# Annual Midwest Noyce Teacher Scholarship Program Conference


## Fostering STEM Futures: Resiliency and Assessment Practices

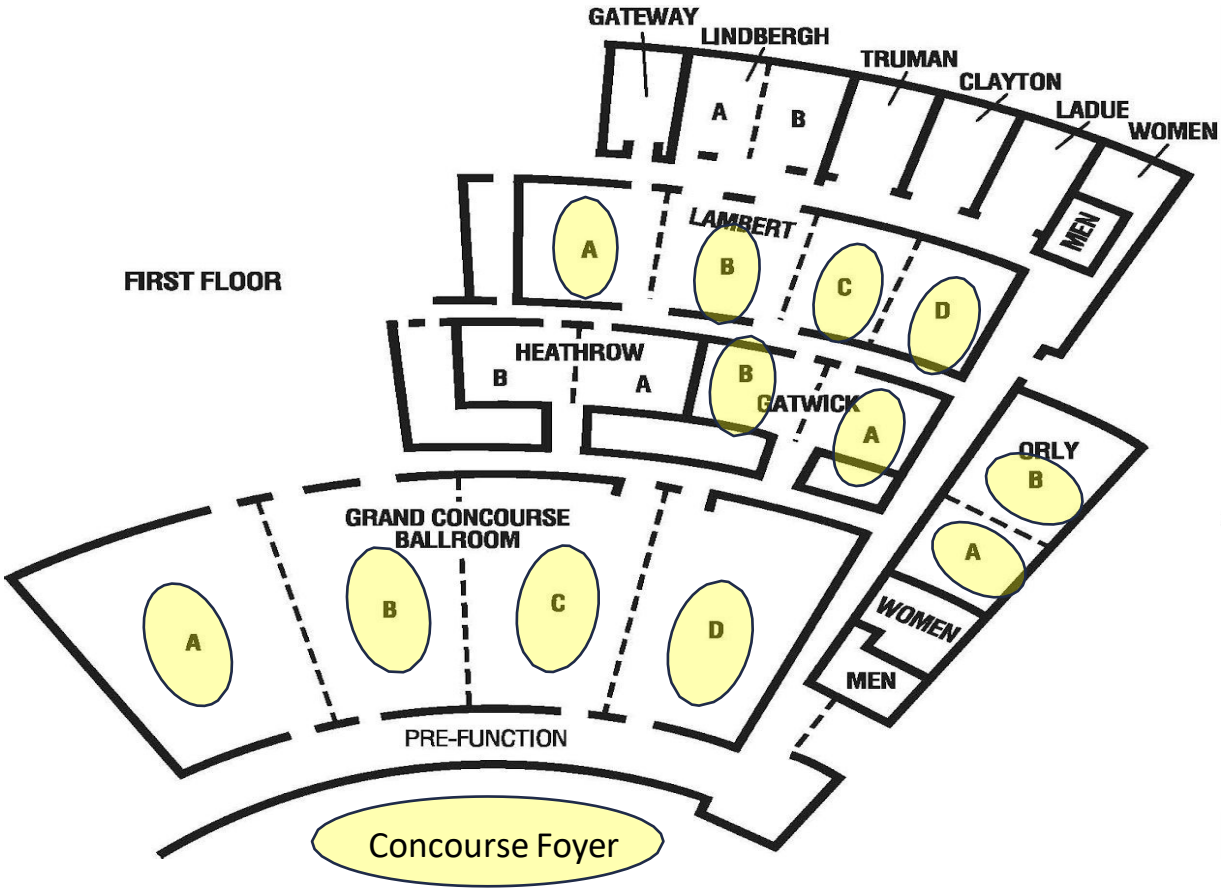
National Science Foundation
NSF DUE #2001058
NoyceMidwest.org

October 18–20, 2024

# Contacts

| Whova Conference App<br>Whova.com | Social Media<br>#MidwestNoyce | E-mail<br>pkbraun@ilstu.edu |
|---|---|---|

# Hotel Information




Renaissance St. Louis Airport Hotel
9801 Natural Bridge Road, St. Louis, MO 63134
t ·314-429-1100

# Welcome!


# Conference at a Glance

| *Friday October 18, 2024* | *Saturday October 19, 2024* | *Sunday October 20, 2024* |
|---|---|---|
| • Conference Check-in<br>• Poster Session with appetizers and dessert<br>• Keynote Speaker — Dr. Brooke Whitworth<br>• Poster Session continues | • Breakfast and Conference Kick-off<br>• Keynote Speaker — Janet Moore<br>• Sessions 1A and 1B<br>• Sessions 2A and 2B<br>• Site Visits<br>• Dinner<br>• Saturday Night at City Museum St. Louis | • Breakfast<br>• MidSTIP Presentations<br>• Keynote Speakers — Elisabeth Greenwood, Victoria Engel and Allycia Uhrhan<br>• Closing Plenary Session<br>• Adjourn (unless MidSTIP Participant) |

# Conference Schedule

- The conference begins with check-in at 4 pm on the first floor — Concourse Foyer.
- Enjoy appetizers at 5:45 pm and view the poster presentations until 6:50 pm.
- Keynote speaker Dr. Brooke Whitworth presents from 7–8 pm.
- More time to view posters and to network follows.

## Friday, October 18, 2024

| Time | Event | Description | Location |
|---|---|---|---|
| 4:00–6:50 pm | **Conference Check-in** | Check-in is also available on Saturday | Concourse Foyer |
| 5:00–5:30 pm | **Poster Setup** | Posters will remain on display through Saturday in Concourse C. | Concourse C |
| 5:45–6:50 pm | **Poster Session and appetizers** | See pages 15–16 for poster details. | Concourse CD |
| 7:00–8:00 pm | **Keynote Speaker: Dr. Brooke Whitworth** | Presentation title: Becoming a Resilient Science Teacher and Leader.<br><br>Check-in is not available during the presentation. | Concourse AB |
| 8:00–9:00 pm | **Poster Session and Networking** | Check-in resumes. | Concourse A, B, C, D |

# Saturday, October 19, 2024

| Time | Event | Description | Location |
|---|---|---|---|
| 7:00–7:45 am | **Optional Beginner Yoga Class** | Class led by Bekky Darner—no mat required! | Concourse D |
| 8:00–8:30 am | **Breakfast Buffet** | | Concourse Foyer |
| 8:30–9:00 am | **Opening Plenary Session: Dr. Jess Krim** | A discussion of the goals and purpose of the conference. | Concourse AB |
| 9:00–9:50 am | **Keynote Speaker: Janet Moore** | Presentation title: Transforming My Students, My Classroom, and Myself | Concourse AB |
| 9:50–10:00 am | **Transition** | | |
| 10:00–10:25 am | **Breakout Session 1A** | | See page 17 for breakout session details. |
| 10:30–10:55 am | **Breakout Session 1B** | | See page 17 for breakout session details. |
| 11:05–11:30 am | **Breakout Session 2A** | | See page 17 for breakout session details. |
| 11:35 am – Noon | **Breakout Session 2B** | | See page 17 for breakout session details. |
| Noon–12:10 pm | **Break and pick up boxed lunches** | Meet with your site visit group to prepare to get the most from your visit. | Concourse AB—sit with your site visit group (see table signs). |
| 12:10–12:30 pm | **Meet by 12:10 for important information about your site visit.** | Enjoy lunch and hear what to expect from site visits. | Concourse AB<br>See page 13 for site visit descriptions. |
| 12:30–12:40 pm | **Buses board & leave for site visits** | | Buses will be in the driveway in front of the hotel. |
| 1:00–4:00 pm | **Site visits** | | |

| Time | Event | Description | Location |
|---|---|---|---|
| 4:00 pm | **Buses return to hotel** | Break until 4:30 pm. | Drop off in front of the hotel. |
| 4:30–5:00 pm | **Site visit reflection: Nicolle and Janet** | Review highlights of the site visits and share opportunities to implement what each group experienced. | Concourse AB—sit with site visit group (see table signs). |
| 5:00 pm | **Dinner Buffet** | | Concourse AB |
| 6:15 pm | **Board buses for City Museum** | | Driveway in front of the hotel |
| 6:30 pm | **Buses leave for City Museum** | | |
| 7:00 pm | **Arrive at City Museum** | Meet at the group sales counter for wristbands. Don't forget to visit the rooftop! | |
| 9:00 pm | **Board buses to return to hotel** | | |
| 9:25–9:45 pm | **Return to hotel** | | Driveway in front of hotel |

# Sunday, October 20, 2024

| Time | Event | Description | Location |
|---|---|---|---|
| 7:00–7:45 am | **Optional Beginner Yoga Class** | Class led by Bekky Darner—no mat required! | Concourse D |
| 8:00–8:30 am | **Breakfast Buffet** | | Concourse Foyer |
| 8:40–8:55 am | **MidSTIP Summary: Nicolle** | An overview of the MidSTIP program. | Concourse AB |
| 9:00–9:50 am | **MidSTIP Presentations** | Please choose one of the six presentations below. | See page 29 for presentation details |
| | *Level-Up:*<br>Dr. Lara Smetana and Dr. Megan Leider | Taking your science teaching practice to new heights. | Orly A |
| | *Immersive Engineering Design Experience:*<br>Dr. Todd France | Project-based activity development to connect math and science to engineering. | Lambert CD |
| | *Making Math Meaningful:*<br>Janet Moore | Bringing mathematics lessons to life in your classroom. | Lambert B |
| | *Avoiding Burnout:*<br>Dr. Bekky Darner and Dr. Ashley Waring-Sparks | Using Self-Determination Theory to foster well-being in both ourselves and our students. | Orly B |
| | *Who's Doing the Heavy Lifting:*<br>Josh Rappuhn | Shifting from teacher-led to student-driven scenarios. | Gatwick A |
| | *Math Unit Fixer-Upper:*<br>Dr. Sherri Martinie and Dr. Michael Lawson | Six math teachers will showcase how they redesigned a unit of study. | Lambert A |
| 10:00–10:50 am | **Keynote Presentation — Elisabeth Greenwood, Allycia Uhrhan and Tori Engel** | A presentation from three teachers who have benefited from a support network to manage the challenges of teaching in a high-needs environment. | Concourse AB |
| 11:00–11:15 am | **Closing Remarks — Dr. Jess Krim** | The conference concludes unless you are a MidSTIP Fellow. | Concourse AB |
| 11:15 am – 12:00 pm | **MidSTIP Session — Jigsaw Format** | MidSTIP groups meet to focus on implementation. Please sit with someone in another MidSTIP group. Lunch is provided. | Concourse AB |
| 12:00 am – 1:00 pm | **MidSTIP Session Tour** | MidSTIP opportunity to visit the other MidSTIP presentations. | See page 29 for presentation details. |
| 1:00 pm | **MidSTIP Group Pictures** | Meet in Concourse A for group pictures. | Concourse A |

# Speakers

Dr. Brooke Whitworth
Associate Professor in Science Education at Clemson University and Educational Consultant

Janet Moore
Instructional Coach, Math — Regional Office of Education #17 – Illinois

Tori Engel
Computer Science Teacher at Carriel Junior High School O'Fallon, IL

Elisabeth Greenwood
Science educator at Belleville West High School Belleville, IL

Allycia Uhrhan
Science educator at Truman Middle School St. Louis, MO

Dr. Jennifer Ellis
NSF's S-STEM Program, the Robert Noyce Teacher Scholarship Program, and the Improving Undergraduate STEM Education Program Director

# Speaker Profiles

Dr. Brooke Whitworth

Associate Professor in Science Education at Clemson University and Educational Consultant

Dr. Whitworth is an Associate Professor in Science Education at Clemson University and currently serves as the Teaching & Learning Doctoral Program Coordinator. Her current research is focused on investigating the role of district science coordinators, professional development models, the differentiation of professional learning, and science teacher leaders. Previously, Dr. Whitworth worked as an Assistant Professor at the University of Mississippi (Ole Miss) for three years and as an Assistant Professor for three years at Northern Arizona University (NAU) in Flagstaff, AZ. Prior to that, she worked for six years as a chemistry and physics teacher at the University of North Carolina School of the Arts (UNCSA) in Winston-Salem, NC and for three years as a chemistry, physics, and math teacher at Punahou School in Honolulu, HI. She frequently presents at local, state, and national conferences on science education and provides workshops for schools, districts, and faculty across the country. Dr. Whitworth currently serves as the National Association for Research in Science Teaching (NARST) Treasurer-Secretary. She also recently received the Association for Science Teacher Education Outstanding Science Educator Award.

BROOKE whitworth

Educational Consultant

SUPPORTING EDUCATORS BY BRIDGING THE RESEARCH-PRACTICE GAP AND MAKING PROFESSIONAL DEVELOPMENT ENGAGING AND MEANINGFUL

Janet Moore
Instructional Coach
Math — Regional Office of Education #17 in Illinois

Janet Moore is a Math Instructional Coach with a passion for empowering students and teachers to be confident, curious, and competent mathematicians, regardless of their past experiences in mathematics.

Janet draws upon a unique combination of formal and informal teaching experiences that include: (1) teaching high school mathematics at Bureau Valley High School, (2) teaching developmental mathematics at Illinois State University, (3) integrating math, science, and ELA into simulated space mission experiences at the Challenger Learning Center, (4) translating the math and science involved in NASA's high-energy astrophysics missions into lessons and materials for K–12 classrooms, and (5) providing professional development for teachers on behalf of ISBE, NSF, and MSP during the transition to Common Core and NGSS standards.

In her curriculum development and professional development endeavors, Janet emphasizes an inquiry-based, SEL-focused approach to mathematics instruction that allows students and teachers to understand mathematical concepts through meaningful experiences.

REGIONAL OFFICE OF EDUCATION #17

DeWitt · Livingston · Logan · McLean Counties

Elisabeth Greenwood

Science educator at Belleville West High School, Belleville, IL

Elisabeth Greenwood is a high school chemistry educator at Belleville West High School in Belleville, near St. Louis. Elisabeth earned her bachelor's degree in chemistry education and her master's degree in curriculum and instruction from Southern Illinois University. She is the recipient of several awards, including the NSTA's Maitland P. Simmons Memorial Award for New Science Teachers, the Illinois Chemical Education Foundation, the Chemical Industry Council of Illinois Davidson Award, and the Armed Forces Communications and Electronics STEM Teacher Scholarship. Elisabeth enjoys working with pre-service math and science teachers and has served as a mentor for SIUe's Noyce science and math teacher candidates.

Allycia Uhrhan

Science educator at Truman Middle School, St. Louis, MO

Allycia Uhrhan teaches science and is the science department chair at Truman Middle School in St. Louis, MO. Allycia earned her undergraduate degree at Southern Illinois University Edwardsville and her master's degree in Diversity and Equity in Education with an emphasis in human resources from the University of Illinois. She is currently pursuing National Board Certification. Allycia was twice awarded the NSTA's Maitland P. Simmons Memorial Award for New Science Teachers and is recognized for her district-wide work in standards-based grading. She is an adjunct professor at Washington University and serves on NSTA advisory boards. Allycia's love of science extends to her hobby of exploring national parks.

Tori Engel

Computer Science Teacher Carriel Junior High School, O'Fallon, IL

Tori Engel teaches computer science and is the instructional technology coach at Carriel Junior High School near St. Louis, MO. Tori is a graduate of Southern Illinois University Edwardsville where she served as a Lead Instructional Specialist managing their Code.org Regional Partnership, leading Code.org Computer Science Principles workshops, and developing, refining, and leading PD on science units for the mySci K–8 curriculum. In 2024, Tori was nominated as a semifinalist for Magic School's AI Teacher of the Year. Additionally, she was awarded the Armed Forces Communications and Electronics STEM Teacher Scholarship. She is currently pursuing a doctoral degree at the University of Illinois.

Dr. Jennifer Ellis

NSF's S-STEM Program, Robert Noyce Teacher Scholarship Program, and the Improving Undergraduate STEM Education Program Director

Dr. Jennifer Ellis, Noyce Program Lead, is from the University of Tennessee at Chattanooga where she is an associate professor and director of STEM Education. Dr. Ellis brings experience in secondary STEM teacher preparation. Her research interests include effective integration of educational technology to enhance STEM teaching and learning as well as in accessible cyberlearning via iterative instructional design.

## Who was Robert Noyce?

Dr. Robert N. Noyce was co-founder of Intel and inventor of the integrated circuit which fueled the personal computer revolution and gave Silicon Valley its name.

*"Innovation is everything. When you're on the forefront, you can see what the next innovation needs to be. When you're behind, you have to spend your energy catching up." — Robert Noyce*


# Site Visits

The 1904 World's Fair is considered a high point in St. Louis history and one the city continues to celebrate and contemplate. This tour will feature a gallery tour of the Missouri History Museum's brand-new 1904 exhibit, the centerpiece of which is a 3-D printed model of the entire fairgrounds. After exploring the exhibit, we'll head off on a 1-hour guided tour of historic Forest Park, learning about the intersections between environmental and social justice history.

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Visit the NWS office that serves eastern Missouri and western Illinois through timely, life-saving weather forecast information. This is one of 122 offices covering every inch of the United States and its territories. The St. Louis office covers 46 counties in Missouri and Illinois, stretching west to east from Columbia, MO to Salem, IL. The county warning area extends as far north as Quincy, IL and south to Fredericktown, MO. The office covers several metropolitan areas including St. Louis, MO, Columbia, MO, Jefferson City, MO and Quincy, IL.


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Founded in 1859, the Missouri Botanical Garden is the nation's oldest botanical garden in continuous operation and a National Historic Landmark. The Garden is a center for botanical research and science education, as well as an oasis in St. Louis. The Garden offers 79 acres of beautiful horticultural display, including a 14-acre Japanese strolling garden, historic architecture, and one of the world's largest collections of rare and endangered flora. Explore the garden and learn about the educational resources available for teachers.

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With over 175 years of history, beautiful Bellefontaine Cemetery is a local St. Louis landmark that includes the distinction of being an arboretum. Bellefontaine's fourteen miles of curved roadways afford beautiful views of the landscape, including thousands of shrubs and trees and hundreds of works of art. Bellefontaine has become an outdoor museum, containing fine sculptures and memorial art reflecting the changing tastes of our culture. Bellefontaine is the final resting place of men and women whose lives have contributed significantly to the westward expansion of our country. A visit to their graves provides a keener appreciation of our national heritage by connecting past, present, and future generations.

This is the first and only Urban League in the country to have a greenhouse and hydroponic farm at its headquarters to help solve our region's food crisis. The 6,800-square-foot area has a greenhouse with a hydroponic urban farm by Vested Urban Farms and Fresh Harvest 365 to grow fresh produce. The produce grown will be distributed through retailers to provide food to St. Louis families and sold at local markets.


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The Sophia M. Sachs Butterfly House officially opened to the public on September 18, 1998. Located in St. Louis County's Faust Park, the central feature of the attraction is an 8,000-square-foot glass conservatory where visitors mingle with more than 60 species of the world's most beautiful butterflies in free flight. The Butterfly House was the first facility dedicated entirely to invertebrates in the country to be granted accreditation by the Association of Zoos and Aquariums (AZA).

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See the best view of Alton and the Mississippi River from eight stories in the air atop the Melvin Price Locks & Dam. As one of the largest locks on the Mississippi River, the Melvin Price Locks & Dam No. 26 is central to river traffic for soybeans, corn, grain, asphalt and other commodities that are transported via the river. Take a guided tour of this fun attraction in Alton, Illinois, and see towboats and barges as they push their way through this incredible structure.


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The St. Louis-based National Building Arts Center (NBAC) promotes public awareness of the crucial roles of architecture, manufacturing, construction, and urban design in our built environment. The NBAC is a unique, emergent study center housing the nation's largest collection of building artifacts. It maintains a large archive and library that offers an expansive body of knowledge around the US historic built environment, including architectural design, materials manufacturing and conservation, labor history, urban studies, geology, transportation, patenting and all aspects of building.

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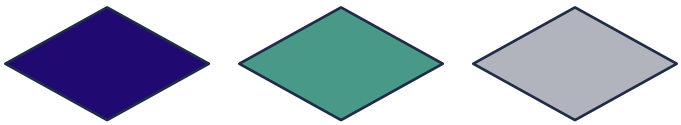
Gaze at over 43,000 tons of concrete and steel making an iconic, elegant arc 63 stories high into the Midwest sky. Shaped by the inspired design of Finnish-America architect Eero Saarinen, the Gateway Arch celebrates the westward expansion of the United States and the pioneers who made it possible. Since its completion in 1965, the monument has taken millions of visitors on the trip to the top to enjoy stunning views stretching up to 30 miles to the east and west.

# Poster Session

Friday, October 18th, from 5:45 pm through Saturday, October 19th
Concourse C



**STRAND 1** **STRAND 2** **STRAND 3**

| Poster # | Authors | Title | Institution |
|---|---|---|---|
| 1 | Craig Kirchner, Meteicha Green, April Bartnick, Michelle Asa, Renee Lopez-Swalls, & Karen Renzaglia | **MTFs and Community Leaders Partner to Host an Annual Day of Science Exploration** | Murphysboro Middle School & Southern Illinois University Carbondale |
| 2 | April Bartnick, Michelle Asa, Renee Lopez-Swalls, Karen Renzaglia, & Meteicha Green | **Noyce Master Teaching Fellows Develop and Promote a Grant Program for Innovative STEM Learning** | Tricounty Special Education, Murphysboro Middle School, & Southern Illinois University Carbondale |
| 3 | Molly Matthews-Ewald, PhD; Cameron Beatty, PhD; Brittany Brewster, PhD; & David Ayeni, PhD | **Assessing Context: The NSF's Robert Noyce Teacher Scholarship Program Evaluation** | WhitworthKee Consulting, LLC |
| 4 | Dr. Nathan Frank, Nicole (Nickie) Kettler, Sarah Marshall, & Kelly Devert | **The Silent Epidemic: A Board Game to Teach Students Mathematical Modeling** | Augustana College |
| 5 | Lara Smetana, Trang Nguyen, Angelica Topor, Annika Alexander, & Betsy Leong | **Research Experiences for Preservice STEM Teachers** | Loyola University |
| 6 | Savannah Lamar, McKenna Clark, & Dr. Mike Daiga | **Inquiry STEM Learning Outdoors: Secondary STEM Preservice Teachers' Experiences with the Great Smoky Mountain Institute at Tremont** | Wittenberg University |
| 7 | Dr. Paul Adams, Dr. Eric Deyo, Dr. Matthew Clay, Mr. Michael Walker, & Mr. Earl Legleiter | **Survey of Rural Science Teachers in Kansas** | Fort Hays State University |

| Poster # | Authors | Title | Institution |
|---|---|---|---|
| 8 | Vishodana Thamotharan, Nova Ammerman, Jiecheng Mei, & Eun Kyung Ko | **What is the role of a High Needs Teacher? Centering Noyce Scholar Voice in Negotiating Project Vision** | Illinois Institute of Technology |
| 9 | Dr. Akhtar Mahmood, Dr. Cody Hamilton Nygard, Dr. Kristin Cook, Dr. Jung Colen, & Divya Joseph | **Informal Education Summer Internship and STEM Maker Fair Experience for Undergraduate STEM Students and Noyce Scholars** | Bellarmine University |
| 10 | Karen S. Renzaglia, Rebecca McGraw, Peter Sheppard, David Gibson, & Adem Ekmekci | **How Noyce Professional Development Influenced MTFs Who Transitioned from the Classroom to Leadership Positions** | University of Arizona, University of Louisiana at Lafayette, Southern Illinois University Carbondale, & Rice University |
| 11 | Ally Cytrych, Isaac Stewart, & Jake Winters | **The Effect of Active Learning Strategies on Student Attrition, Performance, and Satisfaction** | Black Hawk College |
| 12 | Lindsey Hill, Chetna Patel, Alma Rodriguez Estrada, Aubrey Southall, Jamica Foster, Caroline Lantz, & Brigid Redmond-Mattucci | **Community Involvement in STEM Summer Programming** | Aurora University |
| 13 | Andrea Beesley | **SRI Evaluation of the Noyce Teacher Scholarship Program** | SRI |
| 14 | Aleyna Bartnick & Lara Smetana | **A Reflection on My Experience as a Paraprofessional** | Loyola University |

# WORKSHOPS & ORAL PRESENTATIONS

## Session 1A

Saturday, October 19th, 10:00–10:25 AM


### The Benefits of Digital Storytelling: Applications and Reflections for Adult Learners and K–12 Students

**STRAND 1**

10:00–10:25 AM — Orly A

Krystal Brand & Camara Wallace, *Indiana University Indianapolis*

Today's students often have shorter attention spans, which can make maintaining engagement more challenging. Coupled with declining interest in STE(A)M fields, this trend raises concerns given the growing demand for a larger STEM-trained workforce (NSF, 2021). Digital storytelling is an effective approach that fosters active learning by connecting students' cultural and real-life experiences in ways that make the content relevant. It also provides opportunities for students to practice integrating literacy and STEM skills in ways that mimic the scientific world. Utilizing digital storytelling in modern educational settings has proven highly relevant, enhancing students' learning experiences. Students have reported higher engagement with their studies, and teaching staff have faced fewer concerns about academic integrity loss (Anand 2023).

In this session, we will share our experiences with developing and implementing digital storytelling pedagogy to boost student engagement with course content. We will cover the projects we've created, the challenges we've faced, and student responses. Following this brief presentation, we'll provide you with ideas, materials, and sample projects to help you incorporate digital storytelling into your own teaching.

### 5 Common Program Issues...and What to Do About Them

**STRAND 3**

10:00–10:25 AM — Orly B

Matt Feldmann, PhD, & Heidi Masching, *Goshen Consulting*

Have you experienced problems with your program? I know you may feel like you are all alone with your issues, but it is likely others have had this same issue before. This session will cover the following five common issues that Noyce programs often face. We will discuss the issues as case studies, break into groups, and crowd source potential solutions.(1) Low student interest/ recruitment issues (2) Poor Scholar engagement (3) Leadership team turnover (4) Under spending the budget (5). Lack of engagement from community partners. The session will be facilitated by experienced evaluators who have been principal investigators and have worked with multiple Noyce programs.

## How to Build a Thinking Classroom

**STRAND 1**

10:00–10:25 AM — Gatwick A

Dr. Valorie Zonnefeld & Dr. Ryan Zonnefeld, *Dordt University*

This session introduces Peter Liljedahl's transformative approach to teaching mathematics as outlined in his 2020 book, Building Thinking Classrooms. Liljedahl's research will be highlighted as well as the fourteen optimal practices for thinking that foster a dynamic learning environment characterized by critical thinking, problem-solving, and deep mathematical understanding. Participants will explore innovative classroom structures and practices that promote collaborative learning and active engagement. They will also learn how these strategies can empower students to take ownership of their learning, engage in productive struggle and meaningful discourse, and develop a growth mindset. Presenter experience implementing these practical strategies over a two-year period in college classrooms will also be shared.

## Virtual STEM Teaching Hackathons, an Innovative Way to Build an Education Community

**STRAND 3**

10:00–10:25 AM — Gatwick B

Chetna Patel, *Aurora University*

Hackathons are often associated with computer science groups coming together to solve technical programming issues. Aurora University's Noyce Track 1 program utilized the hackathon concept to create a supportive social environment for an education community. By bringing together Noyce scholars, university, and community college faculty, and district educators, the program created a virtual event that fosters collaboration and addresses STEM teaching challenges. An online resource hub was used to disseminate the hackathon results to the community. This presentation will provide the steps to plan and implement a virtual hackathon and share the feedback from the participants.

## Strengthening the STEM Teacher Pipeline: Insights from Rural Kansas Partnerships

**STRAND 3**

10:00–10:25 AM — Lambert A

Dr. Janet Stramel, Dr. Paul Adams, Dr. Bill Weber, Mr. Earl Legleiter, & Mrs. Ann Noble, *Fort Hays State University*

This presentation presents the findings of our NSF-supported project, "Recruiting, Preparing, and Retaining STEM Teachers for Western Kansas," focused on enhancing the STEM teacher pipeline from rural community colleges to a university. The study investigated the effectiveness of partnerships in rural Kansas, showcasing various partnership structures, innovative recruitment strategies, and the challenges encountered. We will provide qualitative and quantitative data on interest levels among community colleges, highlighting the role of these partnerships in addressing the STEM teacher shortage in rural areas. Our research demonstrates how effective collaboration between community colleges and universities can lead to successful recruitment and retention of STEM teachers. The study's outcomes offer valuable insights into essential elements for successful recruitment, the impact of partnerships, and strategies for overcoming challenges. Attendees will learn about assessing interest levels, evaluating partnership effectiveness, and implementing innovative recruitment strategies. The significance of this research lies in its potential to inform policies and practices for recruiting and retaining STEM teachers in rural communities, ultimately contributing to a stronger STEM teacher workforce in these areas. We will provide concrete examples and testimonials, demonstrating the tangible impacts of these partnerships and offering practical resources for enhancing similar efforts in other regions.

## Giving Life to Biology: Bridging the Gap Between Academia and the Field

**STRAND 1**

10:00–10:25 AM — Lambert B

Sergio Arjon & Ethan Tran, *University of Houston*

Have you ever been told what to do but not how to do it? This session will highlight different techniques to engage students in biology lessons that are both culturally responsive and relevant. Participants will look at a menu that portrays how a highly successful biology team implements their yearly scope and sequence that is supported by teacher and student data. This student-centered and engaging biology curriculum includes engineering design process, storytelling, math, history, literature, art, school-based curriculum, and prior knowledge. Teachers at all levels of their careers will benefit from this session provided by a practitioner in the field. Takeaways include curriculum, quick implementations, and networking The session will begin with a lesson that teachers can implement on day one centered around Nature of Science. It has components of data collection and history. Teachers will then take a look at real lessons by teachers that are ready to implement asap. These lessons center around; argumentation, history, math, storytelling/literature, and engineering design process through the lens of biology. Educators will conclude by choosing what aspect to implement into one of their current lessons or be able to create from scratch. Having an electronic device is preferred for this session.

## c Learning: Unleashing AI's Potential in K–12 Education

**STRAND 1**

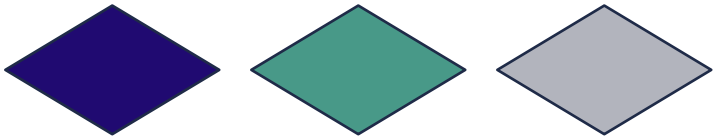
10:00–10:25 AM — Lambert CD

Matthew Cushing, *Rice University*

Discover the transformative power of Artificial Intelligence (AI) in K–12 classrooms. This session explores practical applications of AI, including personalized learning, adaptive assessments, and real-time feedback. Learn how AI can foster creativity, critical thinking, and problem-solving skills. Delve into ethical considerations, ensuring equitable access and data privacy. Leave equipped with strategies to integrate AI responsibly and empower students for the future. Join us to unlock the potential of AI in K–12 education.

# Session 1B

## Saturday, October 19th, 10:30–10:55 AM



**STRAND 1** **STRAND 2** **STRAND 3**

## Incorporating Immersive Technologies into STEM Classrooms — STRAND 1

10:30–10:55 AM — Orly A

Lindsey Hill, Chetna Patel, Alma Rodriguez Estrada, & Aubrey Southall, *Aurora University*

Augmented Reality (AR) and Virtual Reality (VR) are powerful emerging technologies that can transform learning environments. This presentation will delve into strategies for integrating AR and VR into STEM education to make complex subjects more accessible and engaging to students. We will discuss and demonstrate some capabilities and applications of the Merge Cube, an AR device, and VR headsets. We will share our practical experiences and insights gained from using these technologies in two Noyce-funded projects: (1) a one-week Strategies for STEM Success course for first and second-year undergraduates; (2) Camp Spartan, a college-preparation experience for neurodivergent high school students.

## Bringing Awareness of Global Female STEM Role Models Through Picture Books — STRAND 1

10:30–10:55 AM — Orly B

Sumreen Asim, *Indiana University*; Deepika Menon & Allison Johnson, *University of Nebraska Lincoln*; Jeanna Wieselmann, *Southern Methodist University*; Sarah Haines, *Townson University*

Elementary school years are pivotal for sparking student interest in science, technology, engineering, and mathematics (STEM). Elementary teachers are not only change agents but also contribute to a strong foundation for our global STEM ecosystem. Effective STEM teaching extends beyond classroom boundaries and local communities to impact students worldwide. This workshop aims to provide preservice and in-service elementary teachers with a curated book list that is a practical and powerful resource to inspire and engage students in STEM learning.

Research highlights the importance of fostering STEM career awareness and connecting STEM concepts to students' lives from an early age. Our workshop session will equip you with an opportunity for a "book tasting" to globalize your teaching efforts by incorporating STEM role models, particularly female role models, from around the world. Using our collective knowledge, we will develop STEM lesson ideas anchored in picture books, therefore creating a rich, engaging learning experience for all attendees.

Using children's literature to explore international ideas, cultures, and notable figures, we will delve into stories like Tu Youyou's discovery of a malaria cure through Chinese herbal medicine and Isatou Ceesay's grassroots recycling movement in Gambia, as depicted in One Plastic Bag by Miranda Paul. These stories provide real-world contexts, making STEM relevant and exciting for young learners. Join us to transform your teaching, inspire your students, and become a part of the global STEM education movement. Let's ignite a passion for STEM and prepare our students for a bright future.

## Hands-On Mathematics

STRAND 2

10:30–10:55 AM — Gatwick A

Timothy J. Pennings, *Davenport University*

This is a lively, engaged, hands-on talk which has mathematical objectives and pedagogical objectives. Mathematically, the attenders learn a collective of interesting mathematical topics: i) the definition of pi (as opposed to the value of pi), ii) how to calculate pi by randomly tossing needles on lined paper, iii) the numerical patterns incased in Pascals Triangle, iv) the Four Color Map Problem, v) the Mobius Strip, vi) the significance of the normal curve using a Galton Board, vii) the real-world significance that as an object grows in size, the volume grows faster than the surface area, viii) how heat is transferred (conduction, convection, and radiation). We explore each of these topics by using our hands. Thus, this shows the attendee the value and possibility of learning mathematical concepts actively through physical engagement. All topics can be appreciated by junior high and high school students (5th grade and up). The attendees also discover other principles: i) that mathematics is the study of patterns, ii) the importance of precision, iii) the importance of individual and collective input (when counting random events), iv) that simple things may be difficult to prove, v) that reality is full of surprises, vi) that mathematical principles determine the way the world looks and behaves. This talk is designed to provide good teachers inspiration and ideas for sharing with their students the joy of mathematical discovery.

## Trans Students 101

STRAND 2

10:30–10:55 AM — Gatwick B

Bri Saab, *Loyola University Chicago*

More and more, students are coming out as a variety of genders and using a variety of pronouns. This workshop will teach the basics: Things to Know, In the Classroom, and Advocacy. It starts with an exploration of identity and intersections, as well as first-person accounts. Then, we will discuss integrating transgender topics into your classroom, and supporting any trans students you might have. Finally, we will explore ways to step up and advocate for your transgender students—and colleagues—beyond the classroom.

## Action Research 101: A Pathway to Transformative Teaching Practices

STRAND 3

10:30–10:55 AM — Lambert A

Megan M. Leider, EdD, *Loyola University*

This presentation explores into the concept of teacher action research, a reflective, iterative process that empowers educators to systematically investigate and improve their own teaching practices. Through a detailed exploration of action research methodology, participants will gain insights into how to identify specific classroom challenges, develop targeted interventions, and assess the impact of these changes on student outcomes. The session will cover the fundamental steps of action research, including problem identification, data collection and analysis, and implementation of evidence-based solutions. Emphasis will be placed on practical examples and case studies demonstrating successful action research projects across various educational contexts. Attendees will also engage in hands-on activities designed to cultivate their skills in designing and conducting their own action research initiatives. By the end of the presentation, educators will be equipped with a robust framework for initiating their own action research projects, fostering a culture of continuous improvement and reflective practice within their classrooms. The ultimate goal is to enhance teaching efficacy, drive student success, and contribute to the broader educational community's understanding of effective teaching strategies. This presentation is open to pre-service and in-service teachers as well as project managers, principal investigators, and university professionals as well.

## Teaching Through Augmentation

STRAND 1

10:30–10:55 AM — Lambert B

Sergio Arjon, *University of Houston*

Learn how to introduce, implement, and scaffold Argumentation. A major takeaway for this session is where argumentation intersects with Responsiveness, SEL, storytelling, history, and literacy.

Need a way to get your students engaged? We will look at how you can foster a culture of openness, inclusivity, and learning through argumentation. Discussions will not seem forced or superficial as you are able to navigate facilitating how to research, discuss those findings, and see nuance. You will learn how teachers have introduced, scaffolded, and implemented argumentation by looking at real lessons while referencing their scope and sequence. A major takeaway for this session is where argumentation intersects with Responsiveness, SEL, storytelling, history, and literacy. These lessons will be available for those that attend. Focus is for Biology and science, but there are other contents embedded to meet interdisciplinary demands. Having an electronic device is preferred for this session.

## A BRISK look at AI in developing unit plans and resources

STRAND 1

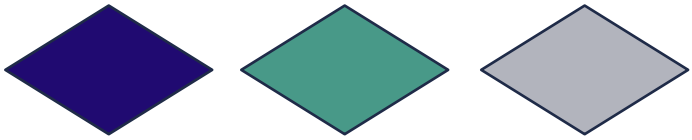
10:30–10:55 AM — Lambert CD

John A. Casebolt, *Southern Illinois University Carbondale*

The brisk AI presentation will be interactive, engaging, and provide teachers with practical takeaways that they can immediately implement in their classrooms. It will empower teachers to create a positive learning environment that supports student success in all fields of study but especially STEM subjects. The presentation will focus on using Brisk AI to prepare resources for classes and build upon the chrome tools such as google slides, docs, forms, etc. that we already use in our classrooms. By attending this presentation, teachers will gain valuable insights and strategies to enhance their teaching practices, promote student resilience, and improve assessment practices in STEM education.

# Session 2A

## Saturday, October 19th, 11:05–11:30 AM



**STRAND 1** **STRAND 2** **STRAND 3**

### Ideas for Curriculum Enhancement and Skill Building in Math Education Including Standards Based Instruction and Assessment — STRAND 1

11:05–11:30 AM — Orly A

LeighAnne Locke, Jeremy Luczak, & Austin Sweet, *Oral Roberts University*

Teachers are always looking for ways to enhance learning in the classroom. The goal of this presentation is to share a variety of ideas relevant to current best practices and the increased focus on standards-based instruction and assessment for the mathematics classroom. The presentation will be a collaborative effort among a mathematics faculty member, a middle school teacher (Noyce Scholar), and a District Learning Specialist (Noyce Scholar). Each presenter will discuss ideas from the context of their current position in mathematics education and encourage participants to consider potential implementation in the mathematics classroom.

### Voices and Visions: Through the Lens of Multilingual Learners — STRAND 2

11:05–11:30 AM — Orly B

Courtney Cutler, *University of Nebraska Omaha*

The journey of an English Language Learner (ELL) is marked by high expectations and a complex identity that bridges multiple roles. Often, these students are purely assessed on their ability to perform solely in English, viewed through a monolingual lens that undermines their multilingual abilities. The focus on 'English Language Learner (ELL)' rather than 'Multilingual Learner (ML)' emphasizes English skills over multilingualism, harming students' identities and impacting their long-term success in navigating both worlds. As ML teachers, we advocate for recognizing students' diverse backgrounds as strengths, while valuing their intrinsic worth. In developing our workshop, we draw from our unique experiences: Courtney, whose mother is Deaf, communicates using American Sign Language, and Frank, raised by Spanish-speaking parents and educated in a K–12 Dual Language program. These backgrounds provide us with firsthand insights into effective strategies and highlight practices that can create disparities in the classroom. Our presentation offers practical strategies for creating an inclusive environment, leveraging diverse perspectives, and challenging the flaws of an English-centric approach. Our personal experiences enrich our approach, providing a genuine perspective on effective educational practices. This workshop aims to equip educators with insights and tools that honor and support every student's learning journey. By embracing multilingualism and cultural diversity, we can foster an inclusive educational environment where every student thrives.

## Incorporating Culturally Responsive Teaching in Native American Science Classrooms

**STRAND 1**

11:05–11:30 AM — Gatwick A

Michelle Childress, PhD, *University of Arkansas*

Native American students have consistently scored less than their white peers on high school achievement tests, have the lowest high school graduation rates, and have the lowest college enrollment rates. Research shows challenges and struggles Native American children are faced with that negatively effects their success in the classroom. Native American students often encounter a disconnect between their home and school life resulting in difficulties of navigating two opposing worlds. When Native American students are associated with negative stereotype's indicative of Native American culture as opposed to the dominant culture, this creates a conflict between their cultural identity and what is expected in the classroom; however, culture that is honored and celebrated will cultivate confidence and success. My research identified culturally responsive teaching in Native American populated science classrooms in Oklahoma with thirteen science teachers and one Native American Studies teacher participating. This research study affirms the necessity of creating and designing effective culturally responsive teaching lessons into the curriculum for student academic success and teacher efficacy; however, teacher resources and appropriate professional development remains to be the greatest challenge. This presentation will introduce several engaging culturally responsive teaching lessons that incorporate Native American culture, history, and tradition into science, technology, engineering, and math curriculum to inspire and motivate Native American students to further their education.

## University of Iowa: Establishing a Successful Partnership with Local Kirkwood Community College

**STRAND 3**

11:05–11:30 AM — Gatwick B

Amy Marling, Ted Neal, & Eva Sileo, *University of Iowa*

Learn from the University of Iowa's (UI) success in establishing a productive partnership with local Kirkwood Community College (KCC). This presentation will address the challenges faced and ultimate achievement in developing transfer credit pathways from KCC to UI. Effective STEM internship opportunities developed by UI and offered to students at KCC will also be discussed.

## Navigating Scientific Communication and Source Evaluation in the Age of Deepfakes and Public Mistrust: Fostering Skepticism

**STRAND 1**

11:05–11:30 AM — Lambert A

José Pavez, Susie Brooks, Kishor Kapale, Jacob Winters, Sebastian Szyjka, & Robert Mann, *Southern Illinois University Carbondale*

In an era where misinformation and deepfakes proliferate, the ability to critically evaluate sources of information is more essential than ever, particularly in STEM education. This 45-minute workshop, titled "Navigating Scientific Communication and Source Evaluation in the Age of Deepfakes and Public Mistrust: Fostering Skepticism," is designed to equip in-service and pre-service teachers with practical strategies to enhance students' critical thinking and skepticism toward the information they encounter. This session focuses on fostering the skills necessary for effective scientific communication and the evaluation of reliable sources. Participants will engage in an interactive activity that challenges them to rank various types of sources according to their perceived reliability. After the initial ranking, attendees will be introduced to new categories of sources. They will then re-rank the sources, reflecting on how emerging challenges in the information landscape impact their judgments. This exercise aims to foster a healthy skepticism and encourages participants to develop classroom strategies that promote critical assessment of information among their students. By the end of the session, participants will leave with a deeper understanding of the importance of skepticism in scientific communication and the tools to cultivate this mindset in their STEM classrooms.

## Sustaining successes, building community, and maintaining the momentum of positive changes in STEM learning following Noyce funding

STRAND 2

11:05–11:30 AM — Lambert B

Karen Renzaglia, April Bartnick, Michelle Asa, Meteicha Green, & Renee Lopez-Swalls, *Southern Illinois University Carbondale*

Through two successful Noyce programs at Southern Illinois University Carbondale, Master Teaching Fellows (MTFs) have transformed STEM education practices and awareness via experiential place-based learning in and out of the classroom. At the close of the five-year River Region Environmental Sustainability program, MTFs developed the foundation to maintain the momentum of our efforts and broaden our impact in the community. First, a trust, Innovations in STEM Education, was founded as part of a well-established regional nonprofit, the Southern Illinois Community Foundation. The mission of the trust is to enhance formal and informal STEM education and improve science literacy and engagement. Funds were raised and objectives for the trust were clarified. Two annual endeavors were then put in place and are currently supported through the trust. The first is a small grant program for local teachers to support innovative approaches to STEM education. MTFs established an application form and scoring rubric, and distributed calls for applications. To date, sixteen teachers have received awards to acquire resources to engage their students in meaningful STEM experiences. Secondly, the Family Eco Festival was developed to encourage community members, including STEM leaders, educators, children and families, to participate in hands-on science and explore topics related to environmental sustainability in southern Illinois. In this presentation, we will discuss the development of these initiatives and how they support and sustain the goals of the Noyce program. Ideas will be shared on how to scale our efforts and transfer them to meet the objectives of other programs.

## Place-Based Case Development for Preservice STEM Teachers

STRAND 2

11:05–11:30 AM — Lambert CD

Beth Kania-Gosche & Katherine Sharp, *Missouri University of Science & Technology*

Case-based learning has been used in both business schools and medical training for decades, however it is less common in K–12 educational settings. When cases are used, it is often in school principal or superintendent training programs to simulate decision-making or communication. Cases are rarely used in K–12 to increase content knowledge and critical thinking skills. The case-based learning approach tells a story, which may appeal to students who are typically “turned off” by STEM content. If this story is place-based in the students' community, they have a connection to the content. This is particularly relevant for rural students, who are less likely to choose a STEM career path (Harris& Hodges, 2018). The curriculum may unintentionally signal to rural students that “important knowledge is nonlocal” (Avery, 2013, p. 30). In addition, rural STEM teachers may have less access to high quality laboratories and equipment. The case-based approach requires no additional facilities and only a few, low-cost materials. The presenters will describe an activity for case development they used in a preservice teacher content literacy course. The project consisted of developing a case aligned with appropriate state standards, as well as incorporating research-based literacy strategies focused on vocabulary. The presenters will share the challenges the preservice teachers experienced in writing their cases, as well as the research supporting their use in the K–12 classroom.

## NSF Meeting with PIs

STRAND 3

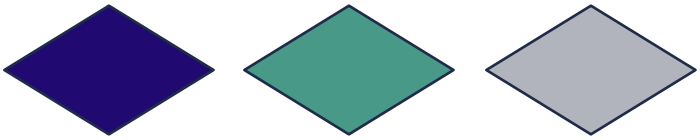
11:05 AM – Noon — Concourse A

Jennifer Ellis & Olivia Long, *National Science Foundation*

An update and discussion of the Noyce Program for PIs. Bring your questions and learn more about the program.

# Session 2B

## Saturday, October 19th, 11:35 AM – Noon



**STRAND 1** **STRAND 2** **STRAND 3**

### Success in Calculus 1 Fueled by Noyce Scholar Learning Assistants — STRAND 1

11:35 AM – Noon — Orly A

Janice F. Rech, PhD, Nick Kass, & Nathan Walther, *University of Nebraska Omaha*

Coordination across sections and active learning have both been found to increase the success rates of students in calculus courses. Both of these efforts have been initiated with some positive outcomes at a large Midwestern university. To complement these strategies, the integration of Noyce Scholars serving as learning assistants in the classroom and importantly, as assistants in a designated homework room was undertaken recently. The results have been impressive. During the spring 2024 semester, the DFW rate among calculus 1 students was 26%. This was in stark contrast to the DFW rates of 46% and 48% that were recorded in the previous two spring semesters, respectively. The spring 2024 semester was the first semester that Noyce Scholars engaged with students in the classroom on solving problems and in learning activities. Additionally, they worked closely with students outside of class in a designated "homework room". Students were strongly encouraged to attend the homework sessions before and after class and work with other students, guided by the learning assistants on problems from the classroom. The presentation will include a summary of our efforts and the results, as well as an engagement of participants in sample learning activities from the calculus classes.

### Strategies to Expand Worldviews and Make Allies with Students — STRAND 1

11:35AM – Noon — Orly B

Dr. Ayanna Shivers, *Lincoln University*; Ximena Uribe-Zarain, *Missouri State University*

This interactive workshop is based on the article that is being published in Futurity Education about the culturally responsive curriculum that Lincoln University has developed as part of its Noyce Project.

Not only will attendees learn about the curriculum, but they engage in activities that will challenge them to expand their worldviews and help them become allies of their current and future students.

## Teacher Competencies in Teaching Science to Multilingual Learners (Information and Roundtable)

**STRAND 1**

11:35 AM – Noon — Gatwick A

Krystal Brand, *University of Indiana Indianapolis*

This session will showcase the latest research on multilingual learner (ML) education, focusing on the competencies required for effective science teaching. While the main focus on the work is on elementary teaching, all levels of educators are invited to participate. Following the presentation, participants will have the opportunity to discuss these competencies and provide feedback based on their own experiences with ML students. This dialogue aims to enhance your understanding of the competencies (increasing your ability to reach you ML students) while also contributing to the development of a competency framework that the presenter will use in their PhD dissertation research.

## Noyce Knights Scholars Program (NKSP) at Bellarmine University

**STRAND 3**

11:35 AM – Noon — Gatwick B

Dr. Akhtar Mahmood, Dr. Kristin Cook, & Dr. Jung Colen, *Bellarmine University*; Prof. Marlisa Austin, *Jefferson Community and Technical College (JCTC)*

Noyce Knights Scholars Program (NKSP) project at Bellarmine University aims to certify 25 highly qualified diverse middle school science and high school Physics, Chemistry, Biology, and Mathematics teachers over five years. We have built partnerships with the community colleges under the Kentucky Community and Technical College System (KCTCS), Jefferson County Public School (JCPS) district, JCPS STEM Academies of Louisville, the Kentucky Science Center, and UK to increase the number of qualified STEM teachers in Kentucky's high-need schools. NKSP provides scholarships/stipends to undergraduate students majoring in Physics, Chemistry, Biology, Biochemistry & Molecular Biology (BMB), Environmental Science, and Mathematics, and to STEM graduates/professionals or career changers with a Bachelor's degree in any STEM discipline who are interested in becoming middle school science and high school Physics, Chemistry, Biology, and Mathematics teachers. We have implemented a STEM Teacher Education Learning Community (STELC), and developed incentive programs based-on informal education, such as four-week paid summer internship in STEM education at the Kentucky Science Center, and participation in the annual STEM Maker Fair on-campus to encourage STEM students to consider a career as a middle or high school STEM teacher. Noyce scholars take part in 200 hours of pre-service field experience in the diverse classrooms in a high-need school as part of their certification training. STELC hosts seminars/workshops on CRT each year for Noyce scholars. Additionally, NKSP offers a paid summer professional development workshop at UK. We will share our achievements, success stories, and challenges, including lessons learnt during NKSP's first two years.

## Place-Based Science for Social Justice

STRAND 2

11:35 AM – Noon — Lambert A

Lillian Sims & Randall Gibson, *University of Cincinnati*

The outcome of this workshop is to equip participants with a collaboratively worked example for a place-based science for social justice instructional unit. In order to meet this outcome, we will introduce the participants to the background literature and resources on place-based science teaching for social justice we used to develop our framework. The place-based science framework is grounded on the work of Buxton & Provenzo (2012). They connect place-based science to social justice through Bowers' (2005) idea of ecojustice. "Ecojustice is the idea that social justice is inseparable from questions regarding ecological well-being (Buxton & Provenzo, 2012, p. 8)." In the workshop we will share a unit we developed using our place-based science for social justice framework as a model. The framework uses a menu approach for designing the instructional unit, such as selecting the anchoring place-based experience and social justice thread, suggestions for integrating disciplinary content and practices, and designing appropriate assessment and action outcomes. After this, the participants will work in collaborative groups to build an outline for a place-based, social justice instructional unit of their own.

*Reference:* Buxton, C. and Provenzo, E. (2012). Introduction to place-based science teaching and learning. In Place-based science teaching and learning: 40 activities for K–8 classroom. Thousand Oaks, CA: Sage

## Community Engagement as Best Practice for STEM Teacher Preparation for Culturally Sustaining Education

STRAND 2

11:35 AM – Noon — Lambert B

Theresa Y. Robinson, PhD, Crystal Velazquez, & Jonathan Hilario, *Elmhurst University*

Efforts to diversify K–12 classrooms must be complemented by strategies designed to increase diversity and inclusivity in the curriculum and to train all teachers to understand and respond to students from different cultural backgrounds. The Elmhurst PRIDE STEM Scholars program emphasizes the integration of community partnerships and culturally relevant pedagogy in STEM teacher preparation. These practices equip students with the tools and methods to use inclusive classroom pedagogies. The goals of this session are to 1) Share pedagogies and practices for STEM teacher preparation for teaching in culturally diverse settings and high-need local schools, 2) Describe methods, strategies, and outcomes for integrating community engagement into STEM teacher education 3) Understand the impact of community-based curriculum practices on 5–12 STEM teacher candidates' self-efficacy. The PRIDE program is committed to ensuring that all teachers understand and respect the unique cultural backgrounds of their students. We believe community engagement in STEM, especially through out-of-school experiences, is a powerful way to achieve this. These experiences enrich the learning process and empower all students to succeed within the STEM fields. Below are examples of community-based activities our Scholars participate in: Afterschool Science Practicum- Grades 3–5 afterschool science program hosted in four local elementary schools; Chicago Science and Innovation Fair- grades K–8 science and environmental science fair hosted at the Illinois Institute of Technology; Museum of Science & Industry, Chicago- Community science engagement fair for children and families; Summer STEM Academy- summer programming for rising high school juniors, seniors, and college freshmen hosted at Elmhurst University.

## Building Thinking Classrooms in Mathematics

STRAND 2

11:35 AM – Noon — Lambert CD

Earl Legleiter, Haylee Hafenstein, Mollie Houtz, & Sarah Abernathy, *Fort Hays State University*

We will be doing some examples from the book by Peter Lejedhal, Building Thinking Classrooms in Mathematics. We will talk about some of the ideas in his book, and how they can be beneficial in the classroom. Participants will work through a thinking task in randomly assigned groups to experience learning in a thinking classroom. We will then engage in a discussion of the pedagogy to reflect on how it may work in your classroom.

# MidSTIP Sessions

Sunday, October 19th
9:00–9:50 am

## Avoiding Burnout and Promoting Wellness with Self-Determination Theory

9:00–9:50 AM — Orly B

Dr. Rebekka Darner & Dr. Ashley Waring-Sparks (Leaders) with Cynthia Balance, Jarod Battisto, Marissa Cantu, Paulina Garcia, Sarah James, Abigail Lincke, & Aidan Link

STIP Fellows who attended the workshop, "Avoiding Burnout Using Self-Determination Theory to Foster Well-being in Both Ourselves and Our Students," will present lessons learned across interactive, engaging stations. Participants in this session will learn about the theoretical constructs put forth by self-determination theory, a macro theory of human motivation, as well as engage in activities that foster wellness and self-determination.

## 3D Printing, DIY Hovercrafts, and Sphero Robots: Activities for Your STEM Classroom

9:00–9:50 AM — Lambert CD

Dr. Todd France (Leader) with Leslie Lyles, Vikki Orso, Katie Powers, Yolanda Reeves, Kole Clarke, Daylan Faltysek, & Abigail Letts

Presenters participated in a 5-day immersive STEM experience this summer in Columbus, Ohio, as part of NSF's pilot Midwest STEM Teacher Innovation Project. After a brief overview of their experiences—including indoor skydiving, a regional STEM school tour, and science museum visit—workshop attendees can explore three different activity stations. Presenters will provide lesson examples using 3D printing, DIY hovercraft kits, and Sphero robots.

## YOU Can Make Math Meaningful for Your Students

9:00–9:50 AM — Lambert B

Janet Moore (Leader) with Jackson Earl, Katelin Miller, Andy Salinas, Stephanie Bayne, Lendell Hargrove, Nancy Morfin, & Brian Orellana

Imagine a math class where students are excited to tackle challenging math problems. Imagine a math class where students are eager to share their ideas and explain their thinking. Imagine a math class where students look for connections and build their knowledge without waiting to be spoon-fed everything. These classrooms are not just ideal fantasies—they are real classrooms with real students, and YOUR classroom can be one of them. Mathematics students often complain that the math they are learning isn't relevant or meaningful to them. In this session, participants will experience teaching strategies and explore resources that can engage students in MEANINGFUL MATHEMATICS. Come join us for some active, interactive, playful, and meaningful math activities!

## Level-Up: Taking your Science Teaching Practice to New Heights

9:00–9:50 AM — Orly A

Dr. Lara Smetana & Dr. Megan Leider (Leaders) with Jennifer Alafnan, Leah Peitzmann, Judith de la Cruz, Alyssa Hoffmann, Sarah Wohler, Emily Richardson, & Natalia Sikora

Taking your science teaching practice to new heights. We will have a round-robin format where attendees will be able to explore curricular examples from high school biology, chemistry, and physics and take-home ideas and resources for their classrooms.

We will also have a poster with information about our summer experiences and the various community partners we worked with to inspire ideas for collaborations in other locations.

## Math Unit Fixer Upper!

9:00–9:50 AM — Lambert A

Dr. Sherri Martinie & Dr. Michael Lawson (Leaders) with Lydia Moon, Jared Meister, Katie Flax, Dani Turner, Tiffany Welton, & Clare Wacker

In this session, six math teachers will showcase how they redesigned a unit of study to elevate their teaching practices and create more engaging learning experiences for their students, all inspired by a summer workshop. The teachers will present tasks, routines, and a variety of resources that support culturally responsive teaching by drawing on multiple mathematical knowledge bases. Through a poster session format, they will demonstrate how they transformed their units to make learning more accessible, engaging, and rigorous, with a focus on building procedural fluency from a strong foundation of conceptual understanding.

## Who's Doing the Heavy Lifting?

9:00–9:50 AM — Gatwick A

Josh Rappuhn (Leader) with Jillian Wheat, Jessica Tolmie, Albana Kume-Robertson, Kimberly Garlie-Sukkert, Hayley Schlabowske, Matthew Zator, & Leila Kassim

Join us as we explore how educators collaboratively redesigned units of study to align more closely with the instructional shifts required by the Next Generation Science Standards (NGSS). This session will focus on strategies used for transforming lessons to emphasize student inquiry, evidence-based reasoning, and the development of critical thinking skills. Participants will engage in discussions on how we guide students in asking more questions, finding and refining information to use as evidence, and constructing well-supported conclusions. By the end of the session, attendees will be familiar with examples of lessons used for enhancing science units to be a more student-centered learning environment.

# Conference Planning Committee

Dr. William Hunter
Dr. Rebekka Darner
Dr. Jessica Krim
Janet Moore
Nicolle von der Heyde
Pam Braun

Dr. Sherri Martinie
Dr. Michael Lawson

Dr. Laura Barwegen

Dr. Monica Medina

Dr. Charles Granger

Dr. Todd France

Joshua Rappuhn

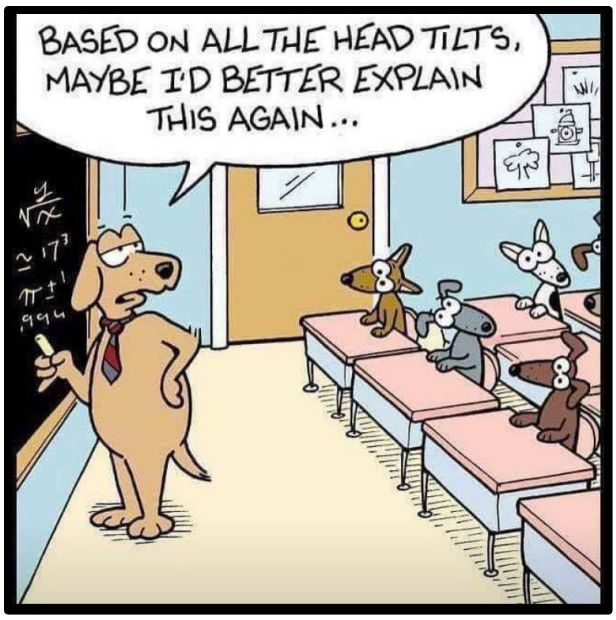
Dr. Margaret Mohr-Schroeder

Dr. Lara Smetana

Dr. Faith Yarberry

Dr. Dorene Huvaere

# Thank you for attending the 2024 Midwest Noyce Teacher Scholarship Program Conference!

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Please take a moment to complete the post-conference survey. Your input is appreciated!

## Post-Conference Survey Link

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