

The Newsletter of The Wisconsin Society of Science Teachers

Promoting the Improvement of Science Instruction in Wisconsin

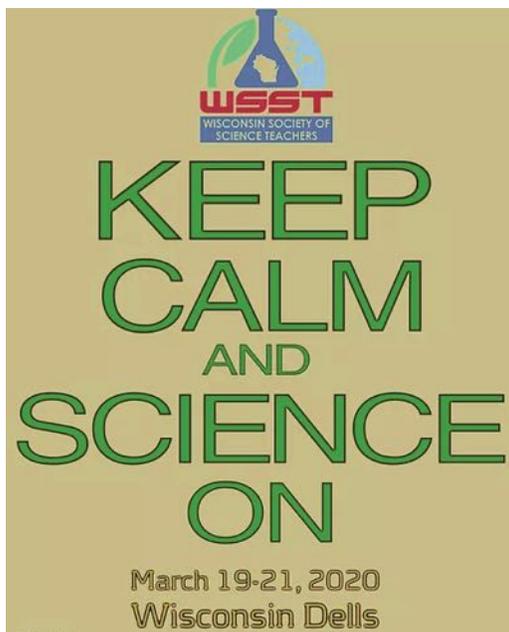


Spring 2020 Vol. 61, #4

WSST 2020 Annual Conference: **From the President** **Keep Calm and Science On**

By Karyl Rosenberg and Crystal Schalliol

We were hoping to write a pleasant and proud summary of the 2020 WSST conference as our last newsletter article during the year of our “co-chair-ship”, but alas that was not to be. On March 12, the coronavirus pandemic put the state of Wisconsin into emergency mode and caused us to cancel the conference, the first time that has



happened in the history of our organization. Needless to say, it was not what anyone would have wanted or even thought of until now, but it was what needed to be done and we are happy to say that it was handled in a rational and cautious way that was fair and positive for all affected.

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WSST President, Matt Lindsey

As we continue to teach from home, I would like to take the time to thank some groups and individuals. First and foremost, thank you, to Ray Scolavino for his dedication and service to WSST as the President-Elect, President, and now Retiring President. Thank you for your guidance and tutelage over the years, the discussions about fermented beverages, and being a listening ear when needed. I would also like to thank Beth Allcox for her years of service as a District Director and I know she will continue to serve the organization.

Next I would like to thank the 2020 Conference Committee and their chairs, Karyl Rosenberg and Crystal Schalliol, for all of your hard work, dedication, and sacrifice to put together an awesome conference. It saddened the Executive Board (including me) greatly that we needed to make the decision to cancel the conference. Thank you to Michelle Griffin-Wenzel and Kevin Niemi for your tireless hours

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The Wisconsin Society of Science Teachers

Our Mission:

Promoting, supporting and improving science education in the state of Wisconsin.

Our Vision:

The Wisconsin Society of Science Teachers will carry out its mission of promoting, supporting and improving science education in the state of Wisconsin by providing leadership, advocacy and programs to enhance the teaching and learning of science.

WSST Directory, 2019-2020

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WSELA

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WESTA

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Karyl Rosenberg & Crystal Schalliol, Wisconsin Dells 2020
 Connie Rauterkus & Shelly Rudnick-Peterson, Appleton 2021

WSST Conference Director

Vacant

WSST Vendor Coordinator

Rodney Dymesich

WSST Newsletter Archive

Visit www.wsst.org/newsletter to download past issues of the WSST newsletter. Available from 2002, all newsletters are in Adobe PDF format.

	Vol 55 (2013-2014)
	Vol 56 (2014-2015)
	Vol 57 (2015-2016)
	Vol 58 (2016-2017)
	Vol 59 (2017-2018)



SHARE YOUR THOUGHTS.

To submit a letter to the WSST Newsletter, send your thoughts via e-mail to newsletter@wsst.org Content may be edited for length, clarity and appropriateness.

Conference

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Despite the previous facts, it is absolutely necessary to recognize and thank our amazing committee for all their efforts during the past year. These folks have contributed in big and small ways to plan an event that would have been fantastic.

We hope that they will be willing to be part of future conference planning teams, because their attitude and skills made the co-chairs' jobs so much easier.

- Matt Lindsey: WSST President
- Kevin Niemi: WSST Chief Financial Officer
- Rod Dymesich: Vendor Coordinator
- Stacey Strandberg, Kirsten Wiesneski: Vendor Relations
- Amy Fassler, Karen Mesmer, Andrew Petto: Field Trip Planning
- Michelle Griffin-Wenzel, Mary Caucutt: Guest Speakers
- Deanna McClung: Primary Conference Scheduling
- Kristin Michalski: Online proposal process and scheduling
- Julie Fitzpatrick: Website-based communications
- Andrew Petto, Shelly Rudnick-Peterson: Printed Program development
- Greg Franzen, Jennifer Bault: Social events planning
- Ray Scolavino: Exploratorium coordination
- Dennis Rohr: Rock Raffle coordination
- Kevin Anderson: DPI Contact
- Julie Lundeen: Conference theme
- Tanzeem Ali, Barb Lukaszewski, Gretchen Watkins: Behind-the-scenes efforts
- Shelly Rudnick-Peterson, Connie Rauterkus: 2021 WSST conference co-chairs
- Cindy Skinner: Co-chair Mentor

We also want to thank Ruby Dow and Bart Kondej, our Kalahari Resort contact people. They were always there to answer any of our questions, no matter how weird they were. Even when the emergency led to cancellation, they were kin, caring, and totally respectful of our needs.

We recommend that when the emergency is over and you and your families want to travel again to consider staying at the Kalahari Resort; they are truly exemplary Wisconsin corporate citizens who put the interests of their customers first, thus deserving of our patronage.

Please note the following message from WSST CFO Kevin Niemi: *The refund process has begun for the conference. All credit card transaction refunds finished. If you have not received confirmation via email, let me know. The refunding of registrations paid for with a check will take more time for me to process. I will send checks to your home address if I have it in our database if you personally paid for your registration. If not, I will have to mail it to your school. I do not know of any other solution as I know many of you may be locked out of your schools, which may make getting your check a challenge. School checks will be sent to a central school district address. Again, I hope the checks get in the correct hands for processing. If there is a way for you to communicate this to your business staff, that may help. One other note for those of you who ordered a t-shirt. Karyl will send them out soon and again we try for your home address. Their cost of \$15 was deducted from your refund. Please send your home address to Karyl Rosenberg at karylrosenberg@gmail.com, as she has your shirts and wants to get your shirts to you all as soon as possible.*

Once again, we were very sorry to cancel the 2020 WSST Conference but appreciate your continued support in all our efforts to make everyone whole. “Keep Calm and Science On” is the motto of the moment, but remember, in 2021 we will be “Full STEAM Ahead” in Appleton and hope to see everyone there!



President

continued from page 1 **Changes to the Frank Zuerner**

Scholarship

By Terry Schwaller, Awards and Recognition

working on the conference from name badges, updating memberships, and finally having to refund everyone's conference registration. We know that was no small task. To the Awards and Recognition Committee and the Foundation, thank you for selecting individuals for awards and grants! I know the recipients will be grateful and we will celebrate our award winners in the future.

As an organization as we continue to transverse this uncharted landscape, we are looking for ways to help our members. We recently hosted a virtual meeting that had almost 40 individuals attend to discuss what has been working and what has not been working while teaching virtually. There was a lot of great discussion that will be leading to more conversations in the future that will be specific to elementary, middle school, or to 6-12 specialty groups (Life Science, Earth & Space Science, Physical Science) to discuss and share best practices and resources. Keep posted for notifications about these meetings coming up.

Lastly, please make sure that you are taking time for yourself and your family during this time. I know personally it is easy to become lost in searching and creating interactive and engaging activities for your students or helping your child(ren) with their homework. Take some time to relax, check in on your students, check in on family members, and know that we all will get through this together!

The Frank Zuerner Scholarship has been a staple of the WSST Spring Conference for many years now. Teachers in their first few years of the profession are nominated and selected for the scholarship, which awards them with free attendance to the Spring Conference. It was Frank Zuerner's belief that the sooner a new educator makes connections with other professionals and engages in professional development, the more likely they are to stay in the profession and be successful. Therefore, he started this scholarship program as we know it.

Starting this year, we have expanded upon that idea. Beginning with our 2020 Frank Zuerner Scholarship recipients, each individual will also be awarded an additional \$500 that they can use towards their professional development (up until the Fall Semester, the year after being awarded). The \$500 award can be used to join professional societies, take classes, attend workshops, attend conferences, and/or purchase literature related to science education or education in general. It is the hope of the Awards and Recognitions Committee that this additional funding furthers Frank Zuerner's vision to support new science educators.



WSST NEWS

Foundation Grant Awards

The WSST Foundation is proud to present the following 2020 grant winners that would have been acknowledged at the 2020 Milt Pella Banquet.

Byerly Grant

The Byerly is a memorial to Don Byerly. The grant, in the amount of \$500.00 is to be used to improve the science classroom experience for students.

Julie Lundeen, Cashton High School
Modeling Whiteboards

Founders Grant

This \$1000 grant can be used to reimburse costs of professional development (including graduate coursework for WSST members, professional development fees for WSST members, materials, or other costs related to a member's professional learning for WSST members).

Zong Vang, Oshkosh Area School District
*Attendance at Camp Making
Sense of SCIENCE*

Founders Grant for Pre-service Teachers

These grants of \$500 each will pay for two pre-service teachers in elementary education or secondary science education to attend the upcoming WSST conference, to go towards registration for the conference, two hotel nights, and the Friday luncheon and banquet.

Ashley Hall, UW-LaCrosse
Faith Valentine, UW-LaCrosse

Foundation STEM Grant

These grants, up to \$1,000 each, are to be used to improve STEM (science, technology, engineering or maths) learning for science students through the purchase of innovative technology hardware or other STEM equipment tied to a

specific project or curricular topic.

Nancy Margis, Olympia Brown
Elementary School, Racine

Milt Pella Grants

The Milt Pella Grant supports the professional activities of our members.

Michell Howe, Lodi Middle School
Aquaponics

Stephanie Baker, Wonewoc-Center
Elementary
Scientist Growth Set

Lisa Swaney, Director for the School
District of Waukesha Horwitz-DeRemer
Planetarium
After School Astronomy Club

Brianna Phernetton, Frederic High School
Encouraging Girls in STEM

Mark Dickson, Monroe High School
Bluetooth printers





2020 MILTON O. PELLA AWARDS PROGRAM



EXCELLENCE IN SCIENCE EDUCATION



Sarah Adumat
Oshkosh SD



SuJean Choi
Marquette Univ.



Fran Grant
Grafton HS



Courtney Knutson
Oshkosh SD



Amy Workman
Baraboo HS

FRANK ZUERNER NEW TEACHER SCHOLARSHIP

FRIEND OF SCIENCE



Diane Munzenmaier
Program Director

Center for BioMolecular Modeling - MSOE

ADMINISTRATOR AWARD



Julie Conrad
Oshkosh SD

RON GIBBS AWARD

Award to be presented at 2021 banquet

Know of an educator deserving of an award WSST offers? Please visit www.wsst.org, click on the awards tab to learn more

WSST Elections Results

By Dan Nelson, Nominations and Elections

I wanted to share with you the results from our WSST elections this February. This year we had the positions of President-Elect, Secretary, District 2 Director, as well as District 3 Director up for election. We had some awesome individuals step up to the nominating table, and I am now proud to announce the results:

President Elect-Jay Gullickson

Secretary-Stephanie Baker

District 2 Director-Brad Wysocki

District 3 Director-Dennis Rohr

Thank you to all who stepped up and dedicated some of your time to ensure our science education remains strong and vibrant in our great state!

Usually, we share the results at the annual conference banquet and discuss future elections. For next year (2021) we will be looking for nominees to take the Director positions for District 5, 6, and 7. I understand that some of you may be hesitant to nominate someone or even yourself. If you would ever like to have a conversation on what role certain positions are responsible for, please reach out to me or others who have experience in those elected posts.

Take care, be safe, and through these challenging times, we will be stronger, wiser, and more cognizant of why science education is so valuable to all of us.



**WISCONSIN
SCIENCE OLYMPIAD**

Science Olympiad is the premier STEM competition in the United States with over 8000 teams and 450 tournaments in 50 states. There are over 100 Wisconsin school districts involved in Wisconsin Science Olympiad.

Is your community experiencing the fun and excitement of Science Olympiad?

**Learn more at:
wisconsinso.org and soinc.org**

WSST Conference Special
New teams receive a free two-year membership!

Science Olympiad brings together teachers, administration, students, parents, community members, universities and STEM industry members in collaboration to support excellence in STEM learning and recognition.

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Earth Day 2020

By Mandela Barnes, Lt. Governor of WI



To Celebrate Earth Day, the WCEE asked Mandela Barnes for a reflection on Earth Day's 50th anniversary.

For 50 years, Earth Day has brought together people across the world to demonstrate support for environmental protection. But this year, things will most likely be different.

I write this essay just under a week after our administration issued a Safer at Home order in response to the COVID-19 pandemic. The spread of the coronavirus disease has disrupted our lives and left many feeling unsure and overwhelmed. The fear and anxiety we have about this disease, along with the hardships many of us are encountering—whether they be financial, medical, or others—show us that this pandemic is taking a toll on us in more than one way.

We are fortunate, though, that amid so much uncertainty, our Earth continues to provide us with daily solace. Solace in the form of fresh air we can step onto our porches and breathe, and sunlight that brightens our homes and nourishes our

plants. The many beautiful natural spaces our state has to offer can ease our minds and provide us with the land to physically and mentally care for our bodies.

Last week, I was fortunate enough to visit Governor Nelson State Park. A hike through the woods and some time on the shores of Lake Mendota eased my busy mind. It was evident that despite what is going on in the world, nature was following her course with little disruption and forging toward new growth and new life.

Our Earth is a powerful being. And even during our darkest hours, she continues to shine light. But we must remember that this is not promised. If we continue to disregard our environment and pollute our water and air, we will have nothing.

This is why I continue to work every day to be a champion for the environment. The work of the Governor's Task Force on Climate Change goes on and is moving forward developing policies that will protect and preserve Wisconsin's great assets.

While we may not be able to celebrate Earth Day the way we would have hoped, I encourage everyone to stay strong, stay vigilant, and continue to advocate for the planet and the people.

Sincerely,

Lieutenant Governor Mandela Barnes

WSST MEMBER SUBMISSIONS

HyperDocs - Providing a Roadmap for Differentiated, Accessible Learning

By Michelle Bartman, District 5 Director

“I don’t know what I’m supposed to do.” How many times did you hear that statement this spring as districts around Wisconsin adjusted instruction due to COVID19? Even with quality content, informational videos, and video conferencing meetings to help students succeed, clear organization of curriculum was certainly a prominent challenge.

One solution to help organize thoughtful, curated, digital curriculum is a hyperdoc. At their simplest, HyperDocs are Google Docs with resource links that provide easy to follow structure. However, HyperDocs can be significantly more meaningful than a Google Doc with links - they can provide a roadmap through learning cycles, and allow students to engage, explore, explain and elaborate at their own pace. They can provide new and creative ways of evaluating student understanding that doesn’t rely on traditional assessment techniques.

HyperDocs are an ideal medium for a flipped classroom; they can be used in or out of a classroom setting, for any grade level, and with any content. Well-

crafted HyperDocs can provide opportunities for differentiation for advanced learners, provide additional support for students who are struggling, allow meaningful options for students who have missed a good deal of instruction, or ensure student engagement when labs are off-limits due to guest teachers.

For an overview of HyperDocs, training materials, and a treasure trove of free HyperDocs, see <https://hyperdocs.co/> For an ‘ideas list’ of tools to be incorporated into HyperDocs, visit bit.ly/hyperdocedtechtools



SOUTH DAKOTA STATE UNIVERSITY
College of Natural Sciences

- Content courses focus on AP Chemistry content and provide rigorous foundational knowledge.
- Designed for in-service science teachers with a valid teacher’s license.
- Learning is about Discovery – Providing accessible graduate level coursework to enhance content knowledge and equip with tools to offer more substantial and memorable learning experiences in the classroom.
- Program requires 32 graduate level credits (24 credits offered via online distance learning).
- Last eight (8) credits are completed through two separate two week programs during the summer at SDSU’s main campus in Brookings SD.
- Peer interactions during content courses will provide opportunities to customize lesson plans, experiments, and strategies.
- Financial aid is available to all qualifying students enrolled in 5 or more credits each semester.

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SPECIALIZATION

CONTACT

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For more info visit: www.sdstate.edu/chem-ed



Just Breathe

By Kevin Anderson

In this time of stress and turmoil, I hope you're doing alright and finding some time for yourself and family/friend connections. Admittedly, everything is not awesome for me, but I'm finding some moments of joy.

Looking at [survey results](#) from a recent check on how people are doing, I'd say that most educators are facing significant challenges, but there are bright spots too. I find myself appreciating a few things...

I appreciated the [WSST virtual meet-up](#) with educators from around the state on April 9th (you'll want to skip the first 14 min on that recording and apologies that we can't record break-out rooms). I've had some meet-ups with other groups of educators too, and I realize I certainly miss options for socializing with people in-person. WSST leaders will be planning more meet-ups, so stay tuned.

I appreciate hearing that most districts are focusing on equity instead of grades. I have only heard from one educator who said they're doing grades as usual. More are pass/fail at the high school or general standards-based feedback at K-8 without grades.

I appreciate some national resources coming out. The Council of State Science Supervisors is working on some with various partners, which can be found [here](#). The National Science Teachers Association is also doing a variety of free things too, from Daily Dos to webinars and free membership. Check out www.nsta.org for more information.

I also appreciate more time to spend with my children, even if that's super stressful at times – I'm sure many of you are coordinating online learning for your students, your children, and all the regular home stuff too. Yikes!

Finally, if I can help you out, let me know. With dozens of meetings cancelled, I'm left with a bit more time to send people resources – kevin.anderson@dpi.wi.gov

Thoughts from an Online Educator

Brad Wysocki, District 2 Director

First a little background. I spent the previous 15 years teaching high school chemistry and physics in a typical fashion - a classroom. At the beginning of this school year I took on a new professional challenge - teaching science for an online virtual school. I guess you could say I was ahead of the curve. Now most of the education world has been forced into the online realm, and it is NOT easy. It hasn't been easy for me either, and I made the conscious decision to enter in. Believe me, I'm not an expert, but I do have some experiences and lessons I've learned that I would like to share with you as you continue to try and provide as much relevant educational opportunity as possible for your students.

- The first lesson I learned is to get comfortable giving up some control. We are all used to having everything prepped, planned, and scheduled down to the minute, when the bell rings, move to the next thing. As hard as it is for us to accept, that is just not the reality with online education, especially during this crisis time. Do the best you can to accept and embrace that.

- Work on thinking about your class, lessons, assignments, etc. in terms of weeks and not days. (Especially for middle and high school).

Students are no longer working on your class during the same 45 minute time frame every day, and you aren't there to look over their shoulder to make sure they are. Think about what essential tasks you would like students to complete over the course of a week and at times that work best for them.

- Determine essential tasks. What is important to keep their minds thinking? This is really hard, because we all believe that everything we do in our classroom is important, and it is. However when students are working independently and flexibly, we need to take that into consideration. What video should they watch? What questions should they answer? What evidence do I NEED to collect from them? This all goes back to the

first point - we have to give up some of the control we are used to.

- How can you encourage your students to “think” about science? Think about ways to engage them in the NGSS Science and Engineering Practices as well as the Cross cutting Concepts during this time. What problems can they solve, what phenomena can they think about, and what connections can they make while they are at home? This may be different from your traditional classroom content and curriculum, and that’s OK. Use this time to allow them to explore.

- Project based learning is great for online learners. What sort of engaging and genuine projects can be created by your students? Start with a prompt and see where it goes. Again, be prepared to give up some control and let the students impress you. The projects don’t need to be perfectly planned out - just start with something that can get them to start thinking, and leave it open ended. Of course, there may need to be some supports along the way, but again, give students the opportunity to explore and create on their own.

I’m sure you noticed that I provided way more questions than answers in the above remarks. That is by design! You are creative, skilled professionals. Plus, I know you’ve been bombarded with “resources” lately, so I didn’t want to just create a list for you. The truth is no one has the perfect answer for your situation, only you can create that, and you will! Will it be stressful, hard, and messy at times? You bet! But we are science teachers, and we can do it!

Final thought: GIVE YOURSELF PERMISSION TO FAIL. Teaching science online is very different, and all of our training and experiences in a classroom could not have prepared us for it. That’s OK, remember that a failed experiment is still a valuable experiment. Reflect, evaluate, and adjust. We are literally in the middle of the engineering cycle; how cool is that? I mean, how stressful is that? Give yourself the credit you deserve and just continue to do the absolute best job you are capable of doing!

If you would like to hear more about my

online teaching experiences, or would like a few more specific resources please contact me at brad@unlockedpotential.com I would also love to see and hear about the creative things you and your students come up with, please share that as well.

WSST Membership Update

*By Kevin Niemi and
Michelle Griffin-Wenzel*

Some of you may have noticed recent activity with your WSST membership account. Michelle Griffin-Wenzel and I are catching up on memberships related to the last conference in 2019. They were never updated after the conference reflecting your active status with WSST. We apologize for this oversight. Please email Kevin Niemi at kjniemi@wisc.edu if you have any questions.



Free (no, really free) Science Resources During the Pandemic

By Brian Bartel, District 6 Director

While there are many free websites and offers during the pandemic, I wanted to highlight a few free resources that don't require a login and are appropriate for various age levels.

Listen to Science Stories from Audible

Audible has released a select number of audio books for students to listen to with titles leveled for younger levels, tween and teen audiences. There are a number of science specific titles, like The Giants of Science Series: Marie Curie, Sigmund Freud, Isaac Newton, Leonardo da Vinci, Astrophysics for Young People in a Hurry by: Neil deGrasse Tyson, Gregory Mone, and Gabrielle de Cuir (and narrated by: LeVar Burton) and Flatland: A Romance of Many Dimensions by: Edwin A. Abbott.

One thing I particularly like about this resource is that it requires relatively low internet bandwidth to listen.

Find out more at stories.audible.com/discovery

NSTA's Science Interactive eBooks

No textbook at home? No problem! NSTA has made all of their interactive eBooks available for free during school closures. Titles are leveled for K-5, 6-12 and professional. Check out <https://www.nsta.org/ebooks/>



Listen to Lab Out Loud

The Lab Out Loud podcast (full disclosure, I am one of the hosts...) has been featuring a few episodes about teaching and learning during the pandemic. A recent post has highlighted some of our favorite science resources as well as

resources we have talked about in past episodes. In addition, we have been talking with scientists this season in a series called #ScientistOutLoud. These are perfect for students to listen to if they are interested in a science career. Check out www.laboutloud.com to listen now!

Learn Physical Science with Comics

Want to engage your students with science content in a graphic novel? C.A. Preece (author of CheMystery, A Chemistry Graphic Novel) has released Fire! Salt! Slime! for free. Check out bit.ly/fire_salt_slime to access and download each comic.

#ColourOurCollections

Sometimes coloring is the perfect companion to social isolation. Students (and teachers) can find free coloring sheets and books based on materials in collections from libraries, archives, and other cultural institutions around the world. Download, print and color away by visiting library.nyam.org/colorourcollections/

Scratch Coding activities from Vernier

Each of the free activities from www.vernier.com/remote-learning/coding-activities/ includes step-by-step instructions and sample code for students and educators. Each activity uses the free online Scratch Editor requiring no software installs.

Science News for Students

Science News for Students (www.sciencenews-forstudents.org) is an online publication dedicated to providing science news to learners (mainly ages 5-12). From Society for Science & the Public, Science News for Students helps to fulfill the Society's mission by connecting the latest in scientific research to learning in and out of the classroom.

Make sure to check out the Coronavirus Collection that includes pieces that help explain the virus to children and teach them coping mechanisms for the pandemic.

In addition, there are also some other great collections including Experiments from Home, Let's Learn About, and Explainers.

The story of how one teacher is tackling distance learning and what two critical elements you should know as an educator or parent

By Cindy Collins

On Friday, March 13, 2020, my job changed dramatically.

The news came with about one hour left in the school day that we would be teaching virtually and not be returning face to face with students until April 14 at the earliest. And now the situation has changed to "indefinitely". As anxiety and panic rose at the uncertain future, my fellow teachers and I did our best to pack up what we would need to either learn or to teach from home for the foreseeable future and left the building. There was no time for goodbyes, well wishes, or yearbook signing.

In an instant, I was in a position to re-imagine teaching and learning and to learn a whole new technological skill-set in about a week, as I learned I would be teaching AP Chemistry and General Chemistry from home via Distance Learning.

Imagine yourself teaching someone to drive without ever actually being in a car with them. Or coaching a basketball game, but never entering a gym with your team.

- How was I going to do this?
- What would be the two most vital elements for distance learning?

To discover the answer, I had to look back on my 16 years of teaching. My greatest pride as an educator is not the accolades of being one of the highest performing AP Chemistry teachers in the state or receiving a Teacher Tribute Award for Excellence in Teaching from Stanford University; it is the relationships I build with my students. While I did enjoy earning recognition but ask my former students, and you will learn, it is all about the relationship! A close second is not the content they learn from me, but the life-long skills that I have the opportunity and bless-

ing to instill in them as they move into adulthood. So that became my priority: relationships and skills.

As I was outwardly anxious in the last few minutes I would have with my students, one of them quietly came up to me and said, "It's OK, Mrs. Collins, you can do this. Use Design Thinking - we know how to solve problems and design solutions!" and she was right. You see, we've been approaching STEM in our General Chemistry course all year by using a method called Design Thinking. The students have tackled problems and designed solutions ranging from re-imagining a shopping cart to a wallet and to even, "How might we re-imagine school?" We've done this. I've got this. Design Thinking is not content; there is no textbook; there is no multiple-choice test at the end of the unit. It is a way of thinking.

The reality is that our K-12 students are likely preparing for a job that doesn't yet exist. According to the article on "The 10 skills, you need to thrive in the Fourth Industrial Revolution" in the World Economic Report, the top three most valued skills are:

1. Complex Problem Solving
2. Critical Thinking
3. Creativity

This is why now more than ever, teaching STEM (science, technology, engineering, and mathematics) skills is vital to our students' futures. And while I tackled my own problem-solving into how to be successful at "distance teaching", I started to ideate (generate as many ideas as possible) on how I could continue my STEM-focused curriculum from home.

Ideating, which is a Design Thinking step, has no bounds; that's the beauty of it. As humans, we are often faced with problems that do not have solutions. Yet. Encouraging kids to use their moonshot thinking, to think of the wildest idea they can, and then run with it is how we're going to solve the world's problems. My ideas became worldly; we are facing a world pandemic, one like we've never seen before in our generation, and the kids are facing experiences as they've never had before by virtue of illness or

isolation.

So, their first project from home won't be to build a marshmallow and spaghetti noodle tower or make Borax crystal structures (although those are great STEM activities for at-home kids), it will be to use Design Thinking to tackle the problem and design solutions to one of the following questions:

- How might we help someone at risk during this time to feel connected and safe?
- How might we positively change the narrative of the current situation?
- How might we stay connected to our family and friends during the safer-at-home order?
- How might we create a way to increase the safety of those who need to leave their house for essential business?

It comes down to relationships, guiding students to recognize that their relationship with others, with their neighbors, and with strangers all over the world matters and is essential moreover, that their ideas matter that their solutions are important. They play a role in a broader pic-

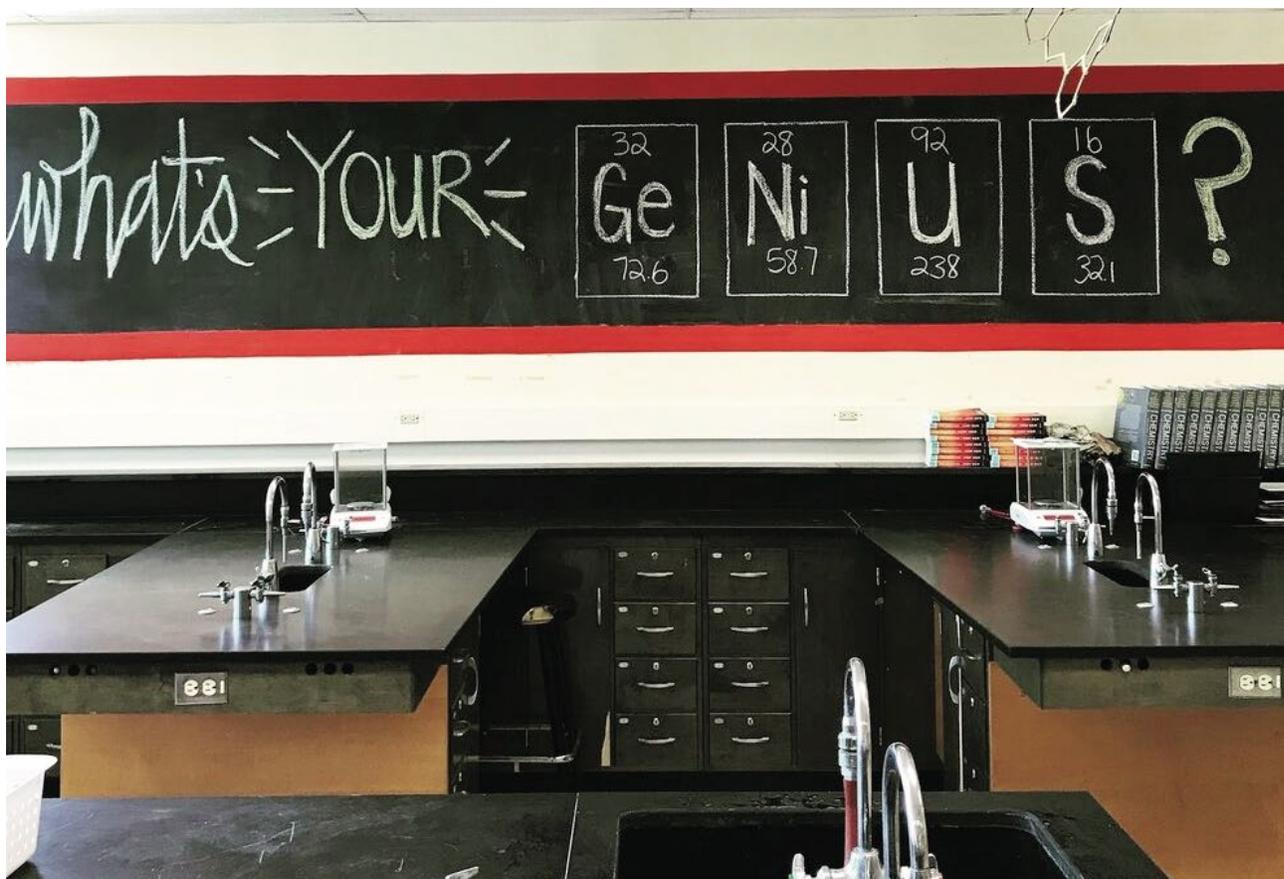
ture of a Global Society. It's about "we", we are in this together.

I see it as my global responsibility to offer learning opportunities for them to collaborate and to solve complex, real-life problems. To flex their moonshot thinking while learning how to be responsible global citizens. We must teach how to appropriately seek answers in the vast and dynamic cosmos held behind their screens. And, our children must learn how to fail and to get back up and try again.

Why? Because that is what the modern world expects from them and what it expects from us as their teachers, parents, and mentors. But remember we don't have to do this in isolation. We are all in this together!

I leave you with this at home STEM activity and an invitation to connect with me on instagram @schoolofcindy.

Originally published on www.stemforward.org/blog-april-2020. Reprinted with permission.



SCIENCE NEWS AND OPPORTUNITIES

Advanced Placement® Teacher Training Institute at the University of Iowa

The Advanced Placement® Teacher Training Institute (APTTI) provides comprehensive preparation for developing and teaching an AP® course. APTTI takes place June 29 – July 2, 2020 at the University of Iowa's Belin-Blank Center for Gifted Education and Talent Development.

Each workshop includes: preparation of course syllabi and lesson plans; examples of classroom materials applicable to the particular AP® subject area; and preparation for the new College Board Audit, required for every AP® teacher. The AP® Teacher Training Institute is designed for teachers who want to learn to teach AP® courses in one of the content areas, current AP® teachers, and educators who wish to strengthen the core curriculum.

Courses offered in 2020 include: AP® Biology, AP® Calculus AB, AP® English Language & Composition, AP® English Literature & Composition, AP® U.S. History, and AP® U.S. Government. For more information, visit www.belinblank.org/aptti or email aptti@belinblank.org

Become a Water Action Volunteer

By Peggy Compton

Water Action Volunteers (WAV) is Wisconsin's citizen science program for monitoring water quality in local streams. WAV has teacher-specific resources that might be of interest to you, including, an "In the Classroom" page on our website:

<https://wateractionvolunteers.org/get-involved/in-the-classroom/>

Also new this year is the Online Introduction to WAV Baseline Monitoring. This online course covers the science behind six "baseline" stream health assessments and an overview of

the WAV monitoring methods for these assessments. There is a specific outline for use in a classroom (see Module 2, "Taking Stock") and a corresponding "Knowledge Check" that was designed for student/classroom use of the course. Check it out here:

<https://canvas.wisc.edu/courses/172203>

Additionally, as WAV's Statewide Coordinator, I would like to communicate with teachers about WAV and related resources and opportunities. If you would like to get occasional updates and informational emails, use this link to share your contact information with me: https://uwmadison.co1.qualtrics.com/jfe/form/SV_9RcWqhol19TBXW5

I hope to hear from you; please contact me at peggy.compton@wisc.edu

Modeling Opportunities

The Modeling Method has been intentionally developed to correct many weaknesses of the lecture-demonstration method of instruction typically seen in STEM classrooms. These weaknesses include the fragmentation of knowledge, student passivity, and the persistence of naive beliefs about the physical world. Scientists and mathematicians learn by doing: they construct and deploy models of the real world and test their ability to predict new phenomena. Our classrooms focus upon turning students into scientists to replicate this process. We focus upon adhering to systematic and organized objectives in all STEM content areas. This makes concepts more meaningful to students, and also reflects the true nature of scientific and mathematical practice.

For this summer, there are modeling workshops offered in Iowa, Minnesota and Wisconsin (see insert pages 18-19). For a complete list of national Modeling Workshops (which is constantly updated) please go to: <https://www.modelinginstruction.org/professional-development/upcoming-workshops/summer-2020/>



Summer Field Experience * August 3-6, 2020

Menominee Adventure

Integrated science with real world connections, plus a lot of fun!!



Highlights:

- * Hiking rock outcrops and collecting
- * White water rafting (Class IV rapids)
- * Mining history (underground mine tour; largest pump in North America)
- * Menominee area geology (volcanic, tectonic, faulting, minerals)
- * Erosional features (oxbow lakes, river meanders, drumlin fields)
- * New Back Forty Mine under development (metal sulfides; environment, hydrology)

Meet with fellow educators and scientists; fun outdoor activities; learn more about science in our natural world. Plus, it is designed to be family friendly.

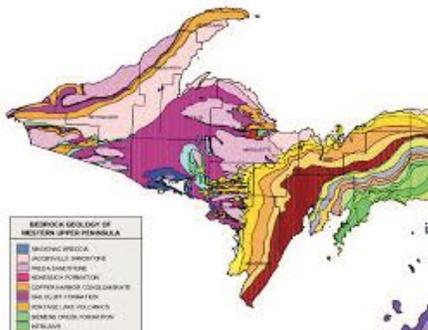
Registration will include a couple of lunches, mine museum and underground mine tour, field experiences, and a field trip manual with maps.

White-water rafting is additional option (with alternatives for those not rafting). Housing will be arranged on your own. Recommendations will be shared.



Iron Mountain - Marietta/Menominee – Escanaba

Register by going to the MESTA web site:
<http://www.mestarocks.org>



For more information contact
Dave Chapman
chapmad@comcast.net



Summer Modeling Institute in Freshman Physics



July 13th-24th, 2020
Monday-Friday 8:00-4:00

Neenah High School
1275 Tullar Rd
Neenah, WI 54956



Workshop Leader:

Dr. Timothy Burgess DrTimCBurgess@gmail.com

Local Coordinator:

Scott Hertting shertting@neenah.k12wi.us

Freshman Physics – Mechanics

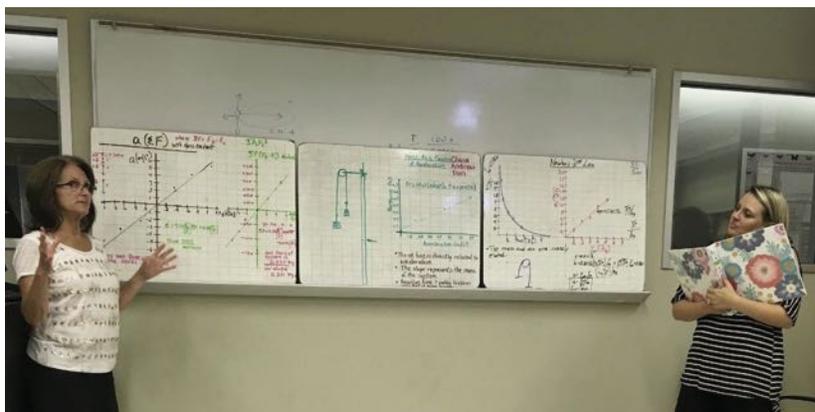
A Physics Modeling Workshop is organized at Neenah HS with an emphasis on Physics First, July 13-24, 2020.

Dr. Tim Burgess will take participants through several “modeling cycles” in hands-on/minds-on experiences that involve scientific reasoning, linear kinematics and dynamics. Working closely with colleagues, participants will practice assisting students in designing and implementing experiments, reasoning from the gathered data and then developing, modifying, validating and deploying scientific models.

Modeling Instruction™

Modeling Instruction™ helps teachers attain knowledge, skills and experience needed to benefit students and is the only high school science program recognized as *Exemplary* by the U.S. Department of Education. Modeling Instruction™ corrects many weaknesses of the traditional lecture/demonstration method, including fragmentation of knowledge, student passivity and persistence of naive beliefs about the physical world. Unlike the traditional approach, in which students passively accept an endless stream of seemingly unrelated topics, Modeling Instruction™ applies structured inquiry techniques around a small number of scientific models, thus making the course coherent. Students learn science as scientists do – by *doing* science. When modeling, students:

- are encouraged to think scientifically by experimenting, collecting and analyzing data, communicating findings & drawing conclusions
- use the basic skills and practices of mathematical modeling, proportional reasoning, quantitative estimation and technology-enabled data collection
- use, test and validate student-created mental models
- evaluate and discard incorrect naïve concepts
- demonstrate improved reasoning as measured on numerous standardized assessments.



The National Science Foundation, Department of Education and independent studies support the assertion that modeling instruction raises the level of the science learned. More information on modeling instruction is available at: <http://modelinginstruction.org/> Published research on the effectiveness of modeling instruction is available at: <https://www.modelinginstruction.org/effective/publications/>

Workshop Leader Dr. Tim Burgess

Dr. Burgess has been modeling since 1997 and has led numerous Modeling Physics Workshops for more than 16 years in Arizona, Tennessee, Mississippi, California and Alabama. He is a lifetime member of the American Modeling Teachers Association. Tim has won numerous awards in science teaching, was a Physics Specialist for the Alabama Science in Motion program, has read Physics Exams for the College Board and has authored articles in the "The Physics Teacher." Tim has worked in urban public high schools, independent private and Catholic high schools for four decades. In his last position as a department chair, he oversaw a highly successful transition to "Physics First" as the new science sequence at his present school (and the positive impact that it had!).

Registration

- Register at <https://www.eweblife.com/prm/AMTA/calendar/event?event=2155>
- Registration fee is \$500 for 2 weeks on a first-come basis
- Includes all curriculum materials with copying privileges
- 60 hours of professional development
- Network of local physics teachers with whom to collaborate
- Enrollment is limited
- Registration deadline is May 18th

Graduate Credit

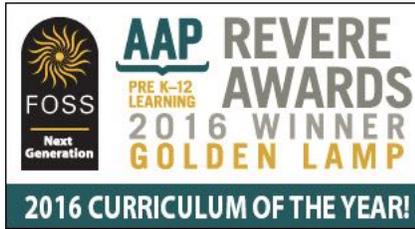
Up to 4 hours of graduate credit from University of Pacific can be obtained upon the completion of the workshop at \$79/credit hour. If you are interested in getting graduate-level credits, information will be shared on the first day of the workshop.

Housing

Recommendations for accommodations are available upon request. Please contact Scott Hertting (shertting@neenah.k12.wi.us) for more information.

Funding

Funding resources are at <http://modeling.asu.edu/Projects-Resources.html>; scroll down to "Grants for Instructional Technology, Improved Instruction, Modeling Workshops".



WSST Madison Mallards Game – Sponsored By Foss
Mallards vs. Wisconsin Rapids Rafters

When: Saturday, August 1st

First pitch: 6:35 p.m. (tailgating information will be sent out later)

Cost: \$20.00

Cost includes:

- Dugout seating by the third baseline
- **All-You-Can-Eat** Burgers, brats, hotdogs, cranberry chicken salad sandwiches, grilled chicken sandwiches, specialty brats, veggie burgers, potato salad, coleslaw and chips. Buffet starts at game time and runs thru the 6th inning with snacks available throughout the game
- Bottomless Pepsi products and bottle water
- Three tabs to be used for beer, spiked seltzers, wine or kids games

Registration deadline: We have 20 tickets—get them while supplies last!!!!

Please complete the information below. Detach and send to:

WSST-Mallards Game
 c/o Ray Scolavino
 N8876 Townline Rd
 East Troy, WI 53120

For more info contact rscali3@yahoo.com or call 414-460-0746. Make checks to WSST.

WSST Member Name (s)	
Address	
City/State/Zip Code	
Email (please print clearly)	

Number of Adults _____

Number of Children _____

Total # of Tickets requested _____

Amount Enclosed _____

Betelgeuse and the Crab Nebula: Stellar Death and Rebirth

By David Prosper

What happens when a star dies? Stargazers are paying close attention to the red giant star Betelgeuse since it recently dimmed in brightness, causing speculation that it may soon end in a brilliant supernova. While it likely won't explode quite yet, we can preview its fate by observing the nearby Crab Nebula.

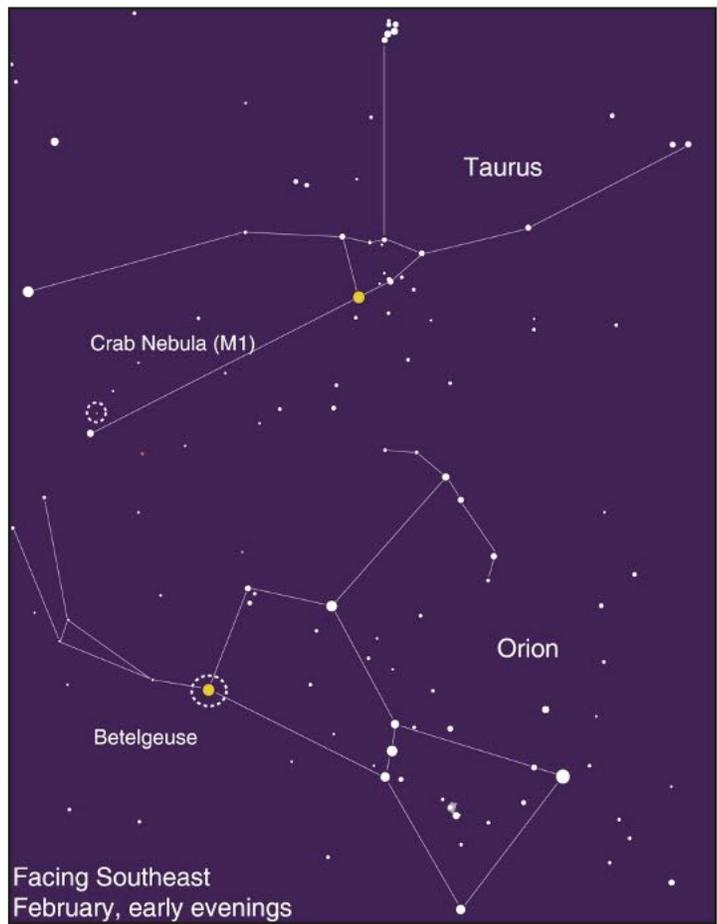
Betelgeuse, despite its recent dimming, is still easy to find as the red-hued shoulder star of Orion. A known variable star, Betelgeuse usually competes for the position of the brightest star in Orion with brilliant blue-white Rigel, but recently its brightness has faded to below that of nearby Aldebaran, in Taurus. Betelgeuse is a young star, estimated to be a few million years old, but due to its giant size it leads a fast and furious life. This massive star, known as a supergiant, exhausted the hydrogen fuel in its core and began to fuse helium instead, which caused the outer layers of the star to cool and swell dramatically in size. Betelgeuse is one of the only stars for which we have any kind of detailed surface observations due to its huge size – somewhere between the diameter of the orbits of Mars and Jupiter - and relatively close distance of about 642 light-years. Betelgeuse is also a “runaway star,” with its remarkable speed possibly triggered by merging with a smaller companion star. If that is the case, Betelgeuse may actually have millions of years left! So, Betelgeuse may not explode soon after all; or it might explode tomorrow! We have much more to learn about this intriguing star.

The Crab Nebula (M1) is relatively close to Betelgeuse in the sky, in the nearby constellation of Taurus. Its ghostly, spidery gas clouds result from a massive explosion; a supernova observed by astronomers in 1054! A backyard telescope allows you to see some details, but only advanced telescopes reveal the rapidly spinning neutron star found in its center: the last stellar remnant from that cataclysmic event. These gas clouds were created during the giant star's violent demise and expand ever outward to enrich the universe with heavy elements like silicon, iron, and nickel. These element-rich clouds are like a cosmic fertilizer, making rocky

planets like our own Earth possible. Supernova also send out powerful shock waves that help trigger star formation. In fact, if it wasn't for a long-ago supernova, our solar system - along with all of us - wouldn't exist! You can learn much more about the Crab Nebula and its neutron star in a new video from NASA's Universe of Learning, created from observations by the Great Observatories of Hubble, Chandra, and Spitzer: bit.ly/CrabNebulaVisual

Our last three articles covered the life cycle of stars from observing two neighboring constellations: Orion and Taurus! Our stargazing took us to the “baby stars” found in the stellar nursery of the Orion Nebula, onwards to the teenage stars of the Pleiades and young adult stars of the Hyades, and ended with dying Betelgeuse and the stellar corpse of the Crab Nebula. Want to know more about the life cycle of stars? Explore stellar evolution with “The Lives of Stars” activity and handout: bit.ly/starlifeanddeath

Check out NASA's most up to date observations of supernova and their remains at nasa.gov



Facing Southeast
February, early evenings

Spot Betelgeuse and the Crab Nebula after sunset! A telescope is needed to spot the ghostly Crab.



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WSST Calendar

WSST Summer Board Meeting
Location TBD Summer, 2020
2021 WSST Conference March 11-13, 2021
Appleton

2019-2020 Newsletter Deadlines

Fall: Friday, August 16, 2019
Winter*: Friday, November 8, 2019
Spring: Friday, January 17, 2020
Summer*: Friday, April 10, 2020
**These will be digital issues only*

More WSST Information can be found at www.wsst.org