ATE PRINCIPAL INVESTIGATORS CONFERENCE

A VIRTUAL EVENT

Broadening Impact Through Innovation

OCTOBER 18-22, 2021 (EDT)

NSF

AACC AMERICAN ASSOCIATION OF COMMUNITY COLLEGES

#ATEPI

CONFERENCE AGENDA

(All session times listed are EDT).

MONDAY | OCTOBER 18, 2021

PRE-CONFERENCE WORKSHOPS

1:00 – 3:00 p.m.   **Workshop A: Getting Started for New Grantees**
Advance Registration Required

This workshop is recommended for all principal investigators, co-principal investigators, and other team members involved in newly awarded projects and centers in FY21. Others who may find the workshop useful include new awardees in FY20 and other project personnel from prior years who have recently become involved in ATE projects and centers. The goal of this workshop is to make new grantees aware of the reporting and financial requirements of their ATE grant and to connect them with other ATE projects and centers that can help them successfully manage, evaluate, and report on their projects. Participants will have the opportunity to hear from individuals representing Mentor-Connect, ATE Central, EvaluATE, and the National Science Foundation and to learn about the various resources they provide through this workshop, and through two subsequent follow-up interactive Zoom calls to be hosted for new grantees in November and December (dates TBA). Participants will be provided access to a resource packet and are encouraged to bring questions about the management of their projects for discussion.

Edward Almasy, *Co-PI*, ATE Central, University of Wisconsin-Madison, WI

V. Celeste Carter, *Lead ATE Program Director*, National Science Foundation, VA

Elaine Craft, *PI*, Mentor-Connect, Florence Darlington Technical College, SC

Jannele Gosey, *Grants Management Specialist*, National Science Foundation, VA

Maria Leta-Leroux, *Special Agent*, Office of Inspector General, National Science Foundation, VA

Mary Slowinski, *PI*, Working Partners, Bellevue College, WA

Lyssa Wilson Becho, *Senior Research Associate*, Western Michigan University, MI

1:00 – 3:00 p.m.   **Workshop B: Diversity, Equity & Inclusion Strategies for STEM Student Populations**
Advance Registration Required

Community colleges are leading the Diversity, Equity, and Inclusion (DEI) charge by infusing DEI throughout their academic programs. However, STEM programs continue to face some of the toughest challenges when it comes to graduating students of color. This workshop will bring together community college STEM faculty and administrators to share examples and highlight successful strategies focused on promoting a commitment to DEI in STEM courses and programs, while maintaining their mission to recruit and graduate diverse student populations.

Chuck Benton, *Professor*, Biology, Madison Area Technical College, WI

Damyen Davis, *Director*, Summer Intensive Program, Bergen Community College, NJ

Falechia Turman, *Professor*, Mathematics, Kennedy King College, IL

Jocelyn Turner, *Instructor*, English, Kennedy King College, IL

Kevin Christian, *Director*, Diversity, Equity and Inclusion, American Association of Community Colleges, DC (Moderator)

1:00 – 3:00 p.m.   **Workshop F: Engaging Students with Interactive HTML 5 STEM Activities**
Advance Registration Required

This workshop will provide participants with a hands-on experience using new HTML 5 interactive activities (E-MATES). Activities include basic mathematics, electronics, programming, cybersecurity, and information technology. The E-MATE library now has over 70 items available to schools. Activities are designed to engage students, address multiple learning modalities, and enable students to master difficult concepts. The activities presented can be run on any browser enabled device.

Michael Qaissaunee, *Chair of the Engineering and Technology Department*; *Director*, Cyber Center, Brookdale Community College, NJ

John Sands, *Professor of Information Technology, Department Chair of the Computer Integrated Technology Department*, Moraine Valley Community College, IL

1:00 – 3:00 p.m. **Workshop C: Stories are Data – Analyzing & Reporting Qualitative Evaluation**
Advance Registration Required

Stories can add rich details and deep understanding to evaluations. Brené Brown has written, "Stories are data with a soul." Many evaluators value a mixed-method approach, combining both numbers (quantitative) and stories (qualitative). This workshop will take a deep dive into qualitative evaluation what it truly means to conduct an evaluation from a qualitative perspective, how you can fit meaningful analyses into tight budgets and short timelines, and what effective qualitative reporting looks like. Join us to discuss how you can infuse your evaluations with stories. In this hands-on workshop, participants will (a) learn how to embrace and make the most out of qualitative evaluation, (b) apply efficient analysis techniques for qualitative data, and (c) identify practical strategies for reporting stories to busy readers.

Lyssa Wilson Becho, *Senior Research Associate*, Western Michigan University, MI

1:00 – 3:00 p.m. **Workshop D: Universal Design for Learning – Supporting Diversity & Equity**
Advance Registration Required

Learn how to make your ATE project and center STEM curriculum materials, including documents, graphics, and videos, more usable for all learners through the implementation of Universal Design for Learning (UDL). Led by experts from CAST (the Center for Applied Special Technology), this interactive workshop will focus on practical uses of UDL, a framework to improve and optimize teaching and learning for all people based on scientific insights into how humans learn. The first half of the workshop will focus on the four accessibility principles of POUR (Perceivable, Operable, Understandable, Robust). POUR will be applied to STEM-related course content through a series of material makeover demonstrations. Building on these four principles, we will help you think about how to engage all learners and create a more accessible environment the encourages and supports diversity and equity.

Alison Driscoll, *Project Manager for R&D*, CAST, MA
Sam Catherine Johnston, *Director of Postsecondary Education and Workforce Development*, CAST, MA
Luis Perez, *Technical Assistance Specialist*, CAST, MA
Rachael Bower, *PI*, ATE Central, University of Wisconsin-Madison, WI (Moderator)

1:00 – 4:00 p.m. **Workshop E: Preparing Technicians for the Future of Work by Implementing a Cross-Disciplinary STEM Core**
Advance Registration Required

Preparing Technicians for the Future of Work has gathered input from stakeholders representing education, industry, and workforce interests to determine ways to prepare for the impacts of emerging technologies on work of the future. An outcome of these exchanges is that the project has identified core cross-disciplinary knowledge and skills that are increasingly important for all STEM technicians. This workshop focuses on methods for integrating advanced digital literacy, data knowledge and analysis, and business knowledge and processes into any technical program.

Ann-Claire Anderson, *PI*, *Vice President*, Special Projects, Center for Occupation Research and Development (CORD), TX
Marilyn Barger, *Executive Director*, FLATE, FL
Hope Cotner, *President*, Center for Occupational Research and Development (CORD), TX
Richard Gilbert, *Professor*, Chemical and Biomedical Engineering, University of South Florida, FL
Mike Lesiecki, *Co-PI*, *Senior Consultant*, Center for Occupation Research and Development (CORD), TX

3:10 – 4:00 p.m. **Ask a Program Director Roundtable: What Do You Want to Know about NSF and ATE?**

Many PIs are new to the National Science Foundation (NSF) and have questions about how NSF operates, how award decisions are made, and how reviewers are chosen. Program directors from the ATE program will be available during this session to respond to general questions posed by attendees. Participants will have the opportunity to meet, greet, and join a discussion group with their project or center's program director. The program directors available and the Zoom links to join will be available on the conference platform.

CONFERENCE OPENING

12:00 – 1:20 p.m. **Plenary Session: Supply Chain Disrupted – Preparing STEM Technicians for the 'Next Normal'**

As result of the ongoing pandemic, supply-chain disruptions and shortages are significant and widespread affecting all areas of the U.S. economy and workforce. Join this session to hear directly from industry leaders as they discuss the technologies, trends, and innovations that are transforming the supply chain—such as the adoption of smart distribution, automation, and robotic systems—and the impact of this transformation on hiring practices. A diverse and differently skilled workforce is crucial to addressing short and long-term supply chain needs nationwide. Come learn how community colleges can effectively support industry as we work to prepare STEM technicians for the "next normal."

Welcome & Introductions

Walter G. Bumphus, *President and CEO*, American Association of Community Colleges, DC
Sethuraman Panchanathan, *Director*, National Science Foundation, VA

Panel

Phil Gilkes, *Maintenance Program Leader Eastern U.S.*, Dollar Tree Stores, IN
Tom O'Brien, *Executive Director*, Center for International Trade and Transportation, California State University, Long Beach, CA
Paige VanFossen, *Vice President E-Commerce Operations*, DHL Supply Chain, OH
V. Celeste Carter, *Lead ATE Program Director*, National Science Foundation, VA (Moderator)

1:20 – 1:30 p.m. **Break**

1:30 – 2:30 P.M. | CONCURRENT SESSIONS

Concurrent 1: **Cybersecurity Across the Economy: Building a Cyber-Savvy Technical Workforce**

Cyber threats touch all sectors of the economy and all STEM technician education disciplines—from computer science to autonomous vehicles, energy, engineering, agriculture, and manufacturing—and the pandemic era, with its widespread remote work and remote teaching and learning, has revealed new cybersecurity challenges. In this session, panelists representing industry, higher education, and the federal government will provide perspectives on the pervasive nature of cyber threats and on the attendant need for cybersecurity education for the workforce in all areas of technology. Participants will share themes from a recent White House Summit that focused on the nation's cybersecurity, and they will discuss the importance of a broad multidisciplinary strategy for preparing the technical workforce to meet the emerging challenges.

Kathi Hiyane-Brown, *President*, Whatcom Community College, WA (Moderator)
Murray Kenyon, *Vice President*, Cybersecurity Partnership Executive Information Security Services, U.S. Bank, DC
Davina Pruitt-Mentle, *Lead for Academic Engagement*, National Initiative for Cybersecurity Education (NICE), MD
Michael Qaissaunee, *Chair of the Engineering and Technology Department; Director*, Cyber Center, Brookdale Community College, NJ

Concurrent 2: **Advancing Diversity in STEM Education**

Community colleges need leaders who can make organizational change and champion teaching environments that create a more equitable world. The lack of diversity in STEM is a social justice issue. However, despite much progress, women and people of color remain underrepresented in science, technology, engineering, and mathematics (STEM) fields. This panel will discuss the impact of diversity in STEM and how their respective institutions have addressed factors used to influence support for students who pursue fields in science and technology. By examining the importance of DEI illustrates the critical role that educators can play in promoting successful STEM educational pathways.

Maureen Murphy, *President*, College of Southern Maryland, MD
Calandra Springer, *Provost, Vice President of Academic Affairs*, Tallahassee Community College, FL
William Tipper Thomas, *Advocate, Engineer, Survivor*, The William Tipper Thomas Foundation, Inc., MD
Kevin Christian, *Director*, Diversity, Equity and Inclusion, American Association of Community Colleges, DC (Moderator)

Concurrent 3: **Engaging Students in ATE Through Undergraduate Research Experiences**

The Undergraduate Research Experience (URE) is a high impact practice in the recruitment and retention of students in STEM. Within the ATE community undergraduate research opportunities are provided through AACC's Community College Innovation Challenge, or through competitions, such as MATE ROV. This unique session will focus on seeing, observing, and hearing from students—directly from the classroom/lab setting—about their experiences and skills development as part of UREs in nanotechnology at Pasadena City College and vacuum technology at Normandale Community College. Students will share the impacts and ways that UREs changed their perspectives on STEM technician education and their own career paths. Community college faculty will also highlight and share effective strategies and opportunities to implement undergraduate research on community college campuses.

Jared Ashcroft, *PI*, Micro Nano Technology Education Center, Professor, Pasadena City College, CA
Keillen Lee, *Student*, Pasadena City Community College, CA
Nancy Louwagie, *Co-PI, Instructor*, Vacuum Technology, Normandale Community College, MN
Pushpa Ramakrishna, *ATE Program Director*, National Science Foundation, VA
Cohen Rautenkranz, *Student*, Normandale Community College, MN
Jason Rear, *Student*, Normandale Community College, MN
Sotheara Sen, *Student*, Normandale Community College, MN
Janet Teng, *Student*, Pasadena City Community College, CA

Concurrent 4:   **Industry Insights: Partnership Successes, Tips & Strategies**

Effective industry-education partnerships that support program objectives and provide valuable insights into workforce needs, trends, and innovations are vital to ATE grantee success. The Working Partners Project & Workshops, which researched and disseminated ATE partnership best practices and offered educator professional development in this area, invite you to learn more about the industry side of these crucial relationships. Three seasoned ATE industry partners will share why they got involved, what keeps them involved, and offer strategies and tips to enhance your partnership efforts.

James Auld, *Director of External Training Initiatives*, NextEra Energy and Florida Power & Light, FL
Rosemary Brester, *President/CEO*, Hobart Machined Products, Inc., WA
Thomas Tubon, *Chief Workforce Development Officer*, BioMADE, MN
Mary Slowinski, *PI*, Working Partners, Bellevue College, WA (Moderator)

2:30 – 2:45 p.m.   **Virtual Coffee Break & Conversation**

Grab a cup of coffee or the beverage of your choice for an informal break and conversation with fellow participants. At the end of the break, see a quick video on how to connect and get the most out of ATE Connects!

2:45 – 4:00 p.m.   **ATE Connects**

ATE Connects is a key component of the virtual conference and offers ATE projects and centers the opportunity to network and connect with conference participants, explore the ATE community, and engage in the sharing of information, resources, and materials related to their programs. Grouped by eight STEM areas of focus, attendees are encouraged to explore ATE project and center materials, join and participate in chat conversations, and message with fellow ATE PIs for virtual networking and engagement. ATE Connects materials will remain available on-demand for viewing throughout the event, and for up to six months following the conference.

4:00 – 4:50 p.m.   **Ask a Program Director Roundtable: What Do You Want to Know about NSF and ATE?**

Many PIs are new to the National Science Foundation (NSF) and have questions about how NSF operates, how award decisions are made, and how reviewers are chosen. Program directors from the ATE program will be available during this session to respond to general questions posed by attendees. Participants will have the opportunity to meet, greet, and join a discussion group with their project or center's program director. The program directors available and the Zoom links to join will be available on the conference platform.

THURSDAY | OCTOBER 21, 2021

12:00 – 12:50 p.m.   **ATE Student/Alumni Poster Session – Supporting Student Innovation in STEM**

Thirty-six students are attending the virtual ATE Conference and have prepared posters designed to share information on their ATE programs of studies and career paths. Learn about these exciting and innovative student projects in a range of topics such as biofuels, nanoparticles, 3D printing, network traffic analysis, virtual reality, machine learning, and more! Conference participants are strongly encouraged to use this dedicated time on the agenda to view student posters, post messages, and engage with students in chat in support of their efforts.

12:50 – 1:00 p.m.   **Break**

1:00 – 2:00 p.m.   **Student Only Session: Career Readiness and Industry "Speed Networking"**

This special, student-only session focuses on providing students the opportunity to talk directly with industry leaders to learn about the skills needed to be successful in the global workplace, as well as successful interviewing tips and techniques for getting the right job. The session will include an opportunity for virtual "speed networking," which is a process designed to facilitate introductions between business/industry representatives and student participants. This session will provide student participants the opportunity to engage with accomplished business professionals from a variety of backgrounds and companies.

Golnar Afshar, *Biotechnology Faculty*, City College of San Francisco, CA (Facilitator)
Karen Leung, *Internship Coordinator, Biotechnology Instructor*, City College of San Francisco, CA (Facilitator)

1:00 – 1:50 P.M. | SPOTLIGHT SESSIONS

Spotlight 1: **The Pandemic Pivot – Lightning Round of Innovative ATE Strategies**

Join ATE PIs and learn about promising strategies and exemplary practices related to pivoting programs, technologies, and instructional delivery during the pandemic in this informative Lightning Round session. Featuring six presentations of seven minutes each, this session will share innovative practices such as hybrid training programs; virtual DACUMs; virtual simulations; creative outreach; remote access for robotics equipment; and crafting at home, active learning labs using household items. Come and engage with presenters live in chat and get a flavor for the effective flexibility, innovation, and resilience exhibited by ATE grantees in meeting the needs of their students and grant partners.

Rachael Bower, *PI*, ATE Central, University of Wisconsin-Madison, WI (Moderator)

Chrysanthos Panayiotou, *Executive Director,* LASER-TEC, Indian River State College, FL

Buffy Quinn, *Associate Professor*, SUNY Onondaga Community College, NY

Mike Guericke, *NEXUS Principal Investigator*, Metropolitan Community College, NE

Debra Jones, *Program Coordinator*, Orangeburg-Calhoun Technical College, SC

Chris Quick, *Founder and CEO*, RealBotics, Inc., PA

Justin Starr, *Assistant Professor*, Community College of Allegheny County, PA

Justin Tickhill, *Associate Professor,* Program Director of Biology, North Central State College, OH

Spotlight 2: **Aerospace Educational Programs' Response to the COVID-19 Crisis**

Education in aviation fields relies heavily on kinesthetic learning; and the COVID-19 crisis caused a major disruption to this type of hands-on learning and engagement. This Spotlight session stems from qualitative research on aerospace and aviation maintenance programs' reactions to the pandemic and strategies used to maintain academic continuity. The presenters will share the innovative approaches taken to educate students when the pandemic caused an abrupt halt to their previous teaching techniques—as well as discuss the steps that aviation education programs are taking to better handle future disruptions.

Karen Johnson, *Associate Professor*, Southern Illinois at Carbondale, IL

Stephen Ley, *Associate Professor*, School of Aviation Science, Utah Valley University, UT

Crystal Maguire, *Executive Director*, Aviation Technician Education Council, OK

Katie Shakour, *Research Associate*, Clemson University, SC

Spotlight 3: **Environmental Protection & Disease Surveillance – The Emerging Field of Wastewater Epidemiology**

Wastewater-Based Epidemiology (WBE) is an emerging field that has great potential to complement infectious disease surveillance systems and provide early warning detection for disease outbreaks and epidemics. Presenters will share a transferable model showing how academic labs can offer appropriate learning experiences and prepare their graduates for emerging career fields such as WBE. Collaborations with local water utility providers and the incorporation of real-world issues such as wastewater treatment into the classroom can also positively impact the retention and recruitment of underrepresented students in STEM.

Francoise Chauvin, *Chief of Laboratory Operations*, Graduate Center, Queens College, CUNY, NY

John Dennehy, *Professor of Biology*, Graduate Center, Queens College, CUNY, NY

Davida Smyth, *Associate Professor of Microbiology*, Texas A&M University, TX

Monica Trujillo, *Associate Professor of Biology*, Queensborough Community College, NY

Spotlight 4: **Industry 4.0 Certifications for Technology Programs**

This session will explore the nationally-recognized certification system associated with Industry 4.0 and the Industrial Internet of Things. Participants will learn about the Smart Automation Certification Alliance (SACA) and how it is shaping educational programs in high school, technical colleges, and universities. Presenters representing educators and industry partners will share how the alliance has impacted their institutions. Since SACA certifications are built on a system of micro-credentials, a discussion of stackable credentials and digital badging will be included.

Debbie Dawson-Gunther, *Automation Faculty*, Montcalm Community College, MI

Matt Kirchner, *President*, ATS/Lab Midwest, WI

James Wall, *Executive Director*, Smart Automation Certification Alliance (SACA), KY

1:50 – 2:00 p.m.   **Break**

2:00 – 2:50 P.M. | SYNERGY MEETINGS

Synergy 1: **Making Industry Connections & Engaging Underrepresented Students**

This session will focus on two areas that ATE project leaders often find difficult: how to make connections to local industry and how to recruit underrepresented students to their programs. The presenters are PIs on ATE projects and collaborate on an ATE coordination network. The approaches and strategies they will share have worked successfully and are not costly or time-consuming to implement. Key topics include collaborating with Manufacturing Extension Partnerships to help connect to local manufacturers, and leveraging career influencers to help with recruitment of underrepresented minorities.

Evelyn Brown, *Director*, Extension Research & Development, North Carolina State University, NC

Marci Gale, *Mechatronics Faculty & Program Head*, Central Virginia Community College, VA

Zack Hubbard, *Dean of Technical Programs*, Rowan-Cabarrus Community College, NC

Synergy 2: **Collaborative Efforts that Identify & Teach Technical Scenarios with Embedded Mathematics Concepts**

Two complementary projects share their collaborative approaches to solicit workplace scenarios that technicians encounter with needed math competencies, discover how mathematical concepts are embedded within these scenarios, then develop and deliver curricular instruction with experiential learning practices in a technician lab. Attendees will see the benefits of partnering between math and technical faculty, and industrialists; leave with industry-based manufacturing scenarios where mathematics is successfully incorporated; and collect anecdotes of how students benefit from abstract mathematical thinking in the trades.

Bobby Alvarado, *Director of Welding and Technology*, Arizona Western College, AZ

Michael Hacker, *Co-Director*, Center for STEM Research, Hofstra University, NY

Jacob Natseway, *Math Faculty*, Arizona Western College, AZ

Rodney Null, *Professor Emeritus*, Rhodes State College, OH

Gerhard Salinger, *Former Program Officer*, National Science Foundation (Retired), NM

Synergy 3: **Engaging Students and Industry for the Future of Agriculture**

California and Nebraska both rank in the top five nationally for agriculture production, with the industry accounting for the largest revenues for both states. This has set the stage for Madera Community College (California) and Northeast Community College (Nebraska) to lead the way in establishing sustainable pathways to increase the skilled technician workforce in the agriculture industry through partnerships with high schools and industry. Join us as we discuss strategies of success in the areas of high school partnership, recruitment, and industry partnerships.

Tee Bush, *Agriculture/Horticulture Instructor*, Northeast Community College, NE

Brandon Keller, *Agriculture Instructor*, Northeast Community College, NE

Sam Rodriguez, *Agriculture Business Instructor*, Madera Community College, CA

Ganesan Srinivasan, *Dean of Instruction*, Madera Community College, CA

Synergy 4: **Improving Diversity, Equity, & Inclusivity via an Equity Gap Analysis**

This session will focus on improving diversity, equity, and inclusivity in the technical programs at River Parishes Community College. In particular, presenters will focus on the process and strategies used to conduct an equity gap analysis across academic and technical silos in consultation with the National Alliance for Partnerships in Equity (NAPE). Details will be shared on the implementation of NAPE's Program Improvement Process for Equity (PIPE)—and the plans and strategies needed to scale-up this process to fit the needs of other technical and non-technical programs across campuses.

John Sluder, *Interim Dean of Applied Sciences*, River Parishes Community College, LA

Esperanza Zenon, *Associate Professor*, River Parishes Community College, LA

Synergy 5: **Outcomes Using "Evaluate" Methods for UR & Engineering Design Projects**

EvaluateUR is a method that helps students identify the knowledge and skills they gain through participation in undergraduate research and engineering design projects and provide feedback about their progress using a range of outcomes identified as important for entering the STEM technician workforce. Several ATE projects are using modifications of EvaluateUR including shorter duration summer research experiences, CUREs, and participation in MATE's ROV competitions. This session introduces EvaluateUR and provides examples of how it is being used in several ATE projects and the ATE MNT Center.

Jared Ashcroft, *PI*, Micro Nano Technology Education Center, *Professor*, Pasadena City College, CA

Iraj Nejad, *Professor of Chemistry*, Mt. San Antonio College, CA

Jill Singer, *SUNY Distinguished Teaching Professor*, SUNY Buffalo State, NY

Jill Zande, *President/Executive Director*, MATE Inspiration for Innovation, CA

2:50 – 3:00 p.m.   **Break**

3:00 – 3:30 P.M. | DEMONSTRATION SESSIONS

Demonstration 1: **Using Maps, Dashboards, and Data Collection Tools to Engage Learners**

Maps have been at the forefront of the news as people try to understand the risk of the pandemic based on where they live. More than a trillion maps have been viewed on the John Hopkins' COVID-19 dashboard site; and people are becoming aware of how maps and dashboards can be used for topics outside of geospatial technology. Advances in technology have provided ways for non-mapping experts to create visualizations that can be interactive and shared on the web. This session will show examples of interactive visualizations such as story maps, dashboards, and data collection surveys as well as demonstrate how to create them.

Vince DiNoto, *Director,* GeoTech Center, Jefferson Community and Technical College, KY
Ann Johnson, *Associate Director*, GeoTech Center, KY

Demonstration 2: **Introducing Technician Navigator**

Future technicians need more than a map to show them the way to educational pathways and career opportunities—they need a trusted guide; one of their own who has traveled the path before them. Utilizing a content system to create contextual experiences to increase the quality, quantity, and diversity of a skilled technical workforce is at the heart of this project. Contextual experiences meet prospective students where they are and use a series of connected experiences that incrementally guide them along their journey to enrolling in technician education programs at community colleges. Join this session for a demonstration of "Technician Navigator" and learn tips and strategies for creating your own content system.

Mary Ellen Gardiner, *Producer*, Pellet Media, MA
Tressa Gardner, *Associate Vice President*, SiMTm, Florence Darlington Technical College, SC

Demonstration 3: **Gameful Mentorships: Creating Engaging Student- Employer Connections**

Gamification is generally defined as the use of game-design elements in non-game concepts. The gameful mentorship program allows mentors to help students learn and apply career competencies and skills while networking with industry professionals. In this session, the presenter will demonstrate tools and resources used to create gameful activities with mentors. Attendees will leave with ideas for immediate implementation into existing mentoring programs.

Taylor Slocum, *Counselor*, Career Services, Columbus State Community College, OH

Demonstration 4: **Zombies Go Virtual: Remote Delivery of Biotech Summer Camp**

Due to the pandemic, Texas Southmost College offered its STEM summer camps remotely for the first time in 2021. Using the "Zombie Apocalypse-themed" biotechnology camp as an example, this session will demonstrate the steps necessary to turn a face-to-face camp into a remote one. Topics include altering activities for at home "hands-on" experiences, choosing virtual tools, and working with internal stakeholders, such as IT. Implementation of virtual camps can also be useful in remote and rural areas where in-person day camps are difficult due to distance and transportation challenges facing many students.

R. Deborah Overath, *Biology Instructor and Chair of Mathematics and Sciences*, Texas Southmost College, TX

Demonstration 5: **Virtual Reality for Effective Business Communication Across Cultural Differences**

Manufacturing and production fields have a growing need for skilled technicians who can communicate effectively in diverse teams. In response to this workforce demand, the session presenters developed an adaptive virtual reality (VR) program to help manufacturing technology students develop empathy, openness, and curiosity, which support effective communication across cultural differences. The VR series allows students to practice communication skills in a smart factory context. Session attendees will learn about the design of this VR program and how to experience the interactive simulations themselves.

Kris Acheson-Clair, *Director*, Center for Intercultural Learning, Mentorship, Assessment and Research, Purdue University, IN
Mesut Akdere, *Professor of Human Resource Development*, Purdue University, IN
Yeling Jiang, *Doctoral Candidate*, Human Resource Development, Purdue University, IN

3:30 – 3:35 p.m.   **Break**

3:35 – 4:05 P.M. | DEMONSTRATION SESSIONS

Demonstration 6: **Drone Integration Across Curricula for Maximum Impact and Growth**

Session presenters will demonstrate step-by-step strategies for recruiting faculty from different disciplines into a cross-curricular community of practice to support instruction in small unmanned aircraft systems (sUAS, or drones) and geospatial technologies (GT). A community college chemistry professor will share her story and how she successfully recruited faculty from many other disciplines to develop sUAS/GT skills through the GeoTEd-UAS project. The importance of this interdisciplinary approach and best practices for program growth in sUAS/GT will also be discussed.

Shawn Shields Lyons, *Professor of Chemistry and GIS*, Germanna Community College, VA
David Webb, *GeoTEd-UAS Consultant*, Virginia Space Grant Consortium-GeoTEd-UAS, VA

Demonstration 7: **Technician Trends Visualized – An Interactive Data Tool**

This session will provide a demonstration of a newly created (free) data visualization tool that allows users to view data trends in technician graduates in various community colleges programs nationally. The tool includes all two-year colleges and programs by CIP code. Users can review graduation trends in varying degree programs by state or across states from 1995 to 2019. Several commonly requested data trends will be demonstrated.

Marilyn Barger, *Executive Director*, FLATE, FL
Bill Mabe, *Chief Data Scientist*, Practical Data Lab, NJ
Michelle Van Noy, *Associate Director & Assistant Research Professor*, Education and Employment Research Center, Rutgers University, NJ

Demonstration 8: **Building IoT Workforce Competencies Using Online Virtual Tools**

This session will present a variety of online tools and exercises used to develop student competencies required in today's smart work environment. Presenters will demonstrate several activities designed to provide students with design and troubleshooting challenges associated with building high-demand workforce competencies in the Internet of Things (IoT). Participants will also be provided with a workforce competency report.

Chuck Bales, *Professor, Mechanical Engineering*, Moraine Valley Community College, IL

Kristine Christensen, *Professor, Management Information Systems*, Moraine Valley Community College, IL

Demonstration 9: **Learning by Teaching: Students as Collaborators on an ATE Project**

The Support Center for Microsystems Education (SCME) assists technical programs looking to introduce microelectronic and mechanical systems (MEMS) topics to their students. Lone Star College biotechnology students are developing a classroom kit that simulates an important MEMS technology: DNA sequencing. This student-driven prototyping project has involved the classroom use of SCME-developed kits as models for the prototype. Current students further leveraged these efforts in a "pay it forward" initiative by producing and disseminating videos that outline the features of the existing kits.

Daniel Kainer, *Director*, Lone Star College Biotechnology Institute, Lone Star College-Montgomery, TX

Demonstration 10: **Environmental Technology Training in a Virtual Future: Augmented & Virtual Reality's Promise**

This session will highlight the Advanced Technology Environmental Education Center's (ATEEC) focus on harnessing transformative augmented, virtual, and mixed reality (AVR) technologies to expand the horizons of training methodologies for the environmental technology workforce of the future. Through a demonstration of training applications guided by an AVR device and a discussion of experiences developing in the AVR sphere so far, presenters will illustrate not only the vast untapped current potential for higher instructional productivity this new technological wave promises, but how in the future it might reshape the nature of training altogether.

Robert Gillespie, *Lead AVR Developer*, Eastern Iowa Community Colleges, IA

Josh Webb, *AVR Center Director*, ATEEC, Eastern Iowa Community Colleges, IA

4:05 – 4:10 p.m. **Break**

4:10 – 5:00 p.m. **ATE Connects – Continuing to Build Community**

Conference participants are encouraged to use this dedicated time to engage in ATE Connects. ATE Connects offers ATE projects and centers the opportunity to network with conference participants, explore the ATE community, and engage in the sharing of information, resources, and materials related to their programs. Grouped by eight STEM areas of focus, attendees are encouraged to explore ATE project and center materials, join and participate in chat conversations, and message with fellow ATE PIs for virtual networking and engagement. Jump into a Zoom room—available in each STEM area of focus—to further engage with fellow participants.

FRIDAY | OCTOBER 22, 2021

12:00 – 1:00 p.m. **Plenary Session: Equity-ology – Keys to Building a Diverse STEM Workforce**

Most educators recognize the importance of 21st century skills—and the need to ensure diverse innovation for the future workforce—but may face some challenges for effective curriculum implementation. These challenges are compounded by the recent pivot to hybrid and virtual learning caused by the pandemic. Based on the speaker's professional experience in multiple STEM disciplines and workforce development programs, this tech-savvy plenary walks educators through unique strategies to engage diverse students in STEM while preparing them for a rapidly evolving workforce.

V. Celeste Carter, *Lead ATE Program Director,* National Science Foundation, VA

Rosalyn Hobson Hargraves, *Division Director*, DUE, National Science Foundation, VA

Keynote Speaker: **Justin "Mr. Fascinate" Shaifer**, *Science TV Show Host*, *Co-Founder*, STEM Success Summit, CA

1:00 – 1:10 p.m. **Break**

1:10 – 2:00 P.M. | SPOTLIGHT SESSIONS

1:10 – 2:00 p.m. **Spotlight 5: Virtual Reality – From Workshops to STEM Engagement & Hands-On Education**

The National Center for Autonomous Technology's (NCAT) foray into virtual reality (VR) was in part motivated by COVID but will persist beyond the pandemic, with innovative practices that will have a lasting and transformative impact on professional development, STEM engagement, and technician education and training. In this session, presenters will share and describe NCAT's initial success facilitating a faculty workshop in VR, which inspired the vision for creating the MATE ROV Competition VR World for Social Engagement, which in turn is a launching point for creating hands-on, collaborative learning experiences for students in KonnectVR.

David Anderson, *Biology Faculty*, Saint Cloud State University's Visualization Lab, MN

Jonathan Beck, *Executive Director*, National Center for Autonomous Technologies (NCAT), MN

Mark Gill, *Director*, Saint Cloud State University's Visualization Lab, MN

Jill Zande, *President/Executive Director*, MATE Inspiration for Innovation, CA

Spotlight 6: **Career READY: Competencies-Based Career & Professional Development**

Columbus State Community College's career services team developed the Career READY program in response to the growing requests for soft skills training and professional development for pre-apprenticeship students. The Career READY program streamlined previous one-off trainings and focuses on a competencies-based career education curriculum. This training has been used widely across STEM academic programs, has received input from industry employers, and is evaluated for effectiveness annually. During the session, presenters will discuss how the program was adapted to better engage and prepare students.

Dave Cofer, *Interim Director*, Employer Engagement & Experiential Learning, Columbus State Community College, OH
Julie Collet, *Counselor*, Career Services, Columbus State Community College, OH

Spotlight 7: **Doubling Down on Mechatronics Dual Enrollment**

Working with high schools for dual enrollment programs often coincides with a maze of issues and logistical challenges. This Spotlight session panel will offer a facilitated discussion—among three NSF ATE grantees involving four community colleges—to focus on the ins and outs of dual enrollment programs for mechatronics, the special issues that must be addressed for a strong program alignment, and innovative practices to ensure student success.

Marilyn Barger, *Executive Director*, FLATE, FL
Doug Brauer, *Dean of Engineering & Industry,* Florida State College at Jacksonville, FL
Doug Laven, *Mechatronics Program Instructor*, South Central College, MN
Doug Pauley, *Associate Dean Training Development*, Central Community College, NE
Andrew Robertson, *Coordinator of Workforce Development*, Gadsden State Community College, AL

Spotlight 8: **Strategically Deepening Employer Engagement in Technical Programs**

Learn how three colleges are deepening and expanding employer engagement or all of their technical programs. Representatives from colleges of differing size and interest will share challenges faced, implementation strategies and benefits to date, and plans for the future. They will be joined by the inventor of the Business & Industry Leadership Team (BILT) co-leadership model who will explain how that model can be adopted and adapted to deepen employer engagement.

Ann Beheler, *PI*, National Convergence Technology Center, TX
Antonio Delgado, *Vice President of Innovation and Technology Partnerships*, Miami Dade College, FL
Sheri Litt, *Provost & Vice President of Academic Affairs*, Florida State College Jacksonville, FL
Phillip Witt, *Associate Vice President for Career and Technical Education*, Crowder College, MO

2:00 – 2:10 p.m.　**Break**

Synergy 6: **The Value of Credentials for Job Seekers and Industry**

Technical training offers unparalleled opportunity for students to obtain skill sets which are in demand by industry. The skill sets are matched and maintained to industry requirements; yet industry is sometimes unfamiliar with graduates' capabilities. An industry-recognized credential bridges the gap between training programs and hiring employers. Join us as we discuss the value of credentials for both job seekers and industry.

Bridgette Kirkpatrick, *Professor*, Biotechnology and Biology, Collin College, TX
Philip Gibson, *PI*, Center for Global Health Innovation, GA
Tamara Mandell, *Director of the Biotility*, University of Florida, FL
Valorie Piper, *PI & Executive Director*, National Center for Supply Chain Automation, CA

Synergy 7: **Supporting STEM Education in Rural and Remote Schools**

Join this session to discuss strategies from two ATE projects in supporting STEM in rural and remote schools. (1) K12 teachers working in rural Alaska often teach in STEM fields for which they do not have the academic qualifications. The 'for Teachers' model helps equip non-STEM teachers with tools they can use to provide STEM instruction standards, such as through the use of place-based and project-based strategies. An emerging idea in this model is how to include indigenous knowledge and indigenous science as an equal partner into STEM instruction. (2) The Developing Photonics Education project brings photonics to rural Iowa Secondary School teachers. Attendees will learn about photonics, the curriculum and techniques in conducting this online content with hands-on labs course, plus opportunities for their students.

Steven Johnson, *Director of Academic Affairs*, Prince William Sound College, AK
Frank Reed, *PI*, *Grant Director*, Indian Hills Community College, IA

Synergy 8: **Increasing the Student Success in Innovation and Entrepreneurship (I&E)**

Teaching engineering design and advanced manufacturing in an innovative and techno-entrepreneurship pathway is important in creating a strong 21st century workforce. Traditional teaching and delivery methods of these concepts do not produce successful learning outcomes with high efficiency. This synergetic session will provide a number of best practices successfully developed and implemented by the faculty members in Somerset Community College, Sinclair College, and Tennessee Tech University.

Ismail Fidan, *Professor*, Manufacturing and Engineering Technology, Tennessee Tech University, TN
Thomas Singer, *Professor*, Mechanical Engineering Technology, Sinclair College, OH
Eric Wooldridge, *Professor of Additive Manufacturing*, Somerset Community College, KY

Synergy 9:   **Recruiting and Retaining Underrepresented Students in Technician Education**

This synergy session is designed as a roundtable to get perspectives on recruiting and retaining students from underrepresented groups into technician education programs. This will involve exploring the importance of industry careers, the present and future needs of industry, and the opportunities for those who seek technician education. Career exploration encourages students to understand what career opportunities are available to them and to establish fit. The intention is to develop a plan that can be used as a blueprint to guide students to seek higher education and employment.

Christine Delahanty, *Area Coordinator of Science and Engineering*, Bucks County Community College, PA

Mara Lopez, *Research Program Manager*, Center for Broadening Participation in STEM, Arizona State University, AZ

Cynthia Pickering, *Research Program Manager*, Center for Broadening Participation in STEM, Arizona State University, AZ

Tracy Timby, *Interim Associate Vice President of Strategic Partnerships*, Bucks County Community College, PA

Synergy 10:   **Impactful Evaluation Questions and Strategies for Getting to So What?**

Session attendees will engage with ATE project staff and evaluators who share passion and creativity for answering tough questions about project outcomes. Session leaders will identify synergies regarding the types of "so what" questions ATE projects and their partners want answered. Proven strategies and possible creative solutions for tackling important questions within and beyond typical assumptions and practices of existing ATE projects will be shared.

Kirk Knestis, *Principal*, Evaluand LLC, VA

Lori Wingate, *Executive Director*, The Evaluation Center, Western Michigan University, MI