

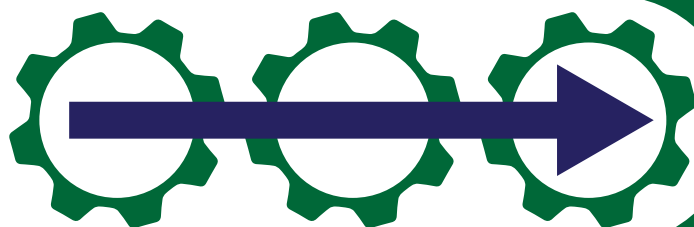


VTEEA

2022 SUMMER CONFERENCE



**FREDERICK
COUNTY**
JULY 26-28



MANUFACTURING OUR FUTURE

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Executive Committee

Alisa Rushing	President Swift Creek Middle School
Amy Sabarre	President-Elect Harrisonburg City Public Schools
Frank Guyer	Immediate Past President Alconbury MHS
Dave Curry	Vice President Admiral Byrd Middle School
George D. Bishop	Executive Secretary/Treasurer Battlefield High School
Dr. Lynn Basham, DTE	Technology Education Specialist Virginia Department of Education

Conference Committee

Mary Beth P. Echeverria	Conference Chair
Alisa Rushing	Awards
George Bishop	Budget
Dr. Lynn Basham	Exhibitors
Dave Curry	Membership
Ron Vickers	Photography
Mary Beth P. Echeverria, Nancy C. VanGorden	Program
Amy Sabarre	Sessions and Online Registration
Kristin Guthrie, Brittany Carper, Dave Curry, Matt Brame	Signage
Mary Beth P. Echeverria, Missy Spielman	Tours
Missy Spielman, Vivian Simon	Transportation
Brittany Carper	T-Shirts and Logo
George Bishop	50/50 Raffle



Dr. James Angelo
Assistant Superintendent
for Instruction



Frederick County Public Schools

Letter of Welcome from the Assistant Superintendent for Instruction, Frederick County Public Schools

July 25, 2022

Dear VTEEA Summer Conference Attendee:

On behalf of Frederick County Public Schools, I am pleased to welcome you to Frederick County and to the Virginia Technology and Engineering Education Association (VTEEA) Summer Conference. Your commitment to enhancing your teaching skills and remaining current in the teaching of Technology Education is evident by your participation in this conference.

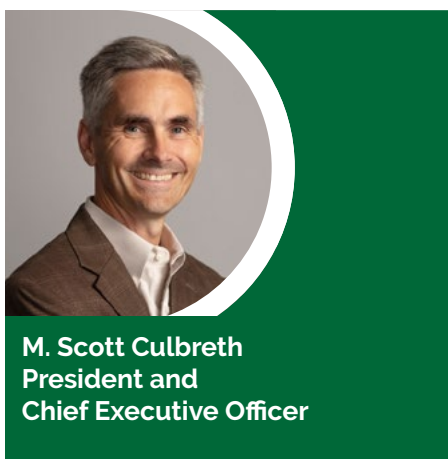
As technology educators, you know keeping pace with the constantly-changing world of science, technology, engineering, and mathematics (STEM) is critical to ensuring students are successful in the future. Engaging students in authentic learning

experiences, encouraging collaboration, and requiring problem-solving and critical thinking skills are essential as we prepare students to compete in a global economy.

I am sure the VTEEA Summer Conference will provide you with a variety of opportunities to expand your knowledge and skills. The strategies and information provided in conference workshops, along with numerous networking opportunities that you will experience over the next several days, will undoubtedly prove invaluable as you prepare for the 2022–23 school year.

Welcome to the Northern Shenandoah Valley. I hope you take time to explore our wonderful corner of the Commonwealth.

Sincerely,
Dr. James Angelo
Assistant Superintendent for Instruction



M. Scott Culbreth
President and
Chief Executive Officer

American Woodmark

Keynote Speaker

Scott Culbreth serves as the president and chief executive officer for American Woodmark. He joined the company in 2014 as the senior vice president and chief financial officer. He was promoted to CEO in 2020.

Scott received a bachelor's degree in finance from Virginia Tech and an MBA from Washington University in St. Louis. He began his career with Shell Oil Company and developed his international operational skills with Robert Bosch Corporation, Newell Brands and Piedmont Hardware Brands, where he held various financial roles with increasing responsibility.

Cultural values and company performance brought Scott to American Woodmark where he continually seeks to live his life as a servant leader each and every day. He is passionate about developing himself and his team through stretch assignments, removing barriers, challenging mental models and striving to always improve.

A native of Charlotte, North Carolina, Scott and his wife live in Winchester, Virginia. They enjoy visiting their two daughters, hiking, traveling and attending Virginia Tech Hokie and Carolina Panthers football games.

SCHEDULE AT A GLANCE

MON

Preconference Sessions

July 25

Admiral Richard E. Byrd Middle School

9:00 a.m.–3:30 p.m. Sea Perch
Engineering Framework
New CTE Teacher Orientation
TSA Workshop

11:30 a.m.–1:00 p.m. Lunch on your own

The George Washington, A Wyndham Grand Hotel

1:00–5:00 p.m. Board Meeting and Dinner, Martha Ballroom

8:00 p.m. Registration Desk Open and Exhibitors Setup
Garden, Lord Fairfax, Heritage Rooms

8:00 p.m. Haunted History Ghost Tours. Ticket required.

No bus transportation this day.

TUES

Conference Opening

July 26

The George Washington, A Wyndham Grand Hotel

8:00 a.m.–6:00 p.m. Registration Desk

9:00 a.m.–12:00 p.m. Meet and Greet, Exhibitor Area

12:00–2:00 p.m. Opening Luncheon, Grand Ballroom. Ticket required.

2:00–2:30 p.m. Regional Meetings, Grand Ballroom

2:30–6:45 p.m. Exhibitors Open

6:00–7:00 p.m. Reception with Cash Bar, Exhibitor Area

7:00–9:00 p.m. Dinner and Awards, Grand Ballroom. Ticket required.

SCHEDULE AT A GLANCE

WED

Conference Sessions

July 27

The George Washington, A Wyndham Grand Hotel

7:00–8:00 a.m. Breakfast, Grand Ballroom
8:15 a.m. Buses load and depart to Admiral Richard E. Byrd Middle School

Admiral Richard E. Byrd Middle School

8:30 a.m.–4:30 p.m. Sessions
12:00–12:50 p.m. Lunch provided at Admiral Richard E. Byrd Middle School
4:30 p.m. Buses load and return to The George Washington Hotel
5:00–7:00 p.m. Social at Alesatian Brewing. Ticket Required.
5:00 p.m. Dinner on your own
8:00 p.m. Haunted History Ghost Tours. Ticket required.

THURS

Industry Tours

July 28

The George Washington, A Wyndham Grand Hotel

7:00–9:15 a.m. Breakfast and Business Meeting, Grand Ballroom
9:30 a.m. Buses load for Industry Tours
10:00 a.m.–12:30 p.m. Industry Tours
1:00 p.m. Buses unload at The George Washington Hotel
1:00 p.m. Lunch on your own
5:00–9:00 p.m. Board Debrief and Dinner

Buses will load and unload at the rear of The George Washington Hotel

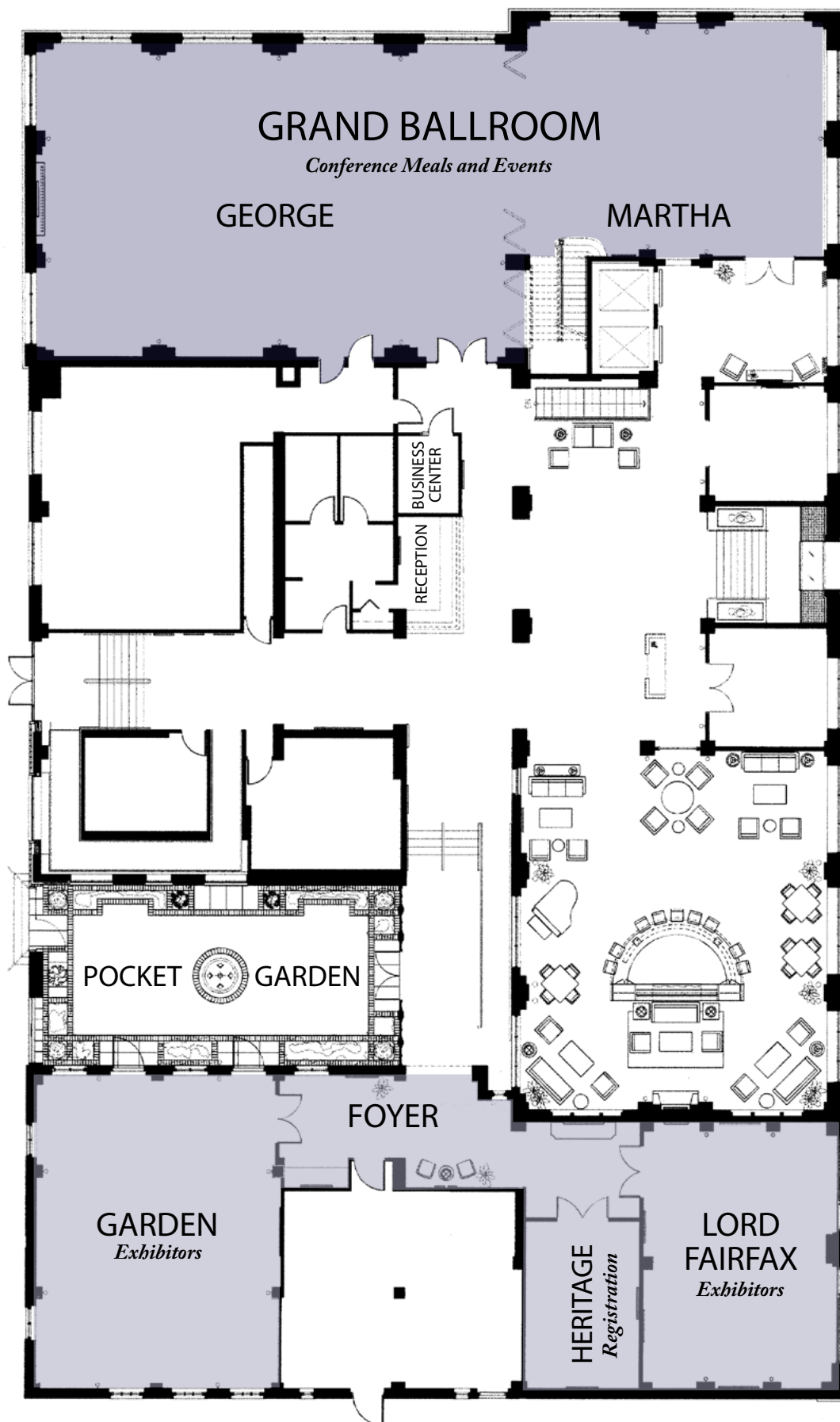
FRI



July 29

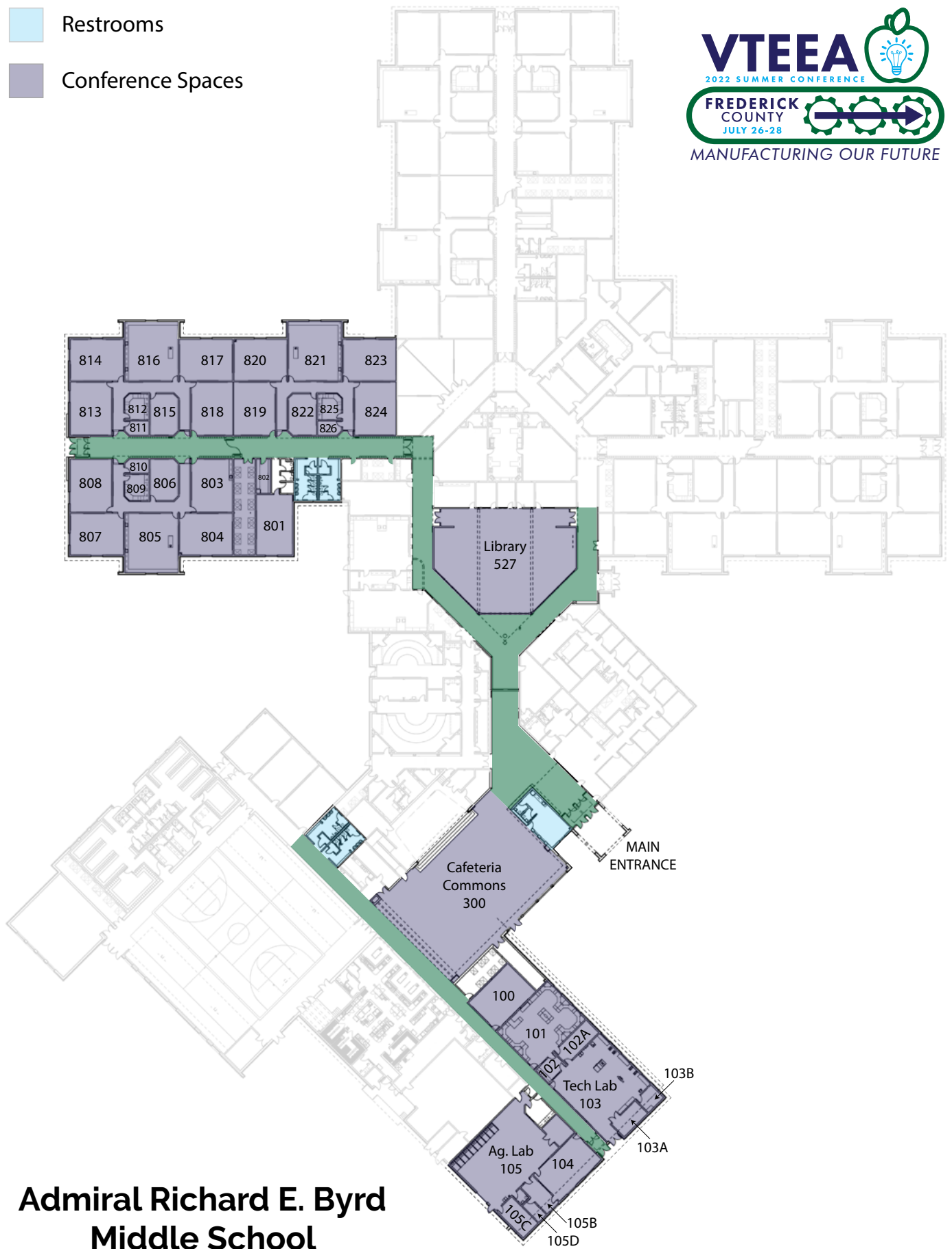
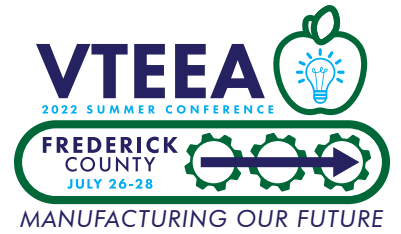
The George Washington, A Wyndham Grand Hotel

8:00 a.m.–3:00 p.m. Board Training

The George Washington, a Wyndham Grand Hotel



-  Restrooms
-  Conference Spaces



Admiral Richard E. Byrd Middle School

JULY 25 • SCHEDULE

Admiral Richard E. Byrd Middle School

MON

Preconference Sessions

9:00 a.m.–3:30 p.m.

SeaPerch

Rm. 105

Alisa Rushing

lisa_rushing@ccpsnet.net

SeaPerch is an integrated STEM education program that engages students and educators through a real-world engineering design project oriented around building an underwater remotely-operated vehicle called a SeaPerch. In this one day workshop attendees will be introduced to the SeaPerch obstacles and the design notebook. Each attendee will design and construct an individual ROV. Lesson plans, cost saving ideas and project organization ideas will be shared so that SeaPerch may be implemented in the classroom.

Engineering Framework

Rm. 103

Amy Sabarre

asabarre@harrisonburg.k12.va.us

Every good structure needs good framing. In this full-day session participants will be introduced to the structure of the P12 Framework for Engineering Learning (published by ASEE) in a minds-on hands-on experience. Participants take part in a project that applies the habits, practices and knowledge of the P12 Framework for engineering learning to enhance instruction!

New Tech Teacher Orientation

Rm. 101

Rachel Domer

redomer@fcps.edu

We have your back! Come to this pre-conference session to learn about: what today's technology and engineering education is, what course pathways there are, how to maintain your lab and keep it safe. Lastly, participants have a hands-on engineering-in-action portion of the day!

TSA Workshop

Rm. 104

B.J. Scott

bscott@vsu.edu

This session provides everything you need to know about how to have a successful TSA chapter! Some highlights include: managing the application process, managing dates and events, how to prepare for competitive events, the new judge system, and having a more productive chapter. A popular and important pre-conference session!

11:30 a.m.–1:00 p.m.

Lunch on your own

4:00–7:00 p.m.

Dinner on your own

8:00 p.m.

Haunted History Ghost Tours *(Ticket required)*

Prepare yourself for a spine-tingling tour that delves into the mysterious history of Winchester! Learn of the restless spirits from the Colonial and Civil War eras often seen and heard in the streets and historic buildings of Old Town. Your expert guide weaves a tale of carefully researched history and true ghost stories that will leave you intrigued and hopefully convinced that they are here! Meet at the intersection of Cork Street and the Loudoun Street Mall. Tour lasts approximately one hour. Fee: \$10. Cash or check only.

JULY 26 • SCHEDULE

The George Washington, A Wyndham Grand Hotel

TUES

8:00 a.m.–6:00 p.m.

Conference Registration

Heritage Room

Visit the Registration desk to pick up your name badge and your conference goodies. Tickets for meals and events you plan to attend are located here as well.

9:00 a.m.–12:00 p.m.

Meet and Greet

Lord Fairfax and Garden Rooms

Stop by to enjoy some refreshments and interact with all the exhibitors who have joined us this year.

12:00–2:00 p.m.

Opening Luncheon *(Ticket required)*

Grand Ballroom

Have your ticket ready to enter the conference opening luncheon with Keynote Address from American Woodmark's CEO Scott Culbreth.

2:00–2:30 p.m.

Regional Meetings

Grand Ballroom

Join your regional presidents in the ballrooms for your regional meeting.

2:30–6:45 p.m.

Exhibitors Open

Lord Fairfax and Garden Rooms

Complete your visit to the exhibitor area and stay for the reception that follows.

6:00–7:00 p.m.

Reception with Cash Bar

Lord Fairfax, Heritage and Garden Rooms

The reception will flow throughout the foyer and exhibitor areas and the Pocket Garden—see hotel map on page 6.

7:00–9:00 p.m.

Awards Dinner *(Ticket required)*

Grand Ballroom

Have your ticket ready for dinner and awards ceremony in the ballrooms.

JULY 27 • SCHEDULE

WED

7:00–8:00 a.m.

Breakfast

Grand Ballroom

8:15 a.m.

Buses load and depart to
Adm. R. E. Byrd Middle School

ALL SESSIONS AT ADMIRAL BYRD MIDDLE SCHOOL

8:30–9:30 a.m.

Cardboard Engineering

Ron Vickers

Rm. 816

57rvick@gmail.com

For middle school students or up, cardboard engineering is an activity that can be an excellent way to have students learn about mechanisms. In this workshop, you will make a working model using cardstock and glue. All materials will be provided for this low-cost project. I have used these for many years and will freely share my materials. Also, lots of examples will be present to examine. Hint: Look up www.robives.com before you come!

Changes in Middle School Curriculum Frameworks

Robert Dudek

Dave Curry

Rm. 104

robert.dudek@apva.us

CurryD@fcpsk12.net

Join two middle school teacher to find out what the changes are in the middle school courses Introduction to Technology, Inventions and Innovations, and Technological Systems. These courses align with the Standards for Technological and Engineering Literacy. There are options for being creative!

Excellent Energy Engineering

Kimberly Swan

Rm. 817

kswan@need.org

Would immersing educators in industry help them understand the skills necessary for student success in the workforce? We think, yes! Learn how Frederick County Public Schools and American Woodmark Corporation team up to provide a unique experience to guide educator practice in preparing students for jobs of today and tomorrow.

How to Make Toast and Other Wicked Problem-solving Solutions

Kirsten Manning

Rm. 821

kirsten.manning@nn.k12.va.us

The value of teamwork and each team member's contribution to a complex problem will be demonstrated through an interactive activity titled "How to Make Toast." Part of the T/E design process is drawing representations of designs. To draw out participants' creative ideas, they are led through an activity in which design ideas are enhanced through team member's individual contributions through sketches of a "simple" design process. The concept of synergy is developed, and the importance of collaboration among team members is reinforced.

Lit Pop-up Cards

Debra E. Shapiro, DTE

Rm. 820

debrashapiro@spsk12.net

Engineer Pop-up Cards with your students and add LED's to make them Lit!

WED

8:30–9:30 a.m. (cont.)

Manufacturing: The Future**Rm. 823***Missy Spielman**Ashly Hawkins*

The future of manufacturing is in our classrooms. How can we get these learners excited about career opportunities in the industry? Learn how a WBL coordinator and local manufacturer teamed up to offer tours and job shadowing that has led to classroom connections and student employment.

**Renewable Energy Classroom Kit Lending Library—
Broadening Our Reach****Rm. 100***Devyn Keller**Remy Pangle**Katie Tennant**devyn.keller@energy.virginia.gov**panglerm@jmu.edu**tennantk@vt.edu*

In this session, participants learn about the Center for the Advancement of Sustainable Energy at JMU and its renewable energy classroom kit lending library. Educators will have a chance to work through many of the kits available and learn about how CASE is partnering with the 4H community to expand the reach of the lending library and increase access to counties not able to benefit from the library in the past.

Sustainability in Action: Planters and Pallets Project**Rm. 105***Ray Wu-Rorrer**wurorrerr@fccps.org*

This project focuses on multiple sustainability initiatives such as on interiorscaping, urban gardening, air quality, horticultural therapy, upcycling, etc. It also provides real-world experiences for the students involved. The MHS design classes converted used pallets into usable wood planter boxes after the creation of digital designs, the planing of the rough wood pallet pieces, fabrication of the boxes, and the exterior painting prior to installation. Students in the Environmental Science (MHS) classes, Design (MHS) classes, the Village Program (MEHMS), and the Sustainable Design, Engineering, and Energy (MEH/MHS) classes all worked to set up planters and place them throughout the schools.

Tinkercad Basics: A Simple 3D Design Tool**Rm. 101***Parkis Kennedy**pkennedy@wcs.k12.va.us*

Tinkercad is a great free 3D design program with a quick learning curve that allows teachers to quickly teach students to create their own designs for 3D printing. In this workshop, you will learn Tinkercad basics and some techniques that help students quickly create some amazing designs.

Using the Lego Spike Robot**Rm. 103***April Peacock**aprilpeacock@mcps.org*

We will discuss the new Lego Spike robot and its use in the classroom.

BREAK

WED

9:45–10:45 a.m.

Amtek Company: Next Generation Methods for Teaching Robotics and Preparing the Future STEM Workforce

Rm. 821

Rich Sykes

rsykes@amtekcompany.com

From coding to manufacturing applications, robotics in the classroom is constantly evolving to better prepare students for future STEM careers. Join us and see firsthand how to reinforce math and science concepts and teach industry credentials using robots. Get hands-on experience with several different robot kits and robotics AR/VR systems.

Cardboard Engineering/Mechanisms

Rm. 816

Ron Vickers

57rvick@gmail.com

From middle school students or up, cardboard engineering is an activity that can be an excellent way to have students learn about mechanisms. In this workshop you will make a working model using cardstock and glue. All materials will be provided for this low cost project. I have used these for many years and will freely share my materials. Also lots of examples will be present to examine. Hint: Look up www.robives.com before you come!

Changes in Middle School Curriculum Frameworks

Rm. 101

Robert Dudek

robert.dudek@apva.us

Dave Curry

CurryD@fcpsk12.net

Find out what the changes are in the middle school courses Introduction to Technology, Inventions and Innovations, and Technological Systems. These courses align with the Standards for Technological and Engineering Literacy. There are options for being creative!

Idea to Object: Driving Ingenuity, Creativity and Design in STEAM with 3D Printing

Rm. 105

J.R. Bontrager

jr.bontrager@3dherndon.com

3D printing has gone from a niche tool making tchotchkes and toys to revolutionizing the manufacturing pipeline. With this technology growing in daily use the need to educate early in the scholastic career is imperative. The advantage of 3D printing in the classroom is that students can see their work transformed from the screen to a physical object. Now students can design parts, 3D print prototypes and make iterations to have fully working components. These models can visually aide in showing simple or complex ideas and concepts in all the STEAM curriculums.

Integrated STEM—Linking STEM Activities to Science SOLs

Rm. 103

Stephanie Nelson

snelson@harrisonburg.k12.va.us

Participants will learn how to create STEM design challenges that integrate science SOLs. Design briefs currently being used with connections to physical science and life science will be shared.

National Board Certification for T&E Teachers

Rm. 820

Jennifer Tolley

jatolley@henrico.k12.va.us

You go to conferences, you read the latest articles, take classes, but what else is out there to further your teaching prowess? Becoming a board-certified teacher allows you to prove your effectiveness in the classroom. It demonstrates a commitment to excellence, students will learn more, and you as an educator will improve your practice.

WED

9:45–10:45 a.m. (cont.)

Sling-shot Egg Crash Cars*Wanda Hulse***Rm. 817***whulse@waynesboro.k12va.us*

This presentation covers the design process, testing, and demonstration of egg crash and smash vehicles with the use of recycled materials (limited resources). The vehicles are designed to protect the driver (raw egg) from injury, (cracked) or death (decapitation) in a head on and a side impact collision.

Taking Engineering to the Next Level*Amy Sabarre***Rm. 104***asabarre@harrisonburg.k12.va.us*

Come learn about the valuable resource published by American Society for Engineering Education that enhances STEL and provides depth to engineering practices and knowledge.

TSA Co Curricular Chapters*B.J. Scott***Rm. 100***bscott@vsu.edu*

Do you want to know more about TSA's competitive events? Are you using the events with your students in class? Do you want your chapter to be more competitive at Regionals and States due to making your classes more co-curricular using TSA? Then this is the session for you. Come spend time with the Virginia TSA state advisor as he breaks down many of the competitive events in ways that will make them more useful in the classroom. He will also give tips to do certain events more effectively.

Using the CTE Resource Center Website and Canvas to Access Virginia's Technology Education Curriculum*Kevin Reilly***Rm. 823***kreilly@cteresource.org*

The CTE Resource Center, your source for Virginia's CTE curricula, will guide you in accessing your courses through the Center's new website and through Canvas/Virtual Virginia. You will learn how to access the content from the Canvas Commons, pull it down into your Canvas course, and see different ways to integrate your current lessons and resources with the course competencies.

BREAK

11:00 a.m.–12:00 p.m.

Changes in Middle School Curriculum Frameworks*Robert Dudek**Dave Curry***Rm. 820***robert.dudek@apva.us**CurryD@fcpsk12.net*

Find out what the changes are in the middle school courses Introduction to Technology, Inventions and Innovations, and Technological Systems. These courses align with the Standards for Technological and Engineering Literacy. There are options for being creative!

Creating Low-cost Robots with CircuitPython and Raspberry Pi Computers*Jon Stapleton***Rm. 817***jonstapleton@codevirginia.org*

Learn to create robots with Raspberry Pi computers and CircuitPython! In this session, participants will assemble small Raspberry Pi-based robots, program them using Python, and consider how STEM/STEAM teachers might use robotics education to address the Virginia Computer Science Standards of Learning.

WED

11:00 a.m.–12:00 p.m. (cont.)

Digital Engineering Design Notebook

Amy Sabarre

Rm. 104

asabarre@harrisonburg.k12.va.us

As many students work through design challenges, they often fumble through the Design Process to arrive at a solution. As teachers, we often ask that they provide a design notebook to show their progression through the process, but these are often not done until after they have finished to design. Having students actually document along the design of the solution has been shown to help develop a better understanding of the design process and even led to more efficient work and better solutions. During this session we will share an online Engineering Design Log that students can access through computers, tablets, and phones to document the design in real time and even date stamp the entries to prevent after production recording.

Exploring Offshore Wind Energy

Kimberly Swan

Rm. 101

kswan@need.org

Hands-on, critical thinking activities to help students develop a comprehensive understanding of the scientific, economic, environmental, technological, and societal aspects of wind energy and offshore wind development.

Learning by Manufacturing—Manufacture Your Own JellyBOX 3D Printer

Ladislav Goc

Rm. 100

Ladi@imade3d.com

Learning by manufacturing 3D printer JellyBOX is a new unique program to learn plenty of the skill by manufacturing 3D printer.

Using the CTE Resource Center Website and Canvas to Access Virginia's Technology Education Curriculum

Kevin Reilly

Rm. 823

kreilly@cteresource.org

The CTE Resource Center, your source for Virginia's CTE curricula, will guide you in accessing your courses through the Center's new website and through Canvas/Virtual Virginia. You will learn how to access the content from the Canvas Commons, pull it down into your Canvas course, and see different ways to integrate your current lessons and resources with the course competencies.

VA STEM Board: Engineering Solutions for STEM

Chuck English

Rm. 821

cenglish@smv.org

Where is Virginia STEM? What counts as a STEM occupation? Learn about the Virginia STEM Advisory Board and what we are doing to help engineer and manufacture solutions for a more unified approach to STEM education in Virginia.

Virtual Robotics with VEX VR

April Peacock

Rm. 105

aprilpeacock@mcps.org

The presenter will focus on how virtual robotics can empower students to be successful with physical robots. *Bring a device and come program!*

12:00–1:00 p.m.

Lunch

Adm. R. E. Byrd M.S.

WED

1:00–2:00 p.m.

Before and After: Virginia ACTE*George D. Bishop***Rm. 103***geobishop1961@gmail.com*

The current President and Immediate Past President will bring an update from Virginia ACTE that covers the history of the Associations under the Virginia ACTE umbrella, the important legislation being considered by General Assembly, leadership opportunities at the local, state, and national levels for the Association for Career and Technical Education, and the current state of affairs for CTE in Virginia.

"Better Than Yesterday"*Michele Thompson***Rm. 821***michele.thompson@portsk12.com*

Although, technology has definitely had a great impact on the past and present success of education, direct access to and knowledge of the appropriate technology is key to ensuring students' future success. This session will share ideas and resources that can help ALL students actively participate and own their learning.

Breaking News—High-quality Work-based Learning (HQWBL) 2022*Susan McNamara***Rm. 817***susan.mcnamara@doe.virginia.gov*

Hot off the press! This is a session you don't want to miss. Learn about updates to the HQWBL guide and the new Work-Based Learning (WBL) virtual network, VAVoyager. We will discuss the role of Virginia's WBL Specialists at the state level and how this impacts the local school division in each region. Information will be shared about incorporating VAVoyager, and how it can help connect your students with HQWBL opportunities. Presenters will also review HQWBL criteria for an experience, graduation requirements, and College, Career, and Civic Readiness Indicator (CCCRI) requirements.

EbD™ for Technological Systems*Debra E. Shapiro, DTE***Rm. 820***debrashapiro@spsk12.net*

Learn how to use the Engineering byDesign™ curriculum from ITEEA to teach Technological Systems in Virginia.

Engineering For US All NSF-sponsored Curriculum*Michael Piccione***Rm. 100***mppiccione@fcps.edu*

Engineering for US All (e4usa) is a NSF funded high school engineering program that opens engineering to a new generation of students and educators. The e4usa mission focuses on the nationwide expansion of student and teacher access to engineering, with intentional efforts to reach populations traditionally underrepresented in the field.

Preparing to Teach Virginia's New Energy Courses*Jim Egenrieder***Rm. 105***jimegenrieder@gmail.com*

VDOE, Energy industry representatives, and Virginia educators designed eight new high school energy courses. This session will guide you through the process to be thoroughly prepared to teach these HS courses (or MS modules), and seek course approval with your CTE Director from your school board.

WED

1:00–2:00 p.m. (cont.)

Safety in STEM Education: Recommendations Informed by Virginians' Responses to the National Safety Survey**Rm. 104***Tyler S. Love, Ph.D.**TSL48@psu.edu*

This presentation will examine Virginians' responses in comparison to the national averages from the T&E Facilities and Safety Survey. Information from ITEEA's new safety book (co-published with ASEE and NSELA) will also be discussed. Practical recommendations will be provided to help educators address safety issues identified from the survey results.

Sea, Air and Land Challenge—An Accessible Project-based Introduction to Engineering**Rm. 101***Susan Zingaro**smz20@arl.psu.edu*

The Sea Air and Land Challenge introduces students to engineering through the use of robotics. Over one semester, teams work in classes or after school groups to design and develop submersibles, drones or land rovers. On Challenge Day, teams come together to learn about careers and compete. Optional curriculum available.

Using the CTE Resource Center Website and Canvas to Access Virginia's Technology Education Curriculum**Rm. 823***Kevin Reilly**kreilly@cteresource.org*

The CTE Resource Center, your source for Virginia's CTE curricula, will guide you in accessing your courses through the Center's new website and through Canvas/Virtual Virginia. You will learn how to access the content from the Canvas Commons, pull it down into your Canvas course, and see different ways to integrate your current lessons and resources with the course competencies.

BREAK

2:15–3:15 p.m.

All About Python and Microcontrollers**Rm. 817***Jon Stapleton**jonstapleton@codevirginia.org*

Learn about teaching code using Python and microcontrollers! CircuitPython is an approachable Python implementation that runs on embedded computing devices (think Arduino, but with Python instead). In this session, you'll get hands-on experience with Python and learn about aligning microcontroller coding activities to the Virginia computer science standards of learning.

Changes in High School Courses for 2022–23**Rm. 821***Lynn Basham**lynn.basham@doe.virginia.gov*

Four High School courses were reviewed and revised for the coming school year: Communication Systems, Graphic Communication Systems, Construction Technology, and Sustainable and Renewable Technologies. Come here about the changes that impact these courses.

EbD™ for Inventions and Innovations**Rm. 820***Debra E. Shapiro, DTE**debrashapiro@spsk12.net*

Learn how to use the Engineering byDesign™ curriculum from ITEEA to teach Inventions and Innovations in Virginia.

WED

2:15–3:15 p.m. (cont.)

Electric Vehicle Grand Prix in the Valley*Ron Vickers***Rm. 103***57rvick@gmail.com*

This session will explain how Sherando High School Technology Education Department started a team to build an electric vehicle. Sponsored by Shenandoah Valley Electric Cooperative (SVEC), students loved the project. TSA members and students enrolled in Engineering Explorations made the effort to build and race a 3 wheeled vehicle.

PBL and PLTW Go Together Like PB&J*Carol Medawar***Rm. 816***cmedawar@pltw.org*

Come explore and learn with PLTW Launch teachers. See how they were able to take their knowledge of PBL and implement PLTW Launch with great success. Learn how you can get funding to bring this to your school or district.

Rapid Prototyped 3D Maze Cube (2 blocks)*Michael Piccione***Rm. 100***mspiccione@fcps.edu*

This project is a way to teach multiple types of rapid prototyping as students design and manufacture a 3D maze. The presentation gives an overview of how to design the maze in CAD then split into sides to laser cut, 3D print, and or CNC mill parts that are assembled.

TSA Intro*B.J. Scott***Rm. 104***bscott@vsu.edu*

Do you want to get your Virginia TSA Chapter off and running? Are you not sure what TSA even is? Do you want running your TSA chapter to be easier for you? Then this is the session for you. Come spend an hour with the Virginia TSA State Advisor and get all of your questions answered about TSA and what it can do for you and your students. After this session, your TSA chapter will be ready to roll into the 2022–23 School year.

Using Micro:bits Microcontrollers in Elementary and Middle School Curricula*Jim Egenrieder***Rm. 105***jimegenrieder@gmail.com*

New micro:bit microcontrollers were introduced just five years ago, and were adopted by many several countries for all 6th–7th graders, and there are new, similar initiatives here in the United States. These microcontrollers have multiple built-in sensors, 25 LED's, multiple input options, radio communication, microphone and speaker, breadboarding capacity, and are programmable in Microsoft MakeCode, Python, Javascript, C++, and Scratch. The online interface and fully functional simulator accommodates 21 different human languages.

Using the CTE Resource Center Website and Canvas to Access Virginia's Technology Education Curriculum*Kevin Reilly***Rm. 823***kreilly@cteresource.org*

The CTE Resource Center, your source for Virginia's CTE curricula, will guide you in accessing your courses through the Center's new website and through Canvas/Virtual Virginia. You will learn how to access the content from the Canvas Commons, pull it down into your Canvas course, and see different ways to integrate your current lessons and resources with the course competencies.

WED

2:15–3:15 p.m. (cont.)

What's Missing From the Engineering Design Process?

Rm. 101

Brendan Murphy

brendan.murph@gmail.com

The engineering design process is a comprehensive tool to develop creative problem solving in students however, one crucial element is often overlooked, empathy. This session will give educators practical applications to develop empathy within the engineering design process.

BREAK

3:30–4:30 p.m.

Computer Programming: Just Another Tool in the Toolbox

Rm. 101

Dave Curry

CurryD@fcpsk12.net

Programming is a useful tool for everyone! We will examine the creation and use of custom programs to use in the classroom. Programs can be in anything from a Google sheet to traditional programming languages. Programs can be for grading, organizing, project calculations, etc. Make life easier with custom programs!

EbD™ for Technological Systems

Rm. 820

Debra E. Shapiro, DTE

debrashapiro@spsk12.net

Learn how to use the Engineering byDesign™ curriculum from ITEEA to teach Technological Systems in Virginia.

Onshape—The Future of CAD Instruction

Rm. 103

Brien McCormick

bmccormick@ptc.com

Onshape is the only Software-as-a-Service (SaaS) computer-aided design (CAD) platform that combines CAD, real-time collaboration tools, student analytics, and access from any device. If you're ready to learn a better way to teach and learn CAD, Onshape is the tool for your classroom. Come learn why so many have already changed.

Qualcomm Free Teaching Resources for Careers and Using Arduinos

Rm. 104

Cristina Bisciglia

cbiscigl@qualcomm.com

Come hear about free teaching resources that are provided by Qualcomm (major tech giant) to schools within Virginia. Computer Science, Invention, Engineering, and Careers are all part of the many helpful resources around using Arduinos with students that you will learn more about. This live virtual session is coming to you direct from California.

Rapid Prototyped 3D Maze Cube (2 blocks)

Rm. 104

Michael Piccione

mspiccione@fcps.edu

This project is a way to teach multiple types of rapid prototyping as students design and manufacture a 3D maze. The presentation gives an overview of how to design the maze in CAD then split into sides to laser cut, 3D print, and or CNC mill parts that are assembled.

WED

3:30–4:30 p.m. (cont.)

**Technology and Engineering Curricula—IITEA—
Engineering byDesign****Rm. 821***Ryan Novitski**rnovitski@iteea.org*

This session consists of A comprehensive, PreK–12 solution for Integrative Science, Technology, Engineering, and Mathematics (I-STEM)—Engineering byDesign™ (EbD)™. Engineering byDesign™ (EbD)™ is built on the belief that the ingenuity of children is untapped, unrealized potential that, when properly motivated, will lead to the next generation of technologists, innovators, designers, and engineers. EbD™ offers the Premier Standards-Based Curriculum Model designed to be flexible, affordable, and accountable. The PreK–12 curriculum is based on the Standards for Technological and Engineering Literacy, as well as national standards for science and math as well as Common Core and the NAE's Grand Challenges for Engineering. This session will focus on grade bands including 9–12, and highlight our sequence of learning offered to all educational professionals in the secondary setting. We will be featuring Onshape Certification byDesign, AP Computer Science Principles byDesign, and our 9–12 High School Advanced Technology Education pathways.

Transform Your Classroom with PLTW**Rm. 816***Carol Medawar**cmedawar@pltw.org*

Learn tips and tricks from PLTW teachers and the hear stories of their success. We will share program updates and new interactive assets and DEIB work. If you are curious about PLTW this is your chance to learn from the best and how to get funds to bring the programs to your school or district.

4:30 p.m.

Buses load for return to The George Washington Hotel

5:00 p.m.

Dinner on your ownFor more information about Winchester and Frederick County visit <https://visitwinchesterva.com/>

5:00–7:00 p.m.

Social at Alesatian Brewing Company (Ticket required)**Sponsored by**

Tickets are good for two drinks and hors d'oeuvres.

8:00 p.m.

Haunted History Ghost Tours (Ticket required)

Prepare yourself for a spine-tingling tour that delves into the mysterious history of Winchester! Learn of the restless spirits from the Colonial and Civil War eras often seen and heard in the streets and historic buildings of Old Town. Your expert guide weaves a tale of carefully researched history and true ghost stories that will leave you intrigued and hopefully convinced that they are here! Meet at the intersection of Cork Street and the Loudoun Street Mall. Tour lasts approximately one hour. Fee: \$10. Cash or check only.

JULY 28 • SCHEDULE

THURS

7:00–9:15 a.m.

Breakfast and Business Meeting

Grand Ballroom

Have your ticket ready for the morning session.

9:30 a.m.

Buses Load for Industry Tours

10:00 a.m.–12:30 p.m.

Industry Tours

Virginia is ranked by CNBC as the Number 1 state in the country for doing business; Frederick County is Number 9 in the Forbes Best Small Places for Business and Careers. Frederick County, Virginia is an extensive transportation hub with competitive tax structure, reliable utilities, higher education and training opportunities, and numerous advanced manufacturing companies call us home. Enjoy tour pairings of some of our valuable community partners. [Click here for an economic snapshot of Frederick County, VA.](#)

1:00 p.m.

Buses unload at The George Washington Hotel

Conference concludes

1:00 p.m.

Lunch on your own

5:00–9:00 p.m.

Board Debrief and Dinner

Garden Room

FRI

8:00 a.m.–3:00 p.m.

Board Training

Garden Room



IN MEMORIAM



We were all shocked and saddened to hear of the passing of George R. Willcox on Wednesday, March 30 in Richmond, VA.

George provided leadership and support for Technology and Engineering Education for 47 years before his retirement on December 31, 2021. He joined the Department of Education as the advisor for the Technology Student Association in 1978 and served as a supervisor of Technology and Engineering Education until his promotion in 2006. Most recently, he served as State Director of Career, Technical, and Adult Education.

George was consistent in his approach and vastly knowledgeable about Career and Technical Education. He was active in TSA and the International Technology and Engineering Educators Association, serving as president in 2006. He was also active in the Virginia Association of Career and Technical Education and served as Board Consultant for VTEEA.

George will be sorely missed. In the honor of his memory, a place is set for him at the VIP table for our 2022 conference.

A video: https://drive.google.com/file/d/1NBf7C_ba2dfX7mMQ-6FCA6t-UFy-lQ4g/view?usp=sharing

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Origami in the Garden

This outdoor exhibition takes origami to another level and transforms paper into giant metal sculptures!



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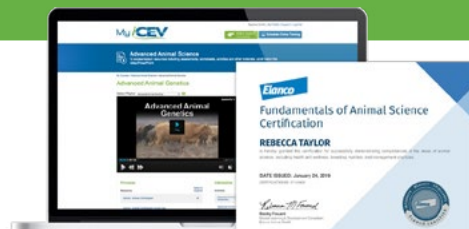
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PLTW UNLOCKING POTENTIAL

For more than 25 years, Project Lead The Way (PLTW) has unlocked the potential of millions of PreK-12 students and their teachers across the U.S. Our unique STEM curriculum is problem-based to empower students to develop the in-demand, transportable knowledge and skills necessary to thrive in our rapidly evolving world.

HELPING TODAY'S PREK-12 STUDENTS DISCOVER AND PREPARE FOR TOMORROW'S CAREERS

Access

- All students can see themselves in our curriculum through diverse stories, career examples, and perspectives
- Distance learning options make curriculum access equitable
- Spanish curriculum provides equal opportunity (PLTW Launch and PLTW Gateway)

Career Readiness

- PLTW Curriculum supports career awareness, exploration, and planning at age-appropriate stages
- Students learn about a diverse range of practitioners, roles, and industries
- Research shows that PLTW students are more likely than their peers to consider STEM careers

Professional Development

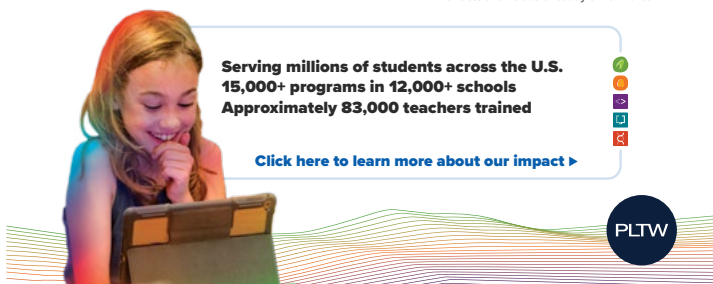
- Transformative, engaging teacher training, regardless of STEM experience
- Learn the same way students learn with interactive, hands-on experiences
- Network with expert PLTW teachers as you learn how to teach the course

Real-World Experience

- Students learn in-demand skills like problem-solving and critical thinking
- Solving real-world challenges helps students prepare for life outside the classroom
- PLTW curriculum and student experience reflects the needs of today's workforce

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