22nd Annual Virginia Children’s Engineering Convention

February 8-9, 2018
The Hotel Roanoke & Conference Center • Roanoke, Virginia

"Engineering Virginia’s Future!"
On behalf of the Virginia Children’s Engineering Council (VCEC), welcome to the 22nd Virginia Children’s Engineering Convention! For over two decades, the VCEC has worked assiduously to assist PreK-5 teachers to provide students authentic instructional experiences that enable them to think freely, critically, and cooperatively. As we embark upon the 22nd Convention, the VCEC’s primary objectives over the past year have been:

- Providing instructional experiences for students to create, design, work cooperatively, think critically, and problem solve within real-life contexts.
- Developing design and technologically enhanced instructional material embedded with the Virginia Standards of Learning for elementary programs.
- Offering professional development opportunities for teachers and administrators.
- Fostering leadership in the promotion of children’s engineering in elementary, secondary, and university programs.

I believe you will have a phenomenal experience during this year’s convention. Teachers and administrators across the state, as well as several other states across the country, are converging upon Roanoke to participate in engaging professional development sessions that promote design, engineering, and technology. These experiences will enable teachers to ensure that students develop an understanding of the T and E in STEM, and provide resources that incorporate the engineering design process in everyday classroom instruction.

We invite you to join the growing number of educators who are providing instruction that truly integrates sciences, technology, engineering, and mathematics in ways that focus on real world challenges. These efforts will positively contribute to the Profile of a Virginia Graduate.

We look forward to continuing to serve PreK-5. If we can be of service to you or your division, please do not hesitate to contact us. Again, welcome to Roanoke and the 22nd Virginia Children’s Engineering Convention, and thank you for promoting children’s engineering!

Yours in Engineering the Future,

LaKesia D. Jolley-Washington
President, VCEC
LaKesia Jolley-Washington, President
Katherine Mangum, President-Elect
Joan Harper-Neely, Past President

Barbara Adcock
Joyce Anderson
Mohamad Barbarji
Dr. Lynn Basham
Lisa Brown
Kelley Davis
Kimberly Dempsey
Patricia Fazzi
Dr. Laguna O. Foster
Linda Harpine
Dr. Charlotte P. Holter
Joseph Jackson  Emily Loving  Shellye Wardensky
Cindy Jones  Bonnie Murray  Barbara Westlund
Elizabeth Kirk  Danielle Scott  George R. Willcox

Focus

Design, Engineering, and Technology Awareness
Science, Technology, Engineering, and Mathematics (STEM) Applications

Featuring

Hands-on teacher activities
Discussion of best practices
Educational vendor exhibits
Opportunities to network and share ideas

Mission

The Virginia Children’s Engineering Council (VCEC) is dedicated to developing design, engineering, and technology instructional materials, and providing local, regional, and statewide inservice opportunities for educators in grades PreK-5. The inservice programs help teachers ensure that children develop an understanding of how to use, create, control, and assess technology. These instructional experiences are provided in a design, critical thinking, and problem solving context. They undergird attainment of selected Standards of Learning in English, mathematics, science, and history and social science.
Keynote Speakers

Thursday, February 8 • 1:00 p.m.
Roanoke Ballroom

Liza Stark

Liza Stark is a designer and educator based in New York. Her work combines techniques, tools, and approaches from craft, textiles and technology to explore the role of materiality in learning and the impact of hybrid spaces on identity formation. She is obsessed with building toolkits and designing modular frameworks; exchanging knowledge in open, accessible ways; and creating inquiry-based learning spaces through play.

She has worked with numerous organizations and companies to design STEM- and STEAM-focused learning experiences. Her most recent quest was at littleBits as Senior Manager of Learning + Engagement. Prior to that, she was a game designer at the Institute of Play where she had the privilege of embedding in a NYC public middle school to collaboratively design games with teachers and students.

Other past adventures include hosting a web series on DIY electronics for families; facilitating EDesign Labs, a teacher-designer residency incubator; and co-founding gadgITERATION, a series of student-centered, hands-on workshops focused on creative engagement with electronics. She currently teaches in the MFA Design and Technology program at Parsons The New School for Design.
“Engineering Virginia’s Future!”

Keynote Speakers

Friday, February 9 • 8:00 a.m.
Roanoke Ballroom

Dr. Tina Manglicmot

Dr. Tina Manglicmot is the new Director of Science, Technology, Engineering and Mathematics (STEM) for the Virginia Department of Education. The office provides leadership, coordination and support of elementary and secondary programs in the areas of science, technology, engineering, gifted education, Governor’s schools, driver’s education, health and physical education. Her office staff provides technical assistance and professional development opportunities to school division personnel and responds to inquiries from educators, parents, and other citizens of the commonwealth. Dr. Manglicmot is dedicated to K-12 education and the integration of technology into the classroom.

Friday, February 9 • 12:30 p.m.
Roanoke Ballroom

Dr. Garret Westlake

Dr. Garret Westlake is leading the transformation of Virginia Commonwealth University into one of the nation’s leading universities for cross-disciplinary collaboration, innovation, and the inclusion of entrepreneurial thinking as a requisite skill for the innovation economy.

As executive director, Dr. Westlake advances university-wide student innovation and entrepreneurship through curriculum, as well as through curated experiential education opportunities.

As a technology entrepreneur, Dr. Westlake founded a social impact company that employed individuals with autism in STEM. Prior to joining VCU, Dr. Westlake served as the associate dean of student entrepreneurship for Arizona State University’s #1 ranked Office of Entrepreneurship and Innovation. He has worked closely with Ashoka U, the Clinton Global Initiative University, and for the Network for Teaching Entrepreneurship. Students and startups he has mentored have been named to Forbes 30 Under 30 for Healthcare Innovation, accepted to Techstars, Y Combinator, SXSW, and awarded Rhodes Scholarships and named Resolution Project Fellows.

Westlake earned his BA in cognitive science from Carleton College, his MEd from Vanderbilt University’s Peabody College, and his PhD in curriculum and instruction from Arizona State University. When not engaged with students and entrepreneurs you are most likely to find Westlake enjoying Richmond, Virginia’s plethora of bike trails, climbing walls, and river sports with his family.
Conference WIFI Code:
SSID: VCEC
Code: vcec2018
### Thursday, February 8

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<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
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<tr>
<td>8:00 a.m. – 5:30 p.m.</td>
<td>On-site Convention Check-in</td>
<td>North Entry Foyer</td>
<td>Roanoke/Crystal Foyer</td>
</tr>
<tr>
<td>9:00 a.m. – 7:00 p.m.</td>
<td>Visit Exhibitors Showcase</td>
<td>Roanoke Ballroom</td>
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<tr>
<td>9:15 a.m. – 9:45 a.m.</td>
<td>Opening General Session</td>
<td>Roanoke Ballroom</td>
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<tr>
<td>10:00 a.m. – 11:15 a.m.</td>
<td>Breakout Sessions</td>
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<tr>
<td>11:30 a.m. – 12:45 p.m.</td>
<td>Breakout Sessions</td>
<td>Roanoke/Crystal Foyer</td>
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<tr>
<td>1:00 p.m. – 2:30 p.m.</td>
<td>Second General Session/Luncheon/Keynote Speaker</td>
<td>Roanoke Ballroom</td>
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<tr>
<td>2:45 p.m. – 4:00 p.m.</td>
<td>Breakout Sessions</td>
<td>Roanoke/Crystal Foyer</td>
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<tr>
<td>4:00 p.m. – 4:15 p.m.</td>
<td>Break/Visit Exhibitors Showcase</td>
<td>Roanoke/Crystal Foyer</td>
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<tr>
<td>4:15 p.m. – 5:30 p.m.</td>
<td>Breakout Sessions</td>
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<tr>
<td>5:30 p.m. – 7:00 p.m.</td>
<td>Networking Reception with Light Hors d’oeuvres/Door Prizes</td>
<td>Roanoke/Crystal Foyer</td>
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**10:00 a.m. – 11:15 a.m.**

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<tr>
<th>Title</th>
<th>Presenter</th>
<th>Grades</th>
<th>Section</th>
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</thead>
<tbody>
<tr>
<td>Design a Device to Help a Teacher</td>
<td>Diane Marx, Lilly West</td>
<td>Grades 2-6 Educators</td>
<td>Appalachian</td>
</tr>
<tr>
<td>I’m an Inventor: Now What?</td>
<td>Sharon Rogers Moore</td>
<td>Grades 5-6 Educators</td>
<td>Allegheny</td>
</tr>
<tr>
<td>Creating a Schoolwide STEM Program</td>
<td>Greg Machi</td>
<td>Grades K-5 Educators</td>
<td>Buck Mountain</td>
</tr>
<tr>
<td>Story Time STEAM</td>
<td>Brittny Boone, Kristen Slayton, Sean Collins</td>
<td>Grades PreK-2 Educators</td>
<td>Wilson</td>
</tr>
<tr>
<td>Using LEGO to Develop Creative and Confident Writers</td>
<td>Steven Charlish</td>
<td>Grades PreK-5 Educators</td>
<td>Monroe</td>
</tr>
<tr>
<td>Integration at Its Best</td>
<td>Matthew Coté, Lisa Young</td>
<td>Grades 3-4 Educators</td>
<td>Bent Mountain</td>
</tr>
<tr>
<td>Designing One-and-Done Maker Challenges</td>
<td>Jamee Dion</td>
<td>Grades K-5 Educators</td>
<td>Crystal Ballroom B</td>
</tr>
<tr>
<td>Connecting With Families Through I-STEM Nights</td>
<td>Diana Ferguson, Tonia Campillo</td>
<td>Grades PreK-5 Educators</td>
<td>Pocahontas B</td>
</tr>
<tr>
<td>Keep Calm and STEM On….in PreK!</td>
<td>Emily Harrell, Ronnell Penn</td>
<td>Grade PreK Educators</td>
<td>Mill Mountain</td>
</tr>
<tr>
<td>Coding the Curriculum</td>
<td>Karen Hues, Matt Caratachea</td>
<td>Grades K-5 Educators</td>
<td>Madison</td>
</tr>
<tr>
<td>2-D to 3-D Hologram Projector</td>
<td>Clifton Jones, Alisa Rushing</td>
<td>Grades 2-6 Educators</td>
<td>Crystal Ballroom E</td>
</tr>
<tr>
<td>Can You Break Out?</td>
<td>Brian Lachance, Mat Campet</td>
<td>Grades PreK-6 Educators</td>
<td>Shenandoah B</td>
</tr>
<tr>
<td>Power Up Your Room</td>
<td>Jessica Palmer, Kate Green</td>
<td>Grades 2-6 Educators</td>
<td>Pocahontas A</td>
</tr>
<tr>
<td>Wind Energy Weightlifter Challenge</td>
<td>Remy Pangle</td>
<td>Grades K-3 Educators</td>
<td>Tinker Mountain</td>
</tr>
<tr>
<td>Twists, Turns, and Torque: Roller Coaster Engineering</td>
<td>Peggy Schimmoeller, Igor Ngabo, Skylar Pippin</td>
<td>Grades 2-6 Educators</td>
<td>Crystal Ballroom A</td>
</tr>
<tr>
<td>Implementing Best Practices Through STEAM</td>
<td>Diana Schmiesing, Sarah Phillips</td>
<td>Grades K-6 Educators</td>
<td>Washington Lecture Hall</td>
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<tr>
<td>Connecting Careers to Engineering Activities</td>
<td>Michele Seibert, Emily Fielder</td>
<td>Grades K-6 Educators</td>
<td>Shenandoah A</td>
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<tr>
<td>LEGO Education WeDo 2.0</td>
<td>Elizabeth Kirk</td>
<td>Grades K-4 Educators</td>
<td>Crystal Ballroom D</td>
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<tr>
<td>Breakout Your Escape Room Super Powers!</td>
<td>Meg Yancey, Kim Laraway</td>
<td>Grades K-5 Educators</td>
<td>Harrison/Tyler</td>
</tr>
<tr>
<td>Fairy Tales Come to Life (repeat at 11:30 a.m.)</td>
<td>Kimberly Howerton, Meredith Rose</td>
<td>Grades 4-5 Educators</td>
<td>Brush Mountain</td>
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**11:30 a.m. – 12:45 p.m.**

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<tr>
<th>Title</th>
<th>Presenter</th>
<th>Grades</th>
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<tbody>
<tr>
<td>STEM Buddies to Teach Perseverance, Patience, and Collaboration</td>
<td>Ryan Barter, Sarah Roche</td>
<td>Grades K-5 Educators</td>
<td>Shenandoah A</td>
</tr>
<tr>
<td>How to Nurture Girl Builders</td>
<td>Michelle Bruch</td>
<td>Grades PreK-3 Educators</td>
<td>Mill Mountain</td>
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<tr>
<td>WILD About STEM!!</td>
<td>Judy Christopher, Vickie Bohidar, Lynn Smith</td>
<td>Grades K-5 Educators</td>
<td>Buck Mountain</td>
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<tr>
<td>Seeing Engineering Everywhere!</td>
<td>Andrew Gillen, Cheryl Carrico, Jacob Grohs, Holly Matusovich</td>
<td>Grades K-6 Educators</td>
<td>Crystal Ballroom C</td>
</tr>
<tr>
<td>Blending Literature and Design Briefs (repeat at 2:45 p.m.)</td>
<td>Emily Loving</td>
<td>Grades K-5 Educators</td>
<td>Pocahontas B</td>
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<tr>
<td>Time</td>
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<td>Presenter(s)</td>
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<tr>
<td>11:30 a.m.</td>
<td>Music and STEM?</td>
<td>Veronica Kennedy</td>
<td>K-5 Educators</td>
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<td></td>
<td>Analyzing Local Waterways: An Exploration of Math and Science with</td>
<td>Willy Kjellstrom, Justin Stauffer, Brandy Garbaccio, Betsy Agee</td>
<td>4-6 Educators</td>
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<td>Microcontrollers</td>
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<td>Osmo in Action</td>
<td>Brian Lachance, Mat Campet</td>
<td>PreK-6 Educators</td>
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<td>Stepping into Standards-Based STEM</td>
<td>Alaina Bear, Chelsea Knickmeyer</td>
<td>K-5 Educators</td>
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<td></td>
<td>One-Page PBL Planning</td>
<td>Karah Morgan, Mackenzie Escobar, Amy Lutter, Katie Brennen</td>
<td>1-6 Educators</td>
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<td>Makerspaces and Integrative STEM Learning: The Transformation of a</td>
<td>Lisa Moyer, Bienna Patterson</td>
<td>K-6 Educators</td>
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<td>Small School Division</td>
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<td>Teaching Squishy Circuits with STEM Minor Students</td>
<td>Taylor Neuman, Casey Craven, Janelle Konké</td>
<td>2-4 Educators</td>
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<td>PBS KIDS Scratch Jr. Coding</td>
<td>Rosalie Rodriguez</td>
<td>3-5 Educators</td>
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<td></td>
<td>STEM Activities with KEVA Planks: The Beauty of Open-Ended Challenges</td>
<td>Ken Scheel</td>
<td>PreK-6 Educators</td>
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<td></td>
<td>&quot;Cat in the Hat&quot;: STEM with That!</td>
<td>Cindy Smith, Erin Alexander-Flores</td>
<td>PreK-5 Educators</td>
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<td>LEGO Mindstorms Education EV3</td>
<td>Barbara Westlund, Shellye Wardensky</td>
<td>4-6 Educators</td>
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<td>STEM + Literacy = Deeper Learning</td>
<td>Mary Lisa Watts, Crystal McArtan, Elizabeth Kirk</td>
<td>K-5 Educators</td>
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<td>Aviation Fascination: Let STEAM Take Flight!</td>
<td>Megan Tucker</td>
<td>K-6 Educators</td>
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<td></td>
<td>Fairy Tales Come to Life (repeat from 10:00 a.m.)</td>
<td>Kimberly Howerton, Meredith Rose</td>
<td>4-5 Educators</td>
</tr>
<tr>
<td></td>
<td>Oceans Matter: Maury Project and More (repeat at 2:45 p.m.)</td>
<td>Kimberly McKinley Taylor</td>
<td>4-6 Educators</td>
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<tr>
<td>2:45 p.m.</td>
<td>Soft Circuit Storytelling</td>
<td>Liza Stark</td>
<td>PreK-6 Educators</td>
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<td></td>
<td>From STEM to STEAM: Adding Language ARTS</td>
<td>Stephanie Cochrane, Kerry Dixon</td>
<td>K-6 Educators</td>
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<td>Exploring National Days through Monthly STEM Challenges!</td>
<td>Megan Dougherty, Kristin Hellman, Charlton Wolfgang</td>
<td>PreK-6 Educators</td>
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<td></td>
<td>Where’s the “T”?</td>
<td>Kate Green, Barbara Daniels</td>
<td>PreK-6 Educators</td>
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<td>Getting It off the Ground: Classroom Makerspace</td>
<td>Kelly Hoggard, Elizabeth Lewis</td>
<td>K-5 Educators</td>
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<td>Engineering Is Elementary</td>
<td>Roy Ann Jolley, Ginger Baggette, Matthew Coté</td>
<td>K-4 Educators</td>
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<tr>
<td></td>
<td>Blending Literature and Design Briefs (repeat from 11:30 a.m.)</td>
<td>Emily Loving</td>
<td>K-5 Educators</td>
</tr>
<tr>
<td></td>
<td>Fairytale Fridays: STEAM and Literature in K-3</td>
<td>Amy Lutter, Taryn Browning, Katie Brennen, Karah Morgan, Mackenzie Escobar</td>
<td>K-3 Educators</td>
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<td></td>
<td>Supercharge Your Lessons</td>
<td>Phyllis Meade, Drew Lowery</td>
<td>PreK-6 Educators</td>
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<td>Embedded EdTech and Innovation Professional Development</td>
<td>Urvi Morrison, Allison Furtion</td>
<td>PreK-6 Educators</td>
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<td>SCRATCH That Itch for Video Game Design</td>
<td>Heather Reisenweber, Amy Qualls</td>
<td>1-6 Educators</td>
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<td></td>
<td>Creating an Integrated Robotics Curriculum</td>
<td>Robin Ricketts, Suzanne Casey</td>
<td>1-6 Educators</td>
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#### 2:45 p.m. – 4:00 p.m. (continued)

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<th>Presenter(s)</th>
<th>Grades/Educators</th>
<th>Room</th>
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<tbody>
<tr>
<td>New STEM Activities for Children with Autism and Special Needs</td>
<td>Ken Scheel</td>
<td>PreK-6 Educators</td>
<td>Crystal Ballroom E</td>
</tr>
<tr>
<td>Shake It Up Earthquakes and Architecture</td>
<td>Peter Sheldon, Igor Rwaka, Peggy Schimmoeller, Skylar Pippin, Amanda Rumore</td>
<td>3-6 Educators</td>
<td>Crystal Ballroom A</td>
</tr>
<tr>
<td>Lego and Simple Machines</td>
<td>Rose Kimball</td>
<td>3-6 Educators</td>
<td>Crystal Ballroom D</td>
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<tr>
<td>It All Starts with STEM!</td>
<td>Dawn Toole, Elizabeth Fulcher</td>
<td>K-2 Educators</td>
<td>Mill Mountain</td>
</tr>
<tr>
<td>Oceans Matter: Maury Project and More (repeat from 11:30 a.m.)</td>
<td>Kimberly McKinley Taylor</td>
<td>4-6 Educators</td>
<td>Taylor</td>
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<tr>
<td>Fraction Action</td>
<td>Mary Hunter Ayer</td>
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<td>Appalachian</td>
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<tr>
<td>Designing with Electrical Circuits</td>
<td>Barbara Adcock</td>
<td>4-5 Educators</td>
<td>Monroe</td>
</tr>
<tr>
<td>A Successful Math/Engineering Elementary School Curriculum</td>
<td>Marilyn Barger, Richard Gilbert</td>
<td>K-5 Educators</td>
<td>Harrison/Tyler</td>
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#### 4:15 p.m. – 5:30 p.m.

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<th>Room</th>
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<tbody>
<tr>
<td>Get Your Build On: Great Engineering Activities</td>
<td>Cheryl Adayemi, Mary Beth Hull</td>
<td>3-5 Educators</td>
<td>Harrison/Tyler</td>
</tr>
<tr>
<td>Planning with Science &amp; Engineering Practices in Mind</td>
<td>Adrienne Kravchak</td>
<td>K-6 Educators</td>
<td>Washington Lecture Hall</td>
</tr>
<tr>
<td>Rube Goldberg: Using a Contraptions Lab in STEAM</td>
<td>Mathieu Campet, Brian Lachance</td>
<td>K-6 Educators</td>
<td>Monroe</td>
</tr>
<tr>
<td>Bringing New Dimensions to Learning</td>
<td>Matt Caratache, Karen Hues</td>
<td>2-6 Educators</td>
<td>Pocahontas A</td>
</tr>
<tr>
<td>Global Collaboration + STEM = Exponential Learning</td>
<td>Tina Coffey, Leigh Ann Becker</td>
<td>2-6 Educators</td>
<td>Buck Mountain</td>
</tr>
<tr>
<td>I’ve Lost My Marbles!</td>
<td>Elyse DeQuoy, Barbara Large, Jennifer Lemieux</td>
<td>K-5 Educators</td>
<td>Bent Mountain</td>
</tr>
<tr>
<td>Age-Appropriate and Fun Coding Activities for Elementary Students</td>
<td>Ron Todd, Bob Claymier, John Seymour, Bobbie Arbogast, Linda Harpine, Krista Miller, Heather Cherry</td>
<td>3-6 Educators</td>
<td>Crystal Ballroom B</td>
</tr>
<tr>
<td>It’s Gravity-Powered and STEAM-Driven</td>
<td>Frankie Gilmore</td>
<td>3-6 Educators</td>
<td>Crystal Ballroom D</td>
</tr>
<tr>
<td>Makers, Inventors, and Entrepreneurs</td>
<td>Terry Guiffre, Tanaga Boozer</td>
<td>3-6 Educators</td>
<td>Appalachian</td>
</tr>
<tr>
<td>Hacking All of the Sciences</td>
<td>Melinda Huffman</td>
<td>4-6 Educators</td>
<td>Taylor</td>
</tr>
<tr>
<td>Utilizing a Digital Daily 5 in Reading</td>
<td>Sarah King, Erica Martin</td>
<td>3-5 Educators</td>
<td>Tinker Mountain</td>
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<tr>
<td>Pop It Up!</td>
<td>Elizabeth Kirk, Lisa Brown</td>
<td>2-6 Educators</td>
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<tr>
<td>Engineer Your Own: Architecture</td>
<td>Ellen Martin</td>
<td>2-6 Educators</td>
<td>Pocahontas B</td>
</tr>
<tr>
<td>Beyond Code.org: A K-5 Coding Curriculum Map</td>
<td>Michelle Pealo, Mallory Bradley, Aubrie Ellis, Charlene Hinshaw, Heather Greer</td>
<td>K-5 Educators</td>
<td>Shenandoah A</td>
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<tr>
<td>Engineering Your Computer Lab</td>
<td>Terry Phillips</td>
<td>PreK-5 Educators</td>
<td>Crystal Ballroom C</td>
</tr>
<tr>
<td>Yes They Can: Engineering for PreK and K</td>
<td>Ken Scheel</td>
<td>PreK Educators</td>
<td>Crystal Ballroom E</td>
</tr>
<tr>
<td>Lots of Bots: Using Robots to Engage Young Learners</td>
<td>Heather Smith-Reeps, Jessica Herr</td>
<td>1-5 Educators</td>
<td>Crystal Ballroom A</td>
</tr>
<tr>
<td>Putting the “T” in STEM</td>
<td>Courtney Steele, Amy Keen, Jenna Newborn</td>
<td>K-4 Educators</td>
<td>Madison</td>
</tr>
<tr>
<td>STEM K-2: The Beginning Days</td>
<td>Wesley Strayer, Devon Becker</td>
<td>PreK-2 Educators</td>
<td>Mill Mountain</td>
</tr>
<tr>
<td>Cross-Curricular 3D Thinking for All Elementary Grade Levels</td>
<td>Gary Daniels</td>
<td>K-6 Educators</td>
<td>Shenandoah B</td>
</tr>
</tbody>
</table>
Friday, February 9

8:00 a.m. – 9:00 a.m.  Third General Session/Annual Meeting/Breakfast/Speaker/Door Prizes  Roanoke Ballroom
9:00 a.m. – 9:15 a.m.  Break/Visit Exhibitors Showcase  Crystal/Roanoke Foyer
9:15 a.m. – 10:30 a.m.  Breakout Sessions
10:30 a.m. – 11:00 a.m.  Break/Visit Exhibitors Showcase  Crystal/Roanoke Foyer
11:00 a.m. – 12:15 p.m.  Breakout Sessions
12:15 p.m. – 12:30 p.m.  Break/Visit Exhibitors Showcase  Crystal/Roanoke Foyer
12:30 p.m. – 2:00 p.m.  Awards Luncheon/Speaker/Special Door Prizes  Roanoke Ballroom

9:15 a.m. – 10:30 a.m.

<table>
<thead>
<tr>
<th>Title</th>
<th>Speaker</th>
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<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MakerSpace: One Journey to Enhancing STEM Education</strong></td>
<td>Teresa Davis</td>
<td>K-5 Educators</td>
<td>Crystal Ballroom A</td>
</tr>
<tr>
<td><strong>STEM Activities Increase Creativity in 4th/5th Graders</strong></td>
<td>April Peacock</td>
<td>4-5 Educators</td>
<td>Taylor</td>
</tr>
<tr>
<td><strong>Reimagining Your School Building</strong> (repeat at 11:00 a.m.)</td>
<td>Mary Ann Settlemyre</td>
<td>K-6 Educators</td>
<td>Buck Mountain</td>
</tr>
<tr>
<td><strong>TeamSpiration and the Rube Goldberg Machine</strong> (repeat at 11:00 a.m.)</td>
<td>Brittany Ballou, Mindy Adamonis</td>
<td>2-6 Educators</td>
<td>Brush Mountain</td>
</tr>
<tr>
<td><strong>Making Engineering the Foundation of a Project-Based Learning Unit</strong> (repeat at 11:00 a.m.)</td>
<td>Deborah Diner, Cheryl Morgan</td>
<td>K-6 Educators</td>
<td>Allegheny</td>
</tr>
<tr>
<td><strong>Waterworks: Energy and Water</strong></td>
<td>Teresa Auldridge, Michael Bentley</td>
<td>3-6 Educators</td>
<td>Crystal Ballroom D</td>
</tr>
<tr>
<td><strong>Fidgets: Friend or Foe?</strong> (repeat at 11:00 a.m.)</td>
<td>Katie Brennen, Mackenzie Escobar, Amy Lutter, Karah Morgan, Taryn Browning</td>
<td>2-6 Educators</td>
<td>Pocahontas A</td>
</tr>
<tr>
<td><strong>Project-Based Learning in the K-2 Classroom</strong></td>
<td>Devon Becker, Wesley Strayer</td>
<td>K-2 Educators</td>
<td>Crystal Ballroom B</td>
</tr>
<tr>
<td><strong>Partnering with 4-H for STEM Enrichment</strong></td>
<td>Jennifer Bowen, Ruth Wallace, Jake Morgan</td>
<td>3-6 Educators</td>
<td>Harrison/Tyler</td>
</tr>
<tr>
<td><strong>BreakoutEDU</strong></td>
<td>Barbara Westlund, Shellye Wardensky</td>
<td>K-6 Educators</td>
<td>Mill Mountain</td>
</tr>
<tr>
<td><strong>Children’s Engineering for Preschool through First: Yes They Can!!!</strong></td>
<td>Kelley Davis</td>
<td>PreK-1 Educators</td>
<td>Crystal Ballroom C</td>
</tr>
<tr>
<td><strong>STEAM in the Primary Grades</strong></td>
<td>Andrea DeMello, Ken Francis</td>
<td>PreK-3 Educators</td>
<td>Crystal Ballroom E</td>
</tr>
<tr>
<td><strong>Easy STEM Integration with NASA Resources</strong></td>
<td>Joan Harper-Neely, Betsy McAllister</td>
<td>3-6 Educators</td>
<td>Appalachian</td>
</tr>
<tr>
<td><strong>Learning with Coding</strong></td>
<td>Kimberly Jameson-Dean, Lyann Abrams, Maureen Ambrose</td>
<td>K-5 Educators</td>
<td>Shenandoah B</td>
</tr>
<tr>
<td><strong>Young Kids Tackle Life Needs of Animals</strong></td>
<td>Barbara Messina</td>
<td>PreK-1 Educators</td>
<td>Monroe</td>
</tr>
<tr>
<td><strong>The Power of STEAM Using Ozobots</strong></td>
<td>Joanna Papadopoulos</td>
<td>K-6 Educators</td>
<td>Bent Mountain</td>
</tr>
<tr>
<td><strong>Putting the Energy in Engineering (K-5)</strong></td>
<td>Susan Ramsey, Teresa Amasia, Chris Chamberlin</td>
<td>K-5 Educators</td>
<td>Pocahontas B</td>
</tr>
<tr>
<td><strong>STEAM: Where Science Meets the Arts!</strong></td>
<td>Natalie Street, Tracy Terwilliger</td>
<td>2-4 Educators</td>
<td>Tinker Mountain</td>
</tr>
<tr>
<td><strong>We Played a Game in School Today...</strong></td>
<td>Paula White, Elliot Rothman</td>
<td>K-6 Educators</td>
<td>Shenandoah A</td>
</tr>
<tr>
<td><strong>Children’s Engineering: Lessons Across the Curriculum in the Primary Grades</strong></td>
<td>Sabra Willhite, Mary Ann Taylor, Suzanne Casey</td>
<td>K-2 Educators</td>
<td>Wilson</td>
</tr>
<tr>
<td><strong>A Divisionwide Robotics Program Initiative</strong></td>
<td>Ray Wu-Romer</td>
<td>K-6 Educators</td>
<td>Madison</td>
</tr>
<tr>
<td><strong>Administrative Panel</strong></td>
<td>Panel led by Dr. Charlotte Holter and features state-wide, national, and international school leaders.</td>
<td>PreK-5 Educators</td>
<td>Washington Lecture Hall</td>
</tr>
</tbody>
</table>
## Friday, February 9 (continued)

**11:00 a.m. – 12:15 p.m.**

<table>
<thead>
<tr>
<th>Session</th>
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<tr>
<td>Youth Conceptions of Engineering Work</td>
<td>Andrew Gillen, Cheryl Carrico, Jacob Grohs, Holly Matusovich</td>
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<td>Taylor</td>
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<td>Deborah Diner, Cheryl Morgan</td>
<td>K-6</td>
<td>Allegheny</td>
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<tr>
<td>Engineering Challenges in Life Science</td>
<td>Teresa Auldridge, Michael Bentley</td>
<td>1-4</td>
<td>Crystal Ballroom D</td>
</tr>
<tr>
<td>Linking Science, Math, and Literacy with Problem-Based Learning</td>
<td>Cathy McCauley, Charlotte Trost, Jessica Smith</td>
<td>3-6</td>
<td>Crystal Ballroom A</td>
</tr>
<tr>
<td>Engineering STEAM Girls’ Clubs Within Your School Community</td>
<td>Elizabeth Brito, Kathy Noyce, Heidi O’Donnell</td>
<td>2-5</td>
<td>Crystal Ballroom B</td>
</tr>
<tr>
<td>Snap, Crackle, Pop-Ups</td>
<td>Lisa Brown</td>
<td>1-6</td>
<td>Monroe</td>
</tr>
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<td>Fidgets: Friend or Foe? (repeat from 9:15 a.m.)</td>
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<td>2-6</td>
<td>Pocahontas A</td>
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<tr>
<td>Putting the MOTION in STEM</td>
<td>Chris Chamberlin, Susan Ramsey, Teresa Amasia</td>
<td>3-5</td>
<td>Pocahontas B</td>
</tr>
<tr>
<td>Connecting Parents with PBL and STEAM</td>
<td>Wendy Dalton, Miranda Meadows</td>
<td>K-2</td>
<td>Madison</td>
</tr>
<tr>
<td>Pneumatics for the Elementary Classrooms: Watch the Animals Fly!</td>
<td>Kelley Davis</td>
<td>PreK-5</td>
<td>Crystal Ballroom C</td>
</tr>
<tr>
<td>Designed for Success: Engineering by Design TEEMS</td>
<td>Anita Deck</td>
<td>PreK-6</td>
<td>Harrison/Tyler</td>
</tr>
<tr>
<td>Upper Elementary Hands-On STEM</td>
<td>Andrea DeMello, Ken Francis</td>
<td>4-6</td>
<td>Crystal Ballroom E</td>
</tr>
<tr>
<td>VCEC’s Boat Building Design and Engineering Challenge</td>
<td>Katherine Mangum</td>
<td>3-6</td>
<td>Appalachian</td>
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<tr>
<td>Coding in Your School Maker Space</td>
<td>Joseph Jackson</td>
<td>PreK-6</td>
<td>Mill Mountain</td>
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<tr>
<td>Building with a Museum: Discover the Fun!</td>
<td>Diane Jackson Schnoor, Jennifer Coleman</td>
<td>1-5</td>
<td>Shenandoah A</td>
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<tr>
<td>STEAM in Early Childhood Special Education</td>
<td>Heather Jankovich, Anne Battle, Debra Coppedge, Stephanie LaFrance</td>
<td>PreK</td>
<td>Wilson</td>
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<tr>
<td>Technology Education Academic Integration</td>
<td>Robert Johnson</td>
<td>PreK-6</td>
<td>Tinker Mountain</td>
</tr>
<tr>
<td>Differentiating STEM for English Learners: A Unit on Community</td>
<td>Stephanie Sebolt</td>
<td>K-6</td>
<td>Bent Mountain</td>
</tr>
<tr>
<td>“Honey, They Shrunk My Classroom!”</td>
<td>Jennifer Whitenack, Anita Mays</td>
<td>3-5</td>
<td>Washington Lecture Hall</td>
</tr>
</tbody>
</table>
10:00 a.m. – 11:15 a.m.

**Design a Device to Help a Teacher**  
Diane Marx, Lilly West  
Students create a device to help their teacher hang academic success symbols in the classroom.  
*Grades 2-6 Educators*  
Appalachian

**I’m an Inventor: Now What?**  
Sharon Rogers Moore  
This workshop will provide an overview of the steps following design, including how to protect intellectual property and how to get a product to market.  
*Grades 5-6 Educators*  
Allegheny

**Creating a Schoolwide STEM Program**  
Greg Machi  
By the end of this presentation, participants will leave with multiple ideas to develop and support a schoolwide STEM program.  
*Grades K-5 Educators*  
Buck Mountain

**Story Time STEAM**  
Brittney Boone, Kristen Slayton, Sean Collins  
Find ways (and books!) to connect STEAM activities to your literacy instruction! Pair shared reading and writing with a culminating STEAM activity for a cross-curricular, real-world learning experience.  
*Grades PreK-2 Educators*  
Wilson

**Using LEGO to Develop Creative and Confident Writers**  
Steven Charlish  
Kick-start creativity and boost all literacy skills by using basic LEGO kits. Learn how students work together to create, build, and publish stories.  
*Grades PreK-5 Educators*  
Monroe

**Integration at Its Best**  
Matthew Coté, Lisa Young  
The purpose of this course will be to introduce teachers to a variety of ways to incorporate STEAM across subject areas. The focus will be integrating STEAM in the areas of science, technology, engineering, arts, and mathematics that can be used across grade levels in elementary school.  
*Grades 3-4 Educators*  
Bent Mountain

**Designing One-and-Done Maker Challenges**  
Jamee Dion  
Dive into how to design, implement, and reflect on quick, easy, and authentic maker challenges that are tied to state standards.  
*Grades K-5 Educators*  
Crystal Ballroom B

**Connecting With Families Through I-STEM Nights**  
Diana Ferguson, Tonia Campillo  
Get families involved in the design process by hosting a family STEM night. Walk away with themes, design challenges, and tips for a successful event.  
*Grades PreK-5 Educators*  
Pocahontas B

**Keep Calm and STEM On….in PreK!**  
Emily Harrell, Ronnell Penn  
Participants will learn how to integrate STEM into the PreK classroom and how STEM can be a part of every day. Participants will leave with examples of STEM activities and ideas to help build a STEM program in your preschool.  
*Grade PreK Educators*  
Mill Mountain

**Coding the Curriculum**  
Karen Hues, Matt Caratachea  
Learn how to incorporate coding into your standards. We will explore a variety of coding resources including Scratch, Ozobots, GoPiGo, Sphero, and more!  
*Grades K-5 Educators*  
Madison

**2-D to 3-D Hologram Projector**  
Clifton Jones, Alisa Rushing  
Create a hologram using plastic and your smartphone that can be transferred and applied to the classroom. Apply vocabulary and skills from math, science, engineering and technology. Bring your smartphone to the session.  
*Grades 2-6 Educators*  
Crystal Ballroom E

**Can You Break Out?**  
Brian Lachance, Mat Campet  
Learn how you can utilize the popularity of escape rooms to increase student engagement and tie into your content.  
*Grades PreK-6 Educators*  
Shenandoah B
10:00 a.m. – 11:15 a.m. (continued)

**Power Up Your Room**
Jessica Palmer, Kate Green
Explore a design brief that incorporates electricity and engineering.

Grades 2-6 Educators  
**Pocahontas A**

**Wind Energy Weightlifter Challenge**
Remy Pangle
Want to teach your students about wind energy? The Wind Energy Weightlifter Challenge is a great way for students to apply the engineering design loop and learn about how to build a windmill. Try it out and compete for prizes.

Grades K-3 Educators  
**Tinker Mountain**

**Twists, Turns, and Torque: Roller Coaster Engineering**
Peggy Schimmoeller, Igor Ngabo, Skylar Pippin
Experience building a roller coaster while introducing children to the physics behind them through an engineering design brief. Develop essential questions based on Next Generation Science Standards to guide student understanding.

Grades 2-6 Educators  
**Crystal Ballroom A**

**Implementing Best Practices Through STEAM**
Diana Schmiesing, Sarah Phillips
Providence STEAM Lab promotes the explicit teaching of 21st century skills. We’ll share ways we connect best practices to our students’ learning in the lab.

Grades K-6 Educators  
**Washington Lecture Hall**

**Connecting Careers to Engineering Activities**
Michele Seibert, Emily Fielder
Connect your engineering hands-on activities to real-world engineering careers at all education levels for grades K-5.

Grades K-6 Educators  
**Shenandoah A**

**LEGU Education WeDo 2.0**
Elizabeth Kirk
LEGO Education WeDo 2.0, elementary science and engineering brought to life with an engaging robotics, coding, and programming platform. This session is hands-on!

Grades K-4 Educators  
**Crystal Ballroom D**

**Breakout Your Escape Room Super Powers!**
Meg Yancey, Kim Laraway
Let us show you the many ways we have found to adapt a breakout to any subject area or library for less than $20.

Grades K-5 Educators  
**Harrison/Tyler**

**Fairy Tales Come to Life** *(repeat at 11:30 a.m.)*
Kimberly Howerton, Meredith Rose
Discover engaging and effective ways to use fairy tales to integrate STEM/STEAM in the 4th/5th grade class room.

Grades 4-5 Educators  
**Brush Mountain**
Breakout Sessions • Thursday, February 8

11:30 a.m. – 12:45 p.m.

STEM Buddies to Teach Perseverance, Patience, and Collaboration
Ryan Barter, Sarah Roche
Talawanda School District (Oxford, Ohio) has an established third through fifth grade STEM program. Through STEM, students are taught perseverance, patience, collaboration, and other skills. This session will focus on how these STEM students partner with K-2 students to better learn these skills.

Grades K-5 Educators

How to Nurture Girl Builders
Michelle Bruch
LEGOs are a basic building block toy for which many engineers share a passion. How can we best ensure girls have access and opportunities to play with LEGO®s in the classroom setting?

Grades PreK-3 Educators

WILD About STEM!!
Judy Christopher, Vickie Bohidar, Lynn Smith
Participants will learn how to leverage free resources like Project WILD, Aquatic WILD, and Growing Up WILD to customize a STEM camp/program.

Grades K-5 Educators

Seeing Engineering Everywhere!
Andrew Gillen, Cheryl Carrico, Jacob Grohs, Holly Matusovich
Participants will learn to facilitate affirming experiences where youth take apart, fix, and explore the function of objects that are meaningful and relevant to them.

Grades K-6 Educators

Blending Literature and Design Briefs (repeat at 2:45 p.m.)
Emily Loving
Ever wonder how to blend children's engineering into your instructional day? Come explore strategies to help! Learn how to use literature from your classroom to create engaging design briefs from scratch.

Grades K-5 Educators

Music and STEM?
Veronica Kennedy
Integrating STEM as a music specialist is a challenge with short class time and 4-6 day rotation schedules. Get ideas for using STEM as extensions, unit projects, and more.

Grades K-5 Educators

Analyzing Local Waterways: An Exploration of Math and Science with Microcontrollers
Willy Kjellstrom, Justin Stauffer, Brandy Garbaccio, Betsy Agee
Rivers, streams, and creeks traverse much of the Virginia landscape. Learn how to capture data from these waterways using microcontrollers, data logging devices, and sensors. Fifth grade students in Crozet did just this, and you can learn how to replicate the PBL STEM project, too.

Grades 4-6 Educators

Osmo in Action
Brian Lachance, Mat Campet
Get your hands on an Osmo and learn how you can incorporate and personalize its many games across your curriculum to boost student engagement.

Grades PreK-6 Educators

Stepping into Standards-Based STEM
Alaina Bear and Chelsea Knickmeyer
Learn how to incorporate STEM materials and apps such as Ozobots, Keva Planks, Koma Koma, and Book Creator into your standards-based lessons!

Grades K-5 Educators

One-Page PBL Planning
Karah Morgan, Mackenzie Escobar, Amy Lutter, Katie Brennen
Participants will learn how to simplify the planning process behind PBL/STEAM lessons, briefs, and rubrics using templates that can be applied for any type of student centered lesson!

Grades 1-6 Educators

Makerspaces and Integrative STEM Learning: The Transformation of a Small School Division
Lisa Moyer, Blenna Patterson
We’ll share engaging STEM and makerspace experiences that are facilitating a small southwest Virginia school division’s transformation toward integrative 21st century teaching and learning.

Grades K-6 Educators

Teaching Squishy Circuits with STEM Minor Students
Taylor Neuman, Casey Craven, Janelle Konkle
Join graduate and undergraduate students from Millersville University in Lancaster, Pennsylvania, to learn how to teach and incorporate Squishy Circuits into the classroom.

Grades 2-4 Educators

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1:30 p.m. – 2:45 p.m.

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Grades 2-4 Educators
11:30 a.m. – 12:45 p.m. (continued)

**PBS KIDS Scratch Jr. Coding**
Rosalie Rodriguez

Have you been hesitant about learning how to code? Learn basic coding using a fun and creative app: PBS KIDS Scratch Jr.

*Grades 3-5 Educators*

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**STEM Activities with KEVA Planks: The Beauty of Open-Ended Challenges**
Ken Scheel

Using precision KEVA planks, learn how to insert engineering into almost any topic you teach. Learn easy two-minute games, instant challenges, and activities you can implement tomorrow.

*Grades PreK-6 Educators*

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**“Cat in the Hat”: STEM with That!**
Cindy Smith, Erin Alexander-Flores

Learn how to incorporate STEM projects schoolwide with Seuss books and materials. Participants will receive hands-on experience with some of the projects and will walk away with ready-to-go design briefs!

*Grades PreK-5 Educators*

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**LEGO Mindstorms Education EV3**
Barbara Westlund, Shellye Wardensky

Need an engaging way to teach your students science, coding, engineering, and other STEM-focused subjects? Look no further than this hands-on session!

*Grades 4-6 Educators*

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**STEM + Literacy = Deeper Learning**
Mary Lisa Watts, Crystal McArtan, Elizabeth Kirk

STEM naturally fits into literacy time. Discover how to easily incorporate STEM into your reading block through work stations, writing, design challenges, and more.

*Grades K-5 Educators*

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**Powerful Partnerships: A Guide to Interdisciplinary STEAM Programming**
Hannah Weiss, Linde Furman

In this session, participants will discover methods for forging strong interdisciplinary partnerships to offer impactful STEAM education and will also explore examples of successful programs.

*Grades Pre-K-5 Educators*

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**Aviation Fascination: Let STEAM Take Flight!**
Megan Tucker

Take STEAM to the skies! Learn how to incorporate aerospace into your elementary classroom through NASA's SOFIA program, Civil Air Patrol curriculum, songs, and more!

*Grades K-6 Educators*

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**Fairy Tales Come to Life (repeat from 10:00 a.m.)**
Kimberly Howerton, Meredith Rose

Discover engaging and effective ways to use fairy tales to integrate STEM/STEAM in the 4th/5th grade class room.

*Grades 4-5 Educators*

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**Oceans Matter: Maury Project and More (repeat at 2:45 p.m.)**
Kimberly McKinley Taylor

Oceans Matter presents the basics of ocean science and engineering. The session discusses the Five E's, highlights shifts in Next Generation Science Standards, and demonstrates hands-on ocean activities.

*Grades 4-6 Educators*
2:45 p.m. – 4:00 p.m.

**Soft Circuit Storytelling**
Liza Stark

In this hands-on workshop, you will create your own interactive storybook out of paper, conductive tape, LEDs, and craft materials. We will discuss how integrating the design process and narrative-based approaches to STEM can build a more inclusive, interest-driven, and creative learning environment.

Grades PreK-6 Educators  Shenandoah B

**From STEM to STEAM: Adding Language ARTS**
Stephanie Cochrane, Kerry Dixon

Add Language ARTS to your STEM classroom! Receive design briefs that incorporate reading and writing Standards of Learning and learn ways to share projects while keeping all students engaged!

Grades K-6 Educators  Wilson

**Exploring National Days through Monthly STEM Challenges!**
Megan Dougherty, Kristin Hallman, Charlton Wolfgang

This session focuses on how to incorporate history and reading into a monthly STEM lesson, based on a national day or important date in history.

Grades PreK-6 Educators  Crystal Ballroom B

**Where’s the “T”?**
Kate Green, Barbara Daniels

Moving from SEAM to STEAM – how to tell the difference between technology infusion and integration, one division’s story.

Grades PreK-6 Educators  Allegheny

**Getting It off the Ground: Classroom Makerspace**
Kelly Hoggard, Elizabeth Lewis

We will share the good, bad, and ugly of how a classroom makerspace came to life and activities we have used to integrate content.

Grades K-5 Educators  Crystal Ballroom C

**Engineering Is Elementary**
Roy Ann Jolley, Ginger Baggette, Matthew Coté

Incorporating engineering into the weekly schedule is easy with planning and support. Our designated Think Tank Thursdays and semi-annual Engineering is Elementary events have made engineering an integral part of our school’s curriculum.

Grades K-4 Educators  Buck Mountain

**Blending Literature and Design Briefs (repeat from 11:30 a.m.)**
Emily Loving

Ever wonder how to blend children’s engineering into your instructional day? Come explore strategies to help! Learn how to use literature from your classroom to create engaging design briefs from scratch.

Grades K-5 Educators  Pocahontas B

**Fairytale Fridays: STEAM and Literature in K-3**
Amy Lutter, Taryn Browning, Katie Brennen, Karah Morgan, Mackenzie Escobar

Explore different ways to create a program that brings children’s favorite fairytales, fables, and fictional literature to life using hands-on STEAM concepts.

Grades K-3 Educators  Pocahontas A

**Supercharge Your Lessons**
Phyllis Meade, Drew Lowery

Technology integration is an important way to create meaningful learning experiences for your students. Lesson planning for teachers can be overwhelming when incorporating the use of technology in activities. During this session, you will learn tips and tricks to integrate technology into any lesson, at any level, with ease.

Grades PreK-6 Educators  Madison

**Embedded EdTech and Innovation Professional Development**
Urvi Morrison, Allison Furton

Learn how to create an embedded professional development model to create a culture of innovation and inquiry.

Grades PreK-6 Educators  Washington Lecture Hall
2:45 p.m. – 4:00 p.m. **(continued)**

**SCRATCH That Itch for Video Game Design**  
Heather Reisenweber, Amy Qualls  
Participants will use SCRATCH software to create and program a video game. Design briefs will include options for both Scratch (grades 3-6) and Scratch Jr. (grades 1-2).

*Grades 1-6 Educators*  
*Tinker Mountain*

**Creating an Integrated Robotics Curriculum**  
Robin Ricketts, Suzanne Casey  
Go beyond STEAM and integrate robotics with reading, writing, and history. Using robots, bring connected technology, teamwork, and problem solving into the classroom.

*Grades 1-6 Educators*  
*Shenandoah A*

**New STEM Activities for Children with Autism and Special Needs**  
Ken Scheel  
Learn simple KEVA Planks activities to enhance understanding of engineering and design concepts. Unleash hidden potential for children of any skill level.

*Grades PreK-6 Educators*  
*Crystal Ballroom E*

**Shake It Up Earthquakes and Architecture**  
Peter Sheldon, Igor Rwaka, Peggy Schimmoeller, Skylar Pippin, Amanda Rumore  
Participants will design and build a house and test with shake tables to simulate an earthquake. Plans for building your own shake table will be provided.

*Grades 3-6 Educators*  
*Crystal Ballroom A*

**Lego and Simple Machines**  
Rose Kimball  
Discover how to bring simple machines to life in your classroom. Explore curriculum, resources, and guiding principles of physical science, mathematics, engineering, and technology.

*Grades 3-6 Educators*  
*Crystal Ballroom D*

**It All Starts with STEM!**  
Dawn Toole, Elizabeth Fulcher  
Discover how easy it is to integrate STEM into the SOLs. Participants will leave with activities that can easily be incorporated into everyday learning while targeting specific standards.

*Grades K-2 Educators*  
*Mill Mountain*

**Oceans Matter: Maury Project and More** *(repeat from 11:30 a.m.)*  
Kimberly McKinley Taylor  
Oceans Matter presents the basics of ocean science and engineering. The session discusses the Five E’s, highlights shifts in Next Generation Science Standards, and demonstrates hands-on ocean activities.

*Grades 4-6 Educators*  
*Taylor*

**Fraction Action**  
Mary Hunter Ayer  
Looking for a way to use engineering in mathematics? Come away with a hands-on project with found materials to show how different fractions are equivalent.

*Grades 3-5 Educators*  
*Appalachian*

**Designing with Electrical Circuits**  
Barbara Adcock  
Explore basic circuit design, differences between incandescent and LED lights, and design and create an electronic study guide. Leave with several design briefs that require very few supplies and can be done on a shoestring budget!

*Grades 4-5 Educators*  
*Monroe*

**A Successful Math/Engineering Elementary School Curriculum**  
Marilyn Barger, Richard Gilbert  
A mathematics/engineering fully integrated curriculum for elementary school is shared with its strong supporting data about its success and curriculum samples.

*Grades K-5 Educators*  
*Harrison/Tyler*
Breakout Sessions • Thursday, February 8

4:15 p.m. – 5:30 p.m.

Get Your Build On: Great Engineering Activities
Cheryl Adeyemi, Mary Beth Hull

This hands-on, interactive workshop will stimulate the engineering interest of K-5 educators by engaging them in engineering and mathematics-based, building activities for their K-5 students.

Grades 3-5 Educators Harrison/Tyler

Planning with Science & Engineering Practices in Mind
Adrienne Kravchak

Scientists and engineers use several skills in their professional roles. Participants will be introduced to these practices and explore ways to integrate them into lessons through a sample lesson and discussion.

Grades K-6 Educators Washington Lecture Hall

Rube Goldberg: Using a Contraptions Lab in STEAM
Mathieu Campet, Brian Lachance

Come explore how you can plan, purchase, and implement a contraptions lab in your STEAM classroom in this “hands-on” collaborative hour.

Grades K-6 Educators Monroe

Bringing New Dimensions to Learning
Matt Caratachea, Karen Hues

Bring new dimensions to learning with 3D design. Explore how 3D printing can tie in with the curriculum, enhance your lessons, and engage your students!

Grades 2-6 Educators Pocahontas A

Global Collaboration + STEAM = Exponential Learning
Tina Coffey, Leigh Ann Becker

Combine STEAM with global collaboration to add purpose and authenticity to Children’s Engineering activities. This session explores how Roanoke County students and their global partners participated in global STEAM courses to solve real-world problems.

Grades 2-6 Educators Buck Mountain

I've Lost My Marbles!
Elyse DeQuoy, Barbara Large, Jennifer Lemieux

Implement and use marble runs and mazes in the classroom while learning about math, science, and engineering. Walk away with ideas using everyday items.

Grades K-5 Educators Bent Mountain

Age-Appropriate and Fun Coding Activities for Elementary Students
Ron Todd, Bob Claymier, John Seymour, Bobbie Arbogast, Linda Harpine, Krista Miller, Heather Cherry

This program will introduce teachers to practical and fun coding activities for students to use in controlling a range of simple devices. A visual presentation (downloadable by the teachers) will show a range of elementary-level systems and control activities as well as the role they can play in (a) advanced language development, (b) gaining concepts and skills for integrating STEM subjects and for learning cybersecurity measures, and (c) meeting selected Standards of Learning and national standards.

Two parallel break-out sessions will follow the visual presentation. One session will introduce teachers (grades 3 & 4) to non-computer-based activities for children to use a hands-on system of building blocks to create “electronic sentences” that can control the operation of such devices as blinking lights on a Christmas tree, a model merry-go-round, or a pump for watering plants. The second session, for teachers (grade 5 and higher), will show activities and materials, similar to those piloted in the VTTEA 2017 Summer Conference.

Grades 3-6 Educators Crystal Ballroom B

It's Gravity-Powered and STEM-Driven
Frankie Gilmore

Develop and reinforce key science and mathematics skills through engaging, standards-aligned, project-based, Soap Box Derby educational programs.

Grades 3-6 Educators Crystal Ballroom D

Makers, Inventors, and Entrepreneurs
Terry Guiffré, Tanaga Boozer

Implement an innovation challenge and promote a maker culture in your school! Elevate student engagement, integrate work readiness skills, motivate students from consumers to creators of technology!

Grades 3-6 Educators Appalachian

Hacking All of the Sciences
Melinda Huffman

Participants will learn about a fifth grade science course that was created to engage and interest students in engineering, making, and the design process while exploring and mastering important scientific concepts.

Grades 4-6 Educators Taylor

Utilizing a Digital Daily 5 in Reading
Sarah King, Erica Martin

Using Google Classroom, participants will receive ideas for whole-group instruction, guided reading groups, independent work, student/teacher conferencing, writing, data collection, classroom management, and parent communication. Please bring a device.

Grades 3-5 Educators Tinker Mountain

Pop It Up!
Elizabeth Kirk, Lisa Brown

During this hands-on presentation, learn how paper engineering enhances instruction across curriculum. Learn how to make pop-ups, try them in a challenge, and receive design briefs to take with you.

Grades K-6 Educators Wilson
4:15 p.m. – 5:30 p.m. (continued)

**Engineer Your Own: Architecture**  
Ellen Martin  
Engineer 2-6 STEM activities to create architecture lessons/modules using design briefs, literature, the scientific process, Google Earth, SketchUpMake, My Places, and hands-on building.  
Grades 2-6 Educators  

**Beyond Code.org: A K-5 Coding Curriculum Map**  
Michelle Pealo, Mallory Bradley, Aubrie Ellis, Charlene Hinshaw, Heather Greer  
Explore many free and inexpensive ways to teach elementary students basic programming concepts (arranged by concept) and ways to connect to core subject curricula.  
Grades K-5 Educators  

**Engineering Your Computer Lab**  
Terry Phillips  
Use design to transform the classroom for integration of STEM activities across the curriculum.  
Grades PreK-5 Educators  

**Yes They Can: Engineering for PreK and K**  
Ken Scheel  
Learn simple open-ended challenges, games, and activities for young children. A fun and practical hands-on workshop using KEVA Planks. Play with a purpose.  
Grade PreK Educators  

**Putting the “T” in STEM**  
Courtney Steele, Amy Keen, Jenna Newborn  
Explore how to use apps, such as ChatterPix, green screens, and Kahoot, to incorporate aspects of STEM into end-of-unit assignments by way of multiple modalities.  
Grades K-4 Educators  

**STEM K-2: The Beginning Days**  
Wesley Strayer, Devon Becker  
This session will teach you how to set up your K-2 classroom, foster independence within your students, and scaffold your STEM lessons for young learners.  
Grades PreK-2 Educators  

**Cross-Curricular 3D Thinking for All Elementary Grade Levels**  
Gary Daniels  
Reinforcing complex STEAM concepts is fun and easy with 3D projects that encourage experimentation and innovation. The applications are endless across all ages and subject areas, including science (earth models), health (anatomy models), technology (freight cars and trains), engineering (bridges, trebuchets), history (ancient ruins, fossils), art (masks, snowflakes), mathematics (fraction teaching tools), and more.  
Grades K-6 Educators  

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**Lots of Bots: Using Robots to Engage Young Learners**  
Heather Smith-Reeps, Jessica Herr  
This is an introductory workshop designed for teachers who have never used a Sphero robot. Ideas on how to integrate coding and math standards will be explored.  
Grades 1-5 Educators
9:15 a.m. – 10:30 a.m.

MakerSpace: One Journey to Enhancing STEM Education
Teresa Davis
As educators balance standards, STEM, and soft skills, how do you add a makerspace? Learn one school’s journey to develop a successful makerspace.

Grades K-5 Educators
Crystal Ballroom A

STEM Activities Increase Creativity in 4th/5th Graders
April Peacock
We are all interested in STEM activities and increasing critical thinking. See what we are doing in fourth and fifth grade and experience their “visions.”

Grades 4-5 Educators
Taylor

Reimagining Your School Building (repeat at 11:00 a.m.)
Mary Ann Settlemyre
Re-imagine the school building and grounds, not as a container for education but as a learning tool and laboratory for applied STEM education! In this interactive workshop, educators will be given free access to a number of lessons that they can begin using with their students right away.

Grades K-6 Educators
Buck Mountain

Teamspiration and the Rube Goldberg Machine (repeat at 11:00 a.m.)
Brittany Ballou, Mindy Adamonis
Participants will incorporate STEAM through Rube Goldberg machines that complete a simple task through a set of complex steps. Students will connect simple machines, cause/effect relationships, how-to directions, and much more! You’ll leave the session with design briefs and ideas to implement your own Rube Goldberg Challenge in the classroom.

Grades 2-6 Educators
Brush Mountain

Making Engineering the Foundation of a Project-Based Learning Unit (repeat at 11:00 a.m.)
Deborah Diner, Cheryl Morgan
Learn the basics of project-based learning and how to design a project-based unit that focuses on engineering. Walk away with the beginnings of a project-based unit that is tailored to your own standards!

Grades K-6 Educators
Allegheny

Waterworks: Energy and Water
Teresa Auldridge, Michael Bentley
Use the power of water to design a waterwheel to lift objects and design a solar water heater to study variables in energy transfer.

Grades 3-6 Educators
Crystal Ballroom D

Fidgets: Friend or Foe? (repeat at 11:00 a.m.)
Katie Brennen, Mackenzie Escobar, Amy Lutter, Karah Morgan, Taryn Browning
Focus on ways to embrace fidgets as teachers and how to make them an investigative tool for students. Using their research and data, students will then make their own fidgets to help their personal needs.

Grades 2-6 Educators
Pocahontas A

Project-Based Learning in the K-2 Classroom
Devon Becker, Wesley Strayer
Learn how to create and sustain a PBL-inclusive classroom that is specifically geared to the needs of the primary grades.

Grades K-2 Educators
Crystal Ballroom B

Partnering with 4-H for STEM Enrichment
Jennifer Bowen, Ruth Wallace, Jake Morgan
Learn how teachers can partner with Virginia Cooperative Extension to bring additional STEM resources into the classroom with programs like National 4-H Youth Science Day, SPIN (short-term special interest) clubs, in-school 4-H clubs, science fair, and after-school programs.

Grades 3-6 Educators
Harrison/Tyler

BreakoutEDU
Barbara Westlund, Shellye Wardensky
There are BreakoutEdu games for every grade level from K-12 spanning all areas of the curriculum. BreakoutEdu is an engaging, fun, learning activity that helps students build skills in critical thinking, collaboration, communication, and creativity. In this session participants will experience physical and digital Breakouts. Once you experience Breakout Edu you’ll be eager to try Breakout Edu in your classroom.

Grades K-6 Educators
Mill Mountain

Children’s Engineering for Preschool through First: Yes They Can!!!
Kelley Davis
You will receive a brief overview of the “big ideas” behind children’s engineering and how to incorporate them into grades PreK through 1st with design briefs, literature, manipulatives, and hands-on projects.

Grades PreK-1 Educators
Crystal Ballroom C
9:15 a.m. – 10:30 a.m. (continued)

STEAM in the Primary Grades
Andrea DeMello, Ken Francis
Learn how STEM education can easily become STEAM education by incorporating fun, age-appropriate literature into hands-on science lessons.

Grades PreK-3 Educators                   Crystal Ballroom E

Easy STEM Integration with NASA Resources
Joan Harper-Neely, Betsy McAllister
Participants will use NASA STEM resources to integrate engineering into physical science lessons that target light and sound, force and motion, and states of matter.

Grades 3-6 Educators                   Appalachian

Learning with Coding
Kimberly Jameson-Dean, Lyann Abrams, Maureen Ambrose
Enhance your classroom instruction and student performance with BlueBots and Ozobots.

Grades K-5 Educators                   Shenandoah B

Young Kids Tackle Life Needs of Animals
Barbara Messina
Students identify and describe the life needs of animals then show those changes through a design challenge.

Grades PreK-1 Educators                   Monroe

The Power of STEAM Using Ozobots
Joanna Papadopoulos
Learn how to use Ozobots to create STEAM lessons to further engage one’s students and participate in a hands-on engineering design-based activity!

Grades K-6 Educators                   Bent Mountain

Putting the Energy in Engineering (K-5)
Susan Ramsey, Teresa Amsia, Chris Chamberlin
You will explore engineering design challenges with a focus on energy. The challenges are appropriate for the K-5 classroom. Includes takeaways that are SOL-aligned and ready for immediate implementation.

Grades K-5 Educators                   Pocahontas B

STEAM: Where Science Meets the Arts!
Natalie Street, Tracy Terwilliger
The basic model of STEAM-based education is to teach kids to bridge subjects and problem solve by using their creative thinking cap. The arts have it all! Join our session and learn how to connect all areas instead of in isolation and revamp those old STEM lessons.

Grades 2-4 Educators                   Tinker Mountain

We Played a Game in School Today...
Paula White, Elliot Rothman
Gaming, like coding, can be a fun way to develop logic and reasoning. Successful games aren't too complicated or too easy- they are just right! Join us to explore gaming and experience rulemaking, breaking, and tweaking to learn design and strategic thinking!

Grades K-6 Educators                   Shenandoah A

Children's Engineering: Lessons Across the Curriculum in the Primary Grades
Sabra Willhite, Mary Ann Taylor, Suzanne Casey
Come see how we have overhauled our curriculum, instilling energy and creativity by using systems thinking, research, making, and design thinking.

Grades K-2 Educators                   Wilson

A Divisionwide Robotics Program Initiative
Ray Wu-Rorrer
This presentation focuses on a divisionwide effort to offer a robotics program at all schools within the Falls Church City Public Schools.

Grades K-6 Educators                   Madison

Administrative Panel
Panel led by Dr. Charlotte Holter and features state-wide, national, and international school leaders.

School leaders will share information on a variety of topics including divisionwide and school-based teacher training, successful school-wide implementation of Children's Engineering, funding, community support, and sustaining a STEM focus over time.

Grades PreK-5 Educators                   Washington Lecture Hall
11:00 a.m. – 12:15 p.m.

**Youth Conceptions of Engineering Work**
Andrew Gillen, Cheryl Carrico, Jacob Grohs, Holly Matusovich
Participants will explore findings from our study investigating conceptions of engineering work held by rural students and discuss culturally relevant teaching approaches in engineering.

*Grades K-6 Educators*  
Taylors

**Reimagining Your School Building** (repeat from 9:15 a.m.)
Mary Ann Settlemyre
Reimagine the school building and grounds, not as a container for education but as a learning tool and laboratory for applied STEM education! In this interactive workshop, educators will be given free access to a number of lessons that they can begin using with their students right away.

*Grades K-6 Educators*  
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*Grades 2-6 Educators*  
Brush Mountain

**Making Engineering the Foundation of a Project-Based Learning Unit** (repeat from 9:15 a.m.)
Deborah Diner, Cheryl Morgan
Learn the basics of project-based learning and how to design a project-based unit that focuses on engineering. Walk away with the beginnings of a project-based unit that is tailored to your own standards!

*Grades K-6 Educators*  
Allegheny

**Engineering Challenges in Life Science**
Teresa Auldridge, Michael Bentley
Explore adaptations of living things and engage in challenges using engineering to mimic structures that enable organisms to survive.

*Grades 1-4 Educators*  
Crystal Ballroom D

**Linking Science, Math, and Literacy with Problem-Based Learning**
Cathy McAuley, Charlotte Trost, Jessica Smith
Learn how to plan, structure, and organize classrooms using problem-based learning (PBL). Motivate your students by solving relevant problems based on curriculum needs through engineering and literacy.

*Grades 3-6 Educators*  
Crystal Ballroom A

**Engineering STEAM Girls’ Clubs Within Your School Community**
Elizabeth Brito, Kathy Notyce, Heidi O’Donnell
Empowering girls to see themselves in a STEAM career is vital to the future of women in these fields. We will teach others how to start a successful STEAM Girls’ Club at their school, discuss what we have done and changed, where we are going with our club, and complete a quick design brief that we use to kick off our club! Resources (websites, handouts, etc.) will be provided to participants to help them begin empowering the girls in their school community!

*Grades 2-5 Educators*  
Crystal Ballroom B

**Snap, Crackle, Pop-Ups**
Lisa Brown
Do you want to take your paper engineering skills to the next level? We will investigate techniques to combine electrical circuits with pop-ups, pull tabs, and rotary spins.

*Grades 1-6 Educators*  
Monroe

**Fidgets: Friend or Foe?** (repeat from 11:00 a.m.)
Katie Brennen, Mackenzie Escobar, Amy Lutter, Karah Morgan, Taryn Browning
Focus on ways to embrace fidgets as teachers and how to make them an investigative tool for students. Using their research and data, students will then make their own fidgets to help their personal needs.

*Grades 2-6 Educators*  
Pocahontas A

**Putting the MOTION in STEM**
Chris Chamberlin, Susan Ramsey, Teresa Amasia
You will explore hands-on, SOL-aligned materials designed for immediate classroom use. You will take away lessons focused on teaching motion through engineering design challenges.

*Grades 3-5 Educators*  
Pocahontas B

**Connecting Parents with PBL and STEAM**
Wendy Dalton, Miranda Meadows
Learn how to connect your parents to STEAM and PBL (Project- and Problem-Based Learning) through student-driven digital portfolios.

*Grades K-2 Educators*  
Madison

**Pneumatics for the Elementary Classrooms: Watch the Animals Fly!**
Kelley Davis
Learn all about pneumatics in our daily lives and using air power to create fun challenges like Pete the Cat’s popping button or The Three Little Pigs popping out of a birthday cake.

*Grades PreK-5 Educators*  
Crystal Ballroom C

**Designed for Success: Engineering by Design TEEMS**
Anita Deck
Engage in Engineering by Design PreK-6 NxtGEN TEEMS course materials that intentionally integrate multiple discipline areas and come away with fun-infused classroom-ready materials.

*Grades PreK-6 Educators*  
Harrison/Tyler
“Engineering Virginia’s Future!”

Friday, February 9 • Breakout Sessions

11:00 a.m. – 12:15 p.m. (continued)

Upper Elementary Hands-On STEM
Andrea DeMello, Ken Francis
Learn methods for sparking interest in STEM concepts through fun, hands-on activities.
Grades 4-6 Educators
Crystal Ballroom E

VCEC’s Boat Building Design and Engineering Challenge
Katherine Mangum
Apply an understanding of buoyancy and boat trim by designing and constructing a boat that floats and carries a load. Work through the engineering design loop to plan and build your own boat using limited materials and supplies.
Grades 3-6 Educators
Appalachian

Coding in Your School Maker Space
Joseph Jackson
Ready to start a makerspace for your elementary school? Capture your students’ attention with code and then translate it into application.
Grades PreK-6 Educators
Mill Mountain

Building with a Museum: Discover the Fun!
Diane Jackson Schnoor, Jennifer Coleman
Join the Discovery Museum in equipping Rapunzel’s Tower with a pulley system, creating recycled instruments for Ada’s Violin, and designing your own roller coaster!
Grades 1-5 Educators
Shenandoah A

STEAM in Early Childhood Special Education
Heather Jankovich, Anne Battle, Debra Coppedge, Stephanie LaFrance
Participants will discover how STEAM fits into an early childhood special education curriculum.
Grade PreK Educators
Wilson

Technology Education Academic Integration
Robert Johnson
Use Technology Education to achieve academic objectives in the classroom.
Grades PreK-6 Educators
Tinker Mountain

Differentiating STEM for English Learners: A Unit on Community
Stephanie Sebolt
Participants will learn how to connect content and academic language to meet the needs of English learners’ levels of English language development through a STEM project. The presenter will share a differentiated social studies STEM project on community. Participants will have the opportunity to design their own community.
Grades K-6 Educators
Bent Mountain

“Honey, They Shrunk My Classroom!”
Jennifer Whitenack, Anita Mays
Learn how students miniaturized their classroom while expanding their design thinking and engineering skills using digital fabrication, 3D printing, and virtual reality.
Grades 3-5 Educators
Washington Lecture Hall
Mark Your Calendar!

Plan to Attend

23rd Annual
Virginia Children’s
Engineering Convention

February 7-8, 2019

The Hotel Roanoke & Conference Center
Roanoke, Virginia
Children’s Engineering
Building a Strong STEM Foundation

Building Blocks Highlight the T&E in STEM
- The Design Process
- Utilizing Design Briefs
- Problem Solving
- Decision Making
- Critical & Creative Thinking
- Hands-on Learning
- Self-Confident Learners
- Differentiated Instruction
- Ownership of Essential Knowledge

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2018 Children’s Engineering Convention Sessions
Evaluation QR Codes

Session Block 1
Session Block 2
Session Block 3
Session Block 4
Session Block 5
Session Block 6
Teacher of the Year

Joyce Matthews
Braddock Elementary School
Fairfax County Public Schools

Joyce Matthews is committed to providing authentic STEM-based learning experiences that engage and inspire students to explore and learn more about STEM careers and the technical content associated with the array of STEM fields. Joyce offers a robust robotics program that provides students an opportunity to explore, create, and innovate with tools and technologies that many children would not have access to without the program. Her passion is evident in the administration, teachers, community, school culture, and most importantly the students. Joyce immerses students in engineering design processes and challenges to solve problems through collaboration. Interdisciplinary connections are designed to support students’ learning and encouragement of students to think critically and develop higher level thinking skills.

The robotics program at Braddock Elementary School has been so successful that the school’s parents have reached out to the area middle and high schools to ensure that their children continue to have an opportunity for robotics experiences.

Joyce is a forward thinking STEM advocate, well versed in instructional techniques that lead to developing strong critical thinking and innovative problem solving skills.

Elementary School Program of the Year

John C. Myers Elementary School
Rockingham County Public Schools
Principal: Rebecca Roadcap
Lead Teacher: Bobbie Arbogast

Teachers at John C. Myers Elementary School believe that all students can be successful life-long learners when offered a high quality instructional program. The teachers participated in a three-year children’s engineering professional development program. Phase one focused on an in-depth in-service on design, engineering, and technology. Phase two focused on types of structures and how to design structures to support and apply knowledge of the Standards of Learning. In phase three, teachers learned to write design briefs. Children’s engineering is implemented in kindergarten through fifth grade. Teachers collaborate to provide meaningful design challenges that reflect grade level standards and national technological standards.

The school maintains strong connections with local businesses and community organizations. The staff sponsors a STEM Family Night annually. The family night program allows families to participate in design challenges, and gives children the opportunity to showcase their projects and expertise in solving design, engineering, and technology challenges. The PTA provides funding for children’s engineering resources.

John C. Myers Elementary School staff promotes Children’s Engineering as an instructional practice that goes above and beyond the required state standards.

Awards Sponsors
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**Creativity Lab**

Learn about the “Big Ideas” behind Children’s Engineering

Come visit the Creativity Lab!!!

Discover new ways to enhance your teaching strategies in the Creativity Lab. The lab will be open concurrent with the convention sessions. Come and spend some one-on-one time in the lab and leave with lots of new design briefs!

**Come experiment with these amazing STEM related products!**

- Bee-Bot®
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- squishy circuits™
- SNAP Circuits®

Design a car for a slug!

Chat with “seasoned” educators: share ideas, ask questions, & receive tips and tricks!

Make Pete’s button pop off using pneumatics!

Build a home for a pig that will withstand the wolf’s blows!
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