CONNECTING CLASSROOMS TO THE WORLD

May 24 & 25, 2017

TENNESSEE STEM Innovation Summit
Dear STEM Partners,

Welcome to the 2017 Tennessee STEM Innovation Summit! Today, you are joining leaders from across the state to advance a vision in which all Tennessee students have access to high-quality STEM education to prepare them for success in college, career, and life.

Excellence in STEM fields has shaped our state for decades – from life-changing innovation at Oak Ridge National Laboratory, to the production of automobiles that are driven throughout the world, to legendary high-tech recording studios and stages, and from the “Body Farm” to the Solar Farm – it will be a part of who we are for years to come. As Tennessee continues to experience a manufacturing renaissance and attracts new high-tech industries, the need for a qualified STEM workforce in our state has never been greater. We must position ourselves today to meet the demands of tomorrow. We must be a future-ready Tennessee!

It is against this backdrop of excellence that we will explore the Innovation Summit theme of **Connecting Classrooms to the World**. This year’s theme was chosen as an exciting opportunity for us to consider fresh ideas for bringing real-world concepts into the classroom and new ways to help our students understand that the knowledge they gain today could change our world tomorrow. Students in STEM classrooms across the state need to be able to approach problems hands-on with finding solutions in mind. The goal of this year’s theme is to equip educators with connections to authentic content that empowers students to be global citizens.

I am excited about our lineup of inspirational speakers and learning session leaders who will explore how STEM education can drive change that leads to future successes. We will hear from innovative educators that have started STEM schools and programs, designed problem-based lessons that incorporate the business partners within their own backyards, and built partnerships that mobilize the community behind our common STEM goals.

I encourage you to take time on the sidelines to network and engage with your fellow leaders attending the Innovation Summit, share your ideas and explore creative, new ways to work together to create the Tennessee that we want to be. If you haven’t done so already, I also encourage you to connect with one of our seven regional STEM Innovation Hubs during our time together. I’d also like to extend a heartfelt thank you to our presenters, sponsors, and partners for their dedication and commitments in making the Innovation Summit the premier STEM event in Tennessee.

On behalf of the Tennessee STEM Innovation Network, it is my pleasure to welcome you to the Innovation Summit! Thanks for your participation and for your continued commitment to advancing **STEM for All**.

Wes Hall, Director
Tennessee STEM Innovation Network
Battelle Education
@WesleyHall

WiFi Network:
Username: tnstem2017
Password: Welcome17

Find us on Twitter!
@theTSIN

Please use our conference hashtag:
#TNSTEM
What is the Tennessee STEM Innovation Network?

In 2010, the Tennessee Department of Education partnered with Battelle Memorial Institute to launch the Tennessee STEM Innovation Network. Focusing on “kindergarten to jobs”, the Network is developing high-quality STEM programming to further ensure Tennessee students are college and career ready upon graduation. The Network utilizes STEM Platform Schools and Regional STEM Innovation Hubs located across Tennessee to increase student interest and participation in STEM fields.

TSIN supports the growth and quality of STEM education in Tennessee by:

- Connecting the best STEM schools, teachers, and administrators to one another and to national resources
- Assisting schools and communities that want to create new STEM schools and programs
- Driving local STEM innovations through a network approach for statewide impact

The Tennessee STEM Innovation Network is committed to helping the State of Tennessee inspire and train the next generation of innovative leaders. The presence of these highly skilled workers will enable the state to grow businesses and industries that can successfully compete in the global economy.

Innovative Leaders Institute

The Innovative Leaders Institute is a year-long training and mentoring experience for educators led by some of the top STEM and innovative school leaders in our state. The Innovative Leaders Institute provides participants opportunities to network with other building-level leaders from across Tennessee, visit innovative schools to examine different models of STEM integration, and share best practices and resources with the expectation of having an immediate impact on leader practice.

The Institute is led by experienced principals from Tennessee, who were selected because they have demonstrated positive impact on their schools through student performance, teacher retention, and creating and supporting an academically challenging learning environment for students.

Innovative Educator Workshops: Professional Development

Regional Hubs are committed to giving educators the resources and skills they need to expand STEM learning both inside and outside of the classroom. Through coordination with the Network, the Regional Hubs provide targeted and aligned professional development on a variety of topics through the Innovative Educators Workshops. The Innovative Educators Workshops are utilized to deliver aligned professional development through the Regional Hubs to targeted audiences across the state.

Previous hub training topics have included problem- and project-based learning, incorporation of engineering design concepts into everyday instruction, deployment of 1:1 technologies in the classroom, inquiry lesson design, planning for horizontal and vertical curriculum alignment, designing STEM lessons on a shoestring budget, and planning for assessment in the STEM classroom.

STEM Excellence Awards

The STEM Excellence Awards are designed to recognize a phenomenal teacher, school, district or regional leader, and advocate in STEM education. Tennessee’s recent successes in STEM are due to the combined efforts of strong teachers in the classroom, innovative school and district/regional leaders, and advocates that place STEM on the top of their priority list. The STEM Excellence Awards seek to recognize one awardee in each of the following areas: teaching, building or district/regional level administration, and advocacy.

STEM School Tours

There is no better way to learn new teaching and learning strategies than to see STEM in action! Schools across Tennessee are integrating STEM learning in different ways and there are multiple benefits to observing pioneering strategies at work. Now, finding innovative school models to visit is easier than ever. The Tennessee STEM Innovation Network has partnered with schools across the state to arrange guided tours in both the spring and fall. Visitors will get a chance to observe the school structure, peek inside classrooms, and have conversations with students, teachers, and administrators.
CONGRATULATIONS TO THE 2017 STEM EXCELLENCE AWARD WINNERS

EXCELLENCE IN STEM TEACHING AWARD
CHRISTA PHILLIPS
TEACHER, HOUSTON HIGH SCHOOL, GERMANTOWN, TN

Christa Phillips is a secondary STEM teacher at Houston High School in Germantown, TN, the lead STEM teacher for Germantown Municipal School District, and a lead teacher in the West TN STEM Innovation Hub’s Master Teacher Corps. Her students are engaged in STEM learning within her courses, as well as outside of school through projects and competitions in CyberPatriot, Skills USA, Technology Student Association, Houston High School STEM Club, and Camp Invention, where she serves as the camp’s director. Additionally, Mrs. Phillips coordinates all STEM efforts across the Germantown Municipal School District through a collaborative cohort that works to define what STEM education looks like in the classroom, as well as the vertical alignment of the STEM programs offered throughout the district. Mrs. Phillips is being recognized for her commitment to integrating STEM learning inside and outside of the classroom and for her efforts to encourage other teachers as they seek to integrate STEM in their own classrooms.

EXCELLENCE IN STEM LEADERSHIP AWARD
DR. B.J. WORTHINGTON
DIRECTOR OF SCHOOLS, CLARKSVILLE-MONTGOMERY COUNTY SCHOOL SYSTEM, CLARKSVILLE, TN

B. J. Worthington serves as the Director of Schools for the Clarksville-Montgomery County School System (CMCSS) in Clarksville, TN. During his tenure with the school district, he has served as a science teacher, assistant principal, middle and high school principal, and Chief Academic Officer. Dr. Worthington has earned teacher of the year honors and outstanding district administrator. In addition, he was one of Education Week’s “Leaders to Learn From” (2014) and was selected as the Bob Grossman Superintendent of the Year (2013) for leadership in communications. Dr. Worthington is a certified leadership trainer and has led his district to the highest academic growth in the state in literacy and numeracy for the past two years. Dr. Worthington is being recognized for his commitment to creating a leading STEM district through his work to infuse STEM learning throughout all schools in CMCSS.

STEM ADVOCATE AWARD
DR. STACY KLEIN-GARDNER
DIRECTOR OF THE CENTER FOR STEM EDUCATION FOR GIRLS, HARPEITH HALL, NASHVILLE, TN

Dr. Klein-Gardner serves as the Director of the Center for STEM Education for Girls at the Harpeth Hall School in Nashville, TN where she leads professional development in STEM and works to identify and disseminate best practices from successful STEM programs for females. Dr. Klein-Gardner hosts the nationally-recognized STEM Think Tank and Conference annually at the Harpeth Hall School and also leads a program for rising 7th – 12th grade girls that integrates community service and engineering design in a global context. She continues to serve as an Adjunct Associate Professor of the Practice of Biomedical Engineering and Radiology and Radiological Sciences at Vanderbilt University and currently serves as the immediate past chair of the American Society for Engineering Education’s Pre-College Engineering Education division. Dr. Klein-Gardner is being recognized for her commitment to advancing opportunities for girls in STEM and for her successful creation of a national platform for incubating ideas for providing access to STEM opportunities for all students.

STEM INNOVATOR AWARD
KERI RANDOLPH
DIRECTOR OF INNOVATION, HAMILTON COUNTY DEPARTMENT OF EDUCATION, CHATTANOOGA, TN

Keri Randolph is the Director of Innovation for Hamilton County Schools in Chattanooga, TN. Previously, she taught high school science for 10 years in North Carolina, worked with pre-service teacher candidates at the university level in the UTeachChattanooga program, and directed STEM and teacher leadership initiatives at the Public Education Foundation of Chattanooga. Randolph was one of the founders of the Southeast Tennessee STEM Innovation Hub where she created the STEM Teaching Fellows program, a year-long professional learning experience for teachers. Passionate about teacher voice and leadership, she created and supports several initiatives including the Teacherpreneur Incubator and Teacher Think Tank. Her work also focuses on business partnerships to support learning, innovative learning models including 1:1 technology, PBL, Gigabit applications and digital equity. She serves on the boards of the Enterprise Center and Benwood Foundation and is a member of the state’s STEM Leadership Council. Mrs. Randolph is being recognized for her success and innovation in leading STEM programs that have had a lasting impact on the Southeast Tennessee region and for her leadership within Hamilton County Schools that has led to new STEM learning opportunities for all students.
Jack Hanna, popular host of the hit television series, “Jack Hanna’s Animal Adventures,” is one of America’s most beloved zoologists, naturalists, and adventurers. Hanna, a Knoxville native, began to receive national recognition after he became Director of the Columbus Zoo in Columbus, Ohio in 1978. He not only transformed the zoo into a model facility, but through his media savvy, made the Columbus Zoo a household name. He is now a regular guest on shows including “Good Morning America,” “Larry King Live,” “The Late Show with David Letterman,” “Hollywood Squares,” and “The Maury Povich Show”.

Hanna’s journey to zoology began in his family’s bathtub in Knoxville, Tennessee, where he raised bluegills and then extended his menagerie to their backyard. After college, Hanna, with support from his wife, Suzi, started a pet shop and petting zoo, worked for a wild life adventure company, and directed a small state zoo. The couple’s subsequent move to Ohio (with their three daughters) was the start of Jack Hanna’s rise to stardom and role as a beloved spokesman for zoology and wildlife conservation.

Jack Hanna is a Professional Fellow of the American Zoo & Aquarium Association and a member of the Explorer’s Club. He is also an active supporter of Easter Seals and the Leukemia Society and serves on the boards of several educational institutions. While he takes all his civic responsibilities seriously, he maintains that wildlife conservation is his true calling. “Jack Hanna’s Animal Adventures’ gives me the platform to excite people and get them to care about animals. For me, this is the fulfillment of a lifelong dream.”

Dr. Candice McQueen currently serves as Tennessee’s commissioner of education. Previously, she served as Senior Vice President and Dean of the College of Education at Lipscomb University. McQueen began her career as a classroom teacher, teaching in both public and private elementary and middle schools. She also served as a higher education faculty member and department chair before being named dean in 2008.

While at Lipscomb, McQueen served as a member of the university’s executive leadership team and oversaw both her college and the 1,300 pre-K-12th grade students in three schools at Lipscomb Academy. Under her leadership, Lipscomb’s College of Education and teacher preparation program were consistently highlighted as one of the top teacher training programs in the state of Tennessee for quality and effectiveness based on the Tennessee Report Card on the Effectiveness of Teacher Training Programs and was most recently pointed out as the second highest ranking program in the nation by the National Council on Teacher Quality. McQueen also founded the Ayers Institute for Teacher Learning and Innovation at Lipscomb. The Institute has a focus on improving professional learning for teachers by focusing on embedded professional development, coaching and new approaches to leadership training and support.

"The WORLD is the TRUE CLASSROOM." - Jack Hanna
WEDNESDAY MAY 24

8:00 AM - 9:00 AM | Registration & Breakfast, Exhibits Open

9:00 AM - 9:15 AM | Welcome & Introductions

9:15 AM - 10:00 AM | Featured Presenter, Dr. Candice McQueen

10:00 AM - 10:30 AM | Thinking Globally, Starting Locally: A Lightning Conversation (Mirabella Ballroom)

10:30 AM - 10:45 AM | MakerMinded Awards

10:45 AM - 11:00 AM | Break

11:00 AM - 11:45 AM | Breakout Sessions 1

11:45 AM - 12:45 PM | Lunch, Exhibits and STEMmobile Open

12:45 PM - 1:30 PM | Breakout Sessions 2 / Tour of Smyrna Nissan Plant (Registration Required)

1:45 PM - 2:30 PM | Breakout Sessions 3 / Tour of Smyrna Nissan Plant (Registration Required)

2:30 PM - 3:00 PM | Snack Break, Exhibits Open

3:00 PM - 3:45 PM | Breakout Sessions 4

3:45 PM - 4:15 PM | STEM Excellence Awards & Closing Remarks

4:15 PM - 6:00 PM | Cocktail Reception with hors d’oeuvres, sponsored by Learning Blade

BREAKOUT SESSIONS 1 - 11:00 AM

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<tr>
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<tbody>
<tr>
<td>OAKLEIGH A A</td>
<td>Facilitating a Student-Led Family STEM Night</td>
<td>Mark Dowlen, STEM Coordinator, Heritage High School</td>
<td>Brandi Stroecker, STEM Relationship Manager, Tennessee STEM Innovation Network</td>
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<tr>
<td>OAKLEIGH B B</td>
<td>Developing a Rural STEM Program through Agriculture</td>
<td>Kattie Nash, STEM Teacher, Prescott South Elementary</td>
<td>Catherine Jones, Principal, Prescott South Elementary STEM Platform School</td>
</tr>
<tr>
<td>OAKLEIGH C C</td>
<td>The Girls’ Index 2017: What Educators &amp; Counselors Need to Know About the Social &amp; Emotional Issues Impacting Girls Today</td>
<td>Lisa Hinkleman, Ph.D., LPC, Founder/Executive Director of Ruling Our Experiences, Inc. (ROX)</td>
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<tr>
<td>CAMBRIDGE A/B</td>
<td>Opening Students to the Wonder of the Coding World with a Little Dash &amp; Dot!</td>
<td>Lisa Buckner, 3rd Grade Teacher / STEM Coach, Linden Elementary School</td>
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LEARNING TRACKS

SCHOOL CULTURE

COMMUNITY PARTNERSHIPS
### BREAKOUT SESSIONS 2 - 12:45 PM

**OAKLEIGH A**
- Supporting Standards Through STEM Instruction
  - Casey Garrison, STEAM Teacher, Prescott South Middle School

**OAKLEIGH B**
- Sustainable STEM: Best Practices for Lasting Community Engagement
  - Dr. Stephanie Ivey, Director of the West TN STEM Hub, University of Memphis

**OAKLEIGH C**
- It’s Personal: Differentiating the Learning Environment
  - Latoya Chitman, Founding Mentor Math Teacher & Dean of Instruction, Nexus STEM Academy Middle School
  - Faith Green, Founding Science Teacher, Nexus STEM Academy Middle School

**NISSAN**
- Introduction to Advanced Manufacturing
  - Registration Required. Bus leaves from main entrance promptly at 12:30pm.

**MIRABELLA BALLROOM**
- Google in the Classroom 101
  - Dr. Jason Beach, Professor of Technology, Tennessee Tech University

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### BREAKOUT SESSIONS 3 - 1:45 PM

**OAKLEIGH B**
- Connecting Girls to the World of STEM
  - Dr. ReGina A. Etter, i3 GROW STEM Instructional Lead, Metro Nashville Public Schools
  - Ms. Michelle Williams, i3 GROW STEM Grant Specialist, Metro Nashville Public Schools

**OAKLEIGH C**
- Developing Ideas for Student Constructed Vehicles
  - Marc Guthrie, Engineering Teacher, Central Magnet School
  - Scarlett Murphy, Engineering Teacher, Central Magnet School

**OAKLEIGH A**
- Using Science Bits Curriculum to Support Three-Dimensional Learning
  - April Anderson, Ed. D., Science Bits Technical Training Aids

**NISSAN**
- Introduction to Advanced Manufacturing
  - Registration Required. Bus leaves from main entrance promptly at 12:30pm.

**MIRABELLA BALLROOM**
- Google in the Classroom 201
  - Dr. Jason Beach, Professor in Technology, Tennessee Tech University

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### BREAKOUT SESSIONS 4 - 3:00 PM

**OAKLEIGH C**
- Creating PBLs to Promote Student Directed Learning
  - Evan Parker, 4th Grade Teacher & STEM Coach, Woodland Elementary
  - Angie Israel, 4th Grade Teacher, Woodland Elementary

**MIRABELLA BALLROOM**
- Teaching the 2017 Total Solar Eclipse: Is YOUR Classroom Ready for the Day the Sky Goes Dark?
  - Tiffany Farmer, Director of Education & Community Engagement, Adventure Science Center
  - Derrick Rohl, Planetarium Manager, Adventure Science Center

**CAMBRIDGE A/B**
- Launching a Literacy-rich Science Curriculum
  - Leslie Suters, Associate Professor, Tennessee Tech University

**OAKLEIGH A**
- How to Talk about STEM and STEM Careers With Just About Anyone
  - Keri Randolph, Director of Innovation, Hamilton County Department of Education

**OAKLEIGH B**
- Unleashing the Maker Movement to Accelerate Learning Across STEAM
  - Devin Hicks, Director of Education Solutions, United Data Technology
The Tennessee STEM School Designation was developed to provide a “roadmap” for schools to successfully implement a STEM education plan at the local level. The tools and resources created define the attributes necessary for a school to create a comprehensive STEM learning environment for its students. STEM schools create learning environments that utilize hands-on learning opportunities to develop the whole child and build skills through collaboration, critical thinking, design challenges, and connections to real-world problem solving. In this session, participants will learn more about how to utilize the STEM School Designation process to further develop their STEM programs.

Deborah Knoll, Career Cluster Consultant for Adv. Manufacturing, IT & STEM, Tennessee Department of Education
Sandy Watkins, STEM Consultant, Tennessee STEM Innovation Network
Brandi Stroecker, STEM Relationship Manager, Tennessee STEM Innovation Network

Facilitating a Student-Led Family STEM Night

STEM nights provide a unique opportunity to engage with students, families, and community partners. The Heritage STEM Program has taken a unique mentorship approach to STEM Nights as our high school STEM students plan and execute events for our feeder elementary schools. Participants will share ideas for replicating their approach in their own communities and be provided guidance on facilitating student participation. From making slime to teaching coding, participants will leave with a broad compilation of suggested activities for encouraging this mentorship program.

Mark Dowlen, STEM Coordinator, Heritage High School
Robert Stewart, Teacher & STEM Club Sponsor, Heritage High School

Developing a Rural STEM Program through Agriculture

This session will provide ideas for incorporating STEM in a rural setting through an agriculture program of study. Participants will explore ways to integrate ‘farm to table’ STEM units and takeaway concrete implementation resources. Time will be provided for attendees to brainstorm local assets that support their individual programs.

Katie Nash, STEM Teacher, Prescott South Elementary
Catherine Jones, Principal, Prescott South Elementary STEM Platform School

The Girls’ Index 2017: What Educators & Counselors Need to Know About the Social & Emotional Issues Impacting Girls Today

This session will utilize national survey data, which includes participating schools from Tennessee, to assist educators in developing a deeper understanding of the social and emotional issues impacting school age girls today. This session will show attendees how to develop effective and meaningful strategies for encouraging more girls to view themselves as successful in the STEM fields and future STEM careers.

Lisa Hinkelman, Ph. D., LPC, Founder/Executive Director of Ruling Our eXperiences, Inc. (ROX)

Opening Students to the Wonder of the Coding World with a Little Dash & Dot!

Come learn how to use Wonder Workshop’s Dash and Dot Robots to teach coding and engage students in project-based learning with hands-on, cross-disciplinary projects that address standards. Participants will learn how to incorporate Wonder Workshop into STEM, social studies, and language arts courses and share strategies for finding additional inexpensive coding opportunities.

Lisa Buckner, 3rd Grade Teacher/STEM Coach, Linden Elementary School
Supporting Standards Through STEM Instruction

In this session, participants will learn how to support core subject standards through additional STEM opportunities. Participants will learn strategies to foster collaboration with fellow grade level teachers and leave this session with concrete examples of how to support core instruction through STEM. This session is sure to have your teachers excited to create new partnerships and work as a team.

Casey Garrison, STEAM Teacher, Prescott South Middle School

Sustainable STEM: Best Practices for Lasting Community Engagement

This session will provide ideas for long-term, sustainable practices in STEM community engagement. Based on the experience of the West TN STEM Hub, the session will focus on strategies for developing sustainable partnerships for all types of efforts: from the classroom level to regional partnerships. Participants will become familiar with best practice strategies for community engagement in STEM, develop an action plan for initiating a STEM partnership, and identify potential barriers to success and approaches for overcoming them. This session is essential for anyone embarking on or trying to revitalize community-engaged STEM strategies.

Dr. Stephanie Drew, Director of the West TN STEM Hub, University of Memphis

It’s Personal: Differentiating the Learning Environment

One of the greatest challenges teachers face is differentiating instruction to meet the needs of all students. Two founding STEM teachers will share their strategies for creating a responsive learning environment. Participants will examine a unique instructional model tailored to the needs of scholars using technology, interventions, and physical teacher instruction and discuss strategies for incorporating this model into their own classroom. Based on the discussion, participants will develop a personalized action plan to incorporate in their own instruction.

Latoya Chitman, Founding Mentor Math Teacher & Dean of Instruction, Nexus STEM Academy Middle School
Faith Green, Founding Science Teacher, Nexus STEM Academy Middle School

Introduction to Advanced Manufacturing - Nissan Smyrna Plant Tour

Tour the Nissan Smyrna plant and see today’s STEM careers in action. Shuttle boards at 12:30pm and will return in time for the 3:00pm session. Registration is required.

Google in the Classroom 101

From calendars to spreadsheets, emails to websites, Google has tons of tools for your classroom. Go paperless with Google Docs. Learn how to monitor group work with ease. Become a Gmail power-user with filters and sorting. Share class calendars with parents and students. Find out about the best add-ons and extensions for Chrome and Chromebooks. In this fast-paced run through, we’ll do it all and you’ll leave the session with tools that will help you in your classroom!

Dr. Jason Beach, Professor of Technology, Tennessee Tech University
Connecting Girls to the World of STEM

Elementary and middle school are the pivotal years for developing female learner’s interest in STEM and a belief in their capabilities. This session will model instructional strategies geared toward developing college and career readiness competencies that connect girls to the world of STEM. Participants will prepare hands-on inquiry based lessons that foster critical thinking and collaboration for girls who desire to make a difference.

Dr. ReGina A. Etter, i3 GROW STEM Instructional Lead, Metro Nashville Public Schools
Ms. Michelle Williams, i3 GROW STEM Grant Specialist, Metro Nashville Public Schools

Developing Ideas for Student Constructed Vehicles

Participants will explore how to use a Hands On By Design Formula Car and hand built vehicle to explain STEM concepts in the classroom. Participants will learn how to incorporate vehicle construction concepts into their curriculum and explore grant opportunities for purchasing equipment necessary for a statewide vehicle design competition. After the discussion, attendees will have the opportunity to ride the human powered vehicle!

Marc Guthrie, Engineering Teacher, Central Magnet School
Scarlett Murphy, Engineering Teacher, Central Magnet School

Using Science Bits Curriculum to Support Three-Dimensional Learning

Science Bits is the most awarded science curriculum to date featuring a high quality, scientifically accurate repository of instructional materials aligned to state standards. Science-Bits curriculum is organized following the 5 E format and supports three-dimensional learning through an incomparable array of multimedia resources. Each Thematic unit is designed to assist teachers to facilitate students through inquiry-based activities featuring natural phenomena presented in real-life context. It’s all about learning by doing and thinking. Science Bits engages both teachers and learners blending historical perspectives and the exciting ever changing nature of science using 21st Century technologies to provide a unique experience that leads to real student engagement. *Sponsored Session

April Anderson, Ed. D., Science Bits, Technical Training Aids

Introduction to Advanced Manufacturing - Nissan Smyrna Plant Tour

Tour the Nissan Smyrna plant and see today’s STEM careers in action. Shuttle boards at 12:30pm and will return in time for the 3:00pm session. Registration is required.

Google in the Classroom 201

It’s time to take it to the next level for more advanced users. Google has a ton of useful features for teachers. We’ll dive deep into Google Classroom, Logic Branching in Forms, Flubaroo, Kami, flippin’ your classroom with ScreenClastify, and much more. We’ll take it slow and experience each tool. Bring your laptops and get ready to earn your geek card.

Dr. Jason Beach, Professor of Technology, Tennessee Tech University
Explore a literacy-rich science lesson addressing the three-dimensions of the K-12 Framework for Science Education by incorporating disciplinary core ideas, science & engineering practices, and cross-cutting concepts. Participants will examine leveled reading and writing activities that can be incorporated in the classroom at elementary, middle, and high school levels. Teachers will leave this session prepared to enrich their science curriculum through literacy.

Evan Parker, 4th Grade Teacher & STEM Coach, Woodland Elementary
Angie Israel, 4th Grade Teacher, Woodland Elementary

Creating PBLs to Promote Student Directed Learning

In this session, attendees will explore how integrating STEM in a cross-curricular way guides and improves student-directed learning. This session will present collaboration techniques used by a fourth grade team to develop 9-week PBL units to guide student learning without regular lecture and worksheets. Each 9-week PBL incorporates core subject areas and a focus on real-world problem solving. Participants will discuss the process of student-led learning and receive tips and tricks to engage students of all abilities and interests.

Evan Parker, 4th Grade Teacher & STEM Coach, Woodland Elementary
Angie Israel, 4th Grade Teacher, Woodland Elementary

Teaching the 2017 Total Solar Eclipse:

Is YOUR Classroom Ready for the Day the Sky Goes Dark?
A once-in-a-lifetime event is coming to a sky near you this summer. Mark your calendars for August 21, 2017, and join us to learn hands-on activities and safe solar viewing techniques your students can try - both in the classroom and at home! Nashville is Earth's largest city in the 2017 path of totality - if you miss this Total Solar Eclipse, you'll be waiting until the year 2566 for an encore performance in the sky! Join Adventure Science Center Director of Education and Community Engagement Tiffany Farmer and Planetarium Manager Derrick Rohl to try out these viewing techniques and get answers to all your burning questions about the Great American Eclipse. As we like to say: “It IS possible to view an eclipse safely; in fact, it is one of the greatest sights in nature.”

Tiffany Farmer, Director of Education and Community Engagement, Adventure Science Center
Derrick Rohl, Planetarium Manager, Adventure Science Center

Launching a Literacy-rich Science Curriculum

Explore a literacy rich science lesson addressing the three-dimensions of the K-12 Framework for Science Education by incorporating disciplinary core ideas, science & engineering practices, and cross-cutting concepts. Participants will examine leveled reading and writing activities that can be incorporated in the classroom at elementary, middle, and high school levels. Teachers will leave this session prepared to enrich their science curriculum through literacy.

Leslie Suters, Associate Professor, Tennessee Tech University
Kristen Trent, Associate Professor, Tennessee Tech University

How to Talk About STEM and STEM Careers With Just About Anyone

Successful communication around STEM careers is the key to ensuring today's young people are prepared to become the next generation of innovators and leaders. In this session, you will learn effective and impactful strategies for communicating with students, parents, teachers, and other stakeholders about STEM and STEM careers, as well as post-secondary readiness standards.

Keri Randolph, Director of Innovation, Hamilton County Department of Education

Unleashing the Maker Movement to Accelerate Learning Across STEAM

Innovation Labs, Maker Spaces, and STEAM are developing as new centers for inquiry-based problem solving and learning. In this session you will discover the critical steps needed to design, equip and inspire your STEAM Lab and Maker Space, based on UDT’s Maker model. Participants will understand how Maker and STEAM extend from a Digital Learning Convergence Strategy, examine the research behind Maker and STEAM by student achievement, see examples of using STEAM and Maker to provide a meaningful context to science, math, and engineering, and discover how UDT can help you bridge digital tools and Inspire Learning by doing. *Sponsored Session

Devin Hicks, Director, Education Solutions, United Data Technology

Devin Hicks, Director, Education Solutions, United Data Technology

Devin Hicks, Director, Education Solutions, United Data Technology
THURSDAY MAY 25

8:00 AM - 9:00 AM | Registration & Breakfast, Exhibits Open

9:00 AM - 9:15 AM | Welcome & Introductions

9:15 AM - 10:30 AM | Keynote Presentation by Jack Hanna

10:30 AM - 11:00 AM | Break

11:00 AM - 11:45 AM | Breakout Sessions 5

11:45 AM - 12:45 PM | Lunch, Exhibits and STEMmobile Open

12:45 PM - 1:30 PM | Breakout Sessions 6

1:45 PM - 2:30 PM | Breakout Sessions 7

2:30 PM - 3:00 PM | Snack Break, Exhibits Open

3:00 PM - 3:45 PM | Breakout Sessions 8

3:45 PM - 4:00 PM | Closing Remarks

BREAKOUT SESSIONS 5 - 11:00 AM

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<tr>
<th>OAKLEIGH A</th>
<th>Cultivating a STEM-task-tic Culture: A K-5 Approach to Growing STEM Literate Students</th>
<th>Dr. Ashley Aldridge, Principal, Jack Anderson Elementary STEM School</th>
<th>Erin Thurston, STEM Teacher, Jack Anderson Elementary STEM School</th>
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<tbody>
<tr>
<td>CAMBRIDGE A/B</td>
<td>Incorporating Art in STEM through Community Partnerships</td>
<td>Cindy Pride, Kids on Stage Director, Mt. Pleasant STEAM Campus</td>
<td>Armin Begtrup, STEM Leader, Mt. Pleasant STEAM Campus</td>
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<tr>
<td>OAKLEIGH C</td>
<td>What Does English Have to do With STEM?</td>
<td>Tressie Norton, English Department Chair &amp; Magnet Facilitator, L&amp;N STEM Academy</td>
<td>Sean Blevins, English Instructor, L&amp;N STEM Academy</td>
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<tr>
<td>OAKLEIGH B</td>
<td>Senior Communications: Bridging the Gap as Students Transition from High School to College</td>
<td>Anthony Alston, Principal, Metro Early College High School, Columbus, OH</td>
<td>Tim Latta, Counselor, Metro Early College High School, Columbus, OH</td>
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<tr>
<td>MIRABELLA BALLROOM</td>
<td>The Sky’s the Limit: Propelling Student Learning Through Drones</td>
<td>Elvia Klym, Teacher, Nolensville High School</td>
<td>David Allen, College, Career &amp; Technical Executive Director, Williamson County Schools</td>
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### BREAKOUT SESSIONS 6 - 12:45 PM

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<tr>
<td>OAKLEIGH B</td>
<td>Original People - How Non-Conformity Makes STEM Vibrant</td>
<td>Aimee Kennedy, Ph.D., Senior Vice President, Philanthropy and Education, Battelle</td>
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<tr>
<td>OAKLEIGH A</td>
<td>Unlocking Students’ Curiosities through Experiential Learning</td>
<td>John DiDiego, Education Director, Great Smoky Mountains Institute at Tremont</td>
</tr>
<tr>
<td>MIRABELLA</td>
<td>Facilitating an Experiential Curriculum through the Engineering Design Process</td>
<td>Terry Sue Fanning, Director MEd and EdS Programs &amp; Associate Professor, Lipscomb University, Billy Hix, Director of STEM Outreach, Motlow College</td>
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<tr>
<td>BALLROOM</td>
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<tr>
<td>CAMBRIDGE</td>
<td>Integrating Career Exploration: A Model that Works</td>
<td>Hope Strickland, Principal, Dayton Regional STEM School, Dayton, OH</td>
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<tr>
<td>OAKLEIGH C</td>
<td>Make Science Come to Life with LEGO STEM Education</td>
<td>Jim Albertone, Lego Education</td>
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</tbody>
</table>

### BREAKOUT SESSIONS 7 - 1:45 PM

<table>
<thead>
<tr>
<th>Room</th>
<th>Title</th>
<th>Speakers</th>
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</thead>
<tbody>
<tr>
<td>MIRABELLA</td>
<td>Infusing STEM Principles into an RTI Squared Model</td>
<td>Marc Walls, RTI Coordinator/Science Teacher, Clarksville-Montgomery County Schools</td>
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<tr>
<td>BALLROOM</td>
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<td>Edward Thomason, Student, President of Blackman High Science Honor Society, Blackman High School</td>
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<tr>
<td>OAKLEIGH B</td>
<td>DIY STEM Day for Students by Students</td>
<td>Sarah Jessie, Instructional Specialist for Science Rutherford County Schools</td>
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<tr>
<td>OAKLEIGH A</td>
<td>Moving the World: Exploring STEM &amp; Transportation Classroom Applications</td>
<td>Haley Holt, STEM Facilitator, Knox County Schools</td>
</tr>
<tr>
<td>OAKLEIGH C</td>
<td>Harnessing Competition to Fuel Interest in STEM</td>
<td>Evan Curran, MakerMinded State Program Manager, Tennessee STEM Innovation Network, Battelle Education</td>
</tr>
<tr>
<td>CAMBRIDGE</td>
<td>Empowering Students to Go Anywhere Using Virtual Reality</td>
<td>Michael Stone, Director of Innovative Learning Public Education Foundation of Chattanooga</td>
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### BREAKOUT SESSIONS 8 - 3:00 PM

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<tr>
<th>Room</th>
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<tbody>
<tr>
<td>OAKLEIGH B</td>
<td>Enhancing Project-Based Learning Through Technology Integration</td>
<td>Sara Shaffer, Digital Arts Instructor, D-B EXCEL</td>
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<td>Sam McCord, English Instructor, D-B EXCEL</td>
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<tr>
<td>OAKLEIGH C</td>
<td>GreenSTEM: Connecting Classrooms to the Natural World</td>
<td>Adrema Higgins, Elementary STEM Leader, Sam Houston Elementary School</td>
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<td>Jenny Sauer, Environmental Literacy Coordinator, Appalachia Cares Americorps</td>
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<tr>
<td>CAMBRIDGE</td>
<td>Using Learning Blade to Rethink RTI and Literacy</td>
<td>Joshua Sneidman, Vice President Learning Blade</td>
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<tr>
<td>MIRABELLA</td>
<td>Innovative Class Scheduling to Promote Career Awareness Opportunities</td>
<td>Jennifer Dye, Director Center of Innovation, Pope John Paul II High School</td>
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<td>BALLROOM</td>
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<tr>
<td>OAKLEIGH A</td>
<td>Integrating Coding and Robotics Programs into Elementary Mathematics</td>
<td>Sarah Haynes, 5th Grade Teacher/ Math Team Sponsor, South Polk Elementary School</td>
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<td>Cayce Dalton, 3rd Grade Teacher, South Polk Elementary School</td>
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</tbody>
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Cultivating a STEM-task-tic Culture: A K-5 Approach to Growing STEM Literate Students

Learn how Jack Anderson Elementary cultivated a STEM-task-tic culture through daily STEM integration, weekly STEM tasks, quarterly STEM Seminars, and established school-wide innovative practices to create STEM literate students. Participants will leave ready to cultivate a STEM-task-tic culture in their own school by examining a unique framework for transforming a traditional school into a premier STEM school and walk away with a compilation of high quality STEM tasks for elementary students.

Dr. Ashley Aldridge, Principal, Jack Anderson Elementary STEM School
Erin Thurston, STEM Teacher, Jack Anderson Elementary STEM School

Incorporating Art in STEM through Community Partnerships

The arts play an increasingly important role in developing well-rounded critical thinkers. Attendees will explore how to build meaningful connections with community partners focused on STEAM education. Participants will explore the ways private partnerships can strengthen learning outcomes and discuss how an art infused curriculum widens the scope of student reach and interest in STEM.

Cindy Pride, Kids on Stage Director
Armin Begtrup, STEM Leader, Mt. Pleasant STEAM Campus

What Does English Have To Do With STEM?

When most people think of STEM, they don’t envision English: that is a problem. This interactive presentation will focus on how to develop an integrated program to deliver meaningful literacy instruction within a STEM environment. Participants will leave with examples of how to support a STEM curriculum with English content, and how to enrich the English classroom with content from STEM disciplines.

Tressie Nornton, English Department Chair & Magnet Facilitator, L&N STEM Academy
Sean Blevins, English Instructor, L&N STEM Academy

Senior Communications: Bridging the Gap as Students Transition from High School to College

The transition to college during senior year is a tremendous challenge at any school but especially in a STEM environment. At Metro Early College High School we meet all of the challenges head-on with a comprehensive program to bridge the gap from high school to college. During this presentation you will learn about the Metro Early College Senior Communications class, where we address a plethora of issues and personally walk each student through their senior year. From college applications to financial aid, we explore every aspect of senior year step by step. The personalized approach of the senior communications class can work to best prepare students for one of the first major decisions in a young person’s life with deliberate planning and hands on participation.

Anthony Alston, Principal, Metro Early College High School, Columbus, OH
Tim Latta, Counselor, Metro Early College High School, Columbus, OH

The Sky’s the Limit: Propelling Student Learning Through Drones

Attendees will learn why an Unmanned Aerial Systems (UAS) program of study is perfect for exploring STEM concepts through real world, hands-on projects. View a sample program of study, understand current and future UAS applications, and share resource recommendations. Participants will leave inspired and ready to implement UAS into their STEM or college and careers readiness curriculum. We promise we won’t “drone” on!

Elvia Klym, Teacher, Nolensville High School
David Allen, College, Career & Technical Executive Director, Williamson County Schools
This session is designed for teachers who want to delve deeper into experiential learning opportunities that lead to positive outcomes. Experiential learning provides a unique method for instilling scientific practices such as observing carefully, questioning critically, and developing appropriate conclusions. Presenters will demonstrate ways to foster a community of learning in your classroom where every student believes that they can meaningfully contribute to the next amazing discovery and begin to see the world as a place of mystery and wonder.

Learn how to employ a unique career awareness model focused on engaging students with STEM careers. This model identifies techniques such as career fairs, power lunches, job shadowing, internships, and teaching the “soft skills” that are needed to succeed in 21st-century careers. Participants will develop strategies for replicating career awareness opportunities in their own school context.

STEM culture has the capacity to encourage original thinking for students in our schools. What’s not always obvious is how STEM culture influences the adults who work in our schools. Drawing on the work of Adam Grant: Originals: How Non-Conformists Move the World, this session will provide participants with a deeper understanding of originals and non-conformity, and specific action steps to cultivate original thinking in the classroom, in the workplace, and in your own life.

Join us in a hands-on session that allows you to play the part of a design engineer while exploring the components of the engineering design process. While engaging in unique instructional activities, participants will experience a variety of design-centered lessons ready for implementation in their own classroom. Tips for addressing early learner misconceptions will be shared along with suggestions for addressing cross-curricular standards.

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Lego Education WeDo 2.0 delivers real-world science projects to elementary classrooms. The unique combination of the Lego Brick, classroom-friendly software, and Science Standards based projects makes science come to life by putting discovery directly in the hands of students. This curriculum-relevant learning resource builds students’ confidence to ask questions, define problems, and design their own solutions by putting discovery in their hands. LEGO features relevant technology, and clearly structured, standards-based projects. It provides and excellent platform for STEM learning, offering an innovative way for students to model reality, conduct investigations, and use design skills while developing knowledge of science practices. *Sponsored Session

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An effective RTI2 model has the potential to revolutionize the depth of knowledge and skills for all students. Learn how to create a school-wide system for RTI2 that uses 21st Century STEM concepts to empower student growth. Participants will receive a strategic plan template to utilize as a framework for customizing the RTI services they offer their students. 

Participants will meet and engage with an amazing high school student who is concerned about motivating more students to look at STEM careers. Participants will gather ideas for hosting their own STEM event and discuss how to overcome potential obstacles. A student champion for STEM will share best practices for the planning process, obtaining sponsors & support, and managing teacher and student participation.

Based on nationwide initiatives in STEM and transportation, there is a huge need to engage students in transportation related topics. During this session we will explore the incorporation of transportation themes into classrooms across grade levels. We will also share a free transportation iBook and Project-based Learning (PBL) book and discuss how they might be embedded in teaching and learning across a variety of content areas.

In this session, participants will learn about the new MakerMinded program, why it is beneficial to students and teachers, and how to participate. MakerMinded is a new program in Tennessee designed to encourage students and schools (6-12 grades) to participate in high quality local and national STEM activities. MakerMinded harnesses healthy competition and hands-on learning to promote the development of career-ready STEM skills. Join us and learn how to get your school to the top of the leaderboard!

Virtual Reality (VR) is an emerging strategy to develop a culture of inquiry and exploration in the classroom. VR provides an innovative opportunity for students to experience the world around them while in a classroom environment. Participants will actively engage in virtual reality field trips as an entry point to Self-Organized Learning Environments (SOLE) and share ideas for incorporating VR into their STEM lesson plans.

Marc Walls, RTI Coordinator/Science Teacher, Clarksville-Montgomery County Schools
Sarah Jessie, Instructional Specialist for Science, Rutherford County Schools
Edward Thomason, Student, President of Blackman High Science Honor Society, Blackman High School
Haley Holt, STEM Facilitator, Knox County Schools
Callie Painter, Gifted Education Specialist & STEM Coach, Oak Ridge City Schools
Evan Curran, MakerMinded State Program Manager
Tennessee STEM Innovation Network, Battelle Education
Michael Stone, Director of Innovative Learning, Public Education Foundation of Chattanooga
Blended-learning is quickly becoming an integral component of high quality STEM education. Participants will explore the potential of blended-learning in a public school setting. During this session, attendees will be introduced to the D-B EXCEL’s model, a practical explanation of blended-learning, and the implementation process for Project-Based Learning. Supplementary learning will include the importance of leveraging community partnerships and real-world connections.

Sara Shaffer, Digital Arts Instructor, D-B EXCEL
Sam McCord, English Instructor, D-B EXCEL

GreenSTEM lessons are highly engaging and allow divergent thinking that can lead to advocacy for a cleaner healthier community and planet earth. Participants in this session will engage in design focused lessons that explore concepts in environmental stewardship and public health. Participants will receive a packet of GreenSTEM lesson plans, a template for developing their own GreenSTEM activities, and a list of upcoming professional development workshops in environmental education.

Adrema Higgins, Elementary STEM Leader, Sam Houston Elementary School
Jenny Sauer, Environmental Literacy Coordinator, Appalachia Cares Americorps

Learn how an RTI Tier I teacher, a STEM instructor, a Science teacher, and a Literacy specialist uniquely use Learning Blade to enhance learning outcomes. Learning Blade is a free STEM resource for all TN schools provided by TSIN. Learning Blade’s supplemental STEM program highlights STEM careers and technologies using 400+ online interdisciplinary STEM lessons aligned to standards. In addition, Learning Blade offers a wide variety of offline lesson plans for STEMgenieering projects, open-ended writing prompts and lessons for 3D printers. *Sponsored session.

Joshua Sneideman, Vice President, Learning Blade

Innov8 is a unique program that allows students to explore areas of interest in diverse fields that integrate STEM skills and ideas. The classes are designed by teachers who are experts in a multitude of disciplines. These classes provide a challenging and supportive environment where trial and error are encouraged, students develop skills through practice and where they are inspired to take risks in their learning. The students are mentored through projects that result in a product that should have a lasting impact on themselves and in their community. The classes are multidisciplinary and range from computer coding and robotics to documentary filmmaking and non-profit community organizing. Additionally, the juniors and seniors have opportunities for placement in internships including some examples such as business, equine therapy, medicine, and engineering.

Jennifer Dye, Director Center of Innovation, Pope John Paul II High School

Learn how to excite students with an innovative and inexpensive project that supports the teaching of cross-curricular standards at the elementary level. Students apply mathematical concepts, robotics, coding, and problem-solving skills to create a sustainable city of their own. This unique STEM project provides a platform for reaching students of all ability levels and encourages creativity and innovation. Participants will actively plan and build their own city while sharing ideas for incorporating the project in their unique school context.

Sarah Haynes, 5th Grade Teacher/Math Team Sponsor, South Polk Elementary School
Cayce Dalton, 3rd Grade Teacher, South Polk Elementary School
SPECIAL THANKS TO OUR SPONSORS!

TENNESSEE STEM Innovation Summit

TN Department of Education

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Science Bits

Upgrade Your Science Class

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Growing interest and sharpening skills for STEM.

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gsmit.org

Hands-On By Design
Location 2
Aaron Crowley & Miranda McConnell
www.hands-onbydesign.com

Learning Blade
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Joshua Sneideman
www.LearningBlade.com

Learning Labs, Inc.
Location 7
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www.lli.com

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Location 13
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Million Women Mentors
Location 17
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Gene Spurlin
www.enasco.com

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Melinda Parish, Clarence Cocroft, Katie McDonald, & Phil Hester
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Presentation Solutions
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Regina Martin
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Texas Instruments
Location 16
Ron Thomas
www.education.ti.com

United Data Technologies
Location 11
Vanessa Byrne, Jackson Ware, Devin Hicks, and Laylah Bulman
udtonline.com

LEGO Education
Location 14
Jim Albertone
legoeducation.com

Teachers Pay Teachers
Location 12
Meghan Putty & Magan Daley
www.teacherspayteachers.com

Tennessee Geographic Alliance
Location 4
Kurt Butefish
tngeographicalliance.org

Tennessee Technological University
Clay N. Hixson Student Success Center
Location 10
Harry Ingle & Elizabeth Powell
www.tntech.edu/engineering/cnh-ssc
CONGRATULATIONS to the 2017 MakerMinded Schools of Distinction!

HIGH SCHOOL
STEM School Chattanooga (Chattanooga)
Heritage High School (Knoxville)
Cookeville High School (Cookeville)

MIDDLE SCHOOL
White Station Middle School (Memphis)
Rose Park Middle School (Nashville)
Maxine Smith STEAM Academy (Memphis)
Two years ago, the Tennessee STEM Innovation Network launched a program to improve STEM career awareness for students in Tennessee middle schools. The cornerstone of the effort was offering Learning Blade® free to any school in the state. Through Learning Blade’s unique approach, Tennessee teachers have seamlessly added STEM career awareness into their existing curriculum linked to the academics.

Over 250,000 Lessons Completed

Complimenting its online lessons, Learning Blade has also recently released a series of exercises designed to incorporate 3D printing into classroom STEM exercises, as well as resources for parents to help foster discussion about STEM careers with students.

Over 45,000 Hours Completed

CONGRATULATIONS TO TENNESSEE STEM SHOWDOWN WINNER

CHESTER COUNTY JUNIOR HIGH
INNOVATIVE LEADERS INSTITUTE

The Innovative Leaders Institute is a year-long training and mentoring experience for educators led by some of the top STEM and innovative school leaders in our state. The Innovative Leaders Institute provides participants opportunities to network with other building-level leaders from across Tennessee, visit innovative schools to examine different models of STEM integration, and share best practices and resources with the expectation of having an immediate impact on leader practice.

The Institute is designed to:

• Develop concepts of innovative leadership practices
• Enhance capacities to promote best practices across the curriculum
• Develop strategies to promote staff effectiveness and improve teaching and learning environments
• Prepare leaders with the procedures and policies to promote success

The Institute is led by experienced principals from Tennessee, who were selected because they have demonstrated positive impact on their schools through student performance, teacher retention, and creating and supporting an academically challenging learning environment for students.

WHO SHOULD APPLY
Teams of building-level leaders
(Principals, Assistant Principals, and/or Lead Teachers)

APPLY IN JUNE!
TASL Credit Available!
For more information visit www.TSIN.org/leaders
Tennessee STEM Innovation Hubs

ETSU NE TN STEM Innovation Hub
Johnson City
netstemhub.com

Northwest TN STEM Innovation Hub
Martin
www.utm.edu/departments/nwtnstem

STEMspark East TN Innovation Hub
Knoxville
stemspark.com

West Tennessee STEM Hub
Memphis
westtnstem.org

Middle TN STEM Innovation Hub
Murfreesboro
midtnstem.com

Upper Cumberland Rural STEM Initiative
Cookeville
ucrsi.org

PEF INNOVATION HUB
Chattanooga
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Dr. Candice McQueen
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Vice President, Enterprise Foundational Services, FedEx

Ann Thompson
Director of Workforce Development, Tennessee Department of Economic & Community Development

State Senator Bo Watson (R) - Hixon