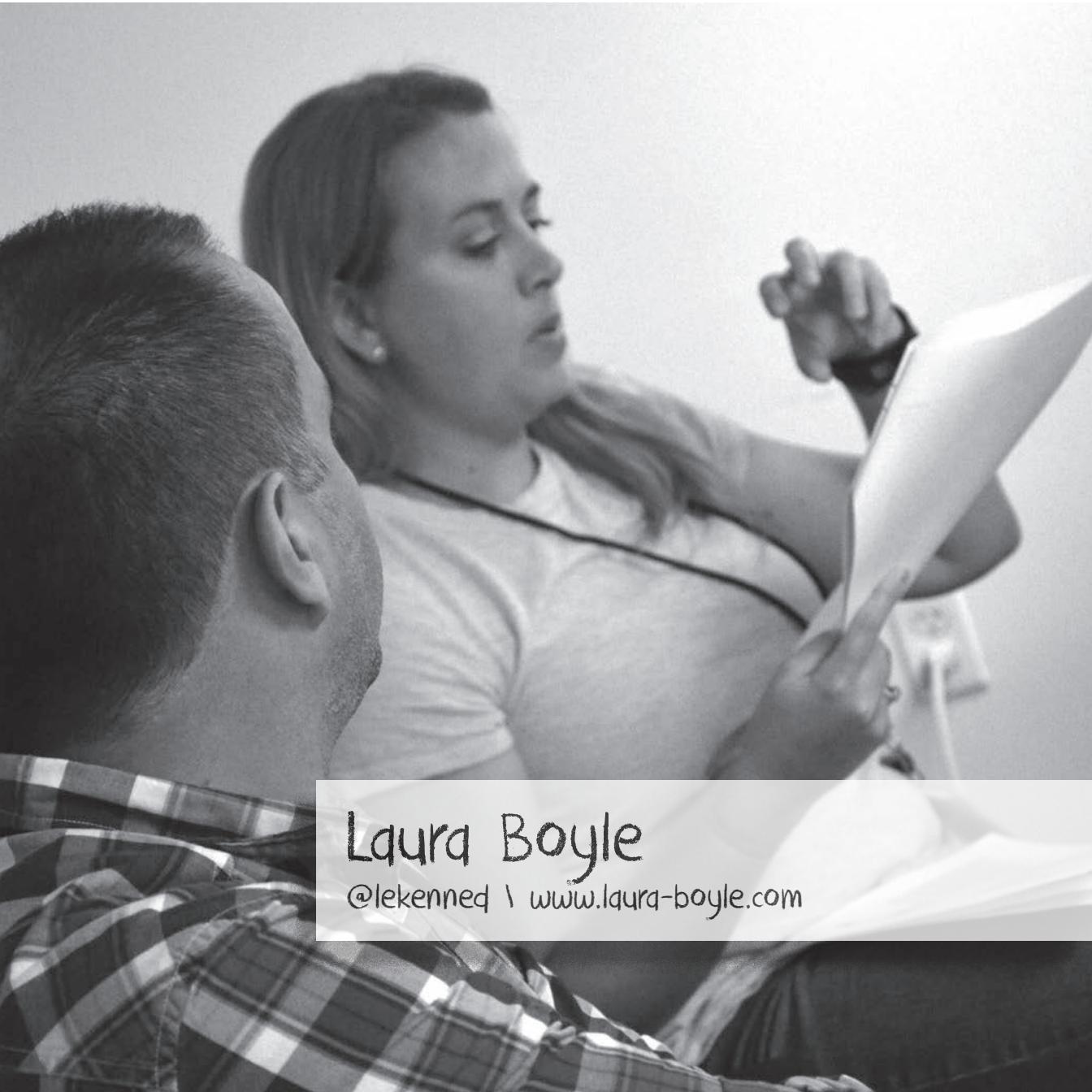
Looking forward: As I look forward, I hope to see our math department become more cohesive and our curriculum become more relevant for the 21st century. First, I hope to make technology an integral component to enhance problem solving and learning for our students. This could involve online tools or other technology which would increase student engagement and conceptual understanding.

Perhaps this would also offer for opportunities for differentiation through the use of various methods of delivering content for learning, and to supplement students' prior knowledge - ensuring that each student masters all the objectives. Second, I hope our math department is able to create assessments to measure students' problem solving skills. We use a modified version of standards based grading, and I hope we can update our assessment and tracking system to reflect the vision of our new, problem-solving rich, curriculum. In the end, my goal is to produce successful 21st century math students. I look forward to continuing this work through the MAET degree at MSU beginning this summer.



This I believe...

... empowering students to be successful in the 21st century is critically important, and all students can learn mathematics, and will rise to the challenge when supported.



Laura Boyle

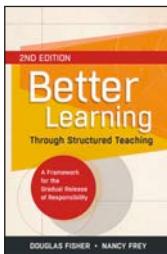
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Teaching is more than imparting knowledge, it is inspiring change. Learning is more than absorbing facts, it is acquiring understanding - William Arthur Ward

Laura Boyle

Laura Boyle is the STEM Science Coordinator at Gwendolyn Brooks College Prep where she teaches 11th and 12th grade AP Biology and Anatomy. She has been teaching since January 2010. During her time at Brooks, she has taught Biology, AP Biology, Chemistry, Environmental Science, AP Environmental Science, and Anatomy. She also teaches a gardening seminar that encourages students to grow their own produce and emphasizes the benefits of gardening and urban agriculture. Prior to teaching, Ms. Boyle was an ecologist and worked in fisheries biology in Alaska. She enjoys inspiring others to follow their passion, especially in science.



Book recommendation

Better Learning Through Structured Teaching: A Framework for the Gradual Release of Responsibility by Douglas Fisher and Nancy Frey. I read this book five years ago when I was a new teacher struggling with planning lessons. I wanted my lessons to be engaging, to make students think, talk to each other, work together, and learn to read difficult scientific texts. I often struggled with scaffolding my lessons and incorporating different learning modalities. This book introduced me to the idea of “I do, we do, you do together, you do alone” and also gave me different strategies for incorporating reading and writing in science.

The past, the present & the future

I have always loved science, so it was an easy decision to major in biology, but it wasn't until two years after I started working as a professional biologist that I realized I wanted to be a teacher. I loved my biology jobs for a while, but didn't feel fulfilled by what I was doing. After a visit home talking to my brother, then a CPS English teacher, I decided to switch gears and become a teacher. My senior year of high school, in Human Anatomy with Mr. Engelman I learned so much and was so enthralled by the course. That is the feeling I want my students to have in Anatomy and AP Biology. I want them to understand that what they're learning in biology really is all around them, all the time. I want them to leave my class with the ability to observe, inquire, test, analyze, and infer about the world they live in.

My ImagineIT project this year has been flipping my AP Biology course. When I started I wanted to be able to spend class time "doing" science. I was going to make instructional videos for students to watch on their own and plan meaningful, engaging lessons that involved the process of science while we were together in class. I started out thinking the main aspect of this project would be the videos. While the videos are definitely important, the most impactful part of this year has been the extra time spent engaged in the scientific process and planning for the 104 minutes of class. I have learned how my students stay engaged for a whole class period and have tried to make every minute count.

My ImagineIT project has transformed the way I teach science, or at least, the way I like to teach science. This year I have been flipping AP Biology, but still teaching Anatomy in the traditional lecture format. I would like to start creating the instructional videos for my anatomy class and start planning the new labs and activities to use

with each unit. I have also started working with other teachers at my school on flipping their classes. Flipping my class has allowed me to open up more class time for inquiry and experimentation and it has also given me more time with the students in smaller groups, making my class much more personalized an experience for my students.



This I believe

... every student has a passion for learning something. As teachers, we have the power to personalize learning for our students so they can find their passion and pursue it.



Gretchen Brinza

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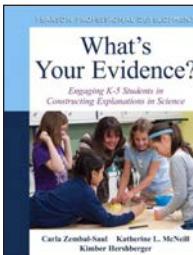
Tech Talk
Gretchen
Brinza



Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it's the only thing that ever has - Margaret Mead

Gretchen Brinda

Gretchen is in her thirteenth year teaching and she currently teaches 5th and 6th grade science at Alcott College Prep. She focuses on integrating technology into her teaching, which she finds incredibly rewarding as she tries new things alongside her students. She is also a professional development leader for the district which she also finds very fulfilling from a different perspective, bringing new ideas to utilize with her students. Outside of school, she enjoys coffee in the morning and ice cream at night. Her family keeps her going and brings her pure joy from the simplest of things.



Book recommendation

What's Your Evidence?: Engaging K-5 Children in Constructing Explanations in Science is a great read for any science teacher. As the shift in science education has moved into a new realm because of the Next Generation Science Standards, this book engages teachers in how to have students explain scientific phenomena. It's filled with tons of student work samples, a great way to see that what the authors suggest CAN actually happen with students!

The past, the present & the future

Looking back: It all started when Mr. Moore chucked a bowling ball down the hallway to show us, his physics students, how projectile motion worked. From there, I was inspired to teach. It wasn't until I put all the pieces together that I realized I was guided my whole life to be a teacher in the STEM fields. My dad was a communications engineer and my mom, a nurse. My sister was a teacher and my brother an industrial engineer. For the last thirteen years, I've spent the majority of my time in a variety of positions spanning K-8th and they've always involved some aspect of STEM. While switching roles is incredibly challenging, it's also pushed me to be a lifelong learner and grow in my practice. It's made me thirsty for more!

Where I am now: This past year has been a game changer for me, and being a part of the MSUrbanSTEM fellowship has served as the spark. My mantra this year has been to try any and all new things, and if they work, great. If they don't, it's okay. I've thought outside-the-box more than I ever have and I've taken more risks with my students. These risks have been better for me and my students. Through my ImagineIT project on alternative forms of assessment, I've explored student thinking in new, creative ways while utilizing technology in ways that I didn't think were possible. My students have danced, sang, acted, and drawn their understanding of science phenomena in unique ways to uncover and extend their knowledge. I've learned more of what gets students "hooked" in their learning and this has been incredibly exciting to witness.

Looking forward. I'm excited about where my ImagineIT project will move in years to come. How can getting my hands on more technology to help strengthen this project with future students? How can I share what I have learned with others in my building? My network? My district? Outside of my district? These questions

certainly get me thinking and inspire me to make greater change within the avenues that are safe, collaborative, and inspiring for both my students and other teachers. As I begin to think about my leadership in these capacities, I am driven to find the paths that allow me to build collaboration in new, innovative ways.



This I believe

... there's so much uncertainty in taking a risk, but sometimes that risk is infinitely more rewarding than sitting back. Take the risk.



William Brown

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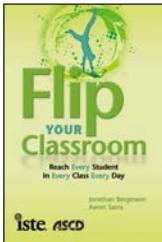


Be realistic, demand the impossible
- Ernesto Che Guevara

William Brown

William R. Brown has been a mathematics teacher at the Chicago High School for Agricultural Sciences in Chicago, Illinois since 2008. He has taught the gamut of high school mathematics courses from Algebra to Advanced Placement Calculus. He has done extensive work in curriculum redesign, co-taught classrooms, standards-based teaching, and flipped classrooms. William earned his Bachelors of Science in Mathematics from Chicago State University in 2008. He also earned a Master's of Education in both Curriculum and Instruction as well as Educational Leadership from the American College of Education in 2010 and 2011, respectively. He is currently pursuing a certificate in STEM Education from Michigan State University. William's hope is that he can help his students understand that mathematics is at play in everything in the world around them. He hopes to impart his love of learning a wide variety of topics and an appreciation of mathematics upon all of his students as well as his young daughter.

Book recommendation



Flip Your Classroom by Aaron Sams and Jonathan Bergmann is a short but excellent “how-to” guide for anyone interested in making a change in flipping their classes. The notion of flipping a classroom allows students to forge their own path and to find deeper meaning in what they learn by building connections. Students get much more access to their teacher and the teacher is able to provide individualized instruction for every student on a daily basis.

The past, the present & the future

Looking back: After some experience as a mathematics tutor in college, I began to realize that math is not learned easily by everyone. I used to help people and try to teach them the material they were struggling with by giving the same sort of lecture that their teacher gave in class. Sometimes that worked but most often it was ineffective. That is when I began to realize that people learn in different ways and at different paces. This experience was invaluable as I decided to become a math teacher. It helped me realize how important it was to have a math teacher who could find different and unique approaches to problems. It also helped me realize that math was a struggle for some and I hoped that I could help some students through that struggle.

Where I am now: In the past year, I have had the opportunity to bring my classroom to life through a project that began with the intention of making mathematics more relatable to my students. I accomplished this by tailoring lessons to point out beautiful aspects of mathematics. This project transformed in both its subject and impact. I began with lessons to point out the beauty in math, but soon began to plan lessons showing the practicality and some of the less beautiful aspects. This led to discussions about individual identity and social justice, all taught using numbers and research. The scope of this project moved from affecting one class to affecting the grade level in which I teach. As I communicated what was happening with my colleagues, we soon forged a partnership and began developing the cross-curricular projects and trips. Each teacher took an aspect of the curriculum and engaged students with the concepts through the lens of their discipline.

Looking forward: Students need to understand that mathematics is more than a series of insanely cool properties of numbers. They

need to understand where those properties come from and why they are useful. They need to be able to construct meaning for themselves with guidance from their teacher. They need to be able to make mistakes, be okay with those mistakes, and learn from them. The mathematics that I teach often focuses on learning and applying abstract rules but rarely allows students to construct the deeper meaning of material. By not taking the time to allow students to interact with the material in a rich way, we are doing them a significant disservice. Because of this, within the next five years, I will teach students abstract mathematics content through applied mathematics lessons with every lesson that I teach. Students will construct meaning by experimenting with manipulatives, constructing things, and observing the world around them.



This I believe

... when teachers begin having focused discussions with their peers, great instruction with authentic activities take place. When students are taught through authentic activities, they are able to construct meaning for themselves and understand and apply concepts in their lives. I believe we need to bring math alive!



Joanna Calandriello

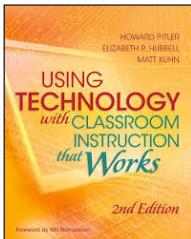
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In teaching it is the method and not the content that is the message... the drawing out, not the pumping in - Ashley Montague

Joanna Calandriello

Joanna Calandriello is currently a Middle School Mathematics Teacher at Mildred I. Lavizzo School in Chicago. She has been teaching in CPS for the past 12 years and was recently recognized by her colleagues as a “Model Teacher Leader in Mathematics.” She is a lifelong learner and her love for learning is evident in her teaching and her professional growth. She considers herself globally cognizant having visited five of the seven continents during her tenure in the steel industry. She believes her love of teaching and learning are enhanced by her understanding of different cultures worldwide. She holds a Master of Science Degree in Middle School Mathematics from DePaul University and a Master of Business Administration degree from Keller Graduate School.



Book recommendation:

A most recent book I read and utilized is *Using Technology with Classroom Instruction that Works* by Elizabeth Ross Hubbell, Howard Pitler, and Matt Kuhn. The area of study our MSUrbanSTEM Deep Play group chose was Multimedia Composition. The above mentioned book is a plethora of technologically defining information to use to build your classroom technology fundamentally and to accommodate today's globally connected digital world. I highly recommend this book for the teacher who desires to grow their knowledge for using technology in the classroom.

The past, the present & the future

Looking back: My initial life's ambition was to be a teacher. When I think about what I believed that to mean it makes me laugh. I thought teaching was having knowledge about content and teaching that content to students. While that is important, teaching is so much more. Teaching is coaching students so they can find the answers. Teaching is mentoring students so that they can make their own decisions. Teaching is presenting opportunities to students so they can broaden their horizons. Looking back this MSUrbanSTEM fellowship was a great opportunity because it helped me to reinforce what I believe being a teacher means and opened so many doors. Sharing my knowledge is just something I do. I have traveled five continents and encountered many different people from different cultures. During this time, I also realized that people are fundamentally the same. I feel I want to share my experiences and knowledge coaching and mentoring students to better prepare them for opportunities that await them. Through learning and perseverance, these students will begin to realize there is a great big world out there and so many things they can do with their lives.

Where I am now: Where do I begin?... I learned that problem solving is supposed to be frustrating. The main frustration came from being placed in a sea of unknowns. One minute I was opening a Twitter account and the next I was uploading photographs to that account and I wasn't even sure I liked the photograph. What I learned from this experience was empathy in a truer sense than I previously knew. I now have a renewed empathy for my students when they say they can't get it done or when they shut down because of their frustration with the task at hand. This is not to say that I will not push them, because I will. It is managing time and perseverance that will make students successful.

This learning experience matters to me because it is motivating me to learn as much as I can about the technology and media available. Combining technology and media with content and pedagogy allows me to offer my students the best real-life learning experience I can provide.

Looking forward: I don't feel this experience has necessarily changed "what" I think about teaching but more "how" I think about teaching. Previously, I looked at content, pedagogy, and technology in their own separate entities. I am beginning to understand how the three make a complete cycle to fully integrate teaching. Using TPACK to fully integrate lessons makes the lesson real-life. If my teaching is to be fully integrated I must combine the MARS Tasks and Problems of the Month with our daily skill and use media such as NEARPOD to disseminate the information to the students. By skillfully using TPACK our class lessons can be real 21st Century mathematics learning.

What I am taking from this experience is a new sense of curriculum presentation. Yes, I must use the curriculum that is developed through our district however, I can build a toolbox full of motivating real-life resources which I can use to present that given curriculum.



This I believe

... it's not just what you teach it's how you teach it that empowers student learning. In a technological world one must teach through technology.



Eu Hyun Choi

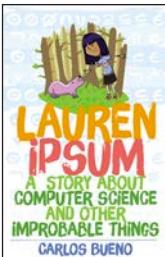
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A person who never made a mistake never tried anything - Albert Einstein

Eu Hyun Choi

A National Board Certified Teacher, Eu Hyun (Choi) Tang is a 7th grade math teacher at Volta Elementary School where she began teaching in 2012. Eu spent five years at Horace Mann Elementary School, where she taught departmentalized middle school math and served as a Curriculum Coordinator and a Math Coach. Changing schools opened her eyes to the inequities of resources between schools within the same district. Eu has worked as a math facilitator of middle school math workshops, participated in writing performance assessments for the district, and has led math workshops at the Chicago New Teacher Center. She believes in and is committed to lifelong learning. Eu earned her BS in Elementary Education from University of Illinois at Urbana-Champaign in 2007 and a masters degree in Education Leadership from DePaul University in 2013.



Book recommendation

Lauren Ipsum: A story about Computer Science and Other Improbable Things by Carlos Bueno. This book helped me understand the connection between math and computer science. It's a journey of Laurie, who is lost in Userland and needs to find her way home. Each chapter consists of a mystery she needs to solve, which is explained in the back of the book called *The Field Guide to Userland*.

The past, the present & the future

Looking back: Coming to America at the age of 10, I did not know any English when I arrived to Chicago. Unfortunately, in my early days of elementary education in a Chicago Public School, I had teachers who wrote down the “assignments for the day” on the chalkboard that consisted of textbook work. I rushed through the assignments with the minimal English that I knew, managed to get done around noon where I spent the rest of the day doing crossword puzzles. I managed to be in Honor Roll, though I have not learned much. My education continued on similarly where I “got away” with many assignments with the minimum amount of effort with Honor Roll each school year. In college, I realized my education had been stolen away; I was angry that teachers did not hold me accountable for my own learning. I decided to become a teacher at a Chicago Public Schools so that future students will not receive the type of education that I did.

Where I am now: Based on my experience at MSUrbanSTEM program, I realize open-ended project-based learning is better than textbook, traditional learning. Of course I had read about it and heard of other teachers implementing this type of learning, but it wasn't until I experienced it myself that I came to realize creativity plays a key role in student learning. Providing assignments that have a variety of options within given parameter allows opportunities for students to learn in their own way, which is more meaningful to them.

Looking forward: Due to my educational experience, I was always fearful of assigning project-based learning to my students. I was afraid as to whether my students were going to learn something from of it, and how I was going to successfully measure their learning. I used to teach traditionally following a curriculum using standards, but now I implement projects into student learning and plan on

growing from this experience each year. I currently hold a certificate in educational leadership. I plan on becoming an assistant principal at an elementary school within the next 10 years. After being part of MSUrbanSTEM program, I now have more resources to bring to the table when influencing teachers. They include but are not limited to QuickFire challenges, ImagineIT project, World of Wonder, and Tech Tips. As a lifelong learner, I appreciate new knowledge that will impact my student's learning. I can now teach these skills to other educators, especially promoting Science, Technology, Engineering, and Mathematics program into their teaching.



This I believe

... our students deserve first-class education, no matter what school that they attend.



Kevin Connolly

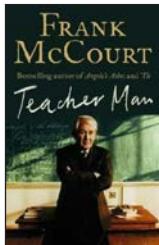
@kconnlly | kmconnolly.weebly.com



Don't expect help from the people who've escaped the classroom, the higher-ups. They're busy going to lunch and thinking higher thoughts. It's you and the kids. So, there's the bell. See you later. Find what you love and do it - Frank McCourt

Kevin Connolly

Kevin Connolly, a teacher for 9 years, is currently the IB biology teacher at John F. Kennedy High School in the Southwest side of Chicago. He teaches both 9th grade Middle Years Programme and 11th-12th grade Diploma Programme courses. His first six were at Al Raby High School on Chicago's West Side. His previous experiences include writing a semi-weekly column for the Daily Illini, being a Peace Corps Volunteer in South Africa, and framing houses in the southwest suburbs of Chicago. Kevin is happily married and blessed with three beautiful children: Patrick (4), Brian (almost 2) and Mae (born March, 2016).



Book recommendation

Teacher Man by Frank McCourt; is a refreshingly honest take on working in education. In this book, Mr. McCourt doesn't try to show off how great he was in the classroom. Instead, he looks back with wit and humility after crossing the finish line of a rocky, yet fulfilling career. I read this book before becoming a teacher and thought it was kind of funny. Reading it as a veteran teacher reinspires me to do this job that so many run from.

The past, the present & the future

Looking back: My professional experiences have always been about taking work head on and being in the trenches. I grew up in a family with a small business and much of my philosophy about work comes from those early experiences. My parents built houses and I got involved at a young age cleaning up. By high school I was learning carpentry on the crew. My father and the other carpenters taught me to avoid shortcuts and do the job right - even if that meant having to tear apart what I had been working on for hours to get back to where the job could be done right.

I can't say that teaching was some dream of mine--it wasn't. I stumbled into it after getting a degree in biology and realizing that my career choices were not that exciting. But once I found myself in a classroom, I got stuck into the work and I've been determined to do the job the right ever since.

Where I am now: The past year as a MSUrbanSTEM fellow has been an adventure of newness. It has been exciting challenging myself to come up with a creative ImagineIT project and then complete all the videos and memes, etc. to communicate the plan with the world. It has also reinforced my belief that teaching is not a static craft - and as teachers we need to resist the comfort of complacency, and the best way to do this is through trying new things. I have also found that partnerships are available all you have to do is ask. The math teachers at Kennedy have been terrific partners this year with my project and I hope to continue and grow this relationship into the future.

Looking forward: My main long term goal is to grow the small scale partnership I am currently building into a full partnership between

the math and science departments. From freshman year to senior year, there are great opportunities to coordinate math instruction with science data analysis. Right now these skills are not being taught in concert and most math or science teachers at Kennedy don't even know what is going on in each other's classes, even at the same grade level. This is a golden opportunity for both departments because it allows students to practice the math skills in real science settings and allows science teachers to spend more time on conceptual mastery and less time on computational skills.



This I believe

... ... teaching is a real job that offers no shortcuts. To do it right, teachers have to figure out what works for them, be open to change, and take ownership of the new ideas that they use in their classrooms.



Fit2gerald Crame

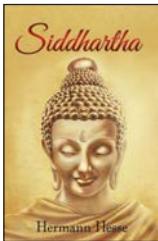
@Fit2Crame | www.fit2crame.com



It always seems impossible until it's done
- Nelson Mandela

Fitzgerald Crame

Being the father of two lovely girls, poised to one day take over the world, takes patience. Luckily, Fitz's lovely wife of 17 years has that. Fitz has been an educator for two decades. After all this time, he's happy to report that he still finds himself continually inspired by the small, magical moments that present themselves every day. Fitz is currently the fourth grade teacher at Edison Regional Gifted Center in Chicago. He teaches STEM, language arts, math, science, and digital media to an amazing array of gifted students.



Book recommendation:

Siddhartha by Herman Hesse is a novel that has intrigued me since I first read it 25 years ago. Hesse employs a simple, rhythmic and almost lyrical prose to chronicle a young man's journey to enlightenment. The protagonist, Siddhartha embarks on a lifelong journey in search of heightened understanding. On this journey, Siddhartha encounters an extreme spectrum of emotional experiences; from periods of acute deprivation to periods of insatiable indulgence. Only after contemplating the totality of his experience does he finally attain enlightenment and find inner peace. This book has helped shape my vision as an educator. I believe that the pursuit of knowledge and wisdom comes only after a deep contemplation of one's experience and as a result of observing the world through multiple perspectives.

The past, the present & the future

Looking back: Becoming a teacher was a once in a lifetime chance at world dominance. I saw education as an opportunity to make my ripple; a ripple that would carry its impact across however far my students could travel. For the greater part of two decades, my global plan has taken effect. I see in each student the potential to make great waves and to effect a future that gets better through their individual contributions. This thought governs my approach as I work to cultivate individual student talent and guide each student on their path to whomever they intend to be. I believe that every student has a talent and a genuine curiosity that is insatiable. Finding that talent and channeling it to fuel student learning experiences has proven to be effective means of motivation. When students believe in themselves, they are equipped with the self-confidence and motivation to help them overcome any obstacle. After twenty years, my efforts are beginning to bear fruit.

Where I am now: I am very proud to call myself an MSUrbanSTEM fellow. The educational tenets set forth by the program align so well with who I wish to be as an educator. In many ways, the teachings of the program serve to validate my pedagogy and to further my development as an educator. One of the more transformational ideas that I have come to appreciate through my MSUrbanSTEM experience has been the challenge to see the world through disciplined eyes. The seemingly innocuous nature of the “mundane” suddenly transforms into something remarkable when viewed through a lens that alters one’s focus. Quite miraculously, what you thought was ordinary reveals its fascinating self through the magic of inquiry. Make the ordinary extraordinary. This idea more than any has inspired me to challenge all of my students to do the same. Learning to see through eyes equipped with disciplinary knowledge makes for a more fascinating world.

Looking forward: It was my goal to inspire students to augment their realities by availing themselves of different disciplinary perspectives. My students are starting to see the world through the eyes of architects, designers, engineers, artists and authors. These small successes manifest in so many ways. When I hear the words, “I wonder if...” it is evidence of greater impact. My students have embraced the challenge to see the world differently and to dispute what is “known”. My hope is that I can continue to inspire students to question conventional knowledge. Only then will new and deeper understandings emerge. In the next few years, I see my ripple becoming a wave.



This I believe

... under the mundane hides wonder. The key to seeing it is to shift perspective.

A photograph of James Edstrom, a man with a goatee wearing a blue and white plaid shirt, working on a project with a woman. They are sitting at a table with various electronic components and wires. James is holding a thin wire in his right hand. The background shows a window with green trees outside. A white text box is overlaid on the bottom right of the image.

James Edstrom

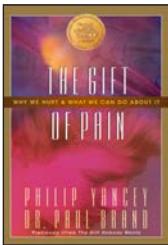
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I hear and I forget. I see and I remember. I do
and I understand - Confucius

James Edstrom

James Edstrom was born in the Democratic Republic of Congo and lived there for thirteen years. He attended three different elementary schools and two different high schools before graduating from The Ubangi Academy in Congo in a class of seven. James holds a Bachelor of Science in Mathematics from North Park University (minor in Physics) and a Master of Science in the Teaching of Mathematics from UIC. Currently, James is the Chair of the Mathematics Department at Von Steuben and is in his twenty-ninth year of teaching. He has taught all levels of mathematics from Double Period Algebra 1 to A.P. Calculus. This year he is teaching Advanced Algebra / Trigonometry and Dual Credit College Algebra through City Colleges of Chicago. James and his wife have been married twenty-eight years and have three children. James is an avid Cubs fan, his favorite musician is Bob Dylan, and he enjoys doing small construction projects in his spare time. James has been remodeling his family's home ever since it was purchased nineteen years ago.



Book recommendation

The Gift of Pain by Paul Brand, Philip Yancey. Dr. Paul Brand, a world-renowned hand surgeon, worked with leprosy patients in India. For most of us, pain is something we try to manage or ignore. Dr. Brand's view is that pain is actually a gift that signals something is wrong. Instead of trying to shield ourselves from pain, we need to get to the root of the problem causing the pain.

The past, the present & the future

Looking back: I began my teaching career at Fenwick High School in Oak Park, Illinois. I came to Von Steuben twenty-three years ago and have thoroughly enjoyed the students I have had the pleasure to teach. I have taught physics and mathematics (from double-period Algebra to A. P. Calculus) and have coached baseball and soccer at both high schools. I had considered engineering while in college but decided on secondary education since I loved math and wanted to coach.

Von Steuben is a very diverse school – culturally, academically, socially, and economically. Because I spent thirteen years in the Democratic Republic of Congo, I believe I can contribute to this diversity.

Where I am now: Being a part of the MSUrbanSTEM program has revitalized my teaching. I have always spent a significant amount of time reflecting on my teaching – from day to day, even period to period. With my background in physics, I have always incorporated activities in my classes to stimulate student interest. I have kept up to date with changes in technology. The constant push to use technology in new ways, to actively involve students, to share ideas with colleagues has been invigorating. As department chair, I have shared many of the ideas I have learned as a part of this program. Colleagues in the math department have been great sounding boards for implementing new ideas, and my administration has been very supportive.

Looking forward: Since the beginning of this program, I have been constantly challenged to make lessons and concepts stick. I have heard that education is everything you remember after you have forgotten everything else. My goal is to have something in each

lesson that students can use to help them remember. Mathematics can become a series of algorithms – I want to always stress the beauty and elegance of mathematics.

My goal for this year was to use alternate forms of assessment. I have had students make videos to show what they have learned. I hope to do this on a regular basis in years to come so that students can always look back to something they actually CREATED, not just something they had to memorize for a test or quiz.



This I believe

... deep inside, students are very creative. They want to show what they have learned, not just spit things back that I have told them. I want cultivate a sense of wonder in their study of mathematics in addition to appreciating its elegance.



Melinet Ellison

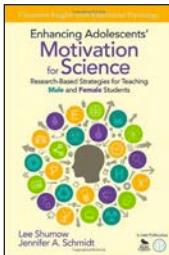
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Intelligence plus character, is the goal of true education - Martin Luther King Jr

Melinet Ellison

Melinet Ellison is a proud graduate of Chicago Public Schools, CPS. She attended CPS kindergarten through 12th grade and has returned to CPS as an agent of change. She is passionate about urban education as it is a part of her ethnic fabric. She has been teaching in academically disadvantaged schools within CPS since 2009. Melinet enjoys working with students who are underprivileged because she believes education can be their door of escape. Her objective is to ignite a passion for learning within her students through engaging learning activities. She currently teaches third grade math with a Science, Technology, Engineering, and Math (STEM) focus.



Book recommendation

I believe STEM educators will enjoy reading *Enhancing Adolescents' Motivation for Science* by Lee Shumow and Jennifer A. Schmidt. This book shares research-based strategies for teaching male and female students. The author begins by highlighting the gender gap in science and shares information about major initiatives created to help encourage girls to explore science. Despite these efforts, there remain a gender gap in science interest. The authors express the need of fostering intrinsic motivation to help sustain learning across genders.

The past, the present & the future

Looking back: As a freshman in college I declared social work as my major. I chose social work because I wanted to change the world. After working in social services for two years, I realized preventative social work yielded higher results than intervention methods. I decided to pursue a Master's degree in teaching in pursuit of changing the world through education.

Since becoming a teacher, my greatest struggle is getting adults to “buy in” to learning and implementing best practices for students. Getting fellow teachers to evolve in their instructional practices is one dilemma in education. In the words of John Dewey, “If we teach today as we taught yesterday, we rob our children of tomorrow.”

I believe education is a powerful tool that can be used to obtain social justice and ironically those who hold the key can also be the ones that stagnate progress.

Where I am now: I applied for MSUrbanSTEM not fully aware of all I would learn. This one-year fellowship has been full of learning experiences that will be long lasting upon my instructional practices. I have learned more in this one year than in my seven years of teaching in relationship to technology and collaboration. I have learned how wonder and questioning is pivotal in discovery. I have also increased my knowledge of implementing technology in the classroom. In MSUrbanSTEM, we learned how to encourage collaboration in our classroom by collaborating in the STEM program. We learned by doing. In summary, learning should be experienced with others and made public for others.

Looking forward: Before participating in MSUrbanSTEM, leadership was a distant goal. I now plan on pursuing a leadership role within

the next five years. I have attained so much knowledge that needs to be shared and duplicated related to the efforts of advancing my goal of social justice through education. I have learned that there are different forms of leadership and the areas of being a tempered leader. Being a tempered leader is someone that is willing to take risk. It is important that in being a leader I surround myself with others that are willing to follow. It's the size of my following that will determine my success.

Summing up: In summary, reflect on the past, the present, and the future; create a one or two sentence closing for the following prompt.



This I believe

... generations can be changed using education that fosters wonder. Careers of the future will look different from careers of today therefore, our methods of preparing students for future careers has to be constructed on collaboration and questioning



Jeffrey Erickson

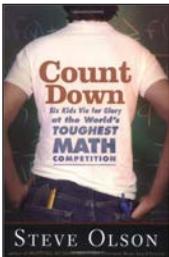
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Children must be taught how to think, not what to think - Margaret Mead

Jeffrey Erickson

Jeffrey was born and raised just south of the City of Chicago. He attended Northwestern University and earned a BA in Biology. He moved to Los Angeles and received an MBA from UCLA in Finance and Accounting. Jeffrey has held positions in management in the high technology, publishing, customer service and gaming industries. He returned to school and completed a teacher certification program at Northeastern Illinois University to teach elementary school in an urban school. This is his eighth year teaching at Nobel Elementary School, a Chicago Public School in the West Humboldt Park area. He has taught all subject areas and grades 3rd through 8th, as is currently a 5th Grade Math Teacher and 7th Grade Algebra Teacher.



Book recommendation

Countdown: Six Kids Vie for Glory at the World's Toughest Math Competition by Steve Olson. This book is an incredible insight of not only these incredible mathematicians, but an in depth look at the art of problem solving. This book raises more questions than it answers about what special talents and skills to make a gifted problem solver, but offers a peek at how these talented kids went about solving problems under extremely competitive and stressful conditions. This book has inspired me to nurture my students with these problem-solving attributes.

The past, the present & the future

Looking back: I have worked in management positions in numerous industries for over 25 years. I didn't feel fulfilled or like I was contributing to society. I am well educated in many areas and well-traveled and believed I could make a difference in a young child's life in an urban setting. These children have to overcome incredible odds to escape the cycle of poverty and violence in the inner cities of our country. I believe I have had a positive impact on some of these children. My only regret is that I waited so long to embark on this incredibly satisfying journey so late in my career, but what an ending!

Where I am now: This past year as an MSUrbanSTEM fellow has completely changed my educational focus driven by content. This program has given me the insight and the courage to embody my favorite quote by Margaret Mead mentioned above. My focus has been to create mathematicians out of my 5th grade students by teaching them to see, think, act communicate and view the world like mathematicians. I have started many new projects and activities to foster these goals and have only scratched the surface. MSUrbanSTEM has provided the foundation to build on these small successes and truly create a learning environment to create problem-solving mathematicians.

Looking forward: A teacher and their students can have every technological tool available and still not reach their educational goals in that classroom. One of my goals is to provide as much access to the technological tools that are available. There are many limitations, especially the budgetary concerns facing CPS. I will work with our leadership team and administration to help secure needed funding for technology.

My overarching goal is simple: create mathematicians. I have started to slowly build up the confidence and experience of my students in respect to thinking, seeing, acting and communicating like mathematicians through activities that involve them looking at the world around them as mathematicians. They are not only identifying mathematical problems in the real world, but providing solutions. I have also instituted many problem-solving exercises into the classroom. Many of my departmental colleagues have incorporated some of these new ideas. My ultimate goal is to have my students initiate this curiosity about mathematical situations in the real world and see how they connect to their everyday life. In five years, I want my students to leave my classroom with the mindset of a mathematician and problem-solving skills that allow them to confidently and competently present solutions to mathematical problems they encounter.



This I believe

... that every child deserves the chance to learn how to think, contribute to society and live a life fulfilled.

A portrait of a woman with dark hair styled in a braid, wearing a dark green top. She is smiling slightly and looking to the right. In the background, there is a white wall with green text that includes the words "ENING" and "PACT".

Laura Frcka

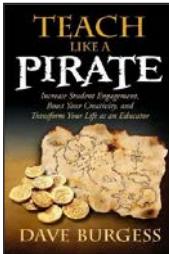
@mrsfrcka | laurافرcka.weebly.com



Education is for improving the lives of others and for leaving your community and world better than you found it - Marian Wright Edelman

Laura Frcka

Laura Frcka has been teaching mathematics for ten years, most recently at William J. Bogan Computer Technical High School, the first 1:1 Chromebook high school in Chicago Public Schools. She currently teaches Algebra II and AP Calculus AB. She is also the 11th Grade Level Lead, Mathematics Department Chair and a member of the Instructional Leadership Team. Laura focuses on inquiry explorations while incorporating growth mindset. Outside of class, she enjoys spending time with her family and friends and is a novice gardener and baker.



Book recommendation

I would recommend *Teach Like a Pirate* by Dave Burgess to all STEM educators. This book inspired me to create an inviting and engaging environment that empowers student learning. Burgess explains how to increase creativity in the classroom by asking yourself the right questions. He lists hundreds of hooks to incorporate in your lessons. These hooks build student interest and engagement and lead to increased student ownership.

The past, the present & the future

Looking back: Throughout my life, I have always helped others. My love of learning developed early and was nurtured by inspiring teachers I had growing up and my mother who was also a teacher. I want others to experience the joys of learning that I had and continue to have. I am passionate about my profession and focus on educating the whole child. My dedication, perseverance, patience and love of understanding are some of the values I bring to the profession. In the past, I focused on knowledge and not understanding. I realized that students can demonstrate knowledge but this does not mean they understand the content. There is too much passive learning occurring in schools. We need to move away from the traditional math student mindset where content is procedural and not conceptual.

Where I am now: This past year as a MSUrbanSTEM fellow and as an educator, I have grown in several ways. With teaching, I ask myself: what is my goal? What do I want to accomplish? What are the big ideas? Where is the story that will stick? I focus on understanding and not knowledge. I believe students need time to explain, interpret and apply their understanding. Students must explore, use technological tools to help construct their own understandings and make their understanding public. I focus on the big picture of math through understandings and misconceptions. We are all mathematicians who explore, create and share. We celebrate our struggles. By looking at the big ideas of math, I design experiences that allow for students to make connections. I help students re-see what is around them and deconstruct their misconceptions. This leads to more meaningful learning.

Looking forward: When my daughter was born, I realized that I needed to refocus my educational vision. Thanks to her I opened my eyes

again. I was caught in the daily grind of life and not living. Too many of us, including myself, believe the misconception that growing up means to stop playing, exploring and wondering: why is this? This realization led me to the fellowship. As I look forward, I strive to be a guide on the side and not a sage on the stage. My goal is to uncover the curriculum and not cover it. I must make math meaningful. This must include using real world tasks and focusing on growth mindset by analyzing misconceptions. I want to share my understanding with others and to continue building a professional learning community with those from the MSUrbanSTEM.



This I believe

...every moment there is an opportunity to learn. We must open our hearts to explore, create and share. Let's be curious. That is what makes human life so amazing.



Katleya Healy

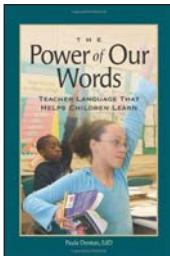
@healykatleya | reachingthestarstem.weebly.com



Learning is the only thing the mind never exhausts, never fears, and never regrets - Leonardo Da Vinci.

Katleya Healy

Katleya Healy is at Salazar school where she has been working for 12 years as an elementary special education teacher. She is from Colombia, S.A. Experiencing social distress and having an unstable work situation there, she found her mission here by teaching the most needy children. Katleya never gave up on her dreams to find a better life for her family. On the contrary, these circumstances motivated her to inspire her children on to success. As a teacher, she strives to find new ways to encourage her students to reach their potential and help them discover the wonders of learning. Katleya enjoys simple things and in spite of her past challenges, she has two Masters degrees, National Board Certification, and a strong desire to help her students learn.



Book recommendation

A book that changed the way I talk to my students is *The Power of Our Words* by Paula Denton. This book is about making us aware of how the words that we use to deliver our instruction and to interact with our students influence the way they think, work, and play.

The past, the present & the future

Looking back: Adaptation, acculturation, language barriers and culture shock have been some of the situations I had to deal with. These challenges have taught me not to give up, but with an open mindset, persistence, and hard work to be able to succeed as a person. As a result of my own struggles, my desire to become a better teacher, my aspiration to have a deep understanding of my student's struggles, and my inclination to constantly find new ways to make learning flexible, engaging and approachable have been a major part of my professional goals. Flexibility allows me to accommodate my student's needs, to adjust my instruction to their learning style, to reflect on what I teach, and to find the origin of what makes my students keep wishing to learn more.

Where I am now: This MSU experience has been an eye opener for me. There have been instances that have inspired me to rethink just what I need to improve and keep in my pedagogical toolkit. Now my teaching is more directed at bringing my students more meaningful learning interactions connected to their personal experiences. I am more mindful of their cultural instances, and individual abilities to carefully plan activities that are relevant to them. They have a lot of choices from multiple readings and activities; time-frame and movement is more flexible; students search what they want to know, choose how they want to demonstrate their understanding, and have time to have fun with music and games.

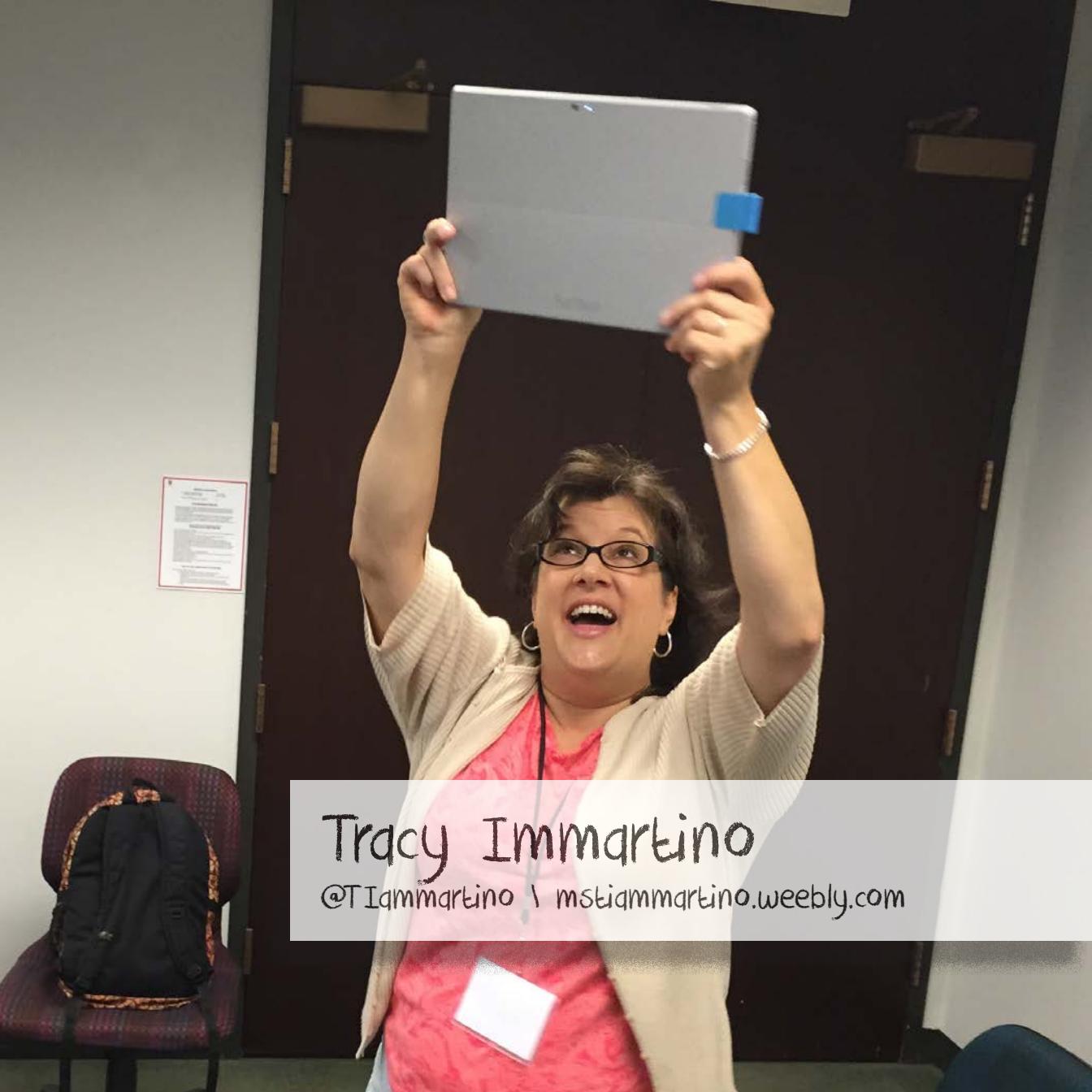
Looking forward: My project is about my students using their own experiences to learn what nutrition is, and the implications of eating an unhealthy diet. They are gaining knowledge about how to make small changes in their diet to balance their nutrition. Integrating science and math has helped them interpret labels and understand food nutrients so they can make better choices. Surprisingly, my 6th

grade math students have demonstrated an interest in knowing their weight and they have been tracking what they eat as well as weighing themselves. They have been discussing the kinds of foods that affect their weight, and how many calories they can consume without getting fat. Over the next few years, I want my students to continue developing the habit of eating healthy food by choice. I want them to be aware that picking the right foods can influence their mental and physical development.



This I believe

... learning involves motivation, curiosity, positive attitude, believing in your own abilities, connecting with your inner aspiration, exposure to the world, lots of practice and a continuous and unlimited desire to embrace new experiences.



Tracy Immartino

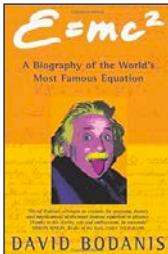
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In times of change learners inherit the earth; while the learned find themselves beautifully equipped to deal with a world that no longer exists - Eric Hoffer

Tracy Iammartino

Tracy teaches 7th and 8th grade science at Norman Bridge Elementary School located in Chicago. An educator for 19 years, Tracy earned a Bachelor's in Secondary Education from the University of Missouri; received a Master's in Science Education from Illinois Institute of Technology and achieved National Board Certification in 2007. Tracy was awarded the 2015 Friends of the Chicago River Educator of the Year for introducing her 7th graders to the biodiversity and history of the Chicago River. A lifelong learner, she enjoys a variety of hobbies including gardening, biking, knitting and crocheting un



Book recommendation

E=MC² by David Bodanis. Blending history and science, Bodanis discusses Einstein's life journey to his famous equation. While this book is not a book on education, it is an important read. Learning about how scientists from all backgrounds came up with ideas and, at times, worked collaboratively demonstrates science in action. For example, when teaching evolution my students compare Lamarck, Darwin, and Wallace's ideas. Students are challenged to prove which theory (Lamarck's or Darwin's) can explain change in a species. We highlight how Darwin and Wallace had similar ideas and collaborated to further the theory of Evolution.

The past, the present & the future

Looking back: Teaching is my second career; I was a radiologic technologist with a plan to become a surgical nurse. Teaching medical students and residents Radiology procedures revealed my love of teaching. I have a strong work ethic and am constantly striving to find innovative teaching strategies to meet the diverse needs of my students. This was the main reason I applied to the MSUrbanSTEM fellowship. I value curiosity: I love to see how things work and love to create which may be why I love to knit and crochet.

Where I am now: Being an MSUrbanSTEM fellow has provided me with tools and opportunities to take my ideas and make them reality. This fellowship inspired me to find ways to connect students to their community. I partnered with the Friends of the Chicago River, having my students utilize their numerous educational resources to conduct live field tests of river water. I challenged my students to use technology and make videos highlighting their experiences. I have embraced more technological tools like Google Classroom and other applications to provide students with multiple ways to creatively demonstrate mastery of content.

What Changed? I started to say, “Yes! And?” Based on our experience during the fellowship with Improvisational pedagogies I finally understood what it means to “let go” in the classroom. I don’t have to have all the answers; we can find them together! I realized that being a leader in the classroom means showing students that we are on this educational journey together taking our experiences and shaping them into meaning.

This year has been huge for me learning more about how to implement technology into my classroom. I share what I have

learned through the MSUrbanSTEM program through professional development opportunities and my website.

Looking forward: My plan is to utilize a Universal Design approach to evaluate and revise my curriculum to more effectively foster student engagement, and more effectively integrate technology, the design engineering objectives and unit plans that incorporate all parts of STEM.

I would also like to expand the educational resources section of my website and encourage teachers to have after-school, “tech play group” where we could explore technological tools and brainstorm ways how they can be implemented in the classroom.

Summing up, with every new adventure I realize how much more I have to learn. Every opportunity leads me to knowledge about myself and the world around me. I enjoy sharing these adventures with my students to challenge them to seek the opportunities this world has in store for them. I can’t wait to see what we create and achieve!



This I believe

... a person is sculpted from their varied experiences and has a responsibility to share what they know with others.



Leigha Ingham

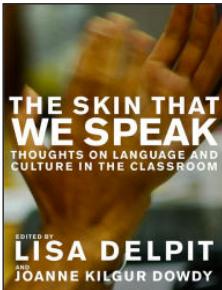
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Something we all have as kids and is beaten out of us as adults. Parents come up to me, "How do I get my kids interested in science?" They're already interested in science. Just stop beating it out of them - Neil deGrasse Tyson

Leigha Ingham

Leigha Ingham has been teaching for eight years and is currently a high school chemistry teacher at Kenwood Academy High School. She majored in Chemistry at Spelman College with aspirations to find a career in lab research. During her college years, Leigha began to volunteer as a tutor in the Atlanta Public Schools System and fell in love with the educating urban youth. However, she still pursued a career in lab research. She worked in labs at McCormick and Centers for Disease Control and Prevention for a few years. During those years, Leigha looked back so fondly on her experiences tutoring that she left her job and obtained a master's degree in science education from New York University so she could follow the passion she had for so long.



Book recommendation

The book I would recommend for educators is *The Skin We Speak* by Lisa Delpit and Joanne Kilgour Dowdy. This is one of the first books I read in graduate school that really made me think about my place in the classroom. As educators, we have to recognize and appreciate the various backgrounds of the students in our classroom. Our students do not come from where we came and these differences can also be reflected in the language we speak. I believe this book highlights those differences well and helps educators think of ways we can integrate their language with ours to enrich the learning experience.

The past, the present & the future

Looking back: Growing up in a small town community, I always felt a little void in my education because I didn't have many teachers that looked like me. When I went to college I chose to go to a small private Historically Black College and University because I wanted to be surrounded by educators who looked like me, women who looked like me, and had the same aspirations as me. These educators inspired me. They pushed me to heights I didn't think I could achieve and I wanted to do the same. I think one of the biggest challenges as a science teacher is to get students past their fear of science. So often students walk in thinking the class is going to be impossible. Helping students realize that understanding science, especially chemistry, is achievable can be a struggle. But, witnessing students surpass their struggles and appreciate what they are learning is incredibly rewarding.

Where I am now: The past year as a MSUrbanSTEM fellow and educator has helped me to pull back and allow the students to take more responsibility and ownership in what and how they are learning. I have often been a hands-on educator answering students' questions as soon as they have any. This year, I have let my students struggle in their learning experiences. The value in that struggle is that students have more ownership in their learning experience because they often find the answers without my assistance. This is a skill the students can take with them when they leave the classroom. I believe it will assist them in any other learning experiences in their future. In today's world, we must develop critical thinkers and this year I have pushed myself to do that with my students. They, in turn, have pushed themselves to learn things without always having me by their side.

Looking forward: Being a member of this cohort has pushed me past my fear of implementing technology in my classroom. However, I know I can do much more than I am currently doing. My missional goal is to have my classroom learning experience lean more toward learning through inquiry. I know students will struggle through this process, but I also know the learning experience will be that more rewarding and memorable. My students have had many more learning experiences this year that are inquiry-based and if I add more inquiry-based experiences every year, my curriculum will lean more toward guided inquiry learning and critical thinking. I want to focus less on the content and more on the skills necessary to be a critical thinker.



This I believe

...I believe every child is born with a sense of wonder and I believe it is our job as adults to cultivate children's desire to wonder and question the world around them. This sense of wonder is what makes learning exciting and accessible. This sense of wonder is what creates the critical thinkers of the world.



Sandra Jackson

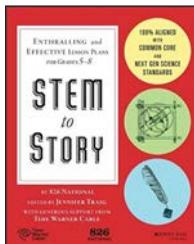
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Education is our passport to the future. For tomorrow belongs to the people who prepare for it today
- Malcolm X

Sandra Jackson

Sandra holds a Bachelor of Science in Mechanical Engineering from the University of Illinois in Urbana. She also received a Master of Arts in Secondary Education and a Master of Arts in School Leadership. Presently, Sandra is a STEM Math Specialist at George W. Tilton STEM Elementary School. Sandra enjoys her role as a STEM Math Specialist offering her expertise as a math coach and leading professional development in STEM education for K - 8th grade teachers. Sandra has a large role in the integration and implementation of STEM as she also teaches STEM classes to 2nd, 3rd, 6th and 8th grade. Prior to this work, Sandra taught high school math for 17 years. As a STEM Math Specialist, Sandra hopes to see more fruit from her labor as teachers and students continue to transition towards full implementation of a STEM education.



Book recommendation

STEM to Story by 826 National and edited by Jennifer Traik. This is a good resource book for someone who is interested in STEM education. This book will enable teachers to facilitate fun, engaging and meaningful lessons that involve hands-on discovery in science, technology, engineering and math with creative writing to inspire future scientists.

The past, the present & the future

Looking back: Growing up in an impoverished neighborhood in Chicago, yet striving to obtain an education, contributed to me being an agent of change. I had to overcome many obstacles as well as work hard in order to obtain a degree in mechanical engineering and to teach high school math. In essence, I had to press to get ahead and to have an equal voice in school and in my job experiences. Martin Luther King, Jr. once said that “The ultimate measure of a man is not where he stands in moments of comfort and convenience, but where he stands during challenges and controversy” I have always had the determination to excel or to make a difference. It became evident in my pursuits. Education has enabled me to impact young people’s lives. As a STEM teacher, I empower students with knowledge and inspire them to embrace opportunities, set goals and to persevere. As a STEM coach, I inspire teachers to embrace the educational changes of the 21st Century because change enables progress and grants opportunities.

Where I am now: I am engaging my students in problem-based and project-based learning and inquiry based learning. Students are practicing 21st Century skills that foster student centered instruction, incorporate the 4Cs, (communication, collaboration, creativity and critical thinking), as well as technology integration. Kagan strategies are being adopted to facilitate cooperative learning. I have also been providing ongoing professional development and coaching to teachers to continue to broaden the scope of understanding of the components that define a STEM education.

Looking forward: As Tilton is taking on more characteristics of a STEM school and teachers are shifting their instruction, I am also growing in knowledge and understanding of where we are with

STEM implementation and where we are going. I do see the potential of student leaders within the school, more parent involvement in STEM and teachers becoming more proficient in planning STEM lessons. One of the goals I am striving for is creating student centered classrooms, where teachers mainly serve as the facilitators.



This I believe

...that the energy, time and effort invested in teachers and students will manifest over time. I believe that within the next few years, some of our present middle school students will be able to apply their knowledge and reasoning skills that they have acquired through their STEM educational experiences to their high school and college experiences. Some of my students will become leaders of change within their academic environment and will eventually pursue STEM related majors in college.



Marianna Jennings

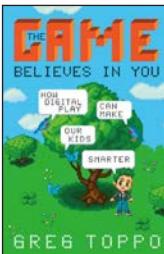
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The teacher is not a judge of his or her students but rather a worker whose role is to serve their needs and broaden their options - Herbert Kohl

Marianna Jennings

Marianna has been in education for the past 30 years. The last 11 years have been spent at Prosser Career Academy High School. She currently works as a Math Coach/Teacher. Marianna loves teaching high school math, especially IB Math Studies. She is a National Board Certified Teacher (AYA/Math), a CPS Framework Specialist and a Network 3 math teacher leader/facilitator. Marianna holds two master's degrees: one in human development and learning and another in curriculum and instruction. Her journey with MSU has been an exploration through the world of STEM which has helped her to reshape her approach to teaching. Problem-Solving Play Days are a hit with her seniors where they have the opportunity to strengthen their perseverance and logic skills. Marianna has a family of teachers. Her husband and three sons are all educators!



Book recommendation

The Game Believes In You: How Digital Play Makes Our Kids Smarter by Greg Toppo. This book is an excellent tool to push you to look at gamification and its place in our classrooms. Toppo discusses how students' excitement and interest in gaming could/should be utilized in order to raise achievement. As gaming technology advances, we must acknowledge its benefits and strategize ways to use it even more in the classroom.

The past, the present & the future

Looking back: I am the product of an “old-fashioned” education. I remember sitting in math class and taking notes, completing worksheets and then taking tests. I had some great teachers who helped feed my need for more math. However, I don’t think I ever worked in groups or had to write an explanation about my work. I think that when I became an International Baccalaureate Math Studies teacher, it pushed me to look at math teaching with a new lens. The idea that the process is more important than the answer is key to teaching IB. And, what I learned as an IB teacher flavored my planning and teaching in all my classes. I became a seeker of new ways that challenged my students which, in fact, challenged me. I believe that all students may not like math, but they can all be successful in math!

Where I am now: I applied for the MSUrbanSTEM program to push me to look at teaching through a new lens. As a teacher I realize that I am a lifelong student. I really have stepped outside of my comfort zone and have been exposed to a world of resources that I never knew were available to me. My Deep Play group chose the book *The Game Believes in You* by Greg Toppo. I embraced the idea that we ask students to be problem solvers, but we never really show them how! My ImagineIT project impacted my role as a math coach. My department has been transformed into a professional learning community and we are exploring, as a team, what a math classroom looks like and how STEM fits into that picture. I feel empowered with new tools (philosophical and tangible) that will help me grow as an educator and improve my practice.

Looking forward: As I look forward to the future, I think about reaching outside my classroom walls and helping others see how learning new things makes them better in the classroom. I know

that change does not happen overnight, but it will come as others are exposed to new ideas that really make them think. Right now, I am excited about our professional learning community's discussion of Jo Boaler's book, *Mathematical Mindsets*. I see this as planting new seeds of thought that I hope will grow to more teachers really thinking about STEM changing their classrooms. I feel confident in my role as a leader and am ready to share my enthusiasm with others. I'm not sure what the future holds, but my voice will be strong, enthusiastic and welcoming!



This I believe

...that I am a lifelong learner who strives to bring my love of learning and, in particular, math to the world. I want my students to be engaged as they struggle to discover the beauty of math.



Edward Kania

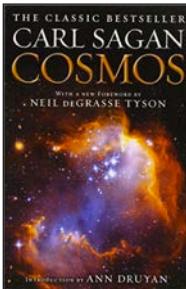
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Get comfortable with being uncomfortable
- Anonymous

Edward Kania

Edward Kania is a Chicago Public Schools teacher at James Ward School in the Bridgeport neighborhood. He currently teaches middle school math and algebra to 7th and 8th graders. Prior to math, Mr. Kania had taught Spanish in high school and elementary school for eight years and was a bilingual education teacher for seven years. Mr. Kania is part of the Math Leadership Team at James Ward and serves as the coach to the math team, cross country and track teams. Among his interests are languages, travel, trivia and baseball. He would like to visit every state in the U.S. as well as set foot on every continent.



Book recommendation

Cosmos by Carl Sagan is a must read for any STEM educator. This is definitely not a book that you should attempt to read in one sitting, or even a weekend. From cover to cover, Sagan unearths many of the mysteries of the universe, written in a way that is attainable for the non-scientist. It is indeed humbling trying to absorb the vastness of the cosmos, but in another respect, this book empowers and stresses the importance and impact of the individual.

The past, the present & the future

Looking back: Upon graduating from college with a degree in Spanish, I had no idea what job I could take or what I was qualified to do. For about a year, I worked various temporary jobs that did not amount to much satisfaction. Luckily, my sister was a CPS teacher and recommended the transitional bilingual certificate which allowed me the opportunity to start full-time teaching while pursuing proper education credentials. Best recommendation ever. Looking back now, this is the only job I want to do. With my sister as sort of a mentor, a fantastic principal and supportive coworkers, I was able to quickly learn on the job and learned to love teaching and kids.

Where I am now: My experience as an MSUrbanSTEM fellow has been eye-opening/transformational in several ways. For one, I see myself as much more of a risk-taker than before. I am definitely trying new things in my own professional learning as well as with my students. From the many creative ways I've learned to address STEM material, to actually implementing a new project with my students, it's been fun and interesting, to say the least! Another change that I see in myself is that I am much more comfortable with taking a leadership role or implementing initiatives in my school. I was not always like this. I believe this stems from a quote that I heard on Day 1 of the fellowship: "Get comfortable with being uncomfortable."

Looking forward: Moving forward, I see myself continuing to embrace challenges and to try new methods/materials that might help me reach my students or help my students approach the subject in a new way.

I will share, share and share some more any past, present or future resources or opportunities with my colleagues. This may be in

person, in a professional development setting or through my website or social media.

I will continue to develop as a leader within my school and district. This may include offering to mentor new teachers at my school or presenting at math teacher leader institutes.

Most importantly, I will maintain my ideals and bring them with me as I continue my experience as a teacher.



This I believe

...teaching is the craziest, scariest and most exciting job imaginable. Watching kids' minds develop also makes it the most rewarding



Molly Lahart

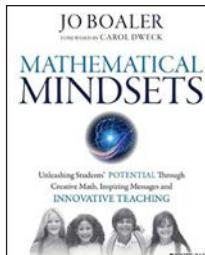
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If a child can't learn the way we teach, maybe we should teach the way they learn - Ignacio Estrada

Molly Lahart

Molly began her teaching career in the fall of 2005 and has spent the past eleven years teaching math at Prosser Career Academy in Chicago, IL. She is currently the Math Department Chairperson and works specifically with freshmen students to acclimate them to high school as the Freshmen on Track Coordinator. In her eleven years at Prosser, she has been involved with National Honor Society, buildOn, Academic Decathlon and is an avid supporter of extracurricular activities. When she is not in the classroom, she can be seen spending time with her family, cheering on the Iowa Hawkeyes and catching up on reading.



Book recommendation

I would recommend *Mathematical Mindsets: Unleashing Students' Potential through Creative Math, Inspiring Messages and Innovative Teaching* by Jo Boaler. The book discusses ways that we can take our students from thinking that they are not a “math person,” to engaging them in the mathematics and allowing for all students to see that they are math people. They just need a different mindset around the math classroom to believe it.

The past, the present & the future

Looking back: I still remember the butterflies in my stomach on my first day of teaching. As soon as I walked into the classroom, I knew that my student teaching at a small, Catholic high school in Iowa had not prepared me for what would happen during that first year. There were many times that I wanted to quit. I looked at different majors that would allow me to work closely with students but not be required to teach them anything, but the best decision I have made is sticking with it that first year. I did not know how to engage my students so I worked hard at building positive relationships with students and making sure they knew that they had an adult that believed in their ability in their building.

Where I am now: This past year, I have come to learn how to help students become more curious about math and its part in their life. My classroom has changed from a mostly lecture format to almost daily group work. Students are interacting with each other and coming up with their own ways to help each other understand math. This year I feel like I am not the only one responsible for student learning, but my students are taking responsibility for making sure that their group members are all learning and understanding the concepts as well. Students seem much more invested in the material we are learning since they know that they will be responsible for contributing to group work based on the concepts we are learning.

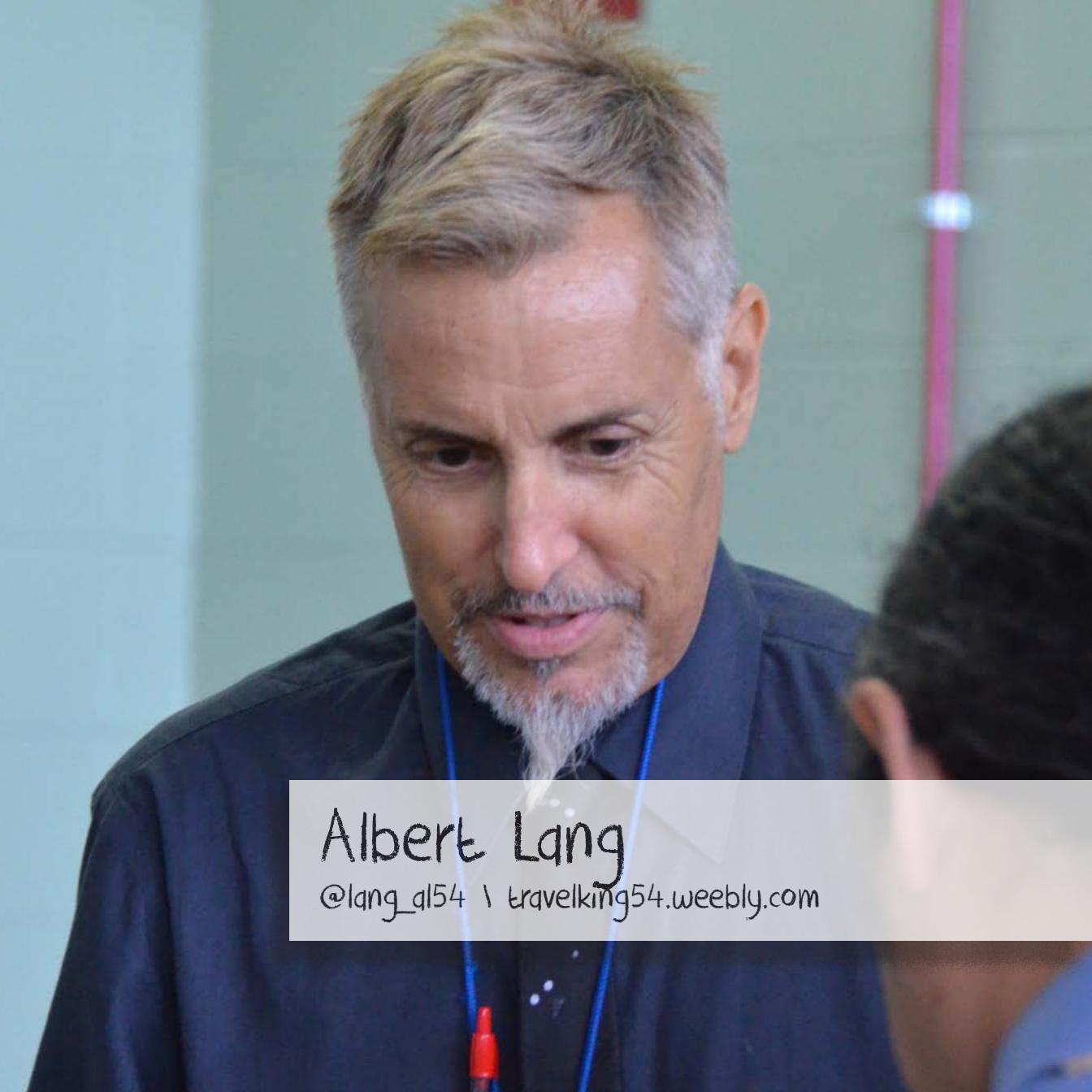
Looking forward: I want to make sure that students are taking responsibility for their learning and the learning of their classmates. I would like my classroom to prepare students for what it is like to problem solve as a group outside of school. My goal is to make my classroom a place where all students feel as though they are the teacher and my job is to simply oversee the learning that is taking

place. I want to take myself out of the front of the classroom as much as possible and make my students be the ones to lead the class.



This I believe

... students will always reach to attain the goals that we set for them. We need to set our expectations high, so that students are always pushing themselves to excel instead of having low expectations and students performing well without putting forth much effort.

A close-up portrait of a middle-aged man with short, light-colored hair and a goatee. He is wearing a dark blue collared shirt and a blue lanyard with a red marker. He is looking down and to the right. The background is a light-colored wall with a pink vertical line and a small light fixture.

Albert Lang

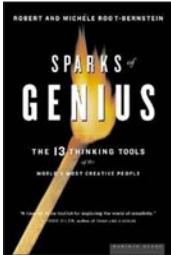
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Education is the movement from darkness to light
- Allan Bloom

Albert Lang

Al Lang is a 7th grade science teacher at Armstrong school, a large elementary school on Chicago's north side. This is only the second school he has worked in, and Al enjoys every day there. This year Al is focusing on the integration of technology and science to differentiate his teaching practices. His goal is to become more prescriptive in his teaching, while raising student engagement and interaction with the curriculum.



Book recommendation

Sparks of Genius: The Thirteen Thinking Tools of the World's Most Creative People by Robert S. and Michele Root-Bernstein. Sometimes I think this book is the greatest gift I got from the Wipro MSUrbanSTEM program. It was an unexpected addition to my life. The book simply details creative habits of successful people from many walks of life. I find it more a reference book to get my students thinking like geniuses and not just a story about their success. What I find most interesting is the way people make connections, in particular by using models. I do a lot of this with 7th grade students, and I can see why it is important for models to work, not work, and be improved upon.

The past, the present & the future

Looking back: My road to teaching was strange. I was a college dropout in my twenties, successful in business by thirty, and an old guy in class when I was pushing forty. I was in the travel industry for many years, working for tour operators, and hotel companies. I was happy, but unfulfilled. A lucky deal came along, which allowed me to change careers. I decided to go to graduate school and study teaching. It made perfect sense to me. I always hated school, but loved education, so maybe I could help others like myself. Fast forward 12 years, and I'm loving what I do. I get to learn science everyday. I understand many things I had only committed to memory when I was younger. Best of all I have many friends who share my commitment to inspiring adolescents to succeed.

Where I am now: When I was told this past July I would need to create and complete a project as one of the requirements for the MSUrbanSTEM program, in many ways, I felt as though my ImagineIT project would never be complete or correct. I always felt like an impostor when I discussed my "albatross" as it seemed to be. Thanks to some patient instructors, and my drive to make what I do golden, I kept at it. I realize that no really good project is ever complete. It should stay a work in progress. The goal of a good project is to stay relevant. Not unlike my project, I have been changing as well. I realize I was a bore most of the time in the classroom. I hate being boring. This year my goal is to be dazzling every day, and to keep it up for the rest of my career.

Looking forward: Moving forward, I am secure in my new and improved teaching practices. My current students are moving along nicely. My previous students visit and question constantly. Even my administrators are starting to take notice. I am getting really good at differentiating in Google classroom. The beauty of this is that

this ties to the heart of my project. I am focusing on the integration of technology to create differentiated instruction from my students. My ImagineIT project will continue to evolve. It is best as a work in progress. I would like to see it spread to other grade levels. I will need to subtly guide it forward. For my current students it is what they demand. I don't see them going back to paper and pencil next year. My administrators are liking the change as well. They like how this is spreading through my grade level and other parts of the school. For others, I want them to start learning tech tools earlier, to save time. I want to get a group of middle school teachers working with me to push this process forward.



This I believe

... live the life you love, and love the life you live. Like I always know, the future is now.



Chris Layton

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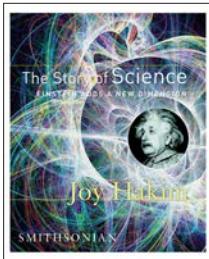


Unless someone like you cares a whole awful lot,
nothing is going to get better. It's not

- Dr. Seuss

Chris Layton

Chris is a National Board Certified Teacher who is finishing his tenth year in the classroom. He teaches middle school science in an International Baccalaureate school in one of Chicago's Hispanic communities. His goal is to have all his students learn things that will be useful to them in the future, whatever that may be, and convey enough of his fascination with the interconnectedness of things and love of learning to inspire students to continue studying science. Chris structures his class to have his students experience the wonder of discovering how the world works.



Book recommendation

To reach students you have to engage them and one of the best ways to do that is to build a compelling story. *The Story of Science* series by Joy Hakim is the finest example I know of how effective telling of the story can grab students' interest and have them learning something before they know it. Tight prose, attractive graphics, and sidebars containing juicy tidbits make it an easy, enjoyable read.

The past, the present & the future

Looking back: An engineer by degree and by nature, I find ways to solve problems using available tools. I began working in the oil industry, creating first-of-their-kind solutions for extreme, new, or changed environments. I added a business degree focusing on process improvement along the way. From engineering, I moved to technology, using Internet tools to solve specific client problems. Our solutions were focused on users' needs and ease of use, not just applying technology - the definition of a missional solution.

Between positions, a teacher friend asked if I would help tutor students in advance of their state tests. It went well, I enjoyed it and decided to pursue it, joining the first cohort of an alternative certification program; a masters and my NBCT certification soon followed. I love to learn and am a resourceful problem solver, qualities I use regularly as a teacher.

Where I am now: My fellowship in MSUrbanSTEM has allowed me to develop a framework that has helped me handle an interesting set of challenges this year. It has also provided a lens through which I got a clearer view of where I am and where I want to go.

My fellowship began following a year frustrated by low student motivation and perseverance. Identifying class gamification as a potential solution to these problems has been huge -- it has had, and will continue to have, an impact on my practice for some time.

The other major challenge this year has been having a student teacher each semester. I enjoy being challenged to consider the decisions I make in planning and delivering units; completing my fellowship work while turning over my teaching to another person has also required me to streamline the time I had with students.

Looking forward: My goal has long been to offer my students more choice in the path their learning takes and gamification will be an important option for doing that. It requires a high level of planning to pull off and can't effectively be done without technology that's currently beyond the average teacher. I would like to change that.

I know that my teaching will lead me to the confluence of technology and education. Education is rife with instrumental tools, not solutions, Google Apps for Education and Classroom among them. My goal is to create missional technology built on these excellent tools, first to provide a framework for gamification and then in technology to support teachers. Unit planning, data collection on student learning, differentiated instruction, action research, and so much else can be enhanced using technology designed FOR teachers, not targeted at them. Making teachers more effective will result in more student learning.



This I believe

... most education technology tries to use technology to replace the teacher. There is a much greater opportunity to improve student learning by using available technology to support teachers rather than replace them.



Preston Lewis

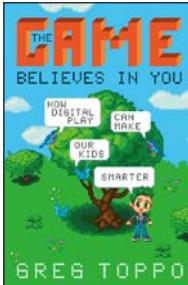
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Don't count the days, make the days count
- Muhammad Ali

Preston Lewis

Preston Lewis is one of two STEM coordinators at Wadsworth STEM in Chicago Public Schools (CPS). This is his third year in this position and his twelfth year in CPS - the previous nine were at two other CPS schools. Preston currently works with kindergarten through eighth grade teachers on STEM integration, and co-teaches a STEM lab class with his STEM colleague for fifth through eighth grade students. He worked as an engineer before entering education, and although he enjoyed his time as an engineer, he feels a greater sense of fulfillment as a teacher. Preston is an avid sports fan and enjoys the outdoors. He also enjoys traveling and is only a few states away from having visited all fifty states.



Book recommendation

The Game Believes in You: How Digital Play Can Make Our Kids Smarter by Greg Toppo thoughtfully makes the case for the inclusion of video game based learning in multiple disciplines. Research-based rationale is explored, and a variety of resources for implementation are highlighted. This recommended resource is a useful addition to a STEM educator's toolkit, and is a helpful guide to make learning more interactive and transformative.

The past, the present & the future

Looking back: A teacher's job is never done. This statement holds special significance since my mother was a teacher, my three sisters became teachers, and many of my relatives were or are involved in education. Yet, I had no desire to become a teacher. I wanted to become an architect, but, due to financial difficulties, I switched to engineering since I could graduate in four years instead of five. After becoming an engineer, I spent time volunteering as a tutor for struggling students in the vicinity of my alma mater. I found this experience to be most rewarding, and the "teaching seed" in my upbringing was slowly starting to germinate. I continued in engineering until an opportunity arose that allowed me to seamlessly transition into education. I can now provide a unique perspective to my students, particularly in a STEM setting where I can actually refer to the "E" in a realistic way.

Where I am now: This program has helped me develop a greater appreciation for the utilization of technology to enhance instruction. I have always been a proponent of technology integration, but I had not considered to this extent how technology can and should be transformative and not just supplemental and substitutionary. This "growth mindset" is preparing me to be in a position to adapt to the inevitable changes to technology. The content remains the same, but the pedagogical approach changes with the times in a way that makes learning relevant to the students by respecting their access to and appreciation of technology. This thinking has helped me challenge myself to provide unique, authentic, and rigorous experiences for students.

Looking forward: My goal over the next five years is twofold: to provide real world connections for the content I am teaching, and to consider each day as a blessing. Many of the students that I teach want to

know why they are learning the content that they are learning. I want to have units that explore these concepts in ways that provide the real world connections to the content. Some concepts lend themselves more easily than others, but they all have a real life application that I want make conspicuous.

Finally, teachers, or other professionals for that matter, tend to look at calendars and count down - this many days until this, that many days until that; each day is a blessing and my goal is to continually remember the quote, “Don’t count the days, make the days count.”



This I believe

... even though life presents a host of challenges, each challenge presents a myriad of opportunities.



Sushma Lohitsa

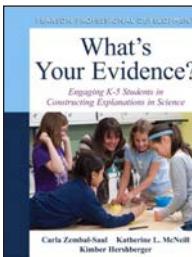
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Be the change you want to see in the world
- Mohandas Gandhi

Sushma Lohitsa

Sushma is in her eleventh year of teaching and is currently a K-6 science and engineering teacher at an elementary school in Hyde Park in Chicago, IL. She is completing a Master's of Arts in Educational Technology as well as Educational Administration. Her ultimate goal is to become the principal of a STEM based school and consult for the National Science Foundation. She is incredibly passionate about primary science and engineering and has spent the past five years learning all that she can about inquiry based science and project based STEM units. When Sushma is not teaching her students, she is writing curriculum for the district and leading professional development to help teachers become better acquainted with NGSS.



Book recommendation

What's Your Evidence? Engaging K-5 Students in Constructing explanations in Science by Zembal-Saul, McNeil, and Hershberger

This is an outstanding book and a must read for my fellow STEM educators! The book breaks down how to help your students participate in meaningful argumentation from evidence. Through this book, you discover how to engage students in making claims that are supported by both data from their experiments as well as reasoning. The book takes a look at actual student discussion while highlighting talk moves that will help promote rich and meaningful dialogue.

The past, the present & the future

Looking back: I have always wanted to be a teacher. From the time I was in elementary school, I would play “pretend” school in the backyard. I would set up science experiments on our driveway and have all of my sister’s friends come watch. I loved witnessing how excited they became when they figured something out. It seemed only natural to go into education when I reached college. Fast forward eleven years later, and my teaching career has taken me everywhere! I’ve had the chance to teach a wide range of grade levels and subject matters. These experiences helped me identify what my strengths and weaknesses are. They also helped me rediscover my passion for science and engineering. Our job has many demands and no longer falls under the cookie cutter pretenses that once fit a basic “job-description”. Instead, we are constantly thinking outside the box, finding new ways to teach a lesson, rising to the occasion or pushing past barriers.

Where I am now: Over the past year, I feel like I have found a more passionate and inspired version of myself. When others demand a higher level of excellence, you rise to the challenge. When I first joined this fellowship, I was looking for other educators who understood the sacred nature of our commitments as teachers. This fellowship is filled with dozens of visionaries like myself who have decided that there is so much left to be conquered in the world of education. This year has helped me find a leader within myself, a woman who supports her colleagues and applies to speak at conferences because I have something worth sharing. I enjoy leading professional development to help other teachers find success in science. I empower my students as leaders in their school communities and help them identify themselves as leaders and makers of change. This year has been pivotal in molding the educator I am today.

Looking forward: Moving forward, I would like to continue helping inspire change within other teachers. I would like to continue leading professional development as well as professional learning communities in Chicago to help other teachers find success in science and engineering. I realize just how much support teachers need to be successful in science and would like to help provide that. I am also greatly interested in working with curriculum development outside of the district level. I have truly enjoyed developing streamlined units that have a bigger picture outlook on content. Finally, I would also like to enter the world of educational administration. I feel that I could make a positive impact in that setting and am very interested in getting involved. Within the next year I will finish a second Master of Arts in Educational Administration.



This I believe

...that you can achieve many wonderful and positive things to help the growth and development of students and learners at any age as long as you are strong willed, compassionate, brave, creative and flexible.



Shujuana Lovett

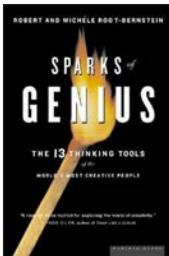
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It is the supreme art of the teacher to awaken joy in creative expression and knowledge - Albert Einstein

ShuJuana Lovett

ShuJuana Lovett is currently in her 22nd year teaching at Myra Bradwell School of Excellence, where she has taught 6th grade Science for the last four years. ShuJuana is the Science Department Coordinator for her school. She has had the pleasure of establishing an after school STEM Club All Stars for her students. This opportunity has afforded ShuJuana to build the capacity in children that encourages them to inquire about lifelong careers in STEM. ShuJuana feels that she has truly made an impact to the community and students she serves everyday. The school's Library/ Media Center has even been dedicated and named in ShuJuana's honor. "Bradwell School of Excellence, Lovett Hall."



Book recommendation

Sparks of Genius: The Thirteen Thinking Tools of the World by Robert and Michele Root - Bernstein. This book is an awesome read to exercise your imagination and set off sparks of genius. This read explores “thinking tools” of extraordinary people from Albert Einstein to Amadeus Mozart. Sparks of Genius lays out how one can practice the same imaginative skills to become their creative best. The book explains what it takes to foster and inspire genius and creativity in people. This book was of an interest to me because it speaks volumes to the work around my practice and the passion. I have to encourage students to reach for the creative skills and exercise their imagination.

The past, the present & the future

Looking back: In the twenty-two years I have been teaching, for me it has been an “educational logistical” world of change with embracing the paradigm shift in expectations for excellence and what that looks like and feel like. I am always energized and ready to take on new and innovative approaches to teaching and learning. A challenge I faced over the years is a signature approach to operating the logistics of teaching and learning. I strongly believe “Education is the key to unlock many doors,” and “Education is not just filling a pail, but the lighting of a fire.” These quotes really speak to my passion around the work I do. My inspirations for becoming a teacher were noted many years ago as I was inspired by my mother who is a retired educator with CPS. I marveled many days at her stories and experiences.

Where I am now: Over the past year has been a rewarding and educational experience being a fellow with MSUrbanSTEM fellowship and an educator. The fellowship has strengthened my practice around STEM with innovative ideas and new approaches to teaching and learning. One transformational experience I resonated with is being able to embellish the holistic learners’ ability to creatively express and transfer knowledge across content through the Arts. The change that occurred with my students through the implementation of my ImagineIT project “Creative Expression Through the Fine Arts” happened when my students began to demonstrate what they learned in their content could transfer into a form of art, music, and physical attributes. Through the guidance and direction of my ImagineIT project with MSUrbanSTEM this gave me the confidence to spark my students’ creative attributes.

Looking forward: Since being in this project, the changes I see are monumental with my students. Implementing my ImagineIT

project gave my students the platform to showcase their learning. One goal I will strive towards next year is to incorporate various grade levels. I plan to take the leadership role and establish a STEM Team at my school. I will offer professional developments for reluctant staff members who may not be comfortable with improvisation style learning. Over the next five years it is my hope to partner with other teachers in my network to share my ImagineIT project and collaborate to incorporate some ideas of the project “Creative Expression through the Fine Arts.”



This I believe

... children build their confidence on what they already know, then they follow that path to what they currently are learning which then remarkably influences the trail of becoming lifelong learners!



Juven Macias

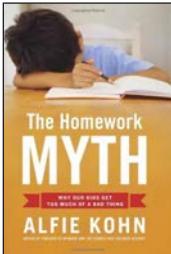
@juven_mdc | www.juvenmacias.com



Always make time to sharpen the saw
- Anonymous

Juven Macias

Juven Macias is a public school teacher residing and working in the great city of Chicago. He is currently working in a K-8 elementary school serving as a technology coordinator, as well as teaching Technology to all grades. Before becoming an educator, Juven spent six years working in the IT field, mostly in network administration. These experiences did well to prepare him for the technology support components of his position and mix well with his own teaching experiences in general education 4th and 5th grade classrooms before getting into Technology Education. Juven feels very fortunate to be able to blend all of his career experiences into a single job and also share these experiences with his students through exploration of the many facets of technology.



Book recommendation

The Homework Myth by Alfie Kohn. This was one of the earliest writings I read when I went back to school as an adult to learn how to be a teacher. I thought this was an important book for me to understand and change my views on the topic of homework assignment, and I still carry these views with me today.

The past, the present & the future

Looking back: I considered education as a profession at a time in my life when I was feeling a sense of disillusionment with my career in IT. My heart was not in that sort of work. During that same time, I was feeling a lot of personal reward and satisfaction from my work as a youth soccer coach. This realization presented me with a professional crossroad of sorts and I chose to shift my focus away from the IT field into education. Though I am sort of back in the technology field in some ways, my experiences are now much more rewarding in being framed as learning experiences and exploration with children!

Where I am now: My original idea was to create set of mental tools to develop in children, lifelong skills independent of passing technologies of the time. This notion has become less a primary focus of my project while also becoming much more pervasive in my dealings with all grade levels, no matter what we are doing at any point in time. I realized my original big idea could not be well represented as merely a unit or group of lessons, but needed to manifest itself as a dramatic shift in the culture of my classroom. It needed to be about me pushing kids to think on their feet, starting as early as Kindergarten and infusing ALL of my units with a mentality and framing all instructional interactions with kids with the notions of how things work, why they work, understanding these clues and how to process them in a meaningful way.

Looking forward: As I look forward in the shorter term future, I will continue cultivating the technologist mindset while developing projects able to support current classroom learning and work more collaboratively with classroom teachers to blend into their units. A particular idea I have for this is creating modular units that can have any content installed without major modification. This will allow

me to support a range of classroom learning opportunities without needing to scrap or massively retrofit existing projects.

I become so immersed in my current position and trying to make my current curriculum as expansive and diverse as possible that I rarely think about my longer term future. I want to keep evolving and challenging myself to grow professionally. I'd like to move to a district level position where I can amplify my own grasp of technology education while having a greater impact on a larger number of teachers and students.



This I believe

...in time, I will reshape my entire technology program to reflect a mentality toward technology where children see the possibilities for technologies, understand why technologies exist, and use technologies simplifying the processes of life. These skills are timeless, and will hold their applicability through time, regardless of the technology present at that specific moment in time.



Kendra Mallory

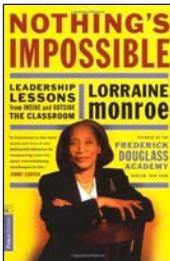
@KIMallory | www.kimallory.com



Our passion for learning...is our tool for survival
- Carl Sagan

Kendra Mallory

Kendra is an urban educator of over 14 years in the Chicagoland area, with a focus in middle school Science and Math. Education is her second career, initially she was a cosmetic chemist. Kendra found her way into education because she enjoyed being a youth mentor, and loved learning and exploring science. She is currently an instructional leader, math teacher, project coordinator, teacher mentor and middle school lead teacher. Kendra's first love is traveling with her husband and four children. She also enjoys riding her bike, long walks along the lake, and yachting



Book recommendation

Nothing's Impossible by Dr. Lorraine Monroe. This book of inspiration chronicles the road Dr. Monroe took to turn around a low achieving school in New York City. Dr. Monroe frames her no-nonsense style of leadership as the *The Monroe Doctrine*. Her beliefs were simple: set the bar high, never accept less than their best, provide a loving, structured and disciplined environment. Dr. Monroe's school was credited with having the highest SAT scores in New York City at one time, as well as breaking down barriers sending inner city youth to Ivy League universities.

The past, the present & the future

Looking back: Working in corporate America as a cosmetic chemist, I never felt fulfilled. However, my fulfillment came from me volunteering as a tutor and youth leader for troubled youth during the summer months. I struggled with the fact that most of the mentees never considered attending college to escape some of the obstacles that they faced due to lack of resources and simple encouragement. This led me to partner them with other college students that faced similar dilemmas. Through this exchange, many of my mentees began to make small changes in their approach to completing high school and enrolling in college. I began my teaching career as a full-time, day to day sub and eventually completed an alternative certification earning my Master's in Education (Science). Today, I continue to inspire students to pursue STEM related careers and opportunities.

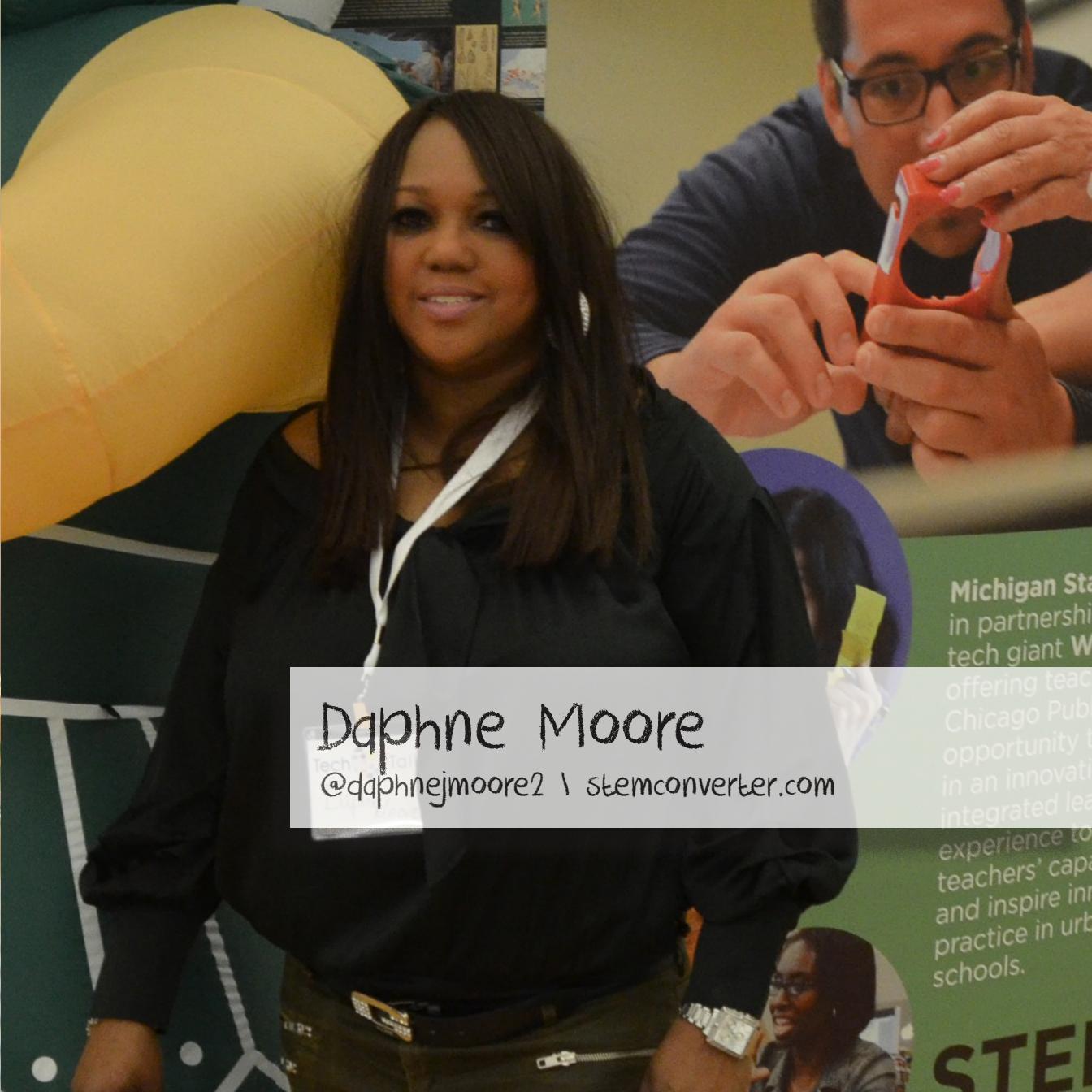
Where I am now: My professional development journey as a MSUrbanSTEM fellow has afforded me the opportunity to emerge into a leadership role in my school. The engaging and structured approach that was used during the Summer 2015 face-to-face classes was used to lead the beginning of the year professional development about being comfortable with being uncomfortable with technology. I used improv techniques as team building exercises. After reading the review of my session, many complemented the relevance of the tools I provided and were happy to be active participants in the professional development. I used a quickfire style challenge to get staff members to play with several creative interfaces that could be used in the classroom. I created a professional development that was not traditional Powerpoint slides, but was full of laughter, music, creativity and staff members share-outs/shout-outs. I also created a school website that helps to centralize school news, updates and is a portal to post completed work.

Looking forward: Over the past school year, I have been launched more into an instructional leader and coach role. Our staff have been introduced to new curriculum with very strict scope and sequences. This has led to me having limited opportunities for me to build a STEM culture within our school. As an instructional leader, I have learned successful techniques of communication and organization of systems and structures within various meeting platforms. My one huge goal for the end of the year as well as the upcoming year, is to have over 90% of the building participate in a MAKER FAIR and have students showcase their work. Over the next 5 years, I want to lead the movement of our school to officially becoming a STEM academy that participates in a variety of national STEM-based competitions and building-wide Problem Based Learning opportunities. I hope to inspire other educators to create a positive digital presence as a model for students.



This I believe

... creating a digital presence once felt like a huge invasion of privacy. Now I have learned how to use my digital presence as an opportunity to share my professional practice with a global audience and will continue to enhance my teacher branding, and staying abreast of ever-changing technological tools.



Daphne Moore

@daphnejmoore2 | stemconverter.com

Michigan State
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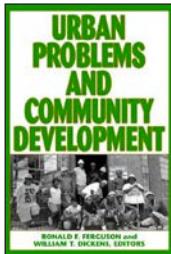


Why fit in when you were born to stand OUT!

- Dr. Seuss

Daphne Moore

Daphne has served as an educator, mentor, and Math/Science Lead teacher for over twenty-two years. She has worked at one school for over nineteen years. Currently Daphne works at Earle STEM School, as a middle school STEM teacher, in Chicago Illinois. Daphne is proud to say that she has strong expertise in instructional leadership, curriculum planning, and the development and supervision of school activities. She has been known as a proven resource within the school and an active contributor to school-wide programs such as problem-based learning, which have supported her sixth and seventh-grade classes in making significant strides in test scores this past year.



Book recommendation

The book I would recommend to fellow students is called, *Urban Problems and Community Development*, by Ronald F Ferguson and William T Dickens. What inspired me most was when the authors talked about why schools can no longer be isolated. The statement that was most significant to me was the initiative in which the authors propose that public schools become “A New Style of school that tailors their curriculum around the communities problems and people that they serve.”

The past, the present & the future

Looking back: Let us start by saying that the first book we read in fall, entitled, *What Can I Do? Confronting Dilemmas of Teaching in Urban Schools* by Anna Ershler Richert was really fitting for this time in my life! One of the dilemmas that I had to face this semester was shifting from teaching ELA to teaching Social Science. This was a challenge since I had already created my ELA lesson plans over the summer months, to go along with my MSUrbanSTEM fellowship program. Fortunately, my administrators, middle school team, and supporting teacher's team, and students are working together to make this school year a success!

Where I am now: Well, I was surprised to see that it was not as difficult as I thought it would be to change from teaching ELA to Social Science, since I was asked to support the ELA teacher by focusing on non-fiction reading. So, I have continued to work on my PBL unit on the water crisis in Flint, Michigan. I have contacted a school in Flint, Michigan and hopefully my students can offer the students at the school in Flint support through social media sites such as Twitter and a Facebook page I have created for my personal website in order to document this journey.

Looking forward: Ultimately, in the next 5 years, I could see myself serving as a STEAM teacher leader. I have over twenty years of teaching experience. I have taught at Earle STEM school grade levels ranging from third to eighth grade. I have taught every subject area. Currently, I am a Wipro MSUrbanSTEM fellowship student at Michigan State University. The past three years, I believe, have been an "eye opener," and I finally believe that school systems have discovered the curriculum for the future. In fact, I believe I could offer both the federal government and or the congressional offices some invaluable advice on best practices for STEM education. I

believe I could serve as a teacher advisor for either the governmental officials; our federal agencies, corporations, and or administrators on STEAM education.



This I believe

...STEAM education along with problem-based units could help “Change the Equation in Education.”

Throughout this journey, I have discovered that it has helped more of my students realize their true potential as well as taught many of them what it means to be civically engaged youth. I can just see myself serving as a STEAM teacher leader.



Oscar Newman

@newman_oscar | megalonyx.wordpress.com

Oscar
Newman
MSU/USC

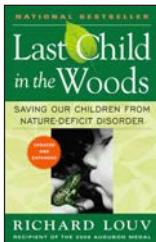
MARK
TO



When one tugs at a single thing in nature, he finds it attached to the rest of the world - John Muir

Oscar Newman

Oscar Newman began teaching in Chicago Public Schools in 1997. He was a member of DePaul University's Urban Teacher Corps and received his master's degree from DePaul. He has achieved and maintained National Board Certification in Early Adolescent Science. In 2004, Mr. Newman was selected as Teacher in Residence for the Chicago Academy of Sciences' Notebaert Nature Museum. Oscar Newman mentored middle school and high school science teacher candidates for National Board Certification for 10 years. Currently, Oscar teaches 7th & 8th grade science and Algebra 1 for 8th grade. He is the School Science Coordinator, created the school's Zoology Club, and coaches soccer. Oscar also partnered with the Museum of Science and Industry's Science Leadership Initiative to assess science education at his school and develop a plan to improve it. Oscar Newman is a proud father of a six year-old and a two year-old. He loves running, riding his bicycle, jazz, and traveling



Book recommendation

My recommendation is *Last Child in the Woods: Saving Our Children From Nature Deficit Disorder*, by Richard Louv. I recommend this book for all teachers and parents because it is very clear how incredibly rewarding it is to encourage young (and old) people to spend time connecting with the natural world.

The past, the present & the future

Looking back: Before teaching, I was a Scoutmaster. It was a formative experience working with youth. However, when I started teaching, I noticed something troubling: superstar scouts on camp outs were driving their teachers bananas Monday through Friday. Too energetic to sit still, too skeptical to listen to information without justification, or too grounded in real world practice to worry about theories, for these kids, camping trips were ideal scenarios – there is always more to do, and consequences of not applying lessons are immediate and memorable. As I reflect on this, I realize this group of boys was only one group of many for whom schools are not ideal places to demonstrate competence. As a beginning teacher, I wanted my classroom to be different, but it was easy to fall back into conventions of my experiences when I was uncertain, which was often. As an experienced teacher, relying on traditional experiences to guide my work does not do justice to my own creativity, values, or students.

Where I am now: As a beginning teacher, I knew my job was teaching content as well as how to navigate the institution of school, but as I got started, I replicated classrooms of my own experience. I did not consider how schools can prevent success or examine my own responsibility to shape my classroom in order for every child to be successful.

Teachers are guilty of reinforcing traditional barriers to success unless they act intentionally and creatively to present their pupils with an alternative.

In this program, I have been immersed in a genuine community characterized by humility, progressive ideas, playfulness, and a willingness to pursue deep knowledge.

The result is that I feel empowered and energized to use creative ideas to make my classroom more effective for all students.

Looking forward: I have many goals as a result of this program. From harnessing technology in a way that is far more systematic than before to maintaining relations with this outstanding community of educators, there are many things I would like to do. However, when I consider what will make the biggest impact on my students, I think the work I have done to get students outside this year has been the most powerful.

I wish to continue my focus on outdoor education and helping students realize the local connections to nature in our city, integrating service learning once time outside has become the norm in what we do.



This I believe

...the most effective classrooms that reach the most students do not just happen. Recreating what we have seen before is not the way to truly make a difference for our students. Instead, we must cultivate creativity in ourselves and in one another: we must change conditions of our classrooms to create conditions for success.



Tim Nuttle

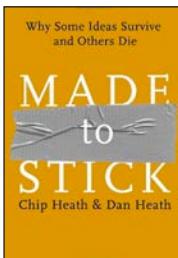
@nuttlegeddon | timnuttle.weebly.com



Character cannot be developed in ease and quiet. Only through experience of trial and suffering can the soul be strengthened, ambition inspired and success achieved - Helen Keller

Timothy Nuttle

Tim has been a teacher for 11 years, and his route to teaching is a most unconventional one. Majoring in engineering, he changed his major to communication with a concentration in math. After graduating, he worked as a temp for a few years until he decided to become an advertising copywriter. A yearlong class, and he found himself with a job in a top recruitment advertising agency. After a move to Brooklyn, and then a move back to Chicago, he was laid off. He started substitute teaching to make ends meet, and once he subbed in an algebra class, he was hooked. A quick master's degree later, he found himself in the Chicago Public School system, working at an incredible school (Von Steuben Metropolitan Science Center) teaching AP Calculus and Geometry to some very special people. He lives on the north side of Chicago with his wife and math-loving daughter.



Book recommendation

I don't have a book per se, but I have an article that I liked, and that was the article *Teaching that Sticks* by Chip and Dan Heath, from their book *Made to Stick*. I found this article compelling because it discussed teaching from the point of view of the audience (students) and what gets them hooked on learning. It is a really interesting take on how teaching looks from the other side.

The past, the present & the future

Looking back: I was always looking for an environment, not a profession. I loved working in advertising because I could wear shorts and a t-shirt every day and play pinball when I needed to think. I was more excited about the where and less about the what. Years later, when I happened to substitute teach in an algebra class, I found that profession. I had always considered becoming a teacher, but I was scared off by friends who barely knew the field.

I began working at a school where most students were more concerned about being safe than being in school. Those struggling students that did put effort into school are on my mind when I think of my cushy magnet school and I have issues with students or teachers who complain about our amazing administration. Those students made me the teacher I am today.

Where I am now: If anyone had asked me if I would have flipped my classroom and focused on persevering in problem solving, I would have said they were mad. I had worked myself into the comfort zone of teaching. I had tried many different pedagogies - group work, project-based learning, etc.—but none of them really worked well.

In the 7 months since becoming a part of the MSUrbanSTEM fellowship, I have tried things I never thought I would have tried. I've completely flipped my classroom, where I (rarely) lecture or serve as the “expert.” It is now a student-led classroom where students work at their pace and I just float around, like a ghost answering calculus questions. It has been a revelation.

Looking forward: I observed students not following through on math problems in recent years, which is why my focus has been

perseverance in problem solving, which I am hoping will lead to students becoming better and more creative problem solvers. I decided to try using a flipped classroom to assist in this endeavor, which I think has allowed me to spend more time with students as they struggle with difficult problems.

In the next year, I plan on expanding my perseverance practices to my non-AP students, since they need even more work sticking with problems. As I reflected earlier in the summer, "...if students could just stick with a problem for maybe 2, 3, 5 minutes longer, it would greatly improve their ability to solve any math problem, or any problem in life, for that matter." If they could start to build up confidence, math would become more wondrous and enjoyable.



This I believe

... that wonder still exists and can inspire students to great heights, and that teachers can be catalysts of wonder.



Lidia Ortiz

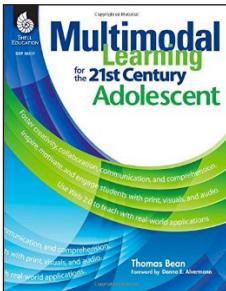
@MsLortiz | mslidiaortiz.wordpress.com



Education is the most powerful weapon which you can use to change the world - Nelson Mandela

Lidia Ortiz

Lidia Ortiz is currently the science department chair and teaches AP Biology, Biology, and Chemistry at Northside College Preparatory High School in Chicago. Lidia earned her B.S. in Biology from the University of Illinois at Urbana-Champaign and her M.Ed in Secondary Education from DePaul University. She is also a National Board Certified teacher in Adolescent/Young Adult Science.



Book recommendation

Multimodal Learning for the 21st Century Adolescent by Thomas Bean. This is a great resource that serves as a starting point for helping teachers to add multimodal compositions into their teaching practice. This book breaks everything down into authentic and accessible strategies that will ring true for classroom teachers.

The past, the present & the future

Looking back: In the fifteen years that I have been a teacher, not only has my practice changed significantly but so too has the teaching profession itself. However, the original impetus for which I chose to become a teacher still rings true. My goals as a teacher are, as they have always been, to help my students recognize that science is all around them, to help them realize that science is truly accessible to all and to help them understand that scientific reasoning is a way of approaching life, rather than simply a process to be adhered to in the four walls of a science classroom.

Where I am now: While my entire experience with MSUrbanSTEM has been transformative, what has proven to make the greatest impact to my daily teaching practice is my ImagineIT Project. My project has challenged me to switch up how I teach and approach my AP Biology class. More specifically, it has required me to think of new, more creative ways for my students to document their understanding outside of the traditional exams and essays that I have always utilized in AP Biology. As a result of my project, I have found myself incorporating more student-focused activities that result in the creation of a creative product that serves as documentation of student understanding. I have found that these opportunities have not only increased student engagement but more importantly their understanding, and thus have a value that exceeds beyond the initial goals of my project.

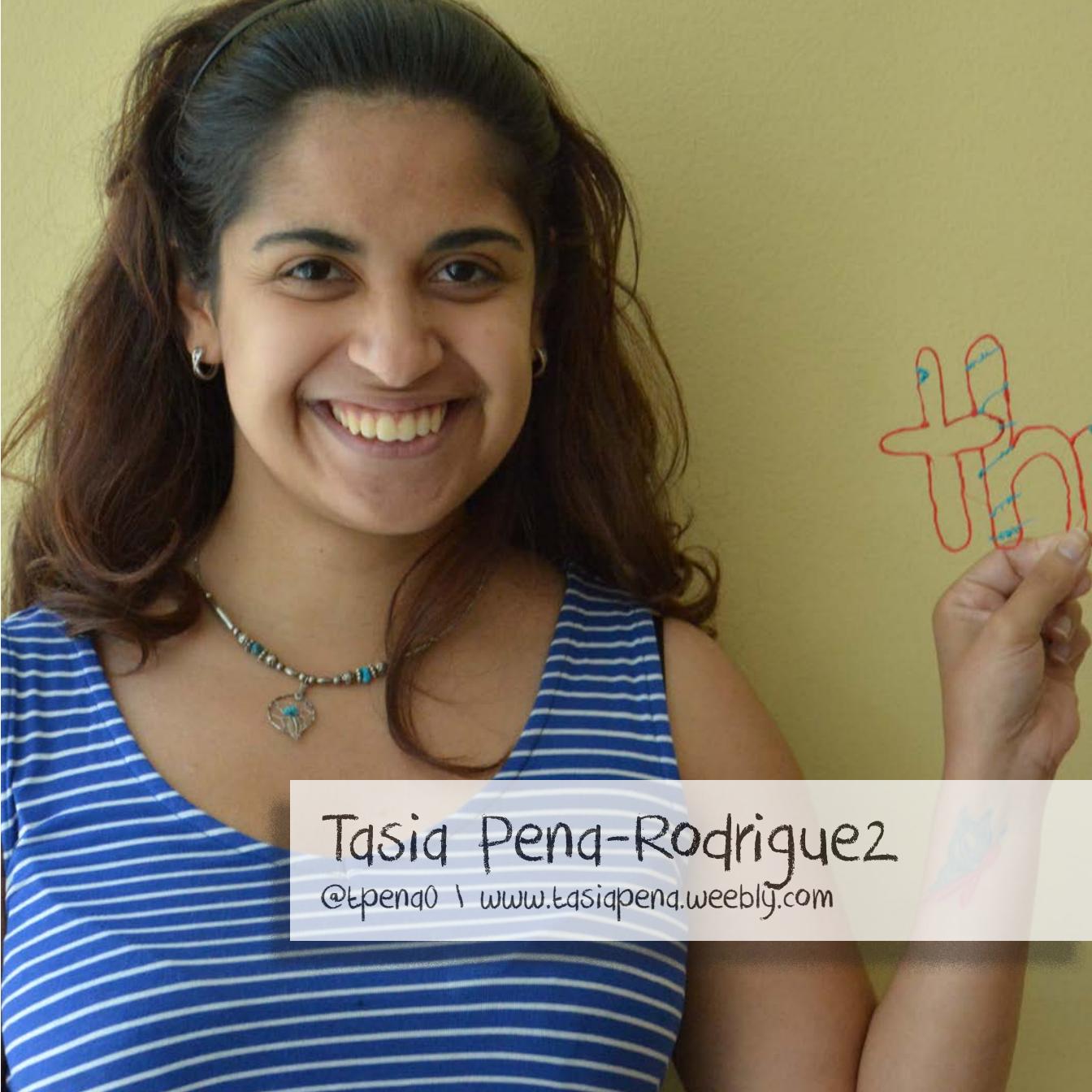
Looking forward: Looking forward, I am focused on expanding my ImagineIT project into the other science disciplines that I teach. The original intention of my ImagineIT project was to use technology to incorporate student voice while having students document their understanding of the material we cover in class. However, since its inception my project has evolved into so much more. Although my

project has served its original purpose of increasing student voice, more surprisingly, it has inspired me to make significant changes to my teaching practice that have resulted in more authentic student engagement and arguably greater student learning. As a result, I am looking forward to incorporating these same components into my other courses. Looking forward more long term, I am focused on expanding our science elective course offerings at our school that extend beyond the AP Science course electives.



This I believe

...teaching, learning and scientific reasoning are ways of approaching life that extend beyond the traditional classroom and academic calendar.



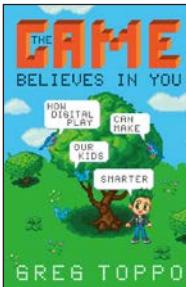
Tasia Pena-Rodriguez
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Keep calm and pretend it's on the lesson plan
- Anonymous

Tasia Pena-Rodriguez

Currently, Tasia is a 6th grade Math and Science teacher and is in her 7th year teaching. She received her Master's in Pure Mathematics from DePaul University. Tasia's passion is teaching math and science and she loves integrating technology in her teaching and tries to make everything hands-on whenever she can. She has two cats, a bird, and a chameleon and is married to a very supportive husband, Alex.



Book recommendation

I highly recommend *The Game Believes in You* by Greg Toppo. He does a great job explaining how game-based learning can have a positive effect in the classroom. Toppo describes how teachers can only have so much patience waiting for a correct answer, but that games have all of the patience in the world. He discusses how students learn to fail in the game, but grow from the failure to do better next time.

The past, the present & the future

Looking back: In elementary school, we had to write a letter about what we wanted to be when we grew up, and at 9 years old, I already knew that I wanted to be a teacher. I loved being the teacher's aid and grading papers. At home I would sit my younger sister in front of our play chalkboard and pretend to be her math teacher. My transition into high school was rough however. I struggled. A lot. I had no social life because I was too busy just trying to keep afloat. I realized that my elementary school did not prepare me for higher education. This furthered my conviction that I wanted to be a teacher, but a teacher that is realistic, honest and involved. Now I work at a school in my old neighborhood, trying to give kids a better chance in the real world than I was given.

Where I am now: The MSUrbanSTEM fellowship has made me more bold. I now know that there are other educators out there that hold similar beliefs. This empowers me to take more risks in the classroom and to not focus solely on test scores. I am more focused on the projects that the students develop. I am also more bold in sharing what I am doing in my classroom. I tweet pictures out to my colleagues and have shared during NGSS presentations about how STEM learning looks in my classroom. I am pushing my other 6th grade teachers to leave the old science book behind and implement more hands-on learning through experiments and demonstrations. This approach leads to students not finding one solution, but discussing multiple results and coming up with reasons why. I have had three new Donors Choose Projects funded this year and they were all from inspiration from my readings or classes with MSUrbanSTEM.

Looking forward: My goal for next year is to make the students learning more tangible in science, as I can experiment more with

this class because there are no testing constraints. I want to continue to build upon my ImagineIT project of learning with a purpose with 3D design and printing. I want to expand my ImagineIT to not just be about the 3D printer, but to include projects where the students plan on paper and then make it tangible or bring it to life through a variety of mediums. This will include modeling with play dough, building with cardboard, creating videos of their work, and also creating with 3D Doodlers and the 3D printer. Next year, my goal is to make sure that we have Maker Space time at least once a week so that the students can be self-directed and choose their own projects to take learning into their own hands.



This I believe

...learning is not about a test score. It is about trying, playing, and failing. Most importantly, learning is about persevering and growing from those failures- that is true learning



Kyle Radcliff

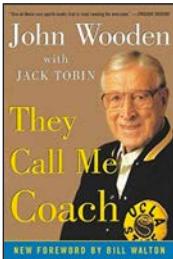
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Fall down seven times, stand up eight
- Japanese Proverb

Kyle Radcliff

Kyle Radcliff is a 6th grade teacher in Chicago Public Schools. He has been teaching for 15 years and has a Master of Education degree in Curriculum and Instruction from National Louis University and a Master of Science in Education degree in Middle School Math from DePaul University. For his entire career, Kyle has been working to deepen student's understanding by consistently bringing quality instruction and creativity to his classroom. In 2011, he received the Golden Apple Award and has been working with the Golden Apple Scholars Program of Illinois to help prepare the next generation of teachers.



Book recommendation

They Call Me Coach by John Wooden. Whenever I question my choice of being an educator, I am reminded of the time in high school when I read this book. It inspired me then and it continues to do so. John Wooden is considered by many to be the greatest coach of all-time, but he was, first and foremost, an educator. This book gives a tremendous glimpse into his early years, and explains in detail his Pyramid of Success. The consistency and depth of thought that he provides can refuel any educator in their weakest moments.

The past, the present & the future

Looking back: I worked as a camp counselor in Pennsylvania the summer between my freshman and sophomore years in college. In my first two weeks, I had the campers from inner-city Detroit and Pittsburgh. There were fights and frustration galore because I didn't understand how to create a disciplined yet fun environment. But I learned quickly and I was hooked. I wanted to teach in an urban setting. From that summer on, I spent my observation hours in urban schools. By my senior year, I knew I wanted to work in Chicago. When I finally did get an interview in Chicago, I was told how hard it would be and asked if I wanted the job. I said yes, and 15 years later, I still love what I do.

Getting the job turned out to be the easy part. When I started, I was a full-fledged member of the CASE club, Copy and Steal Everything. The first few years, I learned how to manage a class, but I didn't have a clue how to teach. I went back to school and learned how curriculum was designed and improved my abilities as a teacher. But, I still felt that my classroom was like the blind leading the blind, and I felt I could still improve my craft. Six years ago, I started a Middle School Math Master's program, and teaching finally clicked for me. Through some tremendous professors and a year of professional development focused around Lesson Study, I finally realized that my role as a teacher was really a combination of designer, architect, and construction worker.

Where I am now: My focus since then has been about grit and growth. I have made it my mission to make sure, to the best of my abilities, that everyone in my classroom is challenged, whether they are a strong student or not. Through this fellowship, I have been able to deepen my understanding of what STEM really should look like in a school. It isn't about the best show or the latest technology. It lies

at the intersection of quality instruction, student engagement, and technology. The biggest impact has been how I have used technology this year to enhance how students show their understanding. In years past, I would teach my math units that focus on algebra through some hands-on experiences and problem solving. But, I realized that I could enhance my unit by really bringing all the aspects of STEM into the equation. With a little more planning and some researching, I was able to bring data-collection and the scientific method into the learning process. I integrated computer coding with JavaScript because my students learned a different context for using variables.

Looking forward: The rate of technological advances is indescribable. As I move forward, I will be watching closely to make sure that the use of technology in my class enhances the instruction and does not replace it. It's about whether or not the technology deepens the learning experience. I want to continue to search for ways to integrate these technological innovations in ways that will help my students.

The climate in education is such that you can feel like a champion one moment and an utter failure the next. You can be lauded in one breath and scorned in the next. You have to keep your focus on those aspects of your life that you can affect, and ensure that those that you are in contact with see your passion and know that you love them.



This I believe

. . . that I cannot let the reality of my surroundings alter the dream I have for the humanity set in front of me.



Bessie Rahman

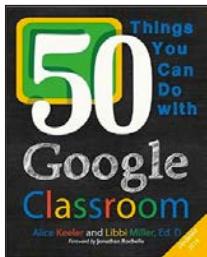
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Change will not come if we wait for some other person or some other time. We are the ones we've been waiting for. We are the change that we seek
- Barack Obama

Bessie Rahman

Bessie Rahman is a middle school math teacher at Jenner Academy of the Arts in the Cabrini Green neighborhood. She has been a teacher for 8 years, and has always put a strong emphasis on thinking analytically in her classroom. As a math teacher, Bessie is charged with the daunting task of preparing children to be successful in careers that have not even been created yet and she believes that their path to success is through math and STEM. She chose a career in teaching because she was fortunate as a child to have teachers who were passionate about math and she wants to bring that passion to her students.



Book recommendation

One of the books we read in our group was called *50 Things you can do with Google Classroom* by Alice Keeler. I use this book for ideas and activities I can incorporate daily with my students. The book is written in a language that teachers like me who are new to technology can easily and readily apply it to their lesson plans. Google Classroom allows you to share lessons and give immediate feedback to students. This book is written in an easy, step-by-step format for teachers who are just getting started with computer usage in the classroom.

The past, the present & the future

Looking back: Teaching in the 21st century is very different from when I was a student. The biggest struggle I've had to deal with as a STEM teacher is learning what amounts to a whole new language. From memes to Twitter to Google Classroom. The textbook is no longer the center of the lesson. I worked in corporate America in finance and mortgage banking where my aptitude for numbers made me successful, but my career as a teacher gives me a sense of fulfillment and pride. My decision to become a teacher was born from the realization of the staggering dropout rate for young African American males. At the time, it was nearly 70%. I thought "someone needs to do something about this, and I wondered "why not me?" It was important for me to try—just one student at a time. I chose teaching because I wanted an opportunity to give back. I am most proud of the number of students I now have who enjoy math and recognize problem solving as a challenge to think, and not just a chore to rush through.

Where I am now: Wow! This has been a whirlwind year. Because of the MSUrbanSTEM fellowship, I have a digital presence including a website that I invite my parents and students to view. I went from opening email to creating entire lessons on the computer. I have developed a sense of confidence when collaborating with my fellow teachers that I never had before this cohort. I've become the resident expert in terms of technology in my school. It's funny, because a year ago, I had never even heard of "Google Classroom;" now it is the center of our class. 90% of what we do in math is technology-based. I have always wanted a student centered classroom and now I have the tools to make it happen.

Looking forward: Now that I have embraced technology in the class, it has transformed how I teach. No longer spending hours over the

weekends grading papers, most of the work is graded immediately when my students submit their assignments. Although I still teach, the students have taken the lead in learning from each other. I am now more of a resource than “the holder of the book with the answers.” Our math class is fun everyday!

Going forward, one goal I have always wanted for my students is to spend more time thinking about how to solve a problem than just rushing toward a right answer. As a teacher, that is the thing that I cherish most, when my students actually come up with a strategy on their own.



This I believe

... I believe that I make a difference. I believe that if I share my passion for things I believe in with a learner, I have the power to change their lives.



Libby Robertson

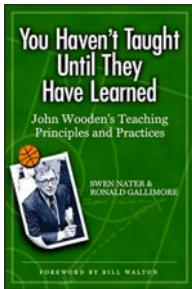
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You should never try to be better than someone else; you should always be learning from others. But you should never cease to try and become the best that you can be - John Wooden

Libby Robertson

Libby Robertson began teaching on Chicago's south side 14 years ago in 2002. After earning a Master's in Science Education from DePaul, she began teaching 6th - 8th Science and is currently at Franklin Fine Arts Center. She is passionate about inquiry-based science for all children and instilling a love of learning in her students. She enjoys reading, traveling, biking, and exploring the great outdoors.



Book recommendation

You Haven't Taught Until They Have Learned: John Wooden's Teaching Principles and Practices by Swen Nater & Ronald Gallimore. John Wooden was a great basketball coach and a magnificent teacher. His lessons from on and off the court are conveyed in this lucid text. One of the most influential books I have read, it defines teaching excellence. The principles outlined in its pages are fundamental to the effective teaching of any subject. This inspiring book highlights the teaching techniques that led to Wooden's success and will cause you to look at and improve your own methods.

The past, the present & the future

Looking back: My journey to teaching was inspired by outstanding teachers along the way, beginning with my grandmother who achieved the impossible with her classes of under-served urban children. It included my mother who home-schooled me and my 8 siblings. Then there were the teachers I babysat for who loaned me books, told me classroom stories and said how great I would be as a teacher. I longed to inspire children and share my love of learning with them. I began my career as an idealistic young person who thought that all you needed was passion and love. I was in for a rude awakening. Turned out, you needed organization, pedagogy skills, creativity, and a firm hand as well. I saw that it really was true that students didn't care what you knew until they knew you cared about them. I discovered that a passion for what you are teaching can catch fire and spread. I learned that if you set expectations high, students can soar regardless of their backgrounds, skills or ability sets.

Where I am now: I have continued to learn and grow as an educator. A huge part of this growth has been my year as a fellow with MSUrbanSTEM fellowship. The fellowship has caused me to take risks and try new things. It has pushed me to remove limitations set by myself or others. Unfamiliar technology was a barrier at times because I didn't think I could learn the huge volume of new material out there without serious time or money invested. I discovered that I could find the information I needed and teach myself after being compelled to learn something quickly and create a product with it more times than I can count. Being in the fellowship caused me to reach deep inside of myself and I was surprised by what I discovered. There was a definite creative streak there and I realized that my students and I could do much more than we had previously thought possible.

Looking forward: The kind of learning I have been participating in for the past year is what I want to see in my classroom: challenges that motivate learning and spark creativity, opportunities to design and create, and a variety of ways to demonstrate understanding. The joyful response from my students to incorporating the Arts and more aesthetic learning in my classroom has been powerful. I plan to collaborate with some of the Arts teachers to work on a joint Science/ Art/Drama project that will allow students to transfer learning across disciplines. Making learning public has been inspiring to me and I want to incorporate more ways for students to make their learning visible and share it with others. Finally, I am enthusiastic about collaboration and plan to work closely with other teachers in my building to promote common themes and goals across grades levels. I am excited to see where this journey will lead!



This I believe

... the joy that one has in learning as a small child should be cultivated throughout life. Creativity and passion are inside every one of us - all it takes is the right opportunity to let it shine!



Jennifer Schult2

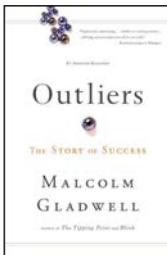
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Believe you can and you're halfway there
- Theodore Roosevelt

Jennifer Schultz

Jennifer Schultz is a middle school math teacher at Coonley Elementary School in Chicago's North Center neighborhood. She currently teaches math and reading, but has also taught science and social studies during her 10 years with the Chicago Public Schools. She has a BA in Political Science from Loyola University Chicago and a MA in Curriculum & Instruction from the University of Phoenix. Jennifer completed her math and science endorsement coursework along with algebra training through the University of Chicago's SESAME program. She was a 2014-2015 Chicago Foundation for Education (CFE) Action Research Fellow researching guided math in middle school and is currently a Wipro MSUrbanSTEM fellow at Michigan State University. In addition to teaching in North Center, Jennifer also lives in the neighborhood with her husband and their beagles, Hank and Buster. In her free time, she enjoys going to the beach, traveling, reading, and cheering on the Cubs.



Book recommendation

Outliers by Malcolm Gladwell presents several thought provoking case studies of “outliers” or highly successful people. The information he presents in his book is both enlightening and entertaining, especially for educators who can relate to several of his conclusions.

The past, the present & the future

Looking back: I have spent nearly my entire career in education teaching middle school math, science, and language arts at Coonley Elementary School. Throughout my teaching career I have made a concerted effort to continue my education and seek out professional development opportunities beyond what is required. Some of my past endeavors have included serving as a mentor teacher in the Teacher Advancement Program (TAP), serving on Coonley's Instructional Leadership Team (ILT) and Professional Personnel Leadership Committee (PPLC), completing coursework through the University of Chicago's SESAME Program to obtain my math and science endorsements, preparing for and passing the Algebra Initiative Exam, co-leading Coonley's participation in the Ravenswood-Ridge Writing Workshop study group, and completing an Action Research Fellowship with the Chicago Foundation for Education.

Where I am now: This past year has been an outstanding experience for me as an MSUrbanSTEM fellow and as an educator. Participating has given me the opportunity to collaborate with amazing educators from all over the city and pushed me to change the way I do things to better incorporate technology and innovation in my classroom. MSUrbanSTEM has helped me use the 1:1 technology in my classroom to its fullest possible extent. However, as proud as I feel about my professional accomplishments this past year, I find it challenging to not feel overwhelmed by my ever increasing workload. MSUrbanSTEM has helped me learn to leverage technology to help me work smarter and not harder, especially when it comes to managing project based learning.

Looking forward: The opportunity to be an MSUrbanSTEM fellow has reinvigorated my teaching from a technological perspective. I

have always considered myself a technologically savvy person, but I feel even more so now that I have well-developed professional websites and a much better grasp of how to infuse my teaching with social media. I want my students to leave middle school with a strong foundation that includes both traditional and 21st century learning skills, along with an appreciation for fine and performing arts.



This I believe

...education is a universal right. It needs to be valued for its power to shape and innovate society. Teachers and students do their best work when they are valued and challenged to be imaginative and inventive.



Halynd Sendoun

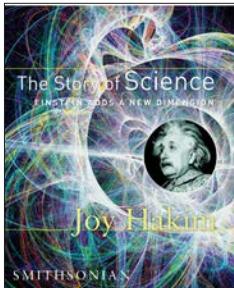
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A child without education is like a bird without wings
- Tibetan proverb

Halyna Sendoun

Halyna Sendoun is a middle school science teacher at Mark T. Skinner West Classical, Fine Arts and Technology School. She was born in Ukraine, before moving to the U.S. at the age of nine. Halyna is in her eighth year of teaching and has loved every minute of it. She enjoys sharing the mysteries of the universe with her students and fostering in them a sense of wonder about the world. In her free time, Halyna enjoys reading fiction, traveling with her fiancé, and exploring new culinary worlds.



Book recommendation

The Story of Science by Joy Hakim is a three book series describing the history of science to young adults. Each chapter focuses on a scientist or discovery, from ancient Babylonians to the modern atom. The stories are engaging and exciting, with colorful diagrams and illustrations to draw the reader in. I have this collection in my classroom and my students find these books highly accessible. We read the stories together or independently, and my students always get drawn into the narrative.

The past, the present & the future

Looking back: I didn't always know that I wanted to be a teacher; growing up I had plenty of fanciful ideas about my future profession, but education wasn't one. As I went through my schooling, I had several amazing science teachers whose influence I still feel. When I first entered the classroom, I knew what kind of educator I wanted to be: innovative, caring, creative. It wasn't easy to exemplify all of these characteristics my first year, or my second. But bit by bit, I felt comfortable, empowered even, as there were more great days than decent ones. I learned the mechanics behind being a teacher, and could focus on what was most important: showing my students how incredible our world is.

Where I am now: I feel incredibly lucky to be part of the MSUrbanSTEM fellowship program. First and foremost, it has created a support network of colleagues. We are all in the same profession, and although our personal circumstances are very different, we have similar ideas about the crucial aspects of our craft. The fellowship has also enabled me to reflect on my strengths and to recognize the areas of focus. It is alright to try and fail than to never try at all; this is an axiom that I say to my students often, but it applies to me as well. This program has helped me to be more comfortable going outside of my comfort zone, shaking things up, and putting myself out there.

Looking forward: Now that this project is almost over, the most important thing is to keep the momentum going. It has been a transformative experience, and one that will shape my teaching for years to come. I have learned the importance of weaving technology into my daily class routine, to focus on content that is supported by technology, not shaped by it. I rediscovered the importance of slowing down, reflecting, and augmenting what I do. Oftentimes, I

become so focused on what we are working on in the classroom, that I forget to take breaks, personally and with my students. One of my goals is to enjoy the journey, not just focus on the destination. I know that this will lead to a more balanced and creative classroom. Most of all, I will continue learning, growing, and improving myself as an educator, and showing my students that the thirst for knowledge is vital to living well.



This I believe

... that it is within my power to inspire the people around me; leading by example, nurturing the creative spirit, helping others grow.



Karoline Sharp Towner

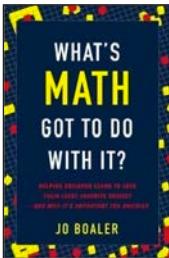
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Every truth has four corners: as a teacher I give you one corner, and it's for you to find the other three
- Confucius

Karoline Sharp Towner

Karoline Sharp Towner has been teaching for 23 years. For the past 18 years she has taught middle school, 7th-8th grade science and math. Prior to this, she taught 5th grade general education for 5 years. Karoline has attended Northeastern Illinois University where she received her bachelor's degree and Concordia University-Portland where she received her master's in Science Education. She has achieved National Board Certification in EA Mathematics in 2007 and is currently renewing. She enjoys incorporating other subjects into her instruction, especially art and literacy, as a way to have students express and show their understanding of content in multiple ways. Karoline's hobbies include going to the movies, reading, and dancing.



Book recommendation

What's Math Got to Do with It? by Jo Boaler is a book about the challenges of math and how to help children overcome them. It's a fascinating book that provides strategies to encourage mathematical thinking. A resource for parents and teachers who would like to inspire children to understand math as well to help combat the fear and anxiety they may have towards the subject.

The past, the present & the future

Looking back: I became a teacher because I enjoy learning. It's the thrill of the hunt for finding out something new or learning a different perspective. I wanted to share that thrill with others. However, I soon learned not everyone has that thrill or enthusiasm for learning as I did. It was a challenge motivating others to feel or see learning the same way I did, but I soon figured out it was not my perspective, it was the students' perspective I needed to address first. It is this understanding that keeps me going and challenged. I am also inspired and challenged by my students' awe and wonder that is around them everyday.

Where I am now: I have taken the plunge into engineering and incorporating it into my science instruction. At first, I was afraid, but now I am becoming more comfortable with each new challenge I venture with my students. I have dived into multimodal learning and teaching, an area I wanted to know more about and utilize with my students. I've made videos I never thought I would create and provided opportunities for my students to do the same in demonstrating their understanding of content. I have taken risks that I didn't know I could take such as seeking out engineering opportunities with the Allen Distinguished Educator DIY Project: 52-minute Challenge and helped three of my students take advantage of the GIED (Girls in Engineering Day) at Argonne National Laboratory. I would not have sought these opportunities, had it not been for the work I am doing with my ImageinIT project or the encouragement of other fellows.

Looking forward: Over the past year, I have designed learning opportunities for my students to utilize engineering practices into their science learning. I have a better understanding of The E in STEM education and have incorporated the Arts into my teaching

as well. In the future, I would like to collaborate more with teachers in my school to bring about STEAM learning experiences for all students in our school. For example, this year I am working with the Art teacher to create a backplash in the science lab of the Periodic Table of Elements. Though a small step, I would like to work with other teachers to create learning experiences that integrate other subjects as well. For example, work with the math department to develop more cohesive learning experiences; experiences that will give students opportunities to use what they've learned. What better way to apply what you know when you can make as many connections as possible.



This I believe

... the engineering practices can be and should be utilized in all aspects of the learning experiences in school.



Thomas Sherlock

@thomas_sherlock | www.thomassherlock.com



It is a miracle that curiosity survives formal education
- Albert Einstein

Thomas Sherlock

Thomas is a National Board Certified teacher that has been in education for the past 14 years. After obtaining his Bachelor's in English Literature and Education, Thomas moved to Japan where he taught high school English for Yokohama Public Schools. After teaching in Japan for three years, Thomas moved back to Chicago, obtained his Master's in Educational Technology, and has taught for the Chicago Public School system for the past 11 years. He currently works as the STEM Technology Specialist at Tilton STEM Elementary school.



Book recommendation

Make Magazine by Maker Media, Inc. Make is a bi-monthly magazine that celebrates our natural instinct to tinker, hack, and play with technologies old and new. From an ancient life-size Trebuchet to fabricating your own circuit boards, this magazine has something for everyone from the beginner to the expert. Each issue contains over 25 projects, which can be completed with inexpensive materials usually found around the home, local hobby shop, or hardware store. Articles contain step-by-step instructions, materials, costs, and estimated time necessary to complete the projects. Columnists also provide links to additional online resources, where makers can read, watch, and find out more on how to build, as well as, network with like-minded individuals that enjoy making.

The past, the present & the future

Looking back: My interest in urban education started when I was young and was introduced to the challenges some kids faced through movies like *Lean on Me* and *Stand and Deliver*. These stories and the experiences they described are what led me to Chicago and choosing to work in some of the most impoverished neighborhoods in the country. Years later, the struggles are still real and the problems and issues have not been solved. Yet, my interest and passion in learning new methods and innovate solutions that help our children overcome these barriers has never diminished.

Where I am now: The MSUrbanSTEM program has helped me refine how I define STEM education. The program has encouraged me to truly reflect on the educational experiences I provide my students. The mantra has always been to show students how to get it right, but what I am discovering is that I should be rewarding students for getting it wrong. To me, STEM is about learning how to fail and knowing how to manage it. We should be rewarding students for failing. If not, they won't take risks and they won't make breakthroughs. Satisfaction lies in effort, not in attainment. Success doesn't come from memorizing a bunch of facts, it comes from failure. What students need to learn is that there is really only one way of failing, and that is giving up.

Looking forward: Going forward, I want to be a voice for the STEM movement. I truly believe we need to provide our children with opportunities to learn from their own mistakes. I want to provide students with learning opportunities that allow them the time for exploration, excitement, and interest. My goal with students is

to ignite their curiosity, or help them find it again. When we instill curiosity in our students, we encourage their desire to learn. That is one of the greatest gifts that we can give our students.



This I believe

... all children can succeed if given the opportunity. The more they succeed, the more they want to succeed, and the more they find a way to succeed.



Lucas Smith

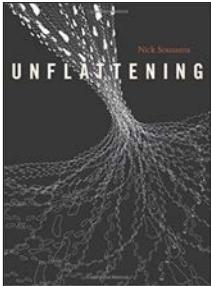
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Different strokes for different folks! - Anonymous

Lucas Smith

Lucas Smith is a teacher, student, citizen, father, husband, brother, son, an explorer, an adventurer, a dreamer, and a change agent. Lucas has been involved in education for fifteen years. Most of that time he has worked for the Chicago Public Schools as a science, social science, and diverse learner instructor. Lucas loves what he does.



Book recommendation

I love Nick Sousanis' *Unflattening*. This book encourages one to look at life from a different angle. This book has helped me think about and view issues in both my life and profession from multiple perspectives. The format is nontraditional, being that it is illustrated. I would call it the best philosophy comic book you will ever own.

The past, the present & the future

Looking back: I grew up in a rough neighborhood in Chicago. Quite a few of my childhood friends are no longer here or in dire straits due to circumstances and choices that were in some ways their own fault, but in others as failures of the adults in their lives to step up, take an interest and provide alternatives. I, myself came close to being a “statistic”. I dropped out of high school and felt I had little direction. If it were not for my mother’s constant encouragement and strong will, I don’t know where I would be.

I decided to get a GED and go to college. My initial major was administration of justice. I wanted to become a parole officer. While in my first year I had an epiphany and came to the realization that I could reach so many more by teaching students to see their potential.

Where I am now: This past year being a MSUrbanSTEM fellow has been a much needed boost to my state of mind as an educator and a learner. One of the most transformational experiences has to do with the ImagineIT project. Over my years of teaching I have noticed a sense of complacency among my students. They were not asking ‘why’ questions when it came to the direction of their education. My ImagineIT project involves giving my students the tools to become reflective learners who take ownership of their education. This project enabled me to refocus on what made me initially choose teaching as a profession; to help children not only grow academically, but emotionally as well. With testing mandates and the push for quantitative data, the personal side of education is being thrown to the wayside. My ImagineIT project is allowing me to reconnect with my students on an emotional level.

Looking forward: After a year of being an MSUrbanSTEM fellow I have changed a bit. I have further embraced technology. I have been

guiding my students to a paperless education. They now turn in their assignments electronically. I have also thought about taking more of a leadership role in implementing a STEM curriculum throughout my school. The full integration of STEM into my school, with common vocabulary and practices, would be the goal I strive for.



This I believe

... we all have a place where we can affect change for a better and brighter future.



Andrew Stricker

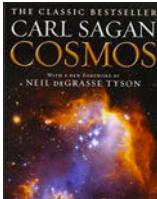
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A mind once stretched by a new idea never regains its original dimension - Oliver Wendell Holmes

Andrew Stricker

Andrew Stricker's teaching career started in 2002 at Westinghouse Career Academy (Chicago Public Schools), where he taught Algebra I and II and Geometry to some of the most challenging students in the city. Andrew currently teaches 9th grade Algebra I and 11th grade Honors Algebra II at Prosser Career Academy (CPS), where he's taught for over 10 years. He has a passion for teaching students how to become better mathematical problem solvers and enjoys tackling tough problems himself. The educational experiences that have shaped his practice the most include National Board Certification, OneGoal & the Wipro/MSUrbansSTEM fellowship. OneGoal, in particular, was rewarding because he empowered 23 at-risk students to improve their cumulative GPA by an average of 0.22 and their ACT scores by 3.09 points. These students received over 145 college acceptance letters, and since high school graduation, 21 of 23 are persisting in college as of second semester sophomore year.



Book recommendation

Carl Sagan's *Cosmos* is one of the most fascinating books I've read in recent years. For the first time since childhood, I was excited about science - space, in particular. For instance, the number of galaxies (10^{11}) and stars in each galaxy (10^{11}) should give us all pause. The fascinating history of human discovery (e.g. over 2000 years ago, Eratosthenes estimating the circumference of the earth with little but his remarkable intuition) and Sagan's moving prose will hook you, too.

The past, the present & the future

Looking back: I am a bit ashamed to admit that I struggled with Calculus during my freshman year of college. I am proud to write that I struggled even more in some of my other math courses, particularly with Abstract Algebra. In a class with seven other highly talented math majors, I finished middle of the pack and earned a 'C', one of my greatest life achievements. This inspired me to help others with the most fascinating and useful topic in human history: mathematics. It is because of my struggles with the subject that I have developed math empathy and have resolved to make the beautiful and complicated subject accessible for students, prodding and cheering them along the way.

Where I am now: As an MSUrbanSTEM fellow, I have learned to expand my thinking with respect to trying activities in my math classroom. I look for more opportunities for the kids to 'play' with the mathematics or have a hands-on approach to drive their understanding of topics we cover. In the first week of school, I took the kids outside and they measured each other, their shadows and the shadows of trees in order to create proportions to find the heights of trees. In past years, this is an activity that I would have bypassed. I used to think that going outside to create proportions was too elementary of an approach to the topic. These are high school kids. This turned out to be one of the most rewarding and enriching activities of the first quarter. Being a part of this fellowship has kept me connected to a thread - the Real Number Line - that I have explored more deeply than ever with students. Their mathematical understanding and appreciation of the subject has, as a result, become much greater.

Looking forward: My goal for the next couple of years centers on increasing student engagement through authentic, meaningful student-to-student interaction. Two of my colleagues recently

attended a conference that centered on student engagement through movement and creative activities. For example, Sage-N-Scribe and Mix-N-Match activities offer opportunities for students to interact in ways that get behind mathematical thinking, their own and their classmates', in order to deepen student understanding. Recently, I implemented an activity that was developed (but shelved) several years ago. In the Rationals Review Race, students used white boards and teammate support to better understand how to simplify rational expressions. Movement around the room, a fringe benefit, broke up the monotony of having to sit still for 50 minutes. Creating and finding more activities like these will serve as an alternative to bloodless handouts and textbooks that offer a low ceiling in fostering higher order thinking skills and excitement in mathematics.



This I believe

...students - all students - can learn and appreciate the beauty and complexity of mathematics. With the right tools and coaching, they will build confidence in their mathematical abilities, too.



Valia Thompson

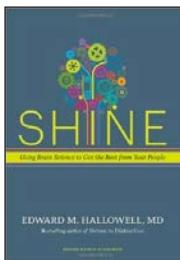
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If a child can't learn the way we teach, maybe we should teach the way they learn
- Ignacio 'Nacho' Estrada

Valia Thompson

Valia Thompson is a middle school science teacher. She has been teaching for 6 years. Her educational background includes a BA from National Louis University, a MA in Instruction and Curriculum with an emphasis on Adolescent Literacy from Concordia University and she is presently working on her PhD from Concordia University in Teacher Leadership. Valia is a proud mother of 3 daughters. In her spare time, she enjoys exercising and using her creativeness to enjoy arts and crafts. She helped start extracurricular activities to help students turn their lives around at her present job. She takes education seriously as well as advocating for students for she believes they are our future.



Book recommendation

Shine by Edward M. Hallowell is an excellent read. This book made me reflect on how my creativity is being stifled in my workplace and how teachers can sometimes hinder students from functioning at their highest potential. Hallowell speaks of a five-step process that he feels will help people overcome problems to be more productive in the workplace through select, connect, play, grapple and grow to finally shining.

The past, the present & the future

Looking back: Coming from the corporate world, I never imagined that I would be a teacher. My job had me working so many hours that I was missing out on my daughters' lives and I knew I needed to do something different. I thought that becoming a teacher would help me to spend more time with my own kids because I would be at work when they were in school and off when they were off. My first year of teaching was dreadful. I knew how I was taught as a student and I thought this was how I was supposed to teach students. I often went home with so much work to grade and it was very overwhelming to see that students just weren't getting it. I thought I was doing everything right because I did exactly what I had learned in school and I taught as I had been taught in school but it was a learning experience for me. Each year I changed something about my teaching and incorporated any suggestions that I was given in order to reach students, it was my job!

Where I am now: Taking on a problem-based project for students during my ImagineIT project has really been an eye opener for me. Students were given the opportunity to look at a problem that they are faced with on an everyday basis of living in a food desert and finding a solution to that problem. This has opened my eyes to connecting student's learning with hands on life experiences that make a difference. I now look for ways for students to experience lessons through life experiences that they can connect to and remember. Students are talking science everyday just as scientists do by asking questions and looking for ways to solve problems after they have tested some of their questions. The traditional way of teaching may have worked in the past but giving students the opportunity to learn through experience has changed the way I teach forever.

Looking forward: Since joining the MSUrbanSTEM fellowship I have learned so many ways to incorporate STEM and also gained a deeper understanding of what STEM really is. This is something my colleagues could benefit from. I would love to open up my own STEM school for middle school students. I want to break boundaries and have students experiencing learning through field experiences and hands on lessons so they are not only learning but making connections to how that learning is useful in the real world. I want students to look back over their learning experiences with me and know that what they learned mattered. I also want them to feel connected, and take what they have learned and modify it to fit the next generation so that learning becomes second nature in the generations that follow.



This I believe

... that times are constantly changing and what worked in the past may still work but modifications must be made to fit today's students and how they learn.

A photograph of Stephen Tow, a man with short dark hair and a goatee, wearing a maroon polo shirt. He is smiling and looking to his right. A blue pen is tucked behind his ear. In the background, several other men are visible, some holding papers, suggesting a professional event or conference.

Stephen Tow

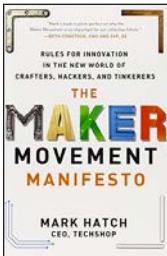
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The more that you READ, the more things you will know. The more that you LEARN, the more places you'll go - Dr. Seuss

Stephen Tow

Stephen is in his 11th year teaching, and currently teaches fourth through eighth grade technology and a new Makers class at Goudy Technology Academy. Through Goudy's first makers classroom, he has instilled a growth mindset in his students as they experience Stanford's Design Thinking process. Stephen has been instrumental in changing the fundamental teaching culture at Goudy. He constantly pushes the envelope in researching and introducing new technologies that will impact teaching and learning. Stephen has excelled in keeping the cost of new technology purchases low and seamlessly balances the demands of being the technology coordinator at a school with over 300 iPads, 15 Chromebook carts, and SmartBoards in every classroom. Outside of school, Stephen enjoys spending time with his wife, Rina, and his two daughters, Yasmine & Jamila.



Book recommendation

The Maker Movement Manifesto: Rules for Innovation in the New World of Crafters, Hackers, and Tinkers by Mark Hatch. This book presents an overview and introduction to what being a maker is all about. This includes the manifesto and its tenets: Make, Share, Give, Learn, Tool Up, Play, Participate, Support, and Change. These principles are actually excellent guidelines for any creative endeavor, especially those that rely on teamwork, collaboration, and prototyping. Even if you aren't a “maker”, this book is a great motivational read.

The past, the present & the future

Looking back: I did not have the typical experience of how and why I came into teaching. Throughout my life, I always felt that my best work was done while serving others. In high school and college, I volunteered most of my time to the community. I found great joy and pleasure in helping others, listening to their problems, and serving their needs. As I pursued my computer consulting dream, I learned very quickly that the business world can often be cruel and cutthroat in nature. This type of environment was not conducive to my lifestyle, nor to my character. I reflected on what made me most happy and it was helping others. I took a job as a school aide teaching computers and I found great joy in seeing students go from point A to point B. From this experience, I knew I wanted to teach.

Where I am now: I have always felt secure in my knowledge and abilities in being a technology coordinator. This past year has inspired me to become a better educator and communicator. Through the help of MSUrbanSTEM, I have taken greater risks in my teaching than my previous 10 years. I have often failed, but I have quickly gotten back up and reassessed on how to improve my teaching and thinking. Through my ImagineIT, I have pushed my students to start believing that failure is a part of the process of learning. As an enrichment teacher and technology coordinator, I was often alone on an island in my school. MSUrbanSTEM has connected me with other passionate educators who have the same passion for teaching and learning. Most of all, I have learned that I have a valuable voice that needs to be shared to show all of the great things that are happening in my school.

Looking forward: Over the next year, I would like to expand my ImagineIT project to where students start to develop their own design thinking challenges. I'm hoping to change the way that the

program is implemented to provide greater availability so that more students can benefit from our makerspace. I'm hoping over the next year to have students take ownership in working within the space and tinkering ideas with each other. Over the next five years, I would like to secure community sponsorship to fully fund the cost of materials, supplies, and equipment. Besides funding support, I would like to see our school work closely with the community to develop opportunities for real world experiences.



This I believe

...find your passion in life and follow through with all your heart.



Aurora Tyagi

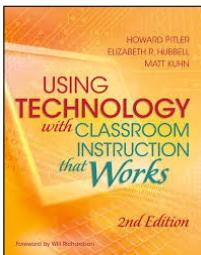
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Every individual has potential to learn and grow but they need a challenging environment and direction from a person who understands humanity and its nature
- Anonymous

Aurora Tyagi

Aurora has been a Chicago Public School teacher for 13 years teaching chemistry, physics, and mathematics. She is a lifelong learner who is very curious and passionate. Aurora graduated with B.S. in Civil Engineering (1981) from Philippines, MA in Education (2001) from Saint Xavier University, Chicago, and a Master's degree in Chemistry Education (2011) from Illinois State University. Currently, she is a part of the Wipro MSUrbanSTEM and Leadership Program.



Book recommendation

The book I recommend for STEM Educators is *Using Technology with Classroom Instruction that Works* by Howard Pitler, Elizabeth R. Hubbell, and Matt Kuhn. This book has many examples of multidisciplinary instructional activities on how to create multimodal representations for teachers and student's sample work. In addition, "The Math Myth" by Andrew Hacker is also an interesting read. It illuminates how mandating higher mathematics for everyone prevents other talents from being developed and even serves as an irrational barrier to graduation and careers.

The past, the present & the future

Looking back: Having my own children and experiencing a parent volunteer in our school inspired me to change my career path and become an educator. In making this transition to become a high school teacher, while taking care of four children, I definitely learned to overcome some challenges. But, a career that can make a difference by providing an opportunity to prepare our future leaders and mold their minds and habits is very rewarding and worth every challenge. My prior experience in the field of engineering and as a mother, along with my curiosity to know something new are some values I bring to my career.

Where I am now: Being an educator and an MSUrbanSTEM fellow has widened my vision on how technology can be embedded in the teaching and learning experience for me and my students. The knowledge I garnered during this fellowship helped me overcome my reservations towards online exposure. I have slowly embraced and learned to use multimedia tools and resources to engage students' learning to achieve content and skill goals. Now, I see the cellphone (with an added training on self-discipline) as a tool that can be very useful to achieving learning goals in a lesson. My quiet way of leading through the work I do within my classroom walls is now global because of the MSUrbanSTEM fellowship experiences. One's work is useful if accessible to all.

Looking forward: Looking forward, my mission is always to improve student learning. Both content and skills are important in order to be a knowledgeable member of the society who can make sound decisions. A year of experience with this project is just a starting point. I am looking forward to improving each year because of

the changing instrumental and missional goals in our school. I am teaching under a curriculum transition from traditional to STEM curriculum that is evolving. Both instrumental and missional goals complement one another. This is similar to finding the sweet spot like in the TPACK framework. Achieving this balance depends on what my school can afford. To be practical, in my classroom, it depends on what decisions I can or cannot control. Teaching in an urban school does not stop at just teaching the content. It includes other unwritten or passion-based extra work that a teacher does, like writing grants, surveying discount stores for instructional materials, keeping an eye on other schools' "garbage" because it is your gold, and being flexible and agile to change when needed to solve problem. In five years, I am confident that Brooks College Prep will be a distinguished STEM school in Chicago, of which I am proud to be a part.



This I believe

... STEM is our present--and how well we integrate multiple disciplines in our educational system--can widen the bridge into a humane and literate society now and into the future.

A portrait of Tracey Walker-Hines, a woman with short, styled hair, smiling warmly. She is wearing a dark green t-shirt with white stripes on the sleeves. In the background, other people in similar green shirts are visible, and a whiteboard with green text is partially seen. A semi-transparent grey box is overlaid on the bottom right of the image, containing her name and contact information.

Tracey Walker-Hines

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MICHIGAN STATE UNIVERSITY
STEM & LEADERSHIP
Teaching Fellowship Program

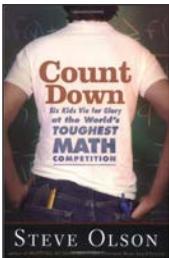


True teachers are those who use themselves as bridges over which they invite their students to cross; then, having facilitated their crossing, joyfully collapse, encouraging them to create their own

- Nikos Kazantzakis

Tracey Walker-Hines

Tracey Walker-Hines is a native Chicagoan and a proud alumnus of Whitney M. Young Magnet High School. She has a Bachelor of Arts degree in Elementary Education from the University of Illinois at Chicago; a Master of Science degree in Curriculum and Instruction from the University of Wisconsin-White-water; and a Master of Arts degree in Educational Leadership from Chicago State University. With over 20 years of experience as an educator she has worked in Chicago Public Schools and Prince George's County Maryland Schools in many roles from classroom teacher to assistant principal. Currently she is the fourth and fifth grade science teacher at Robert Fulton Elementary School.



Book recommendation

I highly recommend reading *Countdown* by Steve Olson. This book takes an in-depth look at The International Mathematical Olympiad, a competition for high school students from all over the world. While these students are brilliant and extraordinary mathematicians, they are still typical teenagers with ordinary interests like sports, games and music. This book also poses some very interesting discussion questions such as the role of nature versus nurture in learning and the use of competition to bring out the best in students.

The past, the present & the future

Looking back: During my twenty-plus year career, I have been fortunate to serve in many roles which have allowed me to develop a wide lens with which I can view education and my own professional practice. I believe the variety of roles I've had makes me especially valuable as it allows me to view challenges and situations from many perspectives and not just with a single-view lens. No matter the role the challenge is the same, to develop students that have competencies that will allow them to have choices in life, become successful and able to make positive contributions to their communities.

Where I am now: This past year as an MSUrbanSTEM fellow has been exciting, humbling, inspiring and transformational. I believe that the transformation that I have gone through is not just due to successfully meeting the many challenging experiences that have been presented to our cohort, but the change is also due to the ImagineIT Project that I have been developing and executing. One of the things I asked my students to do to improve their communication skills was to reflect on their weekly learning and then share their experiences and thoughts in writing with their parents. I have a new appreciation for the power and possibilities of sharing as I see how the reflection logs have allowed students to teach family members (as reported in the feedback) and how much more powerful our learning community becomes as we all learn and grow together.

Looking forward: One of the goals I set for myself when I found my career path was to pursue a doctoral degree in education. This goal was supported and reinforced by my family and friends who always supported me as I grew and developed as an educator. As my personal life began to change with the addition of a family of my own and other major life events, this goal was pushed to the side

and pursuing a PhD seemed like something that would never happen. Once I became a part of the MSUrbanSTEM cohort and fell into the rhythm of the program, I have become inspired again and have learned to balance my job, coursework and family so that in the next few years I feel confident that I will be able to accomplish my goal.



This I believe

...as an educator, if I want to be effective, I must understand that a part my job is to be a student as well as a teacher. As I learn, evolve and grow so will my students. I must be the leader on the path that I want them to take.



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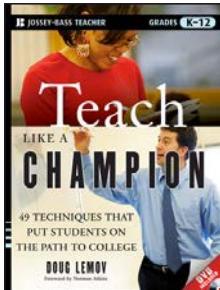


If a child can't learn the way we teach, then maybe we should teach the way they learn

- By Ignacio Estrada

Delora Washington

Delora Washington is a high school math and French teacher in Chicago Public Schools and chairs the math department at Corliss Early College STEM High School. Delora currently teaches Integrated Math III, French 2, and Financial Literacy to juniors and seniors and had been teaching for about 16 years, since the Spring of 1999. Delora was a Milken National Teacher Award winner in 2005 and is currently completing the Wipro MSUrbansSTEM program this year to earn a graduate certificate in STEM.



Book recommendation

My book recommendation is *Teach Like a Champion* by Doug Lemov. This book doesn't just provide you with theories that should work in the classroom, but instead it provides you with actionable strategies and techniques that you can immediately take into the classroom. It also provides video clips of the techniques in action. It inspires you to be the best teacher you can be and does not sugarcoat the difficulties we face in the classroom.

The past, the present & the future

Looking back: For my first teaching job, I was the 6th teacher that these students would have that year and they told me on the first day that they had run the other teachers away and they would run me away too! If I wanted to teach, then I needed to survive this test. I decided that I was not going to run away and that I would make whatever changes, adjustments, or routines that I needed to bring order to this chaos. I found out that many of the students caused trouble to compensate for not understanding the material. The smartest kids were driving the rate of instruction and no one was taking the time to help those that couldn't keep up the pace. Wherever I go now, I try to remember that all students can learn, I just need to take the time to understand their approach and mistakes and obstacles. With patience, those barriers will fall and the students will experience success.

Where I am now: This past year as an MSUrbanSTEM fellow has been hectic, challenging, and rewarding. Somehow, I have been able to rise to each challenge despite the surety within myself that the challenge was impossible for me to complete. I have learned how to use technology in innovative ways instead of being ruled by technology and my lack of understanding. My approach to STEM has changed. STEM no longer is this amorphous concept that I am not involved in and have no idea how to implement. Instead STEM is more an extension of ourselves and our ways of interacting with information and using technology and other tools to create our own unique projects.

Looking forward: STEM is about students thinking deeply and working together to create solutions to problems. To reach students, I need to use technology for educational purposes. I need to be innovative in my assignments and use of available technology. I

plan to keep in touch with Candace and Missy and possibly the other MSU instructors as well as keeping up with what the members of our groups do and learn. I plan to develop lessons next year and in upcoming years that incorporate technology into the lesson so that students are learning while having fun. I also plan to work on changing the way in which I implement my curriculum so that there is more time for students to collaborate and create.



This I believe

...one teacher can make a positive difference in many students' lives. Helping a student to believe in themselves despite their circumstances is worth the fight to get there.



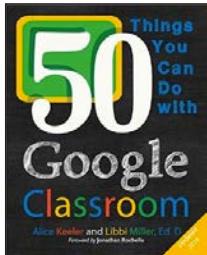
Jeanette Watkins
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A hundred years from now it will not matter what my bank account was, the sort of house I lived in, or the kind of car I drove. But the world may be different, because I was important in the life of a child
- Forest E Witcraft

Jeanettra Watkins

Jeanettra Watkins is an educator for Chicago Public Schools. Jeanettra earned a Bachelor of Science degree in Secondary Biology from Chicago State University. She furthered continued her education earning dual Master of Arts degrees in Educational Leadership and Curriculum and Instruction from Northeastern Illinois University and American College of Education, respectively. Currently, she serves as the South Regional Science Fair Coordinator as well as the Safety Co-chairperson for Chicago Public Schools Student Science Fair Inc. Her passion is continuing with the education process as a life-long learner. As a wife and mother of six, she enjoys traveling abroad, sampling new cuisines and moonlighting as a shoe connoisseur.



Book recommendation

Incorporating technology into any classroom shouldn't be an option but viewed with a sense of urgency so that students can compete, not only in the future, but globally as well. However, it can be challenging in doing so. Therefore, I recommend the book *50 Things You Can Do with Google Classroom* by Alice Keeler and Libbi Martin. The book is user friendly and provides a step-by-step, hands on approach. It is perfect for any teachers that may be willingly, but fearful of integrating technology.

The past, the present & the future

Looking back: I often wonder if I'm good enough. Am I making a difference? My self-esteem at one point was at an all time low. Like the students, I have witnessed the most unimaginable, and horrific incidents which I care not to mention. These incidences were traumatic, life-altering and have caused me to question my practice. However, the only thing that keeps me going is my sincere desire to educate children. Since I was a child, I have always wanted to teach. I can remember "playing school" with family members and I demanded to be the teacher all the time. I believe I was called and I am ordained for this work. That being said, I have to keep pressing forward so that I may be a tangible testimony offering inner-city students a ray of hope. I still believe, I believe in them. Therefore I have resolved to continue this journey as a life-long learner and educator not only to become a better me, but for a better them.

Where I am now: The past year as an MSUrbanSTEM fellow has been a rewarding experience. I have evolved from a digital immigrant to a functioning digital citizen. Moreover, my classroom has transformed from a no-tech environment to a low-tech environment and moving towards a high-tech one. This is a great feat considering how far we have come. Furthermore, I had the opportunity to assume a small emerging leadership role by assisting teachers in incorporating technology in their classes as well. Although this is a small win, the gelling and cohesiveness amongst my colleagues speaks volumes for improving collaboration. Oh what a feeling!

Looking forward: Equity in education, opportunities and outcomes will always be of utmost importance to me. However, I can't control the school district policies nor its politics. To a certain degree I can only control the actions I take to benefit my students. I try wholeheartedly to accommodate them with an education that reasonably resembles

that of an affluent student. My quest is to utilize multiple vehicles to empower students while simultaneously re-examining, adapting and reflecting on teaching practices. Therefore, I plan to become an administrator and to pursue a Ph.D. in Education Leadership and Policy.



This I believe

... I am better than I was before. I feel refreshed and renewed. My goal is to teach students how to think critically without being prompted or staged. The science classroom should be an authentic one where mistakes are allowed and it's OK: otherwise it isn't true inquiry based learning. I plan to incorporate a variety of instructional strategies consisting of direct, cooperative and independent studying that explores cross-cutting cutting-edge concepts, thus promoting rigor and relevance in science and the real-world. The best is yet to come!



Darnella Wesley

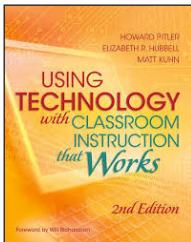
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Most people search high and wide for the key to success. If they only knew, the key to their dreams lies within - George Washington Carver

Darnella Wesley

Darnella Wesley believes learning should be enjoyable. The element of adding fun to the process of teaching allows students to be successful. Darnella is a National Board Certified Teacher working with the Chicago Public Schools, the third largest school system in the United States. Her credentials are professionally licensed to teach elementary school grades K-9 and high school grades 9-12. She is middle school endorsed to teach many subjects, which include language arts, mathematics, social studies, and science. She is experienced with STEM and STEAM using the Next Generation of Science Standards (NGSS). Darnella works on the south side of the city at an International Baccalaureate school, teaching science and social studies. When not teaching, she enjoys reading, spending time with her family, and traveling.



Book recommendation

Using Technology with Classroom Instruction That Works by Howard Pitler, Elizabeth R. Hubbell, and Matt Kuhn is a dynamic book. This book is an excellent tool that will provide guidance with using technology effectively for educational purposes. Suggestions regarding different software and applications to meet specific learning objectives is part of what makes this a valuable tool for educators.

The past, the present & the future

Looking back: After graduating from college, I spent several years working in the private sector. I started out as a human resources assistant and eventually worked my way into executive management. While working in the corporate sector, I met and married my husband and started my family. Over the years, the demands and the commitments associated with working in a corporate environment became less attractive to me. I began to change and my quality of life became more important than my job title, money, and corporate bonuses. I needed a change and, more importantly, I wanted a change. My mom always wanted me to become a teacher and would talk to me about the reasons I should consider teaching. I was blessed with an opportunity and I found my passion in teaching. The journey to becoming a “good” teacher did not come without challenges and some heartaches but I persevered and now I live my passion.

Where I am now: Have you ever wanted to scream and shout and say, “I can’t take it anymore!” As I glance back to reflect and think of my experience as an MSUrbanSTEM fellow, I wonder about my audacity. So many new things being presented at the same time, which overwhelmed me and I wanted to quit, but I am not a quitter! I am so glad that I did not give up. Being an MSUrbanSTEM fellow has been wonderful. I learned things about myself as a learner and a teacher that made me a better educator. I am now able to integrate technology appropriately to my assignments and learning objectives. The MSUrbanSTEM instructional team is phenomenal. I have never seen a group of such hard working, and dedicated people. In summary, this was an excellent learning experience and I am a better teacher by understanding the role of technology and pedagogy (TPACK).

Looking forward: It is critical, as an educator, that I stay on top of new and innovative ways to teach. As the student population changes, educators need to change to meet the demands of the student in front of them. As I compare my teaching with how it will be in the future, I can see it as being vastly different. As a teacher, I have always been goal-oriented in my design to build capacity with my students. This is an admirable effort. However, I now understand that I need to refocus the way I analyze learning outcomes. By being an MSUrbanSTEM fellow, I now comprehend the importance of measuring students' understanding and not task completion. I never looked at student mastery in this way. I am slowing but gradually learning how to design activities that allow students to show what they actually learned. Furthermore, if understanding was completely solidified, I should be able to create a similar learning activity in another subject or situation and the results should validate understanding. That, to me, is very powerful. This is what should happen to develop sustained learning for my kids.



This I believe

... if I am the best teacher I can be, I will facilitate the creation of the best students. As a result, I will continually strive to learn and encourage the love of learning to my students.



Melanie Yau

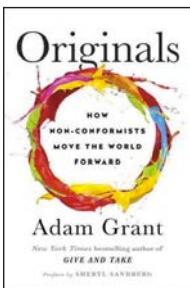
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If we teach today's students as we taught yesterday's, we rob them of tomorrow -John Dewey

Melanie Yau

Melanie Yau is a Chemistry teacher at King College Prep High School in Chicago, IL and has been teaching for 6 years. One of the highlights of the school year is the community beach stewardship project she sponsors in conjunction with the Alliance for the Great Lakes. Students beautify the beach, collect water quality data, and learn about the benefits of the natural resources in the area. In 2015, she became a National Certified Teacher in Adolescence and Young Adulthood Science. Outside of the classroom, she likes to find money on the ground, do hot yoga, read, and take (really long) naps. She thinks elephants are pretty cool.



Book recommendation

Originals: How Non-Conformists Move the World by Adam Grant. Adam Grant gives suggestions for allowing children more freedom to increase creativity. The traditional sense of school is limiting how creative students are because they are constrained by rules. An eye-opening idea Grant presents is how procrastination can be a good thing. By allowing yourself more time (up until the deadline), you will have more time to think and modify a project, which may increase the amount of creativity compared to if you finished the project right when you started it.

The past, the present & the future

Looking back: When I tell people I teach high school chemistry, most will respond, “I hated Chemistry in high school.” They have a fear of chemistry and do not have very fond memories of chemistry class. I didn’t understand; to me, chemistry was fun and “easy.” I started teaching because I want everyone to know and love chemistry the way I do. Even with a group of friends, I become an animated storyteller as I describe a recent lesson to show how cool chemistry is and how prevalent it is around us. As a chemistry teacher, I believe all of my students are capable of learning chemistry and after taking my class, they can appreciate the sciences, even if they do not end up pursuing a science career.

Where I am now: As a result of being an MSUrbanSTEM fellow, I have made some fundamental changes in the way I teach chemistry. My focus is on deeper conceptual learning, as opposed to making sure my students can solve a chemistry word problem. My students are building deeper understanding by doing (investigations and applications) and collaborating. I am using technology tools to create varied assessment to increase engagement, collaboration, and creativity in the classroom. Before I was an MSUrbanSTEM fellow, I would shy away from creating lessons that were novel or challenging because I wasn’t comfortable with not knowing how my students would respond. MSUrbanSTEM gave me the opportunity and support to try some new types of lessons. As a result, I have experienced increased engagement and deeper conceptual understanding with my students. Most importantly, I am having fun teaching and my students are having fun learning chemistry.

Looking forward: Before becoming an MSUrbanSTEM fellow, it was easy to say I wanted to integrate more technology because that is what I thought it meant to have a STEM classroom. However,

STEM is not just technology, it is a shift in how and what we teach our students. My goal for creating a STEM classroom is to have my students act and think like scientists. I envision students having more opportunities to question, explore, and apply scientific concepts. Along with this shift, I will also focus on the integration of technology to facilitate collaboration and the learning of chemistry. As an educator, my goal is to continue my current collaboration with teachers and to create more opportunities to work with other teachers, especially those outside of science, to improve student learning.



This I believe

... learning science means thinking and acting like scientists; be curious, interact with the world around you, and collaborate with others.



Lucy Young

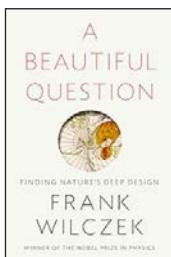
@lucyfash / lucyyoung.weebly.com



To understand the very large, we must understand the very small - Democritus

Lucy Young

Lucy Young is a chemistry teacher at Lane Tech College Prep High School in Chicago, IL. She mainly teaches freshmen and sophomores in the Lane Tech Alpha STEM program, as well as the Honors program. Lucy has been teaching for nine years now. Prior to becoming a teacher, she worked in various medical research labs and learned that there will always be unanswered questions. This is why Lucy took on the role of the Alpha chemistry teacher as these students complete STEM Fair projects every year. In addition to this STEM Leadership Program from Michigan State University, her studies include a B.S. in Biochemistry from Lewis University and an M. Ed. in Curriculum and Instruction from the University of Illinois at Chicago College of Education.



Book recommendation

The book, *A Beautiful Question* by Frank Wilczek is a book that takes you on a journey of different ideas, guiding the reader to find meaningful connections among them. One of the things that teachers often struggle with is the art of making meaningful connections between content and real-world applications. This book has inspired this teacher to discover the stories behind the content.

The past, the present & the future

Looking back: Growing up, I was a curious and active person who was incredibly shy. Working in a lab allowed me to nurture the introvert within. However, I learned that the quiet, slow pace of the lab was not what I really wanted. I loved science, but how could I still be involved and still be allowed space? My husband suggested taking some education classes. Once I got into the classroom, I realized I enjoyed being in front of students teaching science. As a child, I had high expectations for myself. I knew I wanted to do something out of the ordinary, working with extraordinary people. I value a curious mind, and those are always plentiful in a school.

Where I am now: Being a part of the MSUrbanSTEM program this past school year has allowed me to move out of my comfort zone as an educator. I learned that it is okay to try something new. As a teacher, I always felt I needed to be perfect and not make any mistakes or others would lose respect for me. This school year has taught me that it is okay to be human, as we are not perfect creatures. A true leader is one who tries different things, but is always honest about the outcome. If I am true to myself, my students and colleagues respect that, and thus, they respect my decision should I want to take a different approach to our content. I value the art of being able to present a different perspective. If I allow my students to do so, they will be able to transform their learning experience.

Looking forward: I hope to continue in the mindset of looking at things in a different way in order to inspire my students to transform their learning experience. I hope that I can continue learning more about educational technology as it will allow me to find different ways to present content to my students as they will continue to grow

up in the technological world. I want to be able to work with new technology and repurpose older technology in order to bring more creativity to the chemistry content. An effective leader is confident, listens, and leads by example. I hope to continue to develop these qualities both inside and outside of the classroom.



This I believe

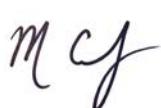
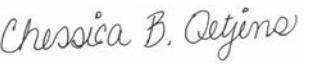
... that looking at the world through a different lens every now and then allows one to inspire growth. If we look at the world and understand that mostly all things are connected in some way, we can transform our life experience.







In this photo (left to right)–*Standing*: Akasha Horton, Rohit Mehta, Punya Mishra, Candace Marcotte, Inese Berzina-Pitcher, Jessica Pham, Smita Swai, Gillian Seals, Chris Seals. *Seated*: Scott Wolf, Swati Mehta, Leigh Graves Wolf, Missy Cosby, Sonya Gunnings-Moton, Kyle Shack. *Not in photo*: Chessi Oetjens, Heather Johnson.

Sonya B. A.   C. Marcotte
 Leigh Graves Wolf    Andrea V.
   Nitrea Hunter  Chessica B. Oetjens
 Jessica Pham  Inese Berzina-Pitcher  Chris Seals  Kyle Shack

The MSUrbanSTEM Team

Project directors

Dr. Sonya Gunnings-Moton, Dr. Punya Mishra,
Dr. Leigh Graves Wolf

Instructional team

Dr. Punya Mishra, Missy Cosby, Dr. Akesha Horton, Candace
Marcotte, Rohit Mehta, Kyle Shack

Chicago Public Schools liaison

Dakota Pawlicki, Litrea Hunter

Assessment and evaluation

Chris Seals, Inese Berzina-Pitcher, Swati Mehta

Instructional and program support

Swati Mehta & Inese Berzina-Pitcher

Project management and administrative support

Jessica Pham, Heather Johnson

In-house journalist

Chessi Oetjens

Graphic designer

Smita Sawai

Preliminary curriculum development

Dr. Michele Schira Hagerman, Andrea Zellner, Day Greenberg



Dr. Sonya Gunnings-Moton

I am Co-director of the MSUrbanSTEM project, and Assistant Dean in the College of Education at MSU. I also serve as the program director for major multi-year urban education partnership grants; and provide leadership for many urban education initiatives. I see the MSUrbanSTEM initiative as an effort that “walks the talk” of creating opportunities and access for urban learners to the growing STEM future of our world.



Dr. Leigh Graves Wolf

I am a teacher-scholar and my work centers around online education, emerging technologies, and relationships mediated by and with technology. I believe passionately in collaboration and community. I am the Co-director of the MSUrbanSTEM program and tremendously honored to be a part of it. It is a privilege to learn from the incredibly dedicated and talented teachers at CPS.



Inese Berzina-Pitcher

I am a doctoral candidate in the HALE program at Michigan State University. My work with MSUrbanSTEM project team provides me with an opportunity to support and advance the work of passionate and motivated educators both at MSU and CPS.



Litrea Hunter

I have had a long career with CPS in various capacities having to do with teacher certification, professional development and mentoring. I currently serve as the MSUrbanSTEM recruitment and sustainability coordinator.



Heather Johnson

I provide admin support to the MAET program, handling everything from admissions, travel, accounts and student support. I enjoy cycling and attending MSU basketball and football games. It has been a pleasure working with this project and seeing first hand the excitement that these programs bring to educators.



Chessi Oetjens

As a 21st century educator, I crave new learning seek to instill this value in my students. In MSUrbanSTEM I have the honor of curating and blogging all about the wonderful work being done by our fellows. This has renewed my energy within my own practice and strengthened my appreciation for devoted educators everywhere.



Dakota Pawlicki

As a former teacher, teacher educator, and now district leader, I understand the value broad-based partnerships can have on students and teachers. Backed by the generous support of Wipro Ltd, MSU is making a lasting impact on CPS teachers through its rigorous fellowship program. This innovative program empowers our educators to be the catalyst for positive change in Chicago schools.



Jessica Pham

I am currently the Administrative Assistant for the MSUrbanSTEM project, handling the back end tasks that keeps the project running from an administratively. I am an MSU graduate and am looking to earn my Master's here in the future as well.



Swati Mehta

I am a first year Ph.D. student in the EPET program at MSU, with an interest in problem based learning and how it can help women persist in STEM fields. In this project I provide support for instruction and research. MSUrbanSTEM for me is a fresh and innovative way of thinking of PD: helping teachers explore their creativity, bringing them closer to thinking of themselves as leaders, and transforming the way they conceptualize student learning.



Smita Sawai

I am a graphic designer at the *College of Education* as well creative director of *avani-design.com* (a graphic and web design studio specializing in print, web and branding). In the MSUrbanSTEM project I have designed books, brochures, posters, banners, and invitations; to showcase the amazing work being done by our fellows.



Christopher Seals

I am a Ph.D. student in MSU's EPET program and hope to have a career in applied research that impacts the success of underrepresented students. In the MSUrbanSTEM project I conduct research and take lead in preparing for conferences and publications. The MSUrbanSTEM program, to me, represents the complexities and artistry of being a teacher! We don't tell our fellows what to do, but we encourage a mindset to approach the classroom, in new ways.

The Instructional Team



In this photo: Kyle Shack, Missy Cosby, Candace Marcotte, Akesha Horton, Rohit Mehta & Punya Mishra.



Missy Cosby

@missycosby / missycosby.com

Missy Cosby is a doctoral student at Michigan State University in Educational Psychology and Educational Technology. She also teaches high school mathematics and has 16 years of teaching experience in Okemos, Michigan. In her free time, she enjoys reading, running, watching reality television, and spending time with her family.

This has been a year of transformation, growth, and inspiration. At the heart of this transformation lies teachers willing to push themselves into uncharted waters, taking risks for the sake of their students. Whether it be flipping their classrooms, encouraging students to tackle their mathematical misconceptions, integrating science and art, exploring alternative assessments, inspiring perseverance in problem solving, facilitating the creation of student web portfolios, or using the real number line to encourage wonder, these teachers have given their all because they believe in the students that they teach and care to provide the best STEM education possible for them. Teaching can be tremendously difficult work, especially in an atmosphere that values standardized testing over learning and curiosity. The fellows that I've worked with are dedicated to their craft and invested in having their students learn, explore, create, and share and have made me proud by persevering in the face of adversity.

This I believe

... Curiosity, wonder, imagination, and exploration are at the heart of learning. A teacher who believes this and who believes in students will go above and beyond to ensure that these remain there.

A handwritten signature in black ink, consisting of the letters 'm', 'c', and 'f' in a cursive, lowercase style.



Akeshia Horton

@akesha / akesha.com

Akeshia has been an active agent in creating solutions for complex problems in various educational arenas for over 20 years. Her background in teaching, urban education, educational technology, creative pedagogies and instructional design has allowed her to support students, teachers and faculty in classrooms and out-of-school urban settings across the globe.

My participation in the MSUrbanSTEM program has been one of the most rewarding educational experiences of my career. I have had the privilege of working with some of the most dedicated teachers I have ever met. All of the fellows have vividly shared how they believe in the infinite potential of their students. They have demonstrated how they see MSUrbanSTEM as an avenue to enhance their pedagogical practices in order to better serve their students. They are also anxious to share what they learn with their colleagues and initiate transformative change in their educative contexts. I am inspired by their drive, curiosity, passion for teaching and learning, dedication and resilience. I constantly learn from them and am in awe of the ideas they share through the assignments they complete as well as the conversations we have throughout the year. Thank you MSUrbanSTEM fellows and everyone who has made this fellowship program possible! I am truly appreciative of the experiences it has afforded me and am absolutely amazed at how these fellows have directly and tangentially impacted teachers and students in Chicago Public Schools. Their influence will resonate for years to come.

This I believe

...no child can fail in a classroom where their teacher sees the child as successful.

A handwritten signature in black ink, appearing to read "Albert H. H. H.", written in a cursive style.



Candace Marcotte

@canmarcotte / canmarcotte.com

Candace is a curious learner, looking to the world to inspire her inquisitive nature. In addition to her role with MSUrbanSTEM, she is an MAET Program Coordinator at MSU. Her work in K-12 education includes teaching 6th grade ELA and science and serving as a 1:1 Technology Facilitator.

I have grown as an educator, innovator, and leader because of my involvement with MSUrbanSTEM. Being surrounded by and working so closely with the outstanding educators who make up Cohort 2, my practice is constantly evolving. I want to be better for all of the MSUrbanSTEM fellows because their work inspires me so deeply and profoundly. This has made me a more reflective practitioner who takes risks and challenges what we have come to know as adult learning. I cannot help but to think daily of the incredible teaching and learning happening in their classrooms because it is that powerful. This has ignited a spark to help educators embrace their awesome teaching moments because we often don't celebrate our work enough. To the fellows, thank you for letting me be a part of your life over the past year, please know that we're here for you in the years to come.

This I believe...

When we take a moment to see the world through a child's eyes, it unlocks a world of imagination, creativity, curiosity, and awe that helps us engage our students in learning and reminds us to continue to ask, "Why?"

A handwritten signature in cursive script that reads "C. Marcotte". The signature is written in dark ink on a light-colored background.



Rohit Mehta

@rohitmeta / mehtarohit.com

Rohit is a doctoral candidate in educational psychology and educational technology at Michigan State University. His research focuses on using multiple ways of meaning-making and representation that are inclusive of different cultures and backgrounds. He loves jumping across disciplines and playing with science as much as art.

During my brief stint as a teacher in India, for the first time, I realized the sense of responsibility that comes with teaching. While working with our fellows in Chicago, I experienced--through their stories--the weight the word *responsibility* carries with it. Having peeked into their lives, I understand the value of empathizing with students who come from diverse backgrounds and cultures. I understand now the value of practicing pedagogies that center on students' lives inside and outside of school, their experiences with their world, their journeys, and their adventures. I understand what we think as researchers and educators as the right thing to do is contingent upon what our students experience. It is futile to create a rigid world of "school" if it does not make sense to our students.

This I believe

... Children have a natural sense of curiosity that needs to be nurtured in schools through critical thinking and scientific inquiry. Loving science for the sake of science is a wonderful perspective to have.

A handwritten signature in black ink on a light gray background. The signature is stylized and appears to read "Roy".



Punya Mishra
@punyamishra / punyamishra.com

Punya Mishra is professor of Educational Psychology & Educational Technology at Michigan State University. His research has focused on the role of technology in teaching, teacher knowledge, creativity and design. He is also an accomplished visual artist and poet whose work has been featured in international design magazines and websites.

The MSUrbanSTEM project has truly been the most amazing and powerful educational experience I have been part of in over 25 years of working in the field of education. In some ways I see this project as being the culmination of years of exploration and work that I have been involved. In large part, this is because of the wonderful team I am privileged to work with: in leadership (Sonya and Leigh); instruction (all the people in this section); research (Chris and Inese); and support (Swati, Jessica and Heather). But most importantly the reason this project means so much to me is because of our fellows. Their stories, their enthusiasm, their energy, and their passion to do right by their students is both humbling and inspiring. They have given meaning to my life, way beyond I could have anticipated.

This I believe

... with a bit of wonder things are curiouser and curiouser (with apologies to Lewis Carroll)

A handwritten signature in black ink, written in a cursive style, that reads "Lewis Carroll". The signature is slanted upwards to the right.



Kyle Shack

@ShackKyle / kyleshack.com

Kyle Shack is a social studies teacher at Allegan Alternative High School in Allegan, MI. Prior to his time in Allegan, Kyle taught high school social studies in Chicago, IL and completed his Master of Arts in Educational Technology at Michigan State University. Kyle's focus is the development of authentic and engaging educational experiences for high-risk student populations.

The opportunity to serve as an instructor with the MSUrbanSTEM project has had a profound impact on me as a teacher and on my classroom. The dedication, energy and passion exhibited by the fellows serves as a constant force of motivation for me to provide an unrivaled educational experience to my students. Throughout this year I have been immersed in a constant dialogue with teachers who exhibit the traits all parents wish for in their child's educator. Whether it be the pursuit of a new curriculum initiative, or the courage to fail forward with their class, each fellow has demonstrated the best qualities in a lead learner. This has allowed me to absorb and spread these ideas through my own instruction, and further transform who I am and the way I teach.

This I believe

*... All students have the opportunity to change the world,
and it is the responsibility of teachers to provide them the
necessary tools.*

A handwritten signature in black ink, appearing to be 'John Doe' or similar, written in a cursive style.





There is no real ending.
It is just the place where
you stop the story
- Frank Herbert