

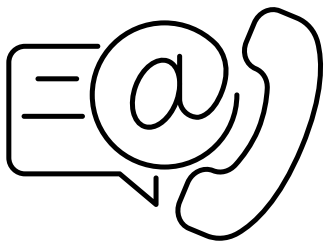


Gretchen Hollingsworth

A PORTFOLIO OF
INNOVATION



Gretchen Hollingsworth



Phone: 678-485-1172

ghollingsworth@barrow.k12.ga.us

Expertise

- **Over 20 years Teaching Experience**
- **2022-Present BASA Innovative Learning Coach**
- **2021-Present Sims Academy Digital Coach**
- **2022 BASA Teacher of the Year Nominee**
- **2020-2021 BASA SGT Chair**
- **2021 Georgia STEM Scholar**
- **2015 and 2022 UGA CLASE Instructional Conversations Summer Institute**
- **2019-2020 RMS Digital Coach**
- **2019-2020 BCSS Digital Content Development**
- **2019 National Geographic Educator**
- **2016-2020 BCSS Teacher Leader**
- **2016-2020 Arts NOW Teacher Pilot Program**
- **2016-2017 RMS Teacher of the Year and BCSS Finalist**
- **PBIS Trained**
- **Certified in 6-12 ELA & Science, Gifted, ESOL**

Education

University of Georgia

ED.S. Instructional Technology

University of Phoenix

M.Ed. Curriculum and Instruction

Marietta College

B.A. English

Experience

- **2022-Present: BASA Innovative Learning Coach**
- **2022-Present: Foothills Barrow-Sims Writing Coach**
- **2021-Present Sims Digital Coach**
- **2020-2021: BASA 8th Science, Honors Physical Science, and 9th/10th ELA Teacher**
- **2004-2020: Russell Middle School - 6-8 Reading Applications, 6-7 Advanced Science, 7 ELA (served in regular, co-taught, and gifted classrooms).**
- **2000-2003: Swiss Hills Career Center 11-12 Applied Communications/ELA Teacher**

STEM Integration: SIMOC in the Science Classroom

I have collaborated with the SIMOC team as well as the Computer Science Capstone Team at University of Arizona. This is an ongoing partnership started in 2020 that allows students to be citizen scientists through the use of the SIMOC Mars habitat simulator. My work with SIMOC in the classroom has resulted in my co-authoring of a paper presented at the 50th International Conference on Environmental Systems as well as presenting at a national webinar hosted by ELCA Schools Connect.

50th International Conference on Environmental Systems
12-15 July 2021

ICES-2021-275

SIMOC – A hi-fidelity simulation of off-world, human habitation and bioregenerative life support as a platform for citizen scientists and virtual classrooms

Kai Staats¹ and Ezio Melotti²
Over the Sun, LLC, Phoenix, AZ 85003

Tyson Brown³
National Geographic Society, Washington, DC 20036

Pete Barnes⁴
New Albany Intermediate, New Albany, Ohio 43054

Gretchen Hollingsworth⁵
Barrow Arts & Sciences Academy, Winder, GA 30680

Michael A. Pope⁶
Zama American Middle/High School, Japan



When COVID-19 turned the whole world upside down in the Winter of 2020, teachers around the world had to instantly redesign their entire curriculum to fit the needs of their students. During this time, I was fortunate enough to have the opportunity to beta test the SIMOC habitat simulator with my students. I had a decision to make: Do I "survive" the rest of the school year using digital worksheets and Google Meet lectures, or do I take a risk and integrate this cool tool in our learning? The fact is, I love integrating technology into my lessons, so my students were well prepared for at-home learning. We needed a new challenge and the SIMOC model was a perfect fit for us!

ELCA Schools Connect
Tuesday, October 26th, 4:00 pm Central
[Register to Attend](#)



Ready to Live on Mars?

An introduction for science teachers of Grades 5–12+ to SIMOC, a Scalable, Interactive Model of an Off-world Community.

SIMOC is a free, web-based resource for classroom use, hosted by National Geographic and based on Next Generation Science and Common Core Standards and 21st Century Skills.

This highly interactive tool engages young citizen scientists in the iterative process of science discovery as they balance the number of astronauts with air, water, food production, and waste recycling in the complicated endeavor of real-life habitat living. SIMOC is built upon authentic NASA data and aerospace research.

Our Presenters



Kai Staats, the **project lead** for SIMOC, is a veteran developer of platforms for science research and education. He was co-founder and CEO of the world-renowned Yellow Dog Linux operating system for ten years. The YDL platform was used extensively in Department of Energy, NASA, and University research across a full spectrum of sciences. With SIMOC, Kai has led the development of a unique computer software model that allows for unlimited creativity and exploration of complexity, and ultimately the design of a human habitat on Mars.



Gretchen Hollingsworth has devoted the past 20 years of her life to the field of teaching. She currently teaches high school English at Barrow Arts and Sciences Academy in Winder, Georgia. Recently, Gretchen has been named as a Georgia STEM Scholar by the Georgia Youth Science and Technology Center. She actively seeks additional professional learning opportunities and has earned National Geographic Educator Certification which resulted in a connection with the SIMOC team to be a beta tester of SIMOC in the classroom.



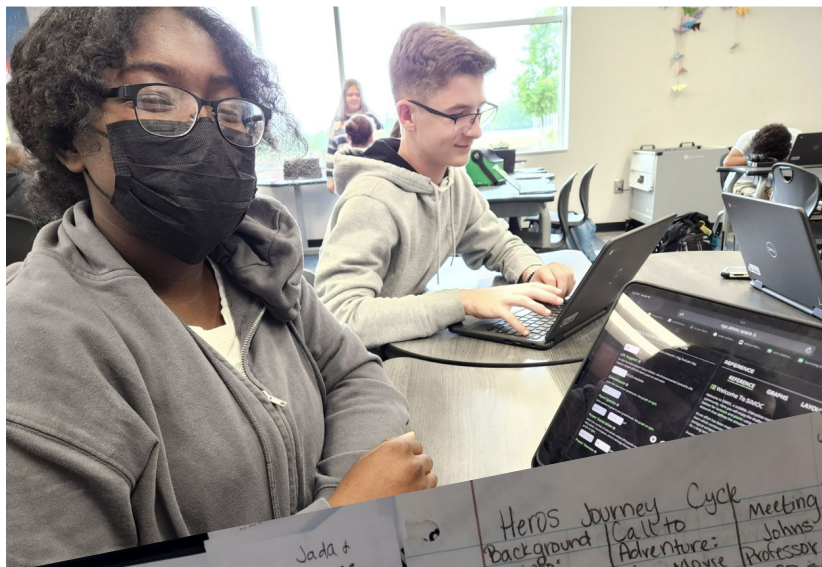
Tyson Brown leads the Resource Library (RL) team for the National Geographic Society. In this role, he contributes to the organization's strategic plan, leads product development and marketing for the RL, and delivers delightful content and interactives to educators and students. Tyson is involved in the farm-to-table effort in Fairfax County Schools to ensure kids have access to healthy, whole foods in the cafeteria, and he manufactures grid-tied electrons to his neighbors from an array of 305-watt solar panels that quietly sit on the roof of his house.

"Thank you for this amazing resource! SIMOC is easily integrated into my curriculum, both in-person and online. It warmed my heart to see the students so excited about science! They were begging to take turns to run a simulation for the class."

~Gretchen Hollingsworth, Barrow Arts & Sciences Academy, Winder GA.

STEM Integration: SIMOC in the ELA Classroom

We used guided inquiry to research Mars, run simulations in SIMOC, used the data from the simulations as the basis for narratives set on Mars, built a mini-Mars habitat in our classroom, and used Adafruit sensors/SIMOC to run experiments to test the levels of CO2 in the enclosed space vs the classroom. Students were able to make meaningful connections between science and ELA as they engaged in research, narrative writing, and scientific writing.



Mars Multimedia Text Set

Directions: For each row below, complete the #1 task and then the #2 task. Once you are finished a row, advance to the next row. Please type your answers in a different color. Thanks!

| #1 | #2 |
|--|--|
| Watch this video on setting. | How can the setting of a story influence the events? Type your answer here. |
| What do you currently know about this article about Mars? | Watch this video to learn more. |
| What do you know about this article about the health concerns facing future inhabitants of Mars? | How is Mars different from Earth? Type your answer here. |
| What do you think you'd need to be able to survive on Mars? | What are some of the health concerns you learned about? Type your answer here. |
| Over the coming decades, spacecraft will orbit around the planet Mars, and in the future, we must learn how to live in hostile environments on Mars. Explore SIMOC. Run simulations to test your ability to survive on Mars. You can sign in as "a guest" and run new configurations. This will allow you to change the parameters of the simulations. After running several simulations, you will be able to see the results. | Research this question and jot down some things you learned. Type your answer here. |

Simoc - Stimulation Notes

- Presets: 4 humans + Garden
- Duration: 100
- Crew Quarters: Medium
- Food Supply: 1000 kg
- Life Support: 3 ACCESS Modules
- Green house: Medium
- Batteries: 40
- Power Generators
- Solar PV Array
- Water Storage

Heros Journey Cycle

Background info: John + Missa + Astrology + Malob + Jade + Lee

Call to Adventure: New Movie

Acts on the radio

Billboards

They felt they had to try

Meeting a Mentor: Johns Astrolog Professor also is a 2D specialist for NASA

They all spoke with him

Is Mrs. Hollingsworth boring, or are we CO2 intoxicated?



Data Table for Mini Mars Habitat Test 1 (2 humans)

| Temperature | Relative Humidity | CO2 | Hydrogen | Ethanol | eCO2 | VOC |
|-------------|-------------------|----------|------------|------------|---------|-----|
| 58.19% | 607.44 ppm | 1.80 ppm | 165.84 ppm | 400.00 ppm | 171 ppb | |
| 59.06 | 2611.07 | 5.16 | 182.50 | 400 | 201 | |
| 59.07 | 2706.94 | 5.00 | 143.53 | 400 | 123.00 | |
| 59.76 | 3018.46 | 4.90 | 125.92 | 400 | 71.00 | |
| 59.77 | 3648.44 | 4.93 | 112.66 | 400 | 41.00 | |

different until they came out and they realized it was much cooler in the classroom.

Data Table for Mini Mars Habitat Test 2 (2 humans)

| Temperature | Relative Humidity | CO2 | Hydrogen | Ethanol | eCO2 | VOC |
|-------------|-------------------|----------|-----------|------------|-----------|-----|
| 59.67% | 448.70 ppm | 2.02 ppm | 30.74 ppm | 400.00 ppm | 68.00 ppb | |
| 57.99 | 2882.49 | 7.35 | 80.67 | 601 | 514.00 | |
| 59.90 | 3153.63 | 8.15 | 90.52 | 666 | 573.00 | |
| 58.53 | 2941.21 | 7.58 | 79.88 | 605 | 509.00 | |
| 58.72 | 5742.89 | 4.93 | 69.27 | 400 | 42.7 | |

ent until after they came out. A little lightheaded/dizzy and kind of hot. People inside the habitat realized that the classroom was cooler than inside the habitat.

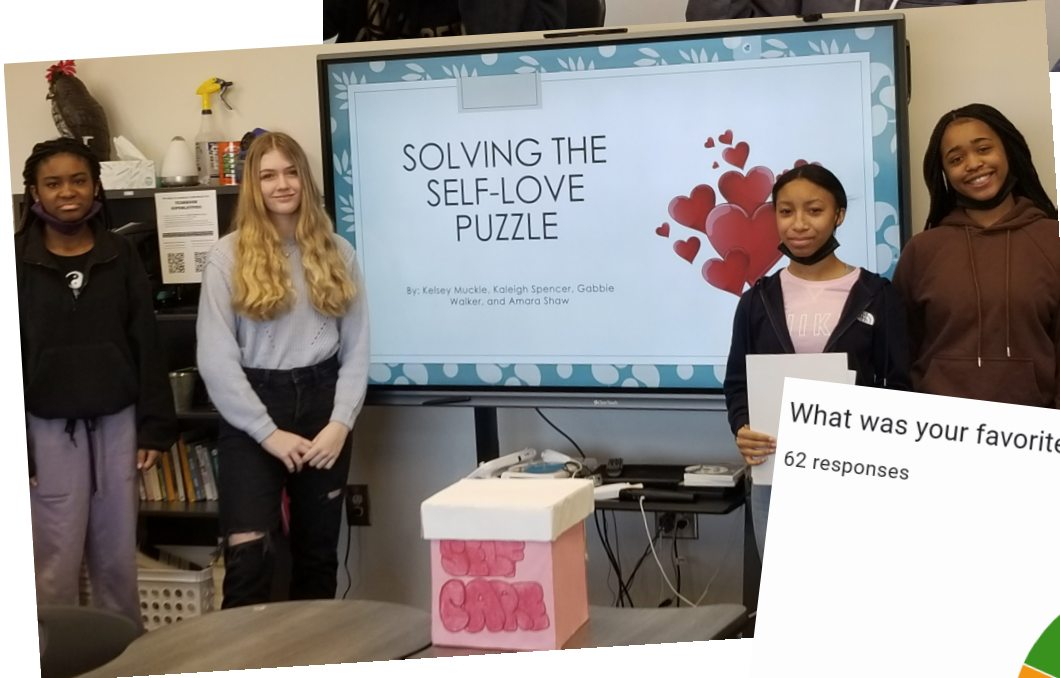
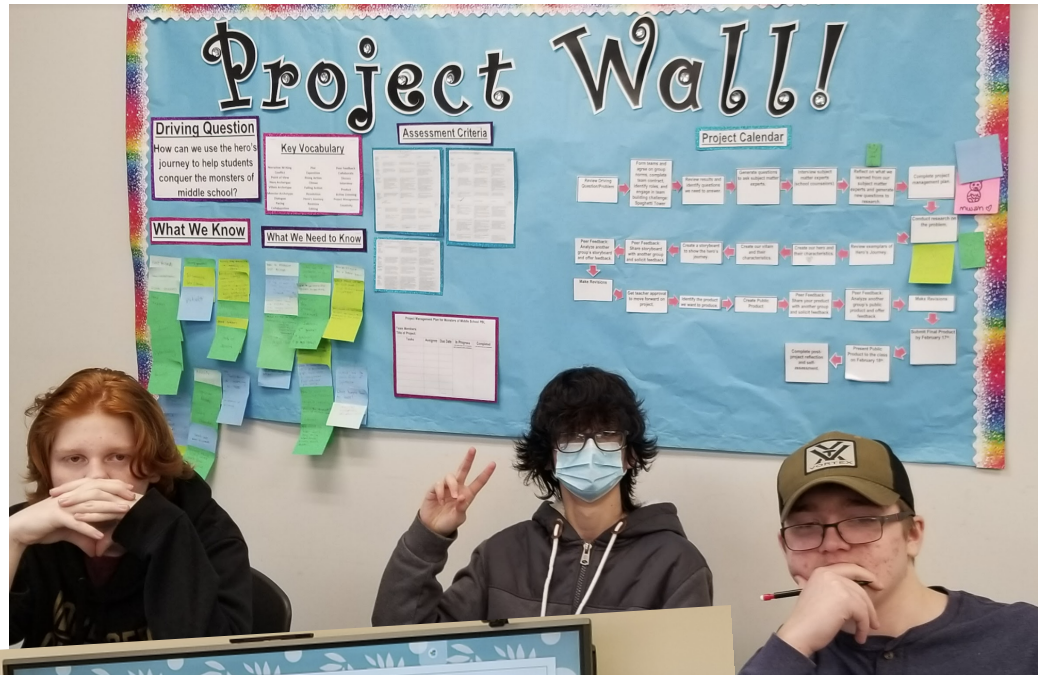
Data Table for Mini Mars Habitat Test 3 (2 humans)

| Temperature | Relative Humidity | CO2 | Hydrogen | Ethanol | eCO2 | VOC |
|-------------|-------------------|------|----------|---------|--------|-----|
| 52.73 | 968.55 | 2.33 | 30.92 | 400 | 65.00 | |
| 59.32 | 2968.86 | 3.88 | 51.58 | 400 | 243.00 | |
| 64.05 | 3311.87 | 4.75 | 62.34 | 400 | 349.00 | |
| 57.37 | 4062.89 | 4.71 | 60.54 | 400 | 322.00 | |
| | 3860.64 | 4.88 | 58.56 | 425 | 319.00 | |

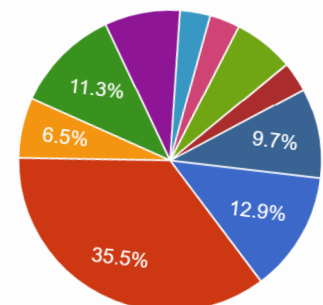
Subjects said legs were asleep, were very thirsty, irritable, tired, and had a headache

Project-Based Learning: The Monsters of Middle School

I designed an authentic PBL where students used their knowledge of the hero's journey and applied it to an SEL product they created to help middle school students defeat the "monsters" of middle school. We tracked our progress on this project wall as students conducted research, developed a project management plan, consulted subject matter experts, and created their products. Products included videos, puzzle boxes, animations, and apps. We distributed our products and asked the clients (middle school students) to rate them.



What was your favorite project?
62 responses



STEM Integration/PBL: Dancing With The Robots

I was honored to be a part of the "Dancing With The Robots" PBL, designed by Ysheena Lyles, where several teachers in digital technology, art, engineering, dance, music technology, and ELA collaborated to offer students an incredibly engaging experience based on the TV show, Dancing With The Stars. My role was to guide students as they composed backstories for the robot contestants.

Let's take a peek at the show and read an article about casting!

Dancing With The Stars: How Casting Works on the Show
Lauren Anderson March 2, 2021

Dancing With The Stars features a range of celebrities in any given season. From movie stars to singers, athletes, radio personalities, and **Netflix** figures, fans are always surprised to see who gets cast to dance in the ballroom. Many DWTS fans wonder how the showrunners decide who to cast in any given season. A Dancing With The Stars co-executive producer explains.



The 'Dancing With The Stars' cast is anything but random

According to co-executive producer Deena Katz, casting Dancing With The Stars is like the "best dinner party you will ever have." In other words, the show brings together some unlikely people fans would have never thought to put on the same cast. "You want stars from all different parts and genres because you don't want only to win [one] market," she explained to **CosmoMag**. DWTS is all about capturing a vast audience of viewers from all age groups, ethnicities, and socio-economic classes. "We want to hit everything, so we try to have a little bit of everything," Katz added. For her, it's about finding celebrities that transcend multiple audiences.

'Dancing With The Stars' will cast celebrities who are perceived negatively in the public eye

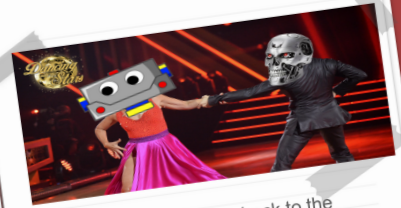
Casting DWTS is about finding a balance between those celebrities that transcend and those who may not have the best public opinion. Behind the scenes, casting directors are always on the lookout for celebrities who can win over viewers in any given season. In season 29, that was



Backstory Rough Drafts

Work with your group to compose the rough draft of your character's backstory. Be sure to incorporate:

- a description of their looks
- information about their childhood and current life
- explanation of their plight
- explanation of how they overcame their plight and what they hope to achieve by being on DWTS
- intimate details that make the audience **want to root for your character!**



Tip: If you get stuck, **refer back** to the example we annotated yesterday. Review your characterization notes to help you as well! Don't forget you have a quiz over those notes tomorrow!

Peer Feedback



- Meet with another group.
- The first group should share their backstory with the other group.
- The other groups should offer the following feedback:
 - What was meaningful or memorable? (avoid like or dislike)
 - What questions do you still have about the character's life?
 - Would you root for this character? Why or why not?
 - The authors' group can ask for feedback on anything specific they were wondering.
- Switch Roles and Repeat

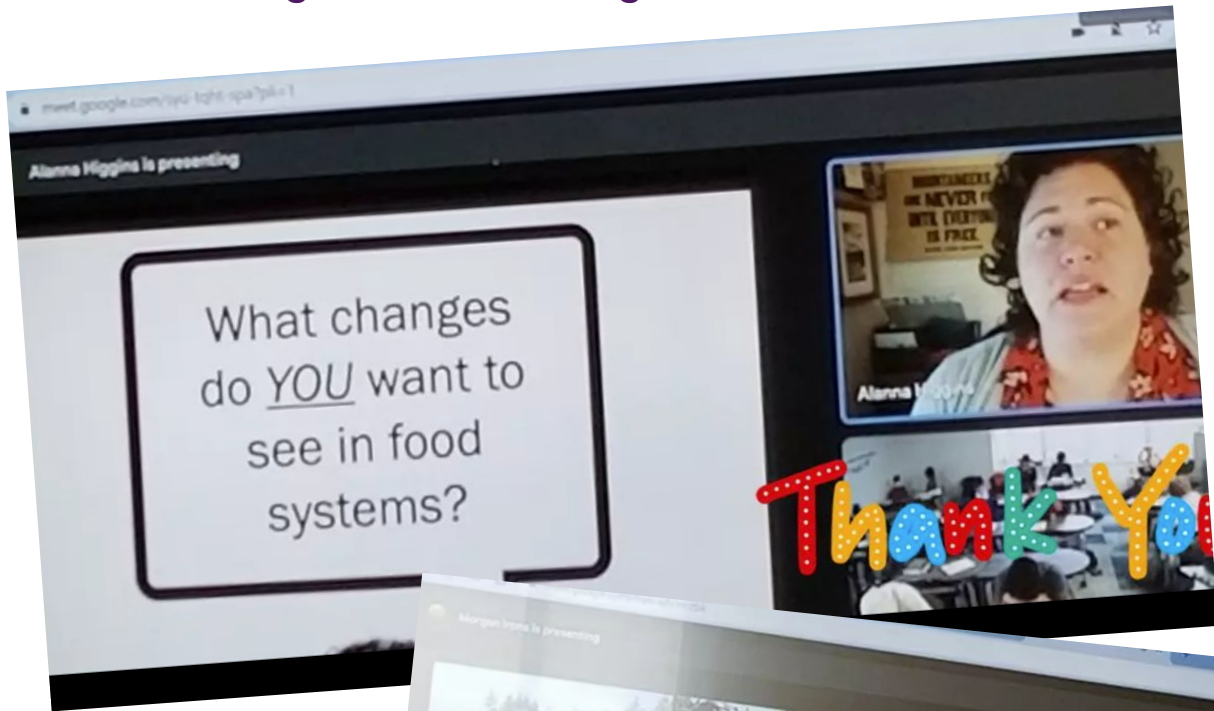
Robot Backstory Requirements

- A clear description of the character
- Details about the character's childhood
- Details on how the character became famous
- Details about the controversy/problem the character faced
- What the character hopes to achieve by being on DWTS
- Details that could be categorized as realistic fiction
- Details that make the character sympathetic
- A variety of sentence structures and excellent sentence flow
- Powerful vocabulary - fresh and interesting with no repetition
- Effective organizational structure
- Pacing is quick and fluid
- A lively, interesting writer's voice

| A | B | C | F |
|---|--|---|---------------------------------------|
| Includes <u>all</u> of the above and comes together as an intriguing backstory that engages the reader and makes the reader want to root for the character. | Includes all but one or two of the requirements above. Creates an engaging backstory but could be strengthened by: | A great start that is still missing some of the components above. | Incomplete or difficult to understand |

PBL: How can we be agents of positive change in the food system?

For this project, I collaborated with the UGA Grow It Know It program and the Skype A Scientist program to design a PBL experience where students learned about the world's food system, consulted with subject matter experts, identified problems, and proposed solutions. This PBL was conducted along with the reading of the novel, The Bitter Side of Sweet.



Instructional Conversations/Joint Productive Activity: House Gods/Goddesses
For this activity, I designed a Joint Productive Activity (JPA) which helped students to become familiar with the JPA format and help them connect their learning to their Crew's house god or goddess. Grouping for this activity was based on students' Crew assignments.

House Gods/Goddess JPA Task Card

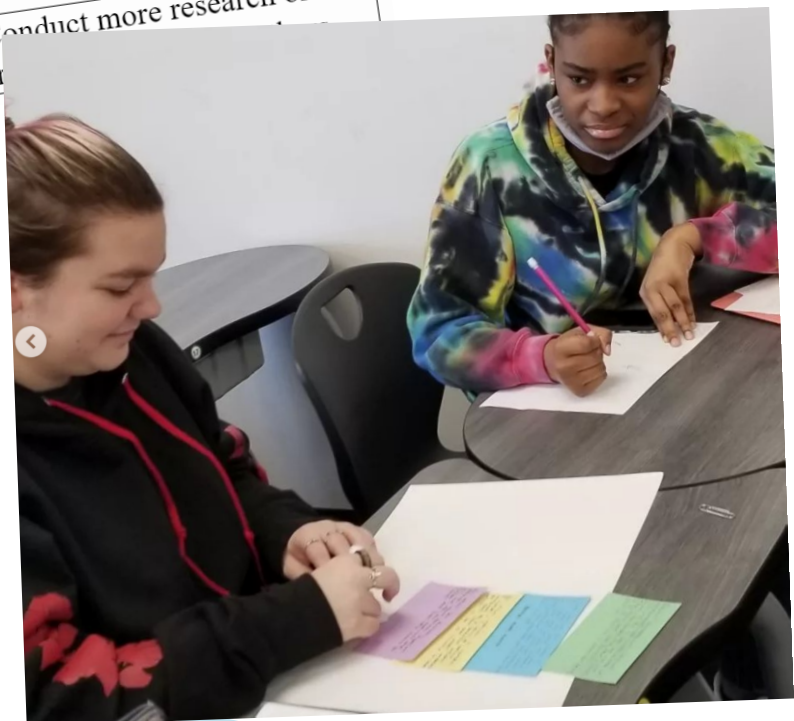
Context: All BASA students are members of a Crew. Each Crew is part of a house, represented by a god or goddess. This activity will help students become more familiarized with their Crew's god or goddess.

Learning Goal: To become acquainted with the JPA format while using text evidence to describe character.

Task:

1. Review group norms.
2. Set a conversational goal and share with your group.
3. Read the text.
4. Discuss the key characteristics of your god/goddess.
5. Use the text and the Internet to create an illustration of your god/goddess and their key traits. You will share this with the group later.
6. Reflect on your conversational goals. Did you meet your goal? What can you work on next time? Was the group on task? What could the group do better next time?

Extend Your Learning: Conduct more research on your god/goddess and their characteristics.



STEM and Arts Integration/PBL: Feral Cat Shelters in Honors Physical Science
 To kick off this PBL, students engaged in arts integration as they learned about artists who love cats from the Arts Now consultant, Shannon. Students created their own artists' inspired cat watercolors. Then, we videoconferenced with Susan from Leftover Pets. She educated students on the feral cat problem in our county and offered suggestions and resources for building feral cat shelters. Students then applied their knowledge of specific heat capacity and heat transfer from science class as they researched, planned, proposed, and ultimately built their designs for feral cat shelters. We donated our feral cat shelters to Leftover Pets to be used in our community.

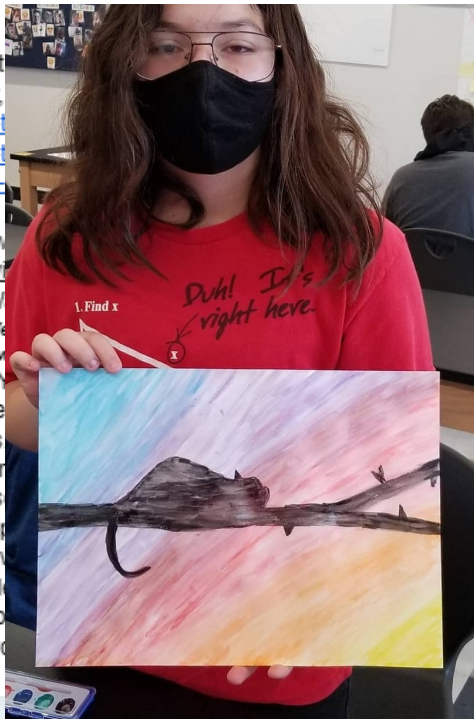
Feral Cat Shelter STEAM Challenge!



Challenge: Using your knowledge of specific heat and heat transfer, you will research, design, propose a budget for, and build a feral cat shelter that provides a safe, temperature controlled environment for homeless cats in Barrow County.

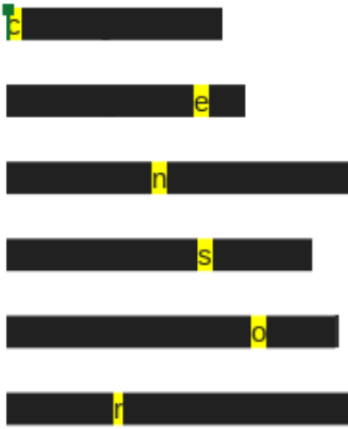
**Digital Learners will be paired with in-person learners for live class meetings unless they are able to obtain materials to build their own at home independently.*

1. Research tips for building feral cat shelters by our expert community member, <https://www.neighborhoodcats.org/how-to-build-a-feral-cat-shelter/>, <https://www.neighborhoodcats.org/how-to-build-a-feral-cat-shelter/>, <https://www.alleycat.org/resources/feral-cat-shelters/>
2. Design your feral cat shelter. Draw your design.
3. Create a materials list complete with a budget of \$25. You may select items from Walmart. Do not worry about decorations for it yet. We will discuss the near future where we explore arts integration.
4. Write a proposal for your project. Your proposal should include the need for your project, a detailed picture of your drawing with labels and materials (including links) that do not exceed \$25. Justification for the materials you select. Information about specific heat capacity and heat transfer. Your proposal should be written in 5-7 paragraphs with headings/subheadings and include your idea! Turn your proposal in to your teacher for approval, your materials will be ordered.

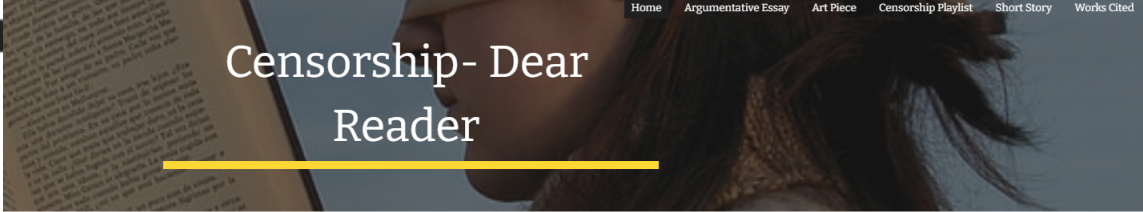


Multigenre Project: Censorship

The culminating project for our Fahrenheit 451 unit was a multi-genre project centered around the topic of censorship. Students built websites to showcase their projects, which included a preface, repetend, argumentative essay, and 3 more original pieces in the genres the students chose.



[click for uncensored poem](#)



Censorship- Dear Reader

Dear Reader,

The concept of censorship has been prevalent in our society for generations, presenting itself in an array of manners. Whether it's through filtering of music, fictitious interpretations, the banning of literature, or even the relevant concept of cancel culture, censorship is something that has been in our society for a long time. Some places in the world take censorship farther than others, an example being North Korea compared to America. This project is intended to educate and relay to you, the reader, the concept of censorship, as well as take creative approaches to insinuate censorship rather than directly stating that's what they are about.

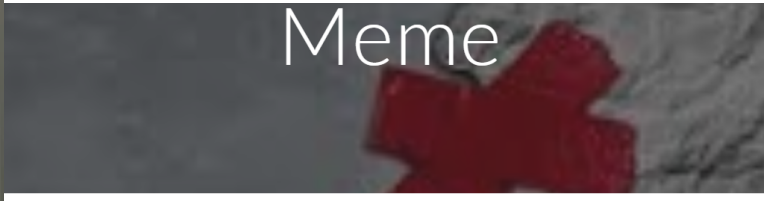
sorship on the internet. Instead of the general topic, I decided to focus on one media. While it may not be everywhere you look, it is still a pressing topic that I either or not gore and violence should be banned on the internet. I chose this topic because of something I've been exposed to before.

on with their hearing and speech being censored and a sign that says "I can't say what I want to say" at topics that have been censored before in media. Another piece I did was a short story about eyes, I decided to represent censorship with a "mother-knows-best" type figure and a playlist, the playlist I made includes songs that have been censored before in the past as well as myself.

Sincerely, Tuz

any to all human communication, and piety of intention is probably the most virulent and the most self-satisfying."

— Chuck Jones



Arts Integration: Irish Step Dancing in Science

To stimulate interest in the appearance of Ah, Surely! at the Innovation Amphitheater, I incorporated Irish Step Dancing in our science lessons. Students learned about Irish Step Dancing and choreographed a dance using Irish Step Dancing to demonstrate understanding of the changing states of matter (8th science) and chemical bonding (Honors Physical Science).

THURSDAY, OCTOBER 29, 7:00PM - 8:00PM

INNOVATION AMPHITHEATER

PURCHASE TICKETS ONLINE AT [TINYURL.COM/AHSURELY20](https://tinyurl.com/ahsurely20)



Seating is limited due to social distancing guidelines.

Enjoy traditional Irish music and dance at its finest and most fun in the family-friendly, socially-distanced outdoor environment of the Innovation Amphitheater. Take in a bit of the Emerald Isle's culture through Irish step dance, fiddle, Irish pipes, and more.



Instructional Conversations/JPA: Why did wind turbines freeze in Texas when they don't in the Arctic?

Students worked on conversational goals as they investigated the problem of wind turbines freezing in Texas.

Task Card

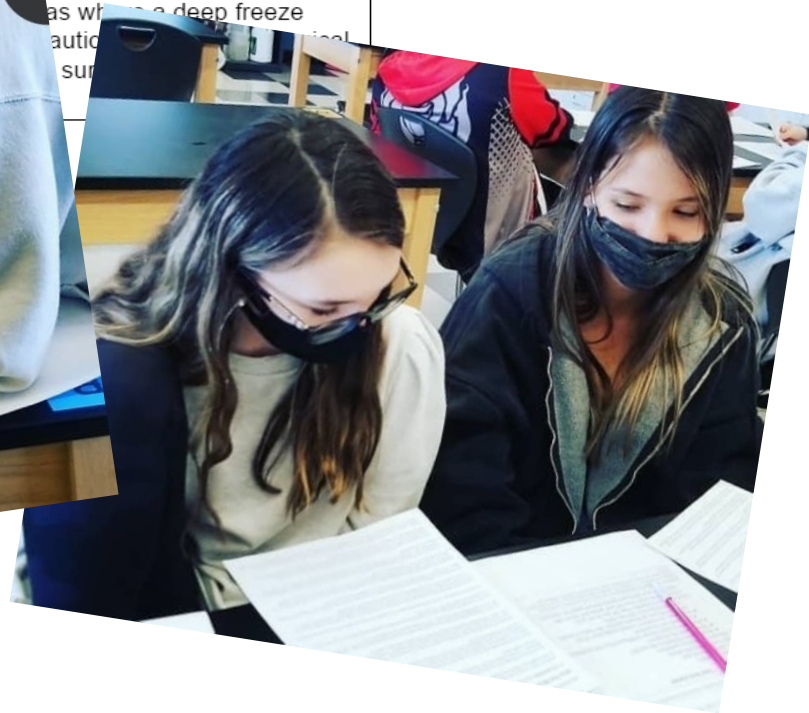
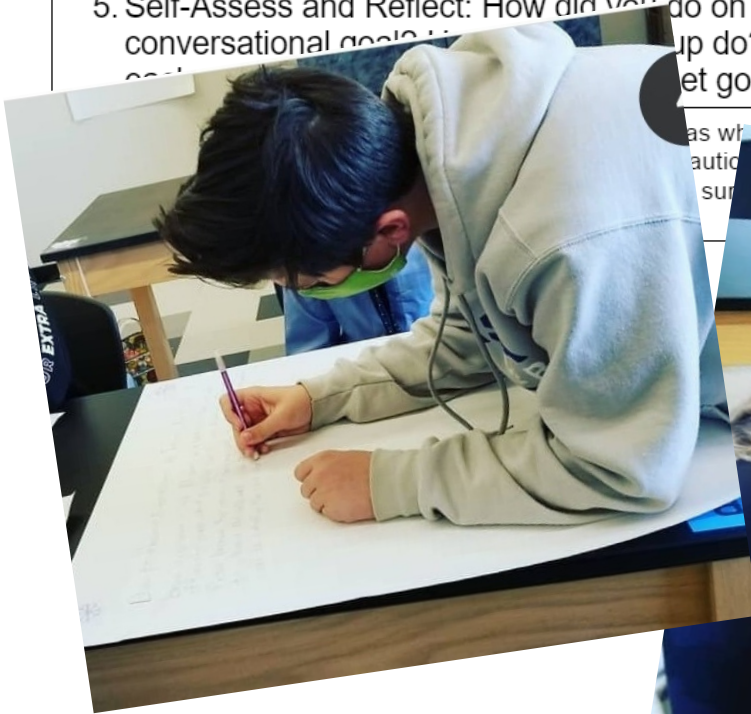
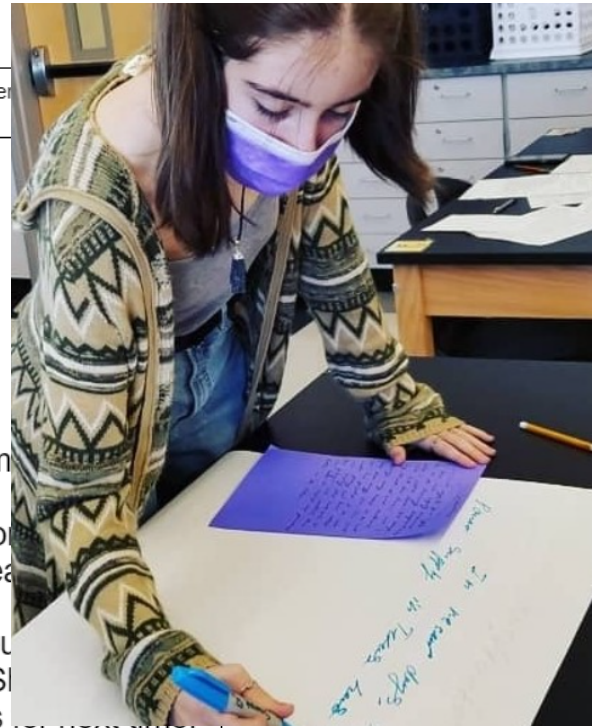


Guiding Question: Why Did Wind Turbines Freeze in Texas When They Work in the Arctic?

Learning Goal: Students will analyze the problem, compare it to other disasters about, and propose solutions.

Task Description

1. Review group norms.
2. Set a conversational goal.
3. Take turns reading the article.
4. Discuss the following questions:
 - What was the problem in the article?
 - What caused the problem?
 - How is this problem similar to/different from at Chernobyl or Fukushima?
 - As a group, co-construct a short explanation problem and your proposed solution. Be ready to share your co-construction with the class.
5. Self-Assess and Reflect: How did you do on your conversational goal? What did you learn? What do you still need to do? Set goals.



as wh... a deep freeze
autio...
su...

Arts Integration: Jill Pelto and Life Science

In a collaboration with Shannon from Arts Now, we studied the work of Jill Pelto, an artist and scientist who uses art to showcase climate data. Students analyzed different environmental graphs and chose one to portray in their art.



Hyperdocs and Multimedia Text Sets

I have developed several Hyperdocs and Multimedia Text Sets (MMTS) for students to engage in guided inquiry for deeper learning and collaboration.

Wicked Weeds?

The Impact of Invasive Species on an Ecosystem

Let's learn more about the interdependence of life within an ecosystem and what can happen when an invasive species disrupts that balance! FOLLOW ME!

WATCH

FOOD WEBS

PLAY

THINK

How is the climate in the US different from that in Asia, and how does that affect the populations of kudzu and Chinese privet?

EXPLORE

Click on the pic below to find out more about invasive species in the US. Then return to your Hyperdoc.

USDA U.S. Department of Agriculture
National Invasive Species Information Center

PAUSE

What is your habitat like? Post a gif/pic to represent it here:

READ

Click on the pics below to read more about kudzu in the US.

THINK

How did humans impact the US when introducing kudzu?

You Are What You Eat

88P1. Obtain, evaluate, and communicate information. Construct an explanation on evidence to describe the conservation of mass and chemical reactions resulting different products and reactants.

Explain

1. What did you eat for dinner last night? Recreate your dinner by pasting pics or using the drawing tools below. You can delete the plate to create your own.

MyFoodDiary

2. Search the nutrition label for each of the foods you ate for dinner. Record the information in the table below.

| Food Item | Nutritional Category | Least abundant nutrients (bottom 3) | Most abundant nutrients (top 3) |
|-----------|----------------------|-------------------------------------|---------------------------------|
| | | | |
| | | | |
| | | | |

Intro to Cells

START HERE

Why do you think cells are the basic unit of all living things?

WRITE a response.

Click present to view/interact with content.

How is the human body organized?

WATCH to learn.

PAUSE

Think about how cells form tissues, tissues form organs, organs form organ systems, and those organ systems work together to keep us alive.

WATCH this clip and consider how the organelles of a cell work together to keep the cell functioning properly.

EXPLORE

Click the image to learn more about cells by playing a game.

EXPLORE

Click the image to play with interactive cells.

EXPLAIN

Click on the book below to read about cells.

EXPLAIN

Click the image to explain the function of some organelles.

APPLY

Click the image below to apply your knowledge of organelles. Turn this in to the Cells Hyperdoc assignment in Google Classroom.

SHARE

Reflect on your cells journey here.

FLIPGRID.

CREATE/SHARE

Superhero Organelles

CREATE/SHARE

Levels of Organization- Be sure to put your name on your slide.

Original creation by @chuckbeaver and inspired by game boards by @petermiller. Modified for classroom use by Gretchen Hollingsworth

Click on this slide, click File-Download-JPEG to save a copy of it to share on the next slide.

Start at "READ" and continue counterclockwise around the game board.

READ

EXPLORE

Explore at least one more type of chemical weapon used in the world, and add your thoughts about it to the Chalk Talk

SHARE

Using information from the article on VX nerve agent, share your thoughts about its use to the Chalk Talk discussion.

WATCH

MORALS AND ETHICS IN SCIENCE

CHEMICAL WEAPONS

After completing all the activities, reflect on your learning by going to

FLIPGRID

READ

What is the VX nerve agent that killed North Korean Kim Jong-nam?

SHARE

padlet

WATCH

PAUSE/THINK

Based on what you know so far about the use of chemical weapons, add your opinion to our Chalk Talk. You'll be adding to this as you continue to learn more.

STEM/Arts Integration/PBL Collaboration in Science and Math: Minimalism

In a partnership with Arts Now consultants, my colleague, McKendree Ramsell, and I designed a year-long minimalism theme in our classrooms which allowed students to make meaningful connections between their academic content and the arts. We began with an introduction to minimalism with the Arts Now consultants and extended that theme within our classrooms as students applied their learning to a tiny house project. Students studied The Minimalism Movement through painting, Theater of the Absurd, and dance. In science class, we embodied the minimalism theme within each unit, culminating in our tiny house project where students built scale models of their minimalist designs. In addition to this, they created commercials to sell products such as solar ovens and compost toilets.

