

A DOSE OF SCIENCE



2021

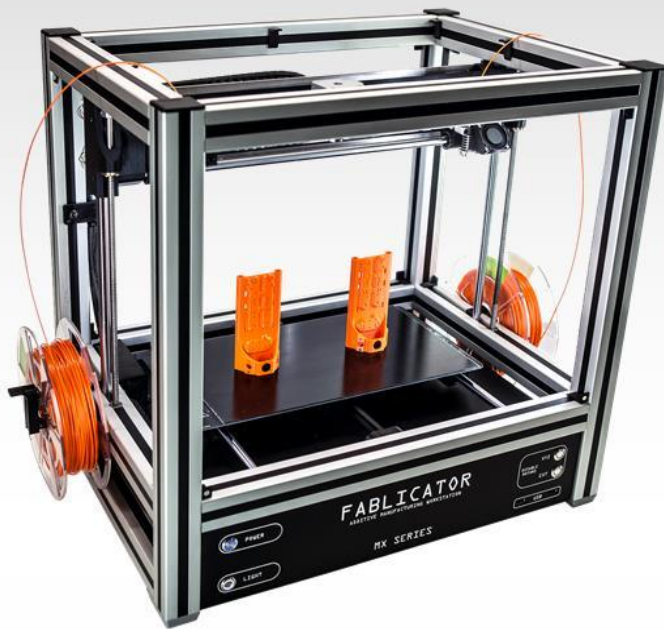
**WEST VIRGINIA SCIENCE
TEACHERS ASSOCIATION
ANNUAL CONFERENCE**

**OCT. 28TH- 30TH, 2021
STONEWALL RESORT**

FABLICATOR

Not your Average 3D Printer!

www.fablicator.com



**Industrial Grade
Additive
Manufacturing
Workstations for
Professionals**

Complete 3D printing workstation w/ built in Windows computer

Install CAD, watch training videos or edit files on the system

Single & independent dual extruder models available

Design -> Slice -> 3D Print, all in one!

***All Fablicator printer systems follow the three R's
Rigid, Repeatable & (very) Reliable!***

Proudly designed, manufactured & supported in the USA

By K&L Services Group Inc.

215 N. 8th Street Allentown, PA 18102

sales@fablicator.com or Toll Free 833-439-3230

Table of Contents

Welcome from the WVSTA President_____	4
Conference at a Glance_____	5
Keynote Speakers_____	6
General Information_____	8
Pre/Post Conference Workshops _____	10
Special Events_____	12
Conference Tours_____	13
WVSTA Leadership_____	14
WVSTA Guiding Principles_____	15
Opening Session_____	16
Grand Banquet_____	17
Special Recognition Awards_____	18
WVSTA Distinguished Fellow_____	21
President’s Luncheon_____	22
Concurrent Sessions	
Friday, October 29th, 8:00 – 9:00am_____	23
Friday, October 29th, 9:15 – 10:15am_____	25
Friday, October 29th, 12:45 – 1:15pm (Forums)_____	27
Friday, October 29th, 1:30– 1:55pm_____	28
Friday, October 29th, 1:30 – 2:30pm_____	29
Friday, October 29th, 2:05 – 2:30pm_____	31
Friday, October 29th, 2:45 – 3:45pm_____	32
Friday, October 29th, 4:00 – 5:00pm_____	35
Saturday, October 30th, 8:30 – 8:55am_____	38
Saturday, October 30th, 8:30 – 9:30am_____	40
Saturday, October 30th, 9:05 -9:30am_____	42
Saturday, October 30th, 9:45-10:45am_____	43
Saturday, October 30th, 11:00 – 12:00pm_____	46
Exhibitors_____	48
Special Thanks_____	51
Conference Certificate_____	53
Resort Map_____	55

President's Message

Welcome to the 2021 WVSTA Conference!

From the WVSTA President,

Welcome to the West Virginia Science Teachers Association (WVSTA) conference! Thank you for deciding to come together and participating in this conference, which demonstrates your commitment to lifelong learning and excellence in teaching.

Our theme this year not only celebrates the recent success and demonstration of science but also fully describes what to expect when attending each and every WVSTA. Whether you are a classroom teacher, informal educator, pre-service teacher, college and university educator, scientist, or vendor, WVSTA serves annually as *A Dose of Science* empowering each of us to improve professionally through learning and sharing. Each year we separate and return to our roles with new knowledge and inspirations.

Please join me in thanking conference coordinator, Rachel Eades-Gill, and the volunteers who planned this conference. We are a volunteer organization with no paid staff and your WVSTA Board of Directors works throughout the year attending to details. You may also want to consider how you can help with the 2022 conference.

Leverage our time together, attend workshops, visit the vendor hall, thank our sponsors, and enjoy meals and conversation with colleagues. You will make connections, generate and discuss new ideas, energize your teaching, and grow as a lifelong learner.

Be inspired –

Josh Revels, NASA IV&V ERC
2020-22 President, WVSTA



Here I am sizing up the Apollo Crew Module at the Houston Space Center – 2020

“Science and everyday life cannot and should not be separated” ~ Rosalind Franklin

Conference at a Glance

Thursday, October 28th

Time	Room	Event
3:30pm – 9:30pm	Lobby	Registration
5:00pm – 9:00pm	Stonewall I	Preconference Workshop
6:00pm – 9:00pm	Birch Room/Foyer	Exhibits Open
6:00pm – 9:00pm	2 nd Floor Kiosk Area	Exhibitors' Reception
8:45pm – 10:00pm	Stonewall II	Auction ☺

Friday, October 29th

Time	Room	Event
6:30am – 8:00am	Stillwater	Breakfast
7:30am – 5:00pm	2 nd Floor Kiosk Area	Registration
8:00am – 5:00pm	Birch Room/Foyer	Exhibits Open
8:00am – 10:15am		Concurrent Sessions
10:30am – 12:00pm	Stonewall I+II	Opening Session
12:00pm – 12:30pm	Stonewall II	Forums
1:15pm – 5:30pm	Meet in Lobby	Tours
12:30pm-1:00pm	Lunch	Stillwaters
1:30pm – 5:00pm		Concurrent Sessions
6:30pm – 8:30pm	Stonewall Ballrooms	Grand Banquet
8:30pm – 10:30pm	Foyer	Dessert Reception
	Fire Pit	Hang Out with Friends

Saturday, October 30th

Time	Room	Event
7:00am – 8:30am	Stillwater	Breakfast
8:00am – 10:00am	2 nd Floor Kiosk Area	Registration
8:00am – 12:00 noon	Meet in Lobby	Tours
8:30am – 12:00 noon		Concurrent Sessions
8:30am – 11:45am	Birch Room	Exhibits Open
12:00 noon – 1:30pm	Stonewall Ballrooms	President's Luncheon & WVSTA Business Meeting
1:30pm – 2:30pm	Summerville Room	WVSTA Board Meeting

Welcome to Roanoke, WV and the Stonewall Resort and Conference Center!

Keynote Speakers

Opening Session- Friday, October 29, 11:00am

Dr. Bertley is a scientist, scholar, and evangelist for innovative thinking, ideation and challenging the status quo. As President and CEO of COSI, Dr. Bertley is shepherding the leading Central Ohio science center to its next great iteration in a legacy of successful science center history. Prior to being President and CEO of COSI, Dr. Bertley was the Senior Vice President for Science and Education at the Franklin Institute where he oversaw a diverse portfolio of initiatives supporting innovation in STEM learning, the partnership with Science Leadership Academy (SLA), The Color of Science, as well as departments and programs that capture the history and legacy of The Franklin Institute such as the Benjamin Franklin Awards Program.



After graduating from McGill University where he studied Physiology, Mathematics and the History of Science, and earned a Ph.D. in Immunology, Dr. Bertley worked internationally in preventative medicine and basic vaccines in Haiti, The Sudan, and the Canadian Arctic. Bertley continued this focus by joining a vaccine research group at Harvard Medical School focusing on the development of DNA vaccines for HIV/ AIDS. Dr. Bertley's international footprint also includes collaboration on educational and science projects in Egypt, Paraguay, Senegal and the Caribbean.

Dr. Bertley sits on the boards of the Columbus Regional Airport Authority, the National Veterans Memorial and Museum, Experience Columbus, the Association of Science and Technology Centers and numerous other organizations.

Dr. Bertley has keynoted and been an invited speaker at several distinguished institutions including The United Nations, The White House, and the National Academy of Sciences. He has received numerous honors, some of which include: an Honorary Doctorate from Otterbein University, Dell Inc. Inspire 100 World Changers, Harvard Medical School Dean's Service Award, Columbus CEO's CEO of the Year, Columbus Business First's C-Suite Award, Philadelphia Business Journal's 40 Under 40, Philadelphia Business Journal's Minority Business Leader of The Year, the George Washington Carver Award, The President's Award (Merck), Citation from the Commonwealth of Pennsylvania, and two Mid-Atlantic, National Academy of Television and Science EMMYS[™]).

Keynote Speakers

Grand Banquet, October 29, 6:30pm-8:30pm



Wild and Wonderful Ice of the Solar System

How is studying ice in the solar system so exciting? We'll explore the marvelous geologic wonders of the solar system by deep diving into how ice behaves to make mountains, glaciers, and volcanoes! We'll also look at the efforts of ice research in thermodynamic and chemical models and laboratory experiments, and what all we still need to do to understand how ice forms these geologic structures!

Caitlin Ahrens' research involves remote sensing of icy surfaces and volatile interactions, including permanently shadowed craters at the lunar poles and cryovolcanism. Dr. Ahrens also works on several planetary geomorphology projects, including lava flow morphology, caldera formation, and rheology, on Mars, Ceres, Titan, and Pluto.

Dr. Ahrens received her B.S. in Physics/Astrophysics and Geology from West Virginia University in 2015, and a Ph.D. in Space and Planetary Science at the University of Arkansas in 2020. Dr. Ahrens is currently a NASA Postdoctoral Program Fellow at the Goddard Space Flight Center, and a member of the Diviner Science Team with the Lunar Reconnaissance Orbiter. In 2018, she was awarded the Ten Outstanding Young Americans award by the Jaycees for her efforts in science communication and outreach.



General Information

Registration

The registration area will be located in the Lobby and will be open during the following times:

- **Thursday, October 28th** _____ **3:30pm – 9:30pm**
- **Friday, October 29th** _____ **7:30am – 5:00pm**
- **Saturday, October 30th** _____ **8:00am – 10:00am**

Conference Meals and Breaks

All meals and breaks are included in your registration (provided you selected them during pre-registration) and are available at the following times (with your ticket):

Thursday, October 28th

Exhibitors' Reception _____ 6:00pm– 9:00pm _____ Birch Room
(Sponsored by All of Our Exhibitors)

Friday, October 29th

Breakfast _____ 6:30am– 8:00am _____ 2nd Floor Kisok
AM Break _____ 10:15am _____ Ballroom Foyer
(Sponsored by WVSTA)

Lunch _____ 12:30pm– 1:30pm _____ Stillwaters

____ PM Break _____ 1:00-2:00 _____ Foyer
(Sponsored by WVSTA)

Grand Banquet _____ 6:30pm– 8:30pm _____ Ballrooms

____ Dessert Reception _____ 8:30pm– 10:30pm _____ Pecan Room
(Sponsored by PAEMST)

Saturday, October 30th

Breakfast _____ 7:00am– 8:00am _____ 2nd Floor Kisok

AM Break _____ 10:00am _____ Foyer

President's Luncheon _____ 12:00pm– 1:30pm _____ Ballroom II
(Sponsored by WVSTA)

General Information

Exhibits

Stop by and visit the exciting booths, get free resources for your classroom, see the newest products, services, and opportunities for science educators located in the **Birch Room**. The exhibit hall is open during the following times:

- **Thursday, October 28th** _____ **6:00pm – 9:00pm**
- **Friday, October 29th** _____ **8:00am – 5:00pm**
- **Saturday, October 30th** _____ **8:30am – 11:45am**

WVSTA Meetings and Events

Remember, this is YOUR organization. Get involved and engaged by attending WVSTA formal and informal meetings held during the conference at the following times:

Friday, October 29th

- Opening Session _____ 10:30am–12:00pm _____ Ballrooms
- Lunch Forums _____ 12:15pm– 1:15pm _____ See Forums Page
Join like-minded people at a roundtable while eating lunch!

Saturday, October 30th

- WVSTA Business Meeting _____ 12:00pm–1:30pm _____ Ballrooms
- Executive Board Meeting _____ 1:30pm–2:30pm _____ Summerville



Pre-Conference Workshop

Registration is required. Please see the registration desk if you are interested!

Thursday, October 28, 5:00 p.m.- 9:00 p.m



Craig T. Gabler is a Science/STEM education consultant from Washington State. Dr. Gabler was a classroom teacher for 25 years and then served as Regional Science Coordinator where his primary role was to coordinate and deliver science professional development to the 44 school districts in the region. He has been active in science education leadership, serving as a writer for the NGSS and working on Washington State science standards writing teams. During 2014 – 2015 he served as President of the National Science Education Leadership Association, as well as serving as a District Director or NSTA and as president of the Washington Science Teachers Association.

Dr. Gabler received a BS in Physical Science from Washington State University, an MS in Science Education from Oregon State University, and a PhD in Science & Mathematics Education from Curtin University in Perth, Australia.

SCIENCE - KEEP IT REAL

Instill a love of science in your students by using phenomena driven instruction and active investigation, so they can engage with and explain the world around them.

Join Dr. Craig Gabler, NGSS writing team member, and Deb Vannatter, Science Education Consultant, for an engaging session that will support science teachers and leaders in their quest to make science relevant for all students through phenomena driven instruction.

Walk away with West Virginia specific phenomena to use in your classroom.

Hand-outs and Door Prizes



S.T.E.M.

Post-Conference Workshop

Saturday, October 30, 1:30 p.m.- 3:30 p.m

Callie Cronin Sams rejoined the WVDEP as the new Save Our Streams (SOS) program coordinator in February of 2021. Cronin Sams brings with her six years of prior experience working with the WVDEP's Youth Environmental Program (2011-2017), three years of grant writing and program development experience with the City of Buckhannon and Buckhannon Volunteer Center (2017 – 2021), volunteer time with the Buckhannon River Watershed Association, and a Master of Arts in Teaching in Biological Sciences from Miami University of Ohio and Project Dragonfly. She lives in Elkins with her husband, Nathan, and daughter, Willow, where she loves spending time with family, trail running, hiking, biking, and enjoying live music. To learn more about the Save Our Streams program, visit the Save Our Streams website or email Callie at callie.c.sams@wv.gov.



WV Save Our Streams- Field Experience

This is a 2 hour field experience in coordination with a 1-hour conference session. Participants that do both sessions and complete the certification exam will receive the Save Our Streams Level 1 certification. Additionally, after completion they will receive a benthic macroinvertebrate sampling kit that includes a kick net, trays, magnicubes, and more depending on their specific needs. The kit will be delivered to their class during their first stream survey outing, which the WVSOS Coordinator will attend and assist teachers as they lead their initial survey with students.

During the 1-hour conference session, we will introduce stream ecology & monitoring concepts. Participants will learn how their class can participate in the WVSOS StreamLAB. During the field experience, participants will go through a WVSOS stream assessment, including physical condition, habitat evaluation, and benthic macroinvertebrate survey.

<https://go.wv.gov/sos>



Special Events

18th Annual WVSTA Auction

Thursday, October 28th _____ 8:45pm– 10:00pm

Surplus your extra supplies by donating them to a good cause . . . other teachers! Do you have stuff in your stock room that has not been touched in years? Just hate to throw it away because you know somebody somewhere can use it? Bring it and the rest of your surplus supplies to the WVSTA Auction! MONEY IS NO OBJECT (and it isn't real either)!!! WVSTA Bucks are provided with your Registration, and are awarded by Visiting Exhibitors, or Donating Equipment. Auctioneer **Jim Cozort** wants to remind you, "The more you bring, the more you can get!!!"



Photo Booth

➤ **Thursday October 28- Saturday October 30**

Foyer

Find the photo booth and take a science selfie, or a group photo with your favorite science friends! Post your photo, and any others you take at the conference, to social media along with #wvsta18 as a hashtag. Let's show WV and the world our amazing science teachers!

Door Prize Winners Circle

Saturday, October 30th _____ 12:00pm

Ballroom

Items donated by vendors are displayed at the registration booth throughout the conference. You receive several slips in your registration packet that can be used to "bid" on these items. Winners will be announced at the President's Luncheon and you **MUST** be present to win!

Vendor Bingo Cards

Saturday, October 30th _____ 12:00pm

Ballroom

Collect all stickers from all vendors by visiting them Friday- Saturday noon in the exhibit hall. You keep the contact information, bring your completed bingo sheet to the registration desk, we'll cut off the bottom and put your name in the drawing. The winner gets a free registration to next year's conference!!



Conference Tours

Pre-registration, prepaid required for all field trips. Didn't pre-register? Check for availability at the registration desk. All tours meet in the Lobby. Please arrive 15 minutes before departure time.

Appalachian Glass Factory

Friday, October 29, 2021 – 8:00am-10:00am

The glass industry played an important role in the development of central West Virginia. At Appalachian Glass, a family owned and operated business, Matt, Chip and Todd Turner are three generations keeping the glass blowing tradition alive. According to their website, over the past century, twenty different glass factories called Lewis County home. Join us for a tour of Appalachian Meet in the Lobby.



Lambert's Vintage Wine

Friday, October 29, 2021 1:00pm-5:00pm

"It stands as a diminutive, Gothic looking structure on a hillside surrounded by a vineyard." The winery is constructed from hand cut stones gathered from various parts of West Virginia, some weighing as much as 3,000 pounds. The doors are designed of solid two by fours on edge, with a rounded top. A comfortably furnished tasting room welcomes visitors as they enter. Come take a tour of the beautiful winery and see how West Virginia's favorite wine is produced, and don't forget to sample the fine selection. There is also a large selection of West Virginian made crafts that make a great gift for any occasion.



Trans-Allegheny Lunatic Asylum Forensics Tour

Saturday, October 30, 2021 8:00a.m.- Noon

Trans-Allegheny Lunatic Asylum (AKA the Weston State Hospital) is located in Historic Weston, West Virginia. This National Historic Landmark served as a sanctuary for the mentally ill beginning in the mid-1800's. This 160 year old asylum holds fascinating stories of Civil War raids, a gold robbery, the "curative" effects of architecture, and the efforts of determined individuals to help better the lives of the mentally ill. Tour this nationally recognized historic landmark and see how it left a lasting impression on local and national history.



WVSTA Leadership

West Virginia Science Teachers Association: 2021 Executive Board

President _____ Josh Revels
President-Elect _____ Leslie Lively
Immediate Past President _____ Erika Klose
Membership Vice President _____ Laura Bohrer
Treasurer _____ Wayne Yonkelowitz
Secretary _____ Davita Melander
Executive Director _____ Deb Hemler
Electronic Services _____ Todd Ensign
WVDE Liaison _____ Erika Klose
Webmaster/Social Media Director _____ Angela McKeen
Middle School Representative _____ Michele Adams

Past Presidents:

2016-2018 Carolyn Thomas	2003-2004 Eric Pyle	1991-1992 Patricia Obenauf
2014-2016 Elizabeth Strong	2001-2003 Jody Cunningham	1988-1990 Sylvia Cooper
2012-2014 Linda Fonner	1999-2001 Larry Oyster	1987-1988 Robert Phipps
2009-2012 Deb Hemler	1997-1999 Diane Furman	1985-1987 Rayman Richardson
2008-2009 Ed Evans	1995-1997 Joe Evans	1984-1985 Larry Wilkinson
2006-2008 "Jo" Hendricks	1993-1995 Jerry DeLuca	
2004-2006 "Page" Stevenson	1992-1993 George Gruber	

Conference Committee Members

Conference Chair _____ Rachel Eades-Gill
Program Coordinators _____ Erika Klose, Deb Hemler, Josh Revels
Registration Coordinators _____ Adam "AJ" Field & Jeffrey Carver
Speaker Coordinators _____ Wayne Yonkelowitz & Josh Revels
Exhibitor Coordinator _____ Leslie Lively & Linda Fonner
Tour Coordinators _____ Rachel Eades-Gill & Josh Revels
Merchandise Coordinators _____ Wayne Yonkelowitz & Todd Ensign
Auction Coordinators _____ Jim and Patty Cozort
Hospitality Coordinators _____ Teresa Barton & Robin Sizemore
Additional Committee Members _____ Mollie Craven & Courtney Creamens

WVSTA Guiding Principles

WVSTA Mission

The mission of the WVSTA is to promote scientific growth through professional development and networking in the science community.

Purpose

The purpose of the WVSTA is to encourage interest and active participation in science and science education at all levels, to provide a medium for the exchange of views regarding the teaching of science, and to promote the cooperative study of problems and challenges to the teaching of science.

Goals

1. Facilitate and cooperate in providing for national, regional, state and local conferences on science education.
2. Prepare and distribute articles, reports, and classroom materials which are appropriate and helpful to teachers of science.
3. Disseminate information which promotes science and science education universally throughout the state at all levels, i.e. school, community, business and industry, and government.
4. Encourage investigations, experimentation and research in science, and science education.
5. Cooperate with the National Science Teachers Association in formulating plans and projects which advance the quality of science teaching and which promote a more widespread acceptance of science as a subject worthy of serious study from elementary school through college.



Opening Session

Friday, October 29th, 10:30am –12:00pm
Stonewall Ballroom

Opening _____ **Josh Revels**
WVSTA President

Welcome _____ **Dr. Mark Manchin**
President
Glenville State College

Invited Announcements

State of Science Education in West Virginia _____ **Ms. Erika Klose**
State Science Coordinator

Presidential Award for Excellence _____ **Dr. Deb Hemler**
in Math and Science Teaching *WV PAEMST Coordinator*

Keynote Speaker _____ **Dr. Frederic Bertley**
President & CEO
COSI

Conference Announcements _____ **Rachel Eades-Gill**
WVSTA Conference Chair



Grand Banquet

Friday, October 29th, 6:30pm (doors open 6:15)
Stonewall Ballroom

Welcome _____ Steve Wotring
Superintendent, Preston Co.

Introductions _____ Josh Revels
2020-22 WVSTA President

Invocation _____ Dr. Pat Obenauf ☺

Dinner _____ Buffet

Presentation of Awards _____ *see next pages*

Introduction of Keynote Speaker _____ Josh Revels
2020-22 WVSTA President

Keynote Speaker _____ Dr. Caitlin Ahrens
NASA Goddard



Special Recognition Awards

2021 Awards Ceremony

2021 Presidential Award for Excellence in Math and Science Teaching

Presenter:..... Deb Hemler
WV PAEMST Coordinator

Secondary Science State Finalists.....**Rachel Eades-Gill**
Midland Trail High School

Renee Haines
Martinsburg High School

Dianna Moriarity
Horace Mann Middle School

2020 Presidential Award for Excellence in Math and Science Teaching

Presenter: Deb Hemler
WV PAEMST Coordinator

Elementary Science State Finalists.....**Laura Bohrer**
Spring Mills Middle School

Leslie Lively
Short Line Elementary School

Tiffany Pace
Weberwood Elementary School



Special Recognition Awards (cont.)

2021 National Association of Geoscience Teachers

Presenter _____ **Deb Hemler**
WVSTA Exec. Director

NAGT ES Section Winner _____ **James “JR” Bunner**
Parkersburg High

2020 WVSTA Fellow

Presenter: _____ **Erika Klose**
WVSTA Past President

WVSTA Fellow _____ **Robin Sizemore**

2021 Patricia Obenauf Scholarship.....

No applicants this year

Please consider applying for this scholarship which awards free registration to the WVSTA Conference!!

This award honors the 33 year commitment of Dr. Patricia “Pat” Obenauf, a founding member of WVSTA.



Dr. Patricia Obenauf (1932-2017)
I honor the place in you in which the universe dwells.

Recent PAEMST* Science Award Winners

Elementary

2018 Jamie Pettit
2016 Margaret Howells
2014 Nancy Holdsworth
2012 Barbara “Tootie” Black
Gabrielle Rhodes
2010 Michele Adams
2006 MaryLu Hutchins
2004 Kathryn Edwards
2002 Barbara Haines
2001 Rebecca Kittle
2000 Philip Guseman
1999 Linda Fonner
1998 Annette DeLuca
1997 James Giles
1996 Bonnie Mae Mueller
1995 Carol Lou Mathis

Secondary

2019 Angela McKeen
2017 Erika Klose
2015 Maureen Miller
2013 Eric Kincaid
Pete Karpyk
2011 Angela McDaniel
2009 Rebecca Jones
2007 Mickie Richardson
2003 Alicia Spears
2002 Wayne Yonkelowitz
2001 Linda Robinson
2000 Cynthia Keeling
1999 Sonya Picklesimer
1998 Cindy Willis
1997 Mary Sue Burns
1996 Kathryn Ann Conway
1995 Kathryn Burns Jacquez



***Presidential Award for Excellence in Math and Science Teaching**

WVSTA Distinguished Fellow

At the 2002 WVSTA conference in Charleston, WVSTA began recognizing outstanding leaders in our organization. In 2004, the Executive Committee bestowed on these winners the title of “WVSTA Fellows” and drafted the following guidelines for future winners:

Nominees must meet a minimum of four (4) of these seven criteria, and a minimum of two of the starred criteria:

1. Past officer of WVSTA *
2. Help plan/execute a WVSTA conference *
3. Leadership in statewide educational activities or grants *
4. Presenter at several WVSTA conferences
5. Significant contributions to the enhancement of science education
6. Recipient of other significant recognition (e.g. Presidential Award, Milken Award)
7. Served on state committees (such as WESTEST construction, or state curriculum development/revision, or state textbook adoptions)

Past Winners

2020	Ms. Robin Sizemore	2018	Ms. Libby Strong
2017	Mr. Kip Bisignano	2016	Mr. Wayne Yonkelowitz
2015	Ms. Linda Fonner		
2013	Ms. Jody Cunningham	2014	Dr. Deb Hemler
	Ms. Jo Hendricks		
2011	Mr. Patrick Balch	2010	Mr. Bob Seymour
2009	Ms. Cindy Willis	2008	Ms. Sheila “Page” Stevenson
2007	Dr. Rayman Richardson	2006	Mr. Larry Oyster
2005	Mr. David Goodwin	2004	Mr. Jerry DeLuca
2003	Ms. Diane Furman	2002	Ms. Phyllis Barnhart
	Dr. Edward Keller, Jr.		Dr. Robert Behling
	Dr. Thomas Repine		Dr. H. Andrew Cook
	Ms. Brenda West		Dr. Joe Evans
			Dr. Jim Meads
			Dr. Patricia Obenauf

Please contact your officers for future nominations for WVSTA Fellow.

President's Luncheon & Business Meeting

Saturday, October 30th, 12:00pm- 1:30pm
Stonewall Ballroom

Presider _____ **Josh Revels**
2020-2022 WVSTA President

Welcome

Introduction of Officers

Recognition of Conference Committee & Contributors

Lunch

WVSTA Board Meeting _____ **Josh Revels**
2020-2022 WVSTA President



Friday October 29th, 8:00am-9:00am

FLEXible Science for Grades 3-5

Stonewall Ballroom 1

Deborah Vannatter, *School Specialty/Delta Education*

If you're struggling to incorporate science in your school day, ScienceFLEX is for you! Explore phenomena-driven, hands-on collaborative lessons that embed authentic literacy with science reading books in 4 lexile levels.

Participate in a hands-on exploration of organism adaptations that enable them to survive in a particular habitat. Discover how students are guided to trace the flow of energy from the sun through organisms within an ecosystem and in a cooperative investigation, create a model of consequences when an ecosystem is altered by an invasive species. Examine the beautiful ScienceFlex student books that can be purchased to meet the readiness levels of YOUR students. Although nearly identical to the untrained eye, the student books are available in four lexile levels ranging from Gr. 2 to Gr. 5/6 reading levels.

Explore how a few easy lessons with hands-on science materials, embedded technology and leveled readers provide flexible solutions for your packed school day. Walk away with a complete lesson plan and temporary access to ScienceFLEX digital resources. Several door prize winners will receive sample packs of leveled ScienceFLEX student books.

Bring STEAM & Coding to Life with SAM Labs!

Maple Room

Aron Fristoe, *Bluegrass Educational Technologies*

Learn how to easily implement and engage your students in integrated, standards-aligned STEAM & coding for K-8th grade! Gain confidence in implementing STEAM and Coding with your K-8 students. Our hands-on approach models our flow-based coding to block-based coding so students can solve problems in a real-world context using our wireless physical and virtual blocks. Using the web-based SAM Studio platform, you will have the opportunity to create coded systems in both platforms, as well as visit our Content Hub featuring standards-aligned lesson plans and resources for you to explore.

Examining Luminescence

Pecan Room

Nancy Spillane, *WVU*

Everyday we are exposed to light from many sources: the sun, the lamp on your desk, overhead fluorescent lights, neon signs, glow-in-the-dark stickers, lightning, lightning bugs, glowing jellyfish, glowsticks, even cracking wintergreen mints will give off a spark of light. Which of these are considered luminescence? And how is that different from incandescence? How can I help my K-12 students understand how light is produced from chemical reactions?

Friday October 29th, 8:00am-9:00am (continued)

This session examines light – from the theoretical to the practical – and yes there will be glowsticks. We will hear from a WVU chemist describing his research exploring photochemical reactions combining the areas of physical inorganic chemistry, synthetic inorganic chemistry, and catalysis to find new solutions towards more sustainable and green chemistry. And you will take home some great ideas about incorporating light into your K-12 lessons.

Using the Next Generation Science Standards Resources

Sutton Room

Deb Hemler, *Fairmont State University*

Mary Sue Burns, **Presidential Awardee**

Attend this session to learn about resources available for our WV Science Standards. During this session you will practice translating the WV Standards and using web resources to help "unpack" the three dimensions of science instruction.

GLOBE: Relative Humidity Protocol Training

Tygart Room

Josh Revels, *NASA Katherine Johnson IV&V ERC*

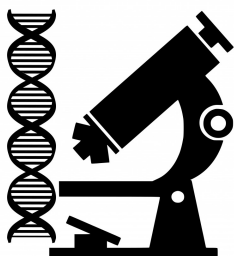
Investigate the meaning of the measurements of dew point and relative humidity while conducting a citizen science protocol from the GLOBE: Atmosphere module. Completing this session results in certification to borrow the NASA ERC's Atmosphere Kit.

Spanning the "STEM" Acronym: Bridging Science and Math

Potomac Room

Jeff Lukens, *Roosevelt High School, Sioux Falls, SD*

Science and math are the “bookends” of STEM education. Integrating science and math can be seamless, natural, and painless. Come join the fun as we collect and analyze data!



Friday October 29th, 9:15am-10:15am

Reimagining Hands-On Science in a Virtual World

Stonewall Ballroom 1

Deborah Vannatter, School Specialty/FOSS

Whether you're in-person with K-5 students utilizing hands-on instruction and/or teaching students through a digital platform, FOSS has you covered! Engage in an interactive elementary Earth Science lesson tied to the revised WV science standards to explore how you can seamlessly pivot instruction using FOSS digital tools for enhanced in-person teaching/learning to engaging students in a virtual setting.

Digital tools are an integral component of the FOSS program. While teachers love the editable teaching slides for every lesson, student learning is deepened with interactive eBooks (English/Spanish) virtual investigations, simulations, tutorials and streaming videos. Join us to explore these resources AND the newly developed Remote Learning Videos created for today's tenuous teaching environment.

Interactive Forms of Energy & Energy Transformations

Stonewall Ballroom 2

Wayne Yonkelowitz, The NEED Project

Explore through six, hands-on stations just as your students would: motion, sound, thermal, radiant, electrical and chemical energy! Using items encountered in our daily lives – glow sticks, hand warmers, batteries, etc. – but often have little understanding of the science behind how they work. Leave feeling confident to teach energy forms & transformations to your students with fun, hands-on scientific investigation and reasoning lessons. Lessons align to state standards, are available for free PDF download, and include a “What’s Happening?” to showcase how the energy transformation is tied to real-world applications. Designed for grades 3-12!

Engaging Students in Earth Science Through Authentic Experiences

Maple Room

Brad Fountain, Discovery Education

Engage your elementary students to think and act like scientists through an introduction to Earth Science lessons based on real-world Phenomena. Learn how to be the teacher that transforms everyday science lessons into authentic, memorable learning experiences with inquiry-focused instruction. Come with a willingness to inspire learning; leave with strategies and tools to make it happen as you experience a dynamic lesson from the perspective of an elementary student.

Friday October 29th, 9:15am-10:15am (continued)

Scratching with NASA

Pecan Room

Emily Helton, *NASA IV&V ERC / Fairmont State University*

Learn about the online programming platform Scratch. This drag and drop coding language is surprisingly robust. There will be resources for complete beginners, intermediate, and advanced Scratchers, with an emphasis on how to tie in science standards using NASA content. Please bring a laptop or iPad to the session to participate. Check it out and create your free account at scratch.mit.edu!

Safety Expectations in the Science Classroom

Sutton Room

Jennifer Schewertfeger, *WVDE*

This session presents a review of lab/classroom safety considerations and practices with a focus on school laboratory safety law including duty (standard) of care. Additional topics presented through the “lens” of safety include lesson planning, equipment maintenance, chemical storage, educator/student safety training, and documentation.

Building Better Outreach to K-12 STEM Students

Tygart Room

Sue Ann Heatherly, *First2 Network*

Deb Hemler, *Professor of Geoscience Education, Fairmont State University*

Understanding that near-peer role models can be powerful influencers, the First2 Network prepares its undergraduate STEM students to talk with high school students who are interested in majoring in a STEM field. Our goals are to encourage high school students to consider STEM careers, and even more importantly, to be better prepared for life as a STEM major. High school students learn first-hand what First2 students love about being a STEM major and what they wish they had known before they started college. In this session we will share examples of past presentations, and get your input on how to make First2 outreach even more effective. Prepare to put your brainstorming hats on!

Flattening the Curve of the Zombie Apocalypse

Potomac Room

Jeff Lukens, *Roosevelt High School, Sioux Falls, SD*

In 2020, we were all introduced to the phrase "Flatten the Curve". At this WVSTA Conference session, we will model a curve-flattening event using.....Zombies! Join us for this engaging and relevant (and fun!) gathering! Bring your brains!

Friday, October 29th, 10:30am-12:00pm

Opening Session

Stonewall Ballroom

Friday, October 29th, 12:00pm-12:30pm Forums!

Just after the opening session and before your lunch at Stillwaters, join a conversation with like-minded folks. We have many forums to choose from and if you would like to suggest another, let us know and we'll add it next year! We'll announce the forums and direct you to the right convener and table in the Ballroom to begin your discussion. Afterwards you can move as a group to lunch if you would like to continue your conversation!

Sustainability
Induction
WV Climate Change PD
2022 Conference
Diversity, Equity, & Inclusion
Presidential Awards
Conference Planning

Erica Harvey
Mary Sue Burns
Kathryn Williamson
Leslie Lively
Laura Bohrer
Deb Hemler
Josh Revels



Friday, October 29th, 1:30pm-1:55

STEM Behind Hollywood: Superheroes, Zombies and Forensics

Maple Room

Michelle Grooms, TI

What do superheroes, zombies, and forensics have in common?

As the latest STEM Behind Hollywood themes, they give students a chance to solve problems just like real-life scientists with concepts from their favorite movies and TV shows. Explore Science Friction!, an activity that lets students play a villain's henchman to explore force, friction, rate, and Newton's Third Law of Motion. In Zombie Apocalypse 2: The Humans Strike Back, students investigate the hypothesis that elevating pH could prevent people from becoming undead. In Body of Evidence, students use interactive data plots from a simulated death investigation to establish the victim's identity. See how STEM Behind Hollywood lessons support research-proven strategies that accelerate mastery of complex STEM concepts.

Science Standard Update and Q & A from WVDE Science Coordinator

Sutton Room

Erika Klose, WVDE

This session provides an opportunity for educators to ask questions regarding state science policies. An update regarding the new science standards which go into effect July 1, 2022 will be provided. Participants will learn about resources available to assist educators in understanding and implementing WVBE Policy 2520.3C, the West Virginia College- and Career-Readiness Standards for Science.

**Empowering Appalachian Students to Address Climate Challenges-
Exploring Geosciences Solutions (EGeoS)**

Tygart Room

Amy Hessel, West Virginia University

Amy Weislogel, West Virginia University

Exploring Geosciences Solutions (EGeoS) connects Appalachian science teachers and students to college education, degree programs, and careers in geoscience using a place-based pedagogy. We develop geoscience education opportunities for Appalachian high schoolers built around cross-cutting concepts germane to mitigating climate change and associated environmental and societal impacts. Here we present the first of six EGeoS learning modules that use geoscience approaches and local evidence to examine impacts of climate change mitigation techniques. Our first module, "Can trees solve climate change?", uses field and computational techniques to quantify the role that planting trees plays in mitigating climate change at the global scale. Students collect, share and analyze local data that addresses the scale of the carbon mitigation challenge. This interdisciplinary module addresses WVDE science standards in Earth and Space Science, Biology and Environmental Environmental Science, We seek feedback from experienced high school science teachers on this and future modules.

Friday, October 29th, 1:30pm-1:55 (Continued)

Typhoid Mary: Victim or Villain

Summersville Room

Ashley Chouinard, Oak Hill High School

Mary Mallon was an Irish immigrant who settled in New York in the early 1900s. Mary was accused of being an asymptomatic carrier of typhoid fever (a virus with a similar infection rate to COVID-19 before the antibiotic era) and essentially forced to quarantine indefinitely on an island against her will.

This lesson is appropriate for grades 7-12. It is a great addition to introducing the scientific method, if you need a 2-day filler while transitioning to new content, or just want to explore something different with relevant correlation. By watching a documentary and/or listening to a podcast, students will learn how Mary was an asymptomatic carrier of typhoid fever, how authorities tracked her down, why the media exploited her, and in the end, what happened to her. Pop into this brief session to get a turnkey lesson with real-world application for one of your classes!

Friday, October 29th, 1:30pm-2:30pm

Level Up!

Stonewall Ballroom 1

Kim Dye, School Specialty/Delta Education

Because reading is an integral component of K-8 science learning, explore how multimodal strategies and leveled readers in print and digital formats prepare students with varying reading readiness levels to meaningfully access and comprehend expository texts.

Participate in an interactive investigation to experience how FOSS's multi-sensory, UDL-informed lessons maximize learning for all students. Experience research-based strategies for differentiation and intervention and examine a plethora of digital and print student science reading resources to supplement your classroom library or science curriculum.

Walk away with a packet of reading strategies. Door prizes include sets of leveled science texts.



Friday, October 29th, 1:30pm-2:30pm (Continued)

Lesson Plans for Sand “Outside the Box”

Stonewall Ballroom 2

Dr. Bob Behling, *West Virginia University (retired)*

Youngsters who have never had the opportunity to play in a sandbox are few and far between. Thus, when teaching Earth Science, we may find it necessary to clearly define what geologists mean when they use the term “sand”. Further, the geological definition of sand may differ when used by engineers or soil scientists. Let’s examine the geological concept of sand through lesson plans for hands-on activities for K-12 students. First and foremost, geologists really mean “sand-size” of grains in any rock or unconsolidated sediment. In addition to grain-size, geologists also examine grain-shape, grain-arrangement, grain-composition, and grain-color. Let me introduce a dozen or more hands-on activities for students as they study the important Earth Science term “sand”.

Project WET Climate, Water, and Resilience - Abbrev. Workshop

Pecan Room

Tomi M. Bergstrom, *WV Dept. of Environmental Protection*

Project WET (Water Education Today) is an international, interdisciplinary water science and education program for educators. In this abbreviated workshop, sixth through twelfth grade educators will be introduced to several of the activities from the Climate, Water, and Resilience guide. All attendees will receive a copy of the guide.

Climate change is a complex topic that can be intimidating to teach. However, understanding climate, and specifically the way that climate is changing, is crucial to making informed decisions and building resilience. This guide helps educators teach middle school and high school aged students about climate and climate change using nine interactive, objective, science-based activities that students will enjoy. All activities are correlated to NGSS and Common Core Math and ELA standards. To further enhance your climate curriculum, the guide also includes suggested adaptations from the Project WET Curriculum and Activity Guide 2.0 to teach about climate.

Infect Your Science Classroom with Math

Potomac Room

Jeff Lukens, *Roosevelt High School, Sioux Falls, SD*

Integrating science and mathematics shouldn’t just be a good idea, it should be the law! Come learn how easy, important, and fun it is to collect and analyze data as a part of good, solid, and responsible science education.

Friday, October 29th, 2:05pm-2:30pm

Dual enrollment in Intro Forensics through Fairmont State

Maple Room

Mark Flood, *Fairmont State University*

This session will provide information on an exciting new collaboration for your high school students to earn credit for Introduction to Forensic Science at Fairmont State! We will discuss lessons learned from our first attempt at this in the spring of 2021, and how we are growing to several new schools in the spring of 2022. We will discuss how your school can get students involved in this great opportunity, and answer any questions that we can to help you take the leap to join us!

West Virginia General Summative Assessment Science Tests

Sutton Room

Timothy Butcher, *WVDE*

Visit this session to learn more about the West Virginia General Summative Assessment science tests. Participants will explore how the science test was constructed, how the science interim assessments supplement the summative test, and how to interpret the results from the test. Stop by and learn more about how the yearly statewide summative science assessment can help you help your students.

Explore the Ocean and the Atmosphere with NOAA Educational Resources

Tygart Room

Tony Edwards, *NOAA/National Weather Service*

NOAA offers many different avenues to help educators and students explore the ocean and the atmosphere. These include classroom-ready modules, historical and real-time data resources for research, hands-on activities that actually help meteorologists analyze the weather and make better forecasts, and science-based field trip opportunities right here in West Virginia. This seminar will introduce you to some of these resources and show you how to get more information on all that NOAA Education has to offer.

Teaching Evolution Virtually or In-Person (9-12)

Summersville Room

Jaime Moss, *The Teacher Institute for Evolutionary Science*

The Teacher Institute for Evolutionary Science has created FREE student-guided units on evolution which covers all of your middle school evolution content standards. Students can follow along on their own or you can guide them in a class setting. The unit takes students to interactive web pages, online games, videos, and more. Since it was created in March of 2020, the unit has been downloaded over 2,000 times from teachers all over the country and presented successfully in dozens of state conferences. This session will give you access to all our free materials, including student response sheets, answer key/rubric, and exam. We will also share dozens of other resources, free webinars, etc. www.tieseducation.org is your one-stop shop for evolution education!!

Friday, October 29th, 2:45 - 3:45pm

Reimagining Hands-On Science in a Virtual World (K-5)

Stonewall Ballroom 1

Kim Dye, School Specialty/FOSS

Whether you're in-person with K-5 students utilizing hands-on instruction and/or teaching students through a digital platform, FOSS has you covered! Engage in an interactive elementary Earth Science lesson tied to the revised WV science standards to explore how you can seamlessly pivot instruction using FOSS digital tools for enhanced in-person teaching/learning to engaging students in a virtual setting.

Digital tools are an integral component of the FOSS program. While teachers love the editable teaching slides for every lesson, student learning is deepened with interactive eBooks (English/Spanish) virtual investigations, simulations, tutorials and streaming videos. Join us to explore these resources AND the newly developed Remote Learning Videos created for today's tenuous teaching environment.

The Power of Mixed Media for Effective Science Communication

Stonewall Ballroom 2

Dr. Frederic Bertley, COSI

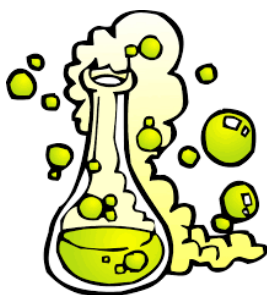
In this session, participants will learn the tricks of the trade about how to use media to communicate science effectively. Leveraging the PBS prime time television show QED with Dr. B, the host, Dr. Frederic Bertley will walk the educators through how media outlets think about communicating science. From best practices and things to avoid, to the power of animation, the audience will leave with fun, effective resources that they can use in their classrooms and beyond.

Forensic Science Share-A-Thon

Maple Room

Mark Flood, Fairmont State University

This Share-A-Thon is intended for teachers to bring some of their best forensic science lessons and tidbits. Please let us know if you are coming to share something and we will have space for you to set up your display and/or activity!



Friday, October 29th, 2:45 - 3:45pm (Continued)

**WV Save Our Streams StreamLAB: Benthic Macroinvertebrates
& Water Quality Monitoring!**

Pecan Room

Callie Cronin Sams, *WV Dept. of Environmental Protection - Watershed Improvement Branch*

WV Save Our Streams will provide a 1-hour hands-on workshop and a 4-5 hour field experience post-conference (Saturday morning or afternoon). Participants that do both sessions will receive the full Save Our Streams training and will be eligible for Level 1 certification. Additionally, after completion they will receive a benthic macroinvertebrate sampling kit that includes a kick net, trays, magnicubes, and more depending on their specific needs. The kit will be delivered to their class during their first stream survey outing, which the WVSOS Coordinator will attend and assist teachers as they lead their initial survey with students.

During the 1-hour conference session, we will introduce stream ecology & monitoring concepts. Participants will learn how their class can participate in the WVSOS StreamLAB. During the field experience, participants will go through a full WVSOS stream assessment, including physical condition, habitat evaluation, and benthic macroinvertebrate survey.

<https://go.wv.gov/sos>

Static Electricity and Forming a Solar System

Sutton Room

Josh Revels, *NASA Katherine Johnson IV&V ERC*

Investigate the variables affecting Electric Fields and learn about the role of static electricity in formation of a planet through these hands-on investigations of static electricity. Also, we will discuss the free, loanable educational kits that you may use in your classroom at 2 week increments through the NASA ERC's Learn and Loan program and discuss your questions about the certification process, availability, and the content of kits.

Leaping Beyond LEED

Summersville Room

Karen Davis, *Eastwood Elementary*

Learn about the features of a LEED Gold certified Green elementary school and the journey we took to embrace sustainability. Hear about our successes and the mistakes we learned from. See examples of outdoor learning spaces and play places as well as Problem Based Learning experiences. Feel the cultural shift that takes place and be empowered to make changes in your own school.

Friday, October 29th, 2:45 - 3:45pm (Continued)

WV Climate Change Professional Development

Tygart Room

Tamara Westfall, *Poca High School*

Kathryn Williamson, *West Virginia University*

Jamie Shinn, *West Virginia University*

Sandra Fallon, *Climate Activist/Public Education and Outreach*

Josh Revels, *Katherine Johnson NASA IV&V*

Gabriela Himmele, *West Virginia University*

Brandon Rothrock, *Environmental Defense Fund*

Alexandra Bunn, *West Virginia University*

The WV Climate Change Professional Development project supports both physical and social science activities to empower climate change action. After our second year growing our program, we now have new activities that include NASA GRACE mission satellite data on water mass concentrations, West Virginia Flood Map tools and story maps showing human impacts, as well as an activity that uses the official EN-ROADS climate solutions simulator. For Earth Day, teachers and students were invited to communicate this data via video and audio Public Service Announcements, or PSAs, aired on TV and radio to over 40,000 West Virginians. We are using our lessons learned to grow our program and offer 3 CEUs through Fairmont State University in Spring 2022. Please join us to learn more about how to engage your students in data-driven climate change learning and action! Visit our website to learn more:

<https://sites.google.com/view/wvclimatechangeepd>



Friday, October 29th, 4:00-5:00pm

Authentic K-5 Science through Local Phenomena

Maple Room

Kim Dye, School Specialty/FOSS

Participate in a lesson that engages students with local and relevant phenomena. Learn how to “keep it real” by incorporating phenomena into your K-5 science instruction.

Most students have experience with puddles but haven’t thought much about why they are in some places but not others. Who cares about puddles and where they form? Students do if a section of their recess playground or a ball field is frequently off limits after it rains. Participants will engage in hands-on explorations and consider how multiple factors have an impact on where puddles (and other bodies of water) form.

Participants will explore how to consider student perspectives in developing and incorporating local phenomena to genuinely engage students in authentic science learning based on the new WV Standards for Science. Finally, participants will consider how to help students identify phenomena in their lives and communities. Hand-outs and Door Prizes!

Project Based Instructional Units Shared

Pecan Room

Jeffrey S. Carver, West Virginia University

Vanessa Licwov-Channell, West Virginia University

Jessica Ely, East Fairmont High School

Erica Skorlinski, Preston County High School

Tina Cool, Preston County High School

Laura Twentier, Preston County High School

Madison McGhee, Student Teacher, Preston County High School

Hannah Lewis, Student Teacher, East Fairmont High School

Janie Kutassy, Student Teacher, East Fairmont High School

Aubrie Williams, Robert C. Byrd High School

Through a shared instrumentation project with West Virginia University, teachers engaged in the development of new Project Based Instructional units for their classrooms in ESS, Forensics, and Environmental Science, among others. The shared use of a portable X-ray fluorescence device allowed for direct data collection of samples (soil, plant, water and other) for the detection of metal contents (including contaminants). Several of the units have or are being implemented in high school classrooms.

Friday, October 29th, 4:00-5:00pm (Continued)

STEAM-minded WV– Teaching Mindsets and Skillsets

Sutton Room

Erika Klose, WVDE

Join WVDE staff for a session introducing WV educators to the STEAM Mindsets and Skillsets. Mindsets are established sets of attitudes held by an individual that play a major role in motivation and achievement. Mindsets determine how individuals make decisions, approach opportunities, and handle adversity. Skillsets are specific abilities that allow individuals to accomplish tasks. The STEAM mindsets and skillsets are those necessary for student success in a STEAM-rich future and are also tied to WVBE Content Standards. This session will include practical resources and applications for including the STEAM Mindsets and Skillsets into regular classroom instruction to develop a STEAM-minded classroom and culture, while at the same time supporting student achievement.

Teaching Human Ecology with Models and Simulations

Tygart Room

Tamara Westfall, Pocahontas High School

Models and simulations can be used effectively in the science classroom to better understand ecological concepts and cause-and-effect relationships in nature, including how human activities can change the physical landscape, affect ecosystems on land and in water, and alter the atmosphere.

In this hands-on session, the presenter will lead participants in activities that will give students practice in collecting and interpreting data to better understand their local and global environment and human impacts on ecosystems. They will create 3-D representations of global land use, model amounts and sources of freshwater, simulate world population growth trends, and more. The presenter will discuss how to implement these activities as part of broadening students' understanding of key topics in Life and Earth Sciences including: Human Impacts, and Interdependent Relationships in Ecosystems. Participants will receive lesson plans and background materials in an electronic format.

Wonder Full Watershed

Summersville Room

Karen Davis, Eastwood Elementary School

Learn to use outdoor spaces for exploration of our precious natural resource, water. This session is made possible by the NASA West Virginia Space Grant Consortium offering children's literature and teaching tools to each participant. The Wonder Full Watershed is the newest of Eastwood Elementary's outdoor learning spaces funded by the WV Division of Natural History and Culture WV STEAM Power. What used to just be an entrance to the building is now a model of West Virginia watersheds, a teaching tool, and a learning space. Gain multiple lesson ideas to help our students be stewards of Earth.

Friday, October 29th, 4:00-5:00pm (Continued)

Cross-Curricular Thematic Units

Potomac Room

Alicen Adkins, *Moorefield Middle School*

Bonnie Crites, *Moorefield Middle School*

The goal of this session is to easily include science content in your early elementary classroom that will help support other content areas (literacy, math, etc). We will focus on how to develop a thematic unit centered around a book study that helps meet science standards, as well as standards from other content areas. Teachers will be given a sample thematic unit developed around the book “Rosie Revere, Engineer”. After walking through this example, teachers will work through a sample engineering design challenge to develop confidence and experience prior to use in their own classrooms, and be given the tools to begin developing their own thematic unit(s). Best suited for K-2.



Saturday, October 30th, 8:30am–8:55am

Photovoltaic Array Use in Earth Science Classes

Pecan Room

Bruce Rose, *Greenbrier East High School*

Update on use of Solar Panels at Greenbrier East High School. A presentation on this was done at the 2019 WVSTA Annual Conference. Two arrays of solar panels for the school were funded by a Technology Model School Grant funded by the WV Department of Education. A website has been created to share materials related to the solar panels, developed for teaching Grade 9 Earth Science students. Data collected over the past two years for electricity production by the solar panels will be shared.

Early research experiences for success: Bridging a summer research internship into a course-based undergraduate research experience.

Sutton Room

Aida E. Jimenez Esquilin, *University of Charleston*

Early research experiences can impact success and retention in STEM majors. As part of our collaboration with the First2 Network we have hosted a summer research immersive at the University of Charleston for 2 years using 2 modalities. First generation rising freshmen participated in research projects in the summer prior to starting their fall semester on campus. Then, students from this summer program were bridged to a CURE course (Biology and Chemistry of WV Environments). Results from pre-post surveys indicate that students who participated in both experiences rated their expertise in research related skills higher before the course began, compared to students who only participated in the course. They also showed a more positive attitude toward science learning. This preliminary case study suggests that these consecutive early research experiences may be synergistic and strengthen the skills and attitudes gained on each thus increasing STEM and research identity.

Seeing the Science in What Children Say and Do: A PD Opportunity for Elementary Teachers

Summersville Room

Melissa J. Luna, *West Virginia University*

Noticing, making sense of, and responding to the things children say and do when exploring the natural world is key to being a great elementary science teacher! Though this may seem rather intuitive in teaching (and to some extent it really is) using what you notice in children's words and actions to drive your science teaching practice is not always straightforward. This session will present details of an upcoming online professional development opportunity for elementary teachers specifically. The PD is designed to support practicing elementary science teachers by focusing on developing practice that centers children's thinking and ideas and uses children's thinking and doing to drive the learning in science classrooms. During the session, details of this opportunity will be described and elementary teachers will have the chance to sign up to participate in this upcoming PD.

Saturday, October 30th, 8:30am–8:55am (Continued)

Supporting incoming first-year STEM students in undergraduate research Tygart Room

Cinthia Pacheco, *West Virginia University*

Paige Zalman, *West Virginia University*

Amy Hessel, *West Virginia University*

Participation in undergraduate research (UR), a high-impact educational practice, has been shown to improve college students' knowledge and skills, as well as increase their persistence and degree completion. This is particularly important for students in STEM fields due to the need to increase the workforce in these careers. Additionally, exposing undergraduates to UR experiences as soon as they enter college has shown to decrease attrition rates, especially in historically excluded groups. To enhance the engagement of undergraduates in research, West Virginia University implemented the Research Apprenticeship Program (RAP) in 2017. In addition to creating research opportunities for first-year students, RAP has served as a pathway to include low-income and historically excluded students in UR. Eligible participants are paid to do research through either federal work-study or NSF INCLUDES initiatives, such as the First2 Network for first-generation STEM majors and LSAMP for Black, Latinx, Native American, and Pacific Islander STEM majors.



Saturday, October 30th, 8:30am–9:30am

Think Like An Engineer with Phenomenal Science Instruction!

Stonewall Ballroom 1

Molly Catalano, *Amplify*

Teachers will learn how student driven engineering internships incorporate all aspects of the Science & Engineering Practices from the West Virginia Next Generation Content Standards and Objectives for Science. This session engages educators with hands-on activities, digital tools, active reading and dynamic discussion with the purpose of integrating phenomena-based science instruction around real-world problem solving. The Amplify connection includes a Force and Motion Engineering Internship where participants design a hands-on egg drop as well as utilize digital modeling tools. Teachers will leave with print resources as well as digital demo accounts. Bring your own device!

Objectives:

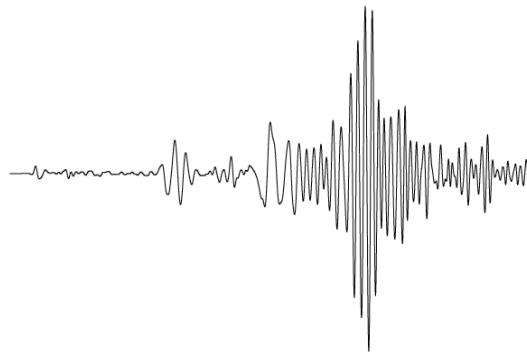
Support science teachers with a deeper understanding of the Science and Engineering Practices
Provide teachers with the knowledge and practice to meet the expectations of the standards.
Engage teachers with phenomena-based instruction using example model units, lessons and activities. Provide teachers from all grade levels with resources they can take back to their classrooms.

Is Science Neutral?

Maple Room

Emily Helton, *NASA IV&V ERC / Fairmont State University*

No. While we often think of science as being neutral and objective, using tools like the scientific method to ensure the validity of experiments and data, science is performed and understood by human beings, who influence every part of the process, from what questions are asked to how findings are presented. In this session, we will look at how we as science educators influence not only what our students learn, but what implicit messages they pick up about science as a discipline and how to enable them to better connect science with their lives.



FLEXible Science for Grades 3-5

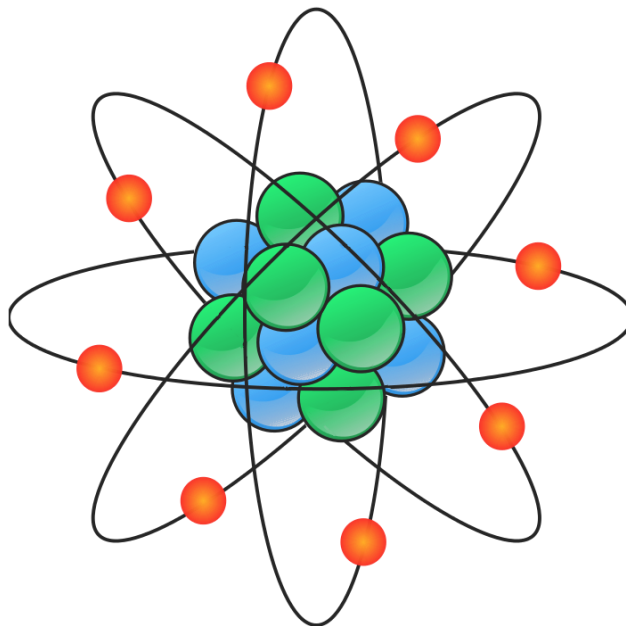
Potomac

Deborah Vannatter, *School Specialty/Delta Education*

If you're struggling to incorporate science in your school day, ScienceFLEX is for you! Explore phenomena-driven, hands-on collaborative lessons that embed authentic literacy with science reading books in 4 lexile levels.

Participate in a hands-on exploration of organism adaptations that enable them to survive in a particular habitat. Discover how students are guided to trace the flow of energy from the sun through organisms within an ecosystem and in a cooperative investigation, create a model of consequences when an ecosystem is altered by an invasive species. Examine the beautiful ScienceFlex student books that can be purchased to meet the readiness levels of YOUR students. Although nearly identical to the untrained eye, the student books are available in four lexile levels ranging from Gr. 2 to Gr. 5/6 reading levels.

Explore how a few easy lessons with hands-on science materials, embedded technology and leveled readers provide flexible solutions for your packed school day. Walk away with a complete lesson plan and temporary access to ScienceFLEX digital resources. Several door prize winners will receive sample packs of leveled ScienceFLEX student books.



Saturday, October 30th, 9:05am–9:30am

All New HMH Biology & Earth Space Science

Pecan Room

Margo Dye, *Houghton Mifflin Harcourt - HMH*

Foster student engagement with HMH's BRAND NEW Biology and Earth & Space Science for West Virginia! Your classroom will come alive with phenomena-based lessons, investigative hands-on activities and stimulating digital resources that encourage students to build problem-solving skills. Instructors will become facilitators who empower students to learn through self-directed engineering and STEM explorations, analysis, application and explanation – in short, to think like scientists! HMH Biology and Earth & Space Science programs for WV will cultivate creative problem solvers who will go on to become the next generation of innovators. Teachers are supported with embedded professional learning for the new instructional shift in science education. Our programs expertly weave the Three Dimensions of Science into each lesson in order to meet the Performance Expectations. This integrated approach takes the burden off of YOU while ensuring a high-quality 3D learning experience for your students. Come see what's NEW at Houghton Mifflin Harcourt!

Argumentation and Radio Waves

Sutton Room

Valarie Bogan, *National Radio Astronomy Observatory (NRAO)*

This session introduces participants to a new curriculum that focuses on the electromagnetic spectrum. Many teachers, myself included, focus solely on the visible light portion of the spectrum because there are no activities available for the other portions. This curriculum uses an RTL-SDR dongle and some free software to visualize the radio waves traveling through your classroom. I will describe how this technology can be used for a lesson that combines argumentation and integrated STEM. Lastly, the participant will learn how they can be part of a future professional development workshop which will provide them lesson plans and student activity sheets for nine lessons. These lessons don't need to be taught by one person but rather the participant may share these lessons with other teachers at their school. Those who participate in the free professional development will receive all materials necessary for implementing the lessons in their classrooms.

Keeping it Together: Time Management and Organization

Summersville Room

Davita Melander, *Spring Mills Middle School*

This session presents ideas and strategies for getting and staying organized, managing your time and materials, and avoiding burnout. This session is designed with newer teachers in mind, but all are welcome to join and add ideas to the discussion.

Saturday, October 30th, 9:05am–9:30am (Continued)

First2 Network Summer Research Program: motivating students to persist in STEM fields

Tygart Room

Cinthia Pacheco, *West Virginia University*

Heather Arnett, *University of Charleston*

First2 Network (First2) is one of eight NSF INCLUDES alliances funded nationwide that aims to improve the early persistence of rural, under-represented, first-generation STEM college students in their majors across West Virginia. Through different programs, First2 seeks to broaden the participation and to expand opportunities for students who choose a STEM career. One of its programs is the First2 Summer Research Internship, an opportunity for rising college freshman who are first-generation or underrepresented in STEM to get ready for their first year of college. The internship is approximately two weeks long and interns are paid to participate in research, professional development activities, as well as activities aimed to bolster first year college success and retention. Travel, room, materials, and technologies are provided. At the end of the experience, interns are encouraged to apply for First2 academic year programs and to continue engaged in research and scholarly activities.

Saturday, October 30th, 9:45am-10:45am

Hands-on Explorations for the NEW WV Science Standards

Stonewall Ballroom 1

Margo Dye, *HMH, Houghton Mifflin Harcourt - HMH*

Let's DO SCIENCE! During this one hour hands-on session, participants will be immersed in explorations and activities that spark curiosity, build problem-solving skills and cultivate effective Claims while Gathering Evidence to Support Reasoning. Houghton Mifflin Harcourt's high school science programs allow students to truly experience the difference between following a "cookie cutter" lab and digging into the evidence that supports their creativity of the engineering and design process. You'll come away with ideas to engage students in the classroom and prepare them to think like a scientist! (High School Biology/Earth & Space Science)

Saturday, October 30th, 9:45am-10:45am (Continued)

Facts on Fossil Fuels

Stonewall Ballroom 2

Wayne Yonkelowitz, *The NEED Project*

Most of our energy consumption comes from petroleum, natural gas, and coal. This session involves hands-on lessons to help you learn the facts of fossil fuels and fun ways to teach your students about energy. Lessons are great for the science, math, or language arts educator! Learn about the process and challenges of mining using chocolate chip cookies, the energy transformations or flows involved with natural gas, just how many products we use on a daily basis consist of petroleum products, and learn about the vast array of careers in the energy industry! Activities are aligned to state standards, hands-on, and inquiry-based!

Ready OER Not

Maple Room

Emily Helton, *NASA IV&V ERC / Fairmont State University*

Tired of spending your own money at Teachers Pay Teachers? Open Education Resources (OER) are digital materials that are free to use, edit, and share. In this session, you'll get an overview of where to find OER, how to adapt it for your learners, and some Open Educational Practices (OEP) that can enhance their learning. This is the "teaser trailer" for the Ready OER Not course offered at Fairmont State University in Spring 2022.

Flying Robots! RECF Aerial Drone Competition

Pecan Room

Todd Ensign, *Fairmont State University / NASA IV&V Education Resource Center*

Join the NASA ERC for a crash course on flying and programming the Parrot Mambo Drone, the platform for our newest robotics competition. The REC Foundation Aerial Drone (RAD) competition is for middle and high school students, and after our first tournament last May, is sweeping the state! Learn how to register a team, what the challenges look like, how to both program (autonomous) and fly (tele-operated) this small, safe, platform.

STEP UP Workshop: Tools for a more inclusive science classroom

Sutton Room

Luci Finucan, *Green Bank Observatory + STEP UP*

STEP UP is an American Physical Society program designed to increase female students' confidence in their ability to pursue physics. If you're interested in creating a more equitable STEM classroom, join us for lesson plans, everyday actions, discussion, and more!

Saturday, October 30th, 9:45am-10:45am (Continued)

**Using Passionate High School Students as STEM Teachers
in Younger Grades**

Tygart Room

Chuck Trautwein, *Garrett County Public Schools, Maryland*

Kelli Catulle, *Garrett County Public Schools, Maryland*

Jeremy Perando, *Garrett County Public Schools, Maryland*

Whether it's VEX, SkillsUSA or FIRST, these youth robotics programs instill a passion for all things STEM in students who compete in these programs. Garrett County Public Schools (GCPS) uses its high school robotics students to help ensure elementary students gain the skills they need for their success in STEM. Every year, passionate GCPS high school robotics students teach highly engaging and impactful lessons to every third, fourth, and fifth grade student in Garrett County. Our session will feature the "gadgets" our students use to teach these lessons which include a LEGO Top Spinner, a set of five cards that help teach the rudiments of binary numbers, AND, a set of LEGO calipers that exactly determine the Golden Ratio. This has been such a huge "Win-Win" success in Garrett County, our students are excited to share our program... you might even leave with your very own awesome "gadget"!

**Station Rotation in an Era of Social Distancing &
Online Learning 6-12**

Summersville Room

Wendy Beltran, *McGraw Hill Education*

Teachers are preparing for an uncertain future. Many are unsure if they will be returning to school on a traditional schedule, a blended learning schedule, or completely online. Teachers are questioning how the instructional strategies they have used in the past will work if students are coming to school on a modified schedule or if they are learning online. Given these realities, teachers will want to think about how to design their lessons to ensure they are able to remediate and differentiate, create time to connect with individual students, and foster communication and collaboration among students. The station rotation model offers an avenue to accomplish all of these goals.

Teaching Evolution Virtually or In-Person (6-8)

Potomac Room

Jaime Moss, *The Teacher Institute for Evolutionary Science*

The Teacher Institute for Evolutionary Science has created FREE student-guided units on evolution which covers all of your middle school evolution content standards. Students can follow along on their own or you can guide them in a class setting. The unit takes students to interactive web pages, online games, videos, and more. Since it was created in March of 2020, the unit has been downloaded over 2,000 times from teachers all over the country and presented successfully in dozens of state conferences. This session will give you access to all our free materials, including student response sheets, answer key/rubric, and exam. We will also share dozens of other resources, free webinars, etc. www.tieseducation.org is your one-stop shop for evolution education!!

Saturday, October 30th, 11:00am-12:00pm

Bringing Live Electron Microscopy into Any Classroom

Maple Room

Stephen Kuehn, *Concord University*

Electron microscopes can provide an excellent and accessible window into the world of the very small, appropriate for kids and adults alike. Tiny crystals, bits of a feather, or even just an average speck of dust could be the entry point to this micro-world. All sorts of "what is it made of" questions can also be explored. All of this can be done remotely from almost any classroom or Zoom connection, and your kids can even take control. Potential topics include biology, chemistry, physics, earth sciences, forensics, and yes art too. Join in and take a micro trip with the Electron Microprobe Lab at Concord U.

The American Rocket Contest (6 - 12)

Pecan Room

Todd Ensign, *Fairmont State University / NASA IV&V Education Resource Center*

Join Todd Ensign, President of the WV Rocketry Association club, for an informative session on model rocketry, engines, 3D design and printing, digital simulations, altitude tracking, and how to get involved in the largest model rocket contest in the world. The American Rocket Contest (TARC) is an outstanding way to fuel your students interest in STEM while learning a wide range of skills that will propel them into a degree and hopefully a career in aerospace. While we can't build and launch a model rocket in 1 hour, we will stop for numerous hands-on activities which engage you in the principles of rocket stability. www.RocketContest.org

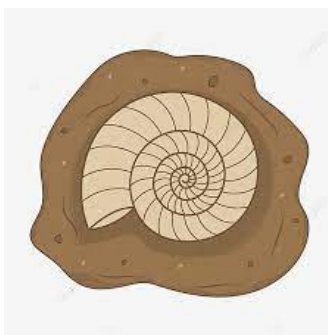
Virtual Escape Rooms

Sutton Room

Mary Elliott, *Fairmont State University*

Emily Helton, *NASA IV&V ERC / Fairmont State University*

Excited about the idea of escape rooms, but not the amount of time it takes to get those locks set and clues hidden? Try a virtual escape room! Using Google Forms and Scratch, you can create an escape room that can be accessed in a classroom or from home. We'll share some ready-made options and get you started with creating a virtual escape room of your own. Please bring your own device to access the virtual escape rooms.



Saturday, October 30th, 11:00am-12:00pm (continued)

**Station Rotation in an Era of Social Distancing
& Online Learning K-5**

Summersville Room

Wendy Beltran, *McGraw Hill Education*

Teachers are preparing for an uncertain future. Many are unsure if they will be returning to school on a traditional schedule, a blended learning schedule, or completely online. Teachers are questioning how the instructional strategies they have used in the past will work if students are coming to school on a modified schedule or if they are learning online. Given these realities, teachers will want to think about how to design their lessons to ensure they are able to remediate and differentiate, create time to connect with individual students, and foster communication and collaboration among students. The station rotation model offers an avenue to accomplish all of these goals.

Integrated Genetics and Engineering Unit

Potomac Room

Valarie Bogan, *National Radio Astronomy Observatory (NRAO)*

In this session you will learn about an engineering and genetics curriculum unit. This is a five-lesson unit that starts by introducing the students to the engineering problem. After students understand the problem they will be solving they spend several days learning about the science topics that are necessary to complete the challenge. Finally, the unit ends with an engineering challenge where students have to design a breeding program that creates corn plants which are resistant to the northern corn leaf blight. During the session you will learn about each lesson and get a chance to try the engineering challenge for yourself!



Exhibitors

3Z's Instruments, LLC.

<http://3zslc.com/>
Mr. Tim Zickefoose
Tim@3zslc.com
(800) 247-2726

Amplify Education

amplify.com
Molly Catalano
mcatalano@amplify.com
Melissa Webb
mwebb@amplify.com
(304)552-0234

Biozone

<http://www.thebiozone.com>
Mark Temons
Pamela Temons
mpteachllc@gmail.com

Bluegrass Educational Technologies, LLC.

<https://bluegrasset.com/>
Aron Fristoe
afristoe@bluegrasset.com
866.276.6457

by the Robin

Robin Sizemore
bytherobin@gmail.com
bytherobin on Facebook

Delta Education/School Specialty

<https://www.deltaeducation.com/>
<https://store.schoolspecialty.com/>
Kip Bisignano
kip.bisignano@schoolspecialty.com
(410) 878-1080

Discovery Education

<https://discoveryeducation.com>
Kyle Talavera
ktalavera@discoveryed.com
AnnMarie Oakley
AOakley@Discoveryed.com
1-800-323-9084

Experience Learning

www.experience-learning.org
Vicki Fenwick-Judy
vfenwick@experiencelearning.org
Becca Myers
rmyers@experiencelearning.org
(304) 606-3233

Exhibitors (continued)

Fablicator

www.fablicator.com
Jeff McGinley
sales@fablicator.com
(833) 439-3230

Great Minds

<https://greatminds.org/>
Diana DiPofi
Diana.DiPofi@greatminds.org
(202) 223-1854

Houghton Mifflin Harcourt

<https://www.hmhco.com/>
Nicole Accordino
nicol.accordino@hmhco.com
Margo Dye
margo.dye@hmhco.com

McGraw Hill

<https://www.mheducation.com/>
Wendy Beltran
wendy.beltran@mheducation.com

Savvas Learning Company

<https://www.savvas.com/>
Amanda Ansell
amanda.ansell@savvas.com

Texas Instruments

<https://www.ti.com/>
Michelle Grooms
mgrooms@ti.com
1-855-226-3113

Non-Profit Vendors

Non-Profit Exhibitor	Website
Alderson Broaddus	ab.edu
Concord University	https://www.concord.edu/
First2 Network	https://first2network.org/
NASA IV&V ERC/Fairmont State University	nasaivverc.org
W.V. Dept. of Environmental Protection	dep.wv.gov
West Virginia University	wvu.edu
WV SPOT	wvspot.org

Plan to join us for Future Conferences

October 27th-29th, 2022_____ Canaan Valley Resort
Canaan Valley, WV



Special Thanks

This conference would not be possible without the above and beyond actions of many individuals and organizations. Please make an effort to give special thanks to:

- WV SPACE GRANT CONSORTIUM for providing the Induction Grant scholarships for 19 teachers to attend the conference.
- EARTH & SPACE SCIENCE (ESS) PASSPORT GRANT for sponsoring the conference bags.
- FOSS/ Delta Education for providing the name badge holders
- Fablicator and NASA IV&V ERC for sponsoring the programs.
- WVSTA for sponsoring Breaks.
- PAEMST for sponsoring the Dessert Reception.
- FAIRMONT STATE UNIVERSITY for printing registration materials.
- A.J. Fields for his tireless work on the registration materials.
- ALL THE GENEROUS VENDORS that supplied door prizes.
- ALL OF THE PRESENTERS who prepared and shared their passion for science education;
- ALL who made tours possible and helped to make this a great conference; and
- ALL of you who attended, because without attendees, there is no conference!

A state conference is a huge undertaking and is the work of many people. The cooperation and helping hands that have been extended to WVSTA and the conference committee have been invaluable. Thank you to everyone who made this conference possible.

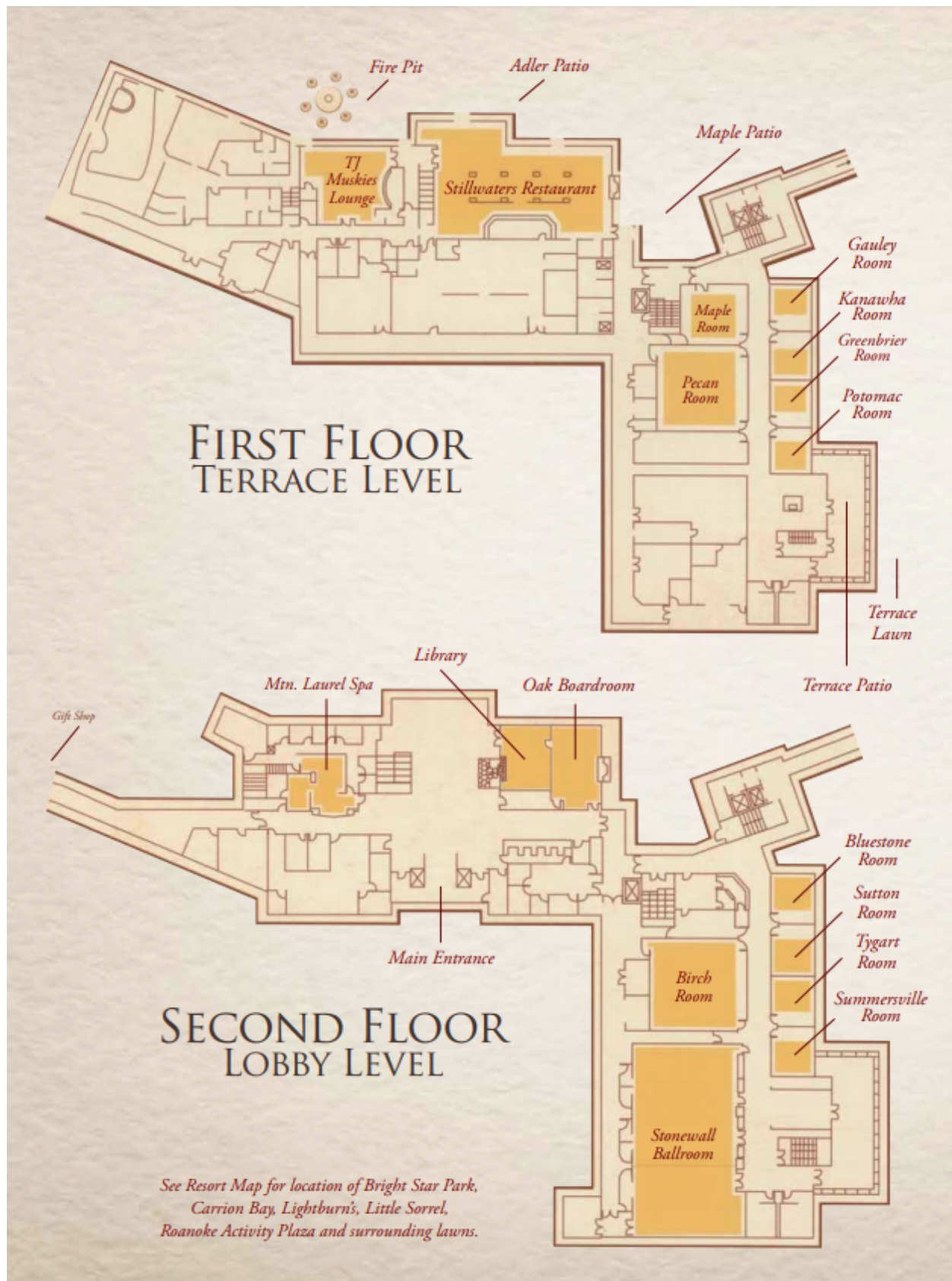
*CERTIFICATE OF
ATTENDANCE*

Presented to

**for Participation in the
West Virginia Science Teachers Association Conference
October 28-30, 2021
Roanoke, WV**

**Josh Revels
2020-22 WVSTA President**

**Dr. Deb Hemler
WVSTA Executive Director**





NASA West Virginia

Space Grant Consortium

WVSPACEGRANT.ORG

West Virginia University, 341 Mineral Resources Building
Morgantown, WV 26506
(304) 293-4099

STEM Grant Opportunities for Educators

- ❖ K-12 Professional & Curriculum Development
- ❖ Extension and Public Outreach Program

Research Development Opportunities for Faculty

- ❖ Research Initiation Grant
- ❖ College Course Development

Applications will open in Nov. for 2022-2023 funding:

Deadline to apply- Monday, March 7, 2022

For more information please visit our website:
WVSPACEGRANT.ORG

or

Email: candy.cordwell@mail.wvu.edu

Dedicated to building research infrastructure and the promotion of science, technology, engineering and math (STEM) education in WV

Consortium Affiliates

West Virginia University (Lead)
Bethany College
Bluefield State College
Clay Center for the Arts and Sciences of WV
Community and Technical College System of WV
Fairmont State University
Glennville State College
Green Bank Observatory
Marshall University
NASA Katherine Johnson IV &V Facility
Polyhedron Learning Media, Inc.
Shepherd University
West Liberty University
WV High Technology Consortium Foundation
West Virginia State University
WVU Institute of Technology
West Virginia Wesleyan College
Wheeling University

Thank you NASA WVSGC for funding the “New Science Teacher Induction and NGSS Professional Development” grant, a K-12 Professional and Curriculum Development Program which provided registrations & rooms for 19 in-service and preservice teachers at this year’s conference!

NASA WVSGC

Dr. Melanie Page, Director
Email: Melanie.Page@mail.wvu.edu

Candy Cordwell, Assistant Director
Email: Candy.Cordwell@mail.wvu.edu

www.wvspacegrant.org

Be sure to like, follow and add us!



Facebook.com/WVSGC



Twitter.com/NASAWVSGC