REIMAGINING EDUCATION DURING COVID-19 and BEYOND

Set Sail With Science

2020 Fall Virtual Instructional Leadership Conference
October 6-7, 2020

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Session Logistics

- **Handouts:** Session handouts are available for download in the handouts section on your screen and at www.gadoe.org/sdeevents

- **Questions:** Use the question box to type questions or comments throughout the presentation

- **Feedback:** We ask all participants complete the pop-up feedback survey after the close of the session

- **Recording:** A link to the session recording and certificate of attendance will be emailed in 24-hours

- **On Demand:** All sessions will be available on-demand following the conference on the SDE Events and Conference webpage

Session Goals

- Participants will understand how the science Georgia Standards of Excellence are constructed.

- Participants will understand what is meant by three-dimensional science.

- Participants will be able to identify key places for locating science resources.

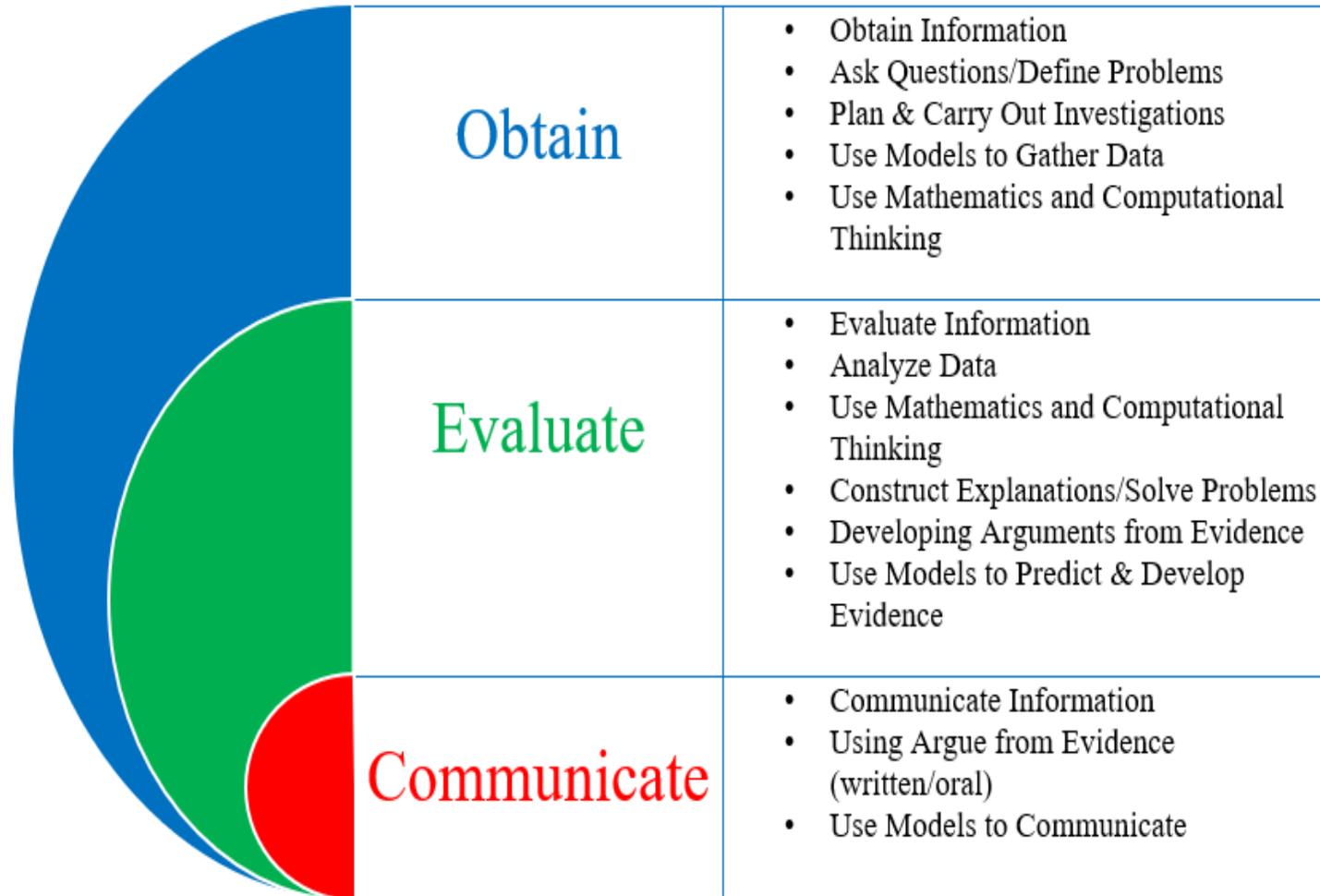- Participants will engage in doing science using a phenomenon.

Setting the Course

What Do Scientists & Engineers Do?

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Scientists and Engineers...

Obtain	• Obtain Information • Ask Questions/Define Problems • Plan & Carry Out Investigations • Use Models to Gather Data • Use Mathematics and Computational Thinking
Evaluate	• Evaluate Information • Analyze Data • Use Mathematics and Computational Thinking • Construct Explanations/Solve Problems • Developing Arguments from Evidence • Use Models to Predict & Develop Evidence
Communicate	• Communicate Information • Using Argue from Evidence (written/oral) • Use Models to Communicate

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What Do We Mean By 3-D Science?

| Science and Engineering Practices	Crosscutting Concepts	Core Disciplinary Ideas
• Asking questions and defining problems • Developing and using models • Planning and carrying out investigations • Analyzing and interpreting data • Using mathematics, information and computer technology, and computational thinking • Constructing explanations and designing solutions • Engaging in argument from evidence • Obtaining, evaluating, and communicating information	• Patterns • Cause and effect • Scale, proportion, and quantity • Systems and system models • Energy and matter • Structure and function • Stability and change	• Matter and its interactions • Motion and stability: Forces and interactions • Energy • Waves and their applications in technologies for information transfer • Structure and processes in living organisms • Ecosystems: Interactions, energy, and dynamics • Heredity: Inheritance and variation of traits • Biological evolution: Unity and diversity • Earth's place in the universe • Earth's systems • Earth and humanity • Engineering design

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A Cord of 3 Strands is Stronger Than 1

What does 3 dimensional learning look like?
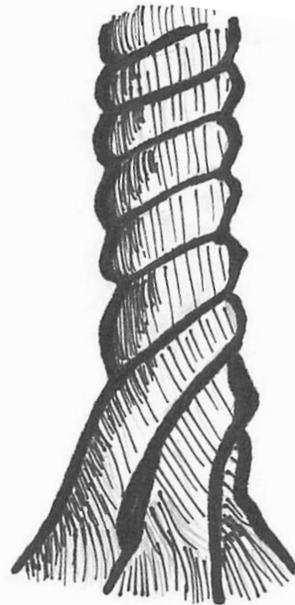
Practices   Core Ideas

Crosscutting Concepts

Standard Construction

Each standard in K-12 science begins with the science practice of obtaining, evaluating, and communicating information. Each standard element contains a separate science practice.

Here is how they are constructed:

S6E3. Obtain, evaluate, and communicate information to recognize the significant role of water in Earth processes.

Ask questions to determine where water is located on Earth's surface (oceans, rivers, lakes, swamps, groundwater, aquifers, and ice) and communicate the relative proportion of water at each location.

The WHAT (disciplinary core idea)

The HOW (science and engineering practice)

The WHY: start with a phenomenon!

Mapping the Way

Finding Our Resources – Start Here

Content Areas

Computer Science

English Language Arts

Fine Arts

Gifted Education

Health & Physical Education

Literacy Reading

Mathematics

Science

Social Studies

STEAM/STEM

World Languages & Global Initiatives

Other Programs

Positive Behavioral Interventions and Supports (PBIS)

L4GA

Early Intervention Program (EIP)

Instructional Materials/Learning Resources/Textbooks

Library Media Services

Science

Click here to view Fall 2020 Virtual Professional Learning Opportunities and On-Demand PL from GaDOE Science

GaDOE Science Professional Learning Playlist

Georgia Department of Education

From Traditional Labs to Phenomenon Investigations	Supporting Struggling Students in Science	New High School 4h Sciences: From GPS to GSE	Leveraging Technology to Support Struggling Students in Science
Secondary Teachers	Secondary Teachers	High School Teachers	Secondary General and Special Ed
September 3rd 10 am	September 9th 9 am	September 10th 9 am	September 16th 4 pm
Register Here	Register Here	Register Here	Register Here

New Updates

Contact Information

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Our Newest Site

VISIT!

Visit the Essential Toolkit

Remember Georgiastandards.org

Packing Your Bags

Instructional Segments

- The resources for science are posted to the TRL-essential toolkit or the GaDOE Science page.

- All the instructional segments have been updated to have students supports charts.

- This includes all the instructional segments for k-8, Environmental Science, Biology, Physical Science, Earth Systems, Physics and Chemistry.
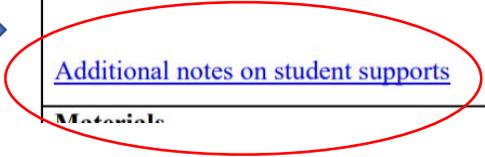
Student Supports

The focus of this instructional segment is sustainability of energy sources, choices and human impact.

This segment covers topics pertaining to human impact and sustainability.

Student Science Performance

Grade or course: Environmental Science	Title:
Topic: Sustainability of Planet Earth	Sustaining Planet Earth

Performance Expectation for GSE:

SEV3. Obtain, evaluate, and communicate information to evaluate types, availability, allocation, and sustainability of energy resources.

    d. Design and defend a sustainable energy plan based on scientific principles for your location.

SEV4. Obtain, evaluate, and communicate information to analyze human impact on natural resources.

    b. Design, evaluate, and refine solutions to reduce human impact on the environment including, but not limited to, smog, ozone depletion, urbanization, and ocean acidification.

SEV5. Obtain, evaluate, and communicate information about the effects of human population growth on global ecosystems.

    d. Design and defend a sustainability plan to reduce your individual contribution to environmental impacts, taking into account how market forces and societal demands (including political, legal, social, and economic) influence personal choices.

Performance Expectations for Instruction:

Students will construct a claim on the effects of human impact on natural resources.

Students will design solutions to reduce human impact on the environment.

Students will construct explanations for how human impact affects quality of life.

Students will construct an argument on how human innovations have affected global ecosystems.

Students will design and defend a personal sustainability plan.

Additional notes on student supports

Materials

PowerPoint- water in a clear tub, dirt, leaves, baking soda, vinegar, fishing line, napkins, vegetable oil, other materials for the water pollution demo

Heat Island Article with images

Technology/books for students to do research

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and economic) influence personal choices.

Performance Expectations for Instruction:

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Additional notes on student supports

Materials

Additional Supports for struggling learners:

General supports for the following categories:

Reading:	Writing:	Math:
1. Provide reading support by reading aloud or doing partner reads 2. The teacher should read and annotate a text with students so that the students may see what the teacher thinks as they read.	1. The teacher can provide a sentence starter for the students. 2. The teacher can give students an audience to write to (i.e. Write a letter to your sibling explaining this topic). 3. The teacher can provide constructive feedback during the writing process to help students understand the expectations.	1. The teacher should model how to create and read a graph including labeling all the parts of the graph. 2. The teacher should provide graph paper so that students do not have to free hand a graph. Many students will get caught up in the drawing and forget basic graphing concepts. 3. The teacher should provide some graph reading practice for students that have trouble constructing the graph.

Supports for this specific lesson if needed:

Engage:
1. The teacher may need to show the demo more than once to allow students to make observations.
2. The teacher should have clear and consistent guidelines for class discussions. These guidelines should help students feel more comfortable and be more likely to participate in the discussion.
3. The teacher should consider providing students with question stems to assist students in generating questions.
4. Teachers can also consider changing the format to be "what do you notice?" and "what do you wonder?".
5. The teacher should consider providing students with an organizer to record their thoughts, observations and research.
6. The teacher should consider providing students with some sources that they can use in their research.
7. The teacher can, also, assist students in determining what sources are reliable and why.
8. The teacher should consider posting a list of the major human impacts somewhere the students can see as they work.

Exploring:
1. The teacher should consider providing students with the images that they can write on. This way the students can write as they think about the images.
2. The teacher should have clear and consistent guidelines for class discussions. These guidelines should help students feel more comfortable and be more likely to participate.
3. The teacher should consider providing students with sources that they can use in their research.
4. The teacher can also help students determine which sources are reliable and why those sources are more reliable than others.
5. The teacher should consider providing multiple formats for students to show their knowledge. These formats could include writing, drawing, verbally explaining or using technology to make a video.

Explaining:
1. The teacher may need to repeat direction as needed for students.
2. The teacher should have multiple formats for students to share their knowledge. These formats could include writing, drawing, verbally explaining or using technology to make a video.
3. The teacher may need to consider providing students with an example of a solution might be to a human impact.
4. The teacher should consider having students go outside to examine their school's area for heat islands.
5. The teacher may need to help students calculate the cost of their solution.
6. The teacher should consider multiple share formats for students. It is best to choose options or give students options that reduce anxiety.

Elaborating:
1. The teacher should refer back to the list of human impacts to help students choose.
2. The teacher should consider having multiple options for students to show their knowledge. This could include writing, drawing, verbally explain or using technology.
3. The teacher should consider providing students with some sources that students can use to obtain information.
4. The teacher should consider helping students decide which sources are reliable and why those sources are more reliable.
5. The teacher should consider having multiple share formats so that students can choose a way to share that does not create anxiety.

Evaluating:
1. The teacher may need to repeat directions multiple times to assist students in understanding the expectations.
2. The teacher should provide students with multiple ways to share their knowledge. These formats could include written, verbally explaining, designing a play, drawing or using technology to make a video.
3. The teacher should provide positive, constructive and clear feedback to help students make improvements on their work.
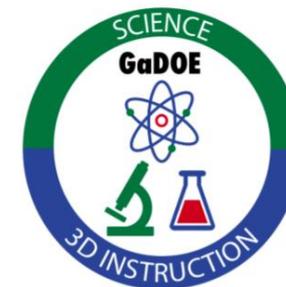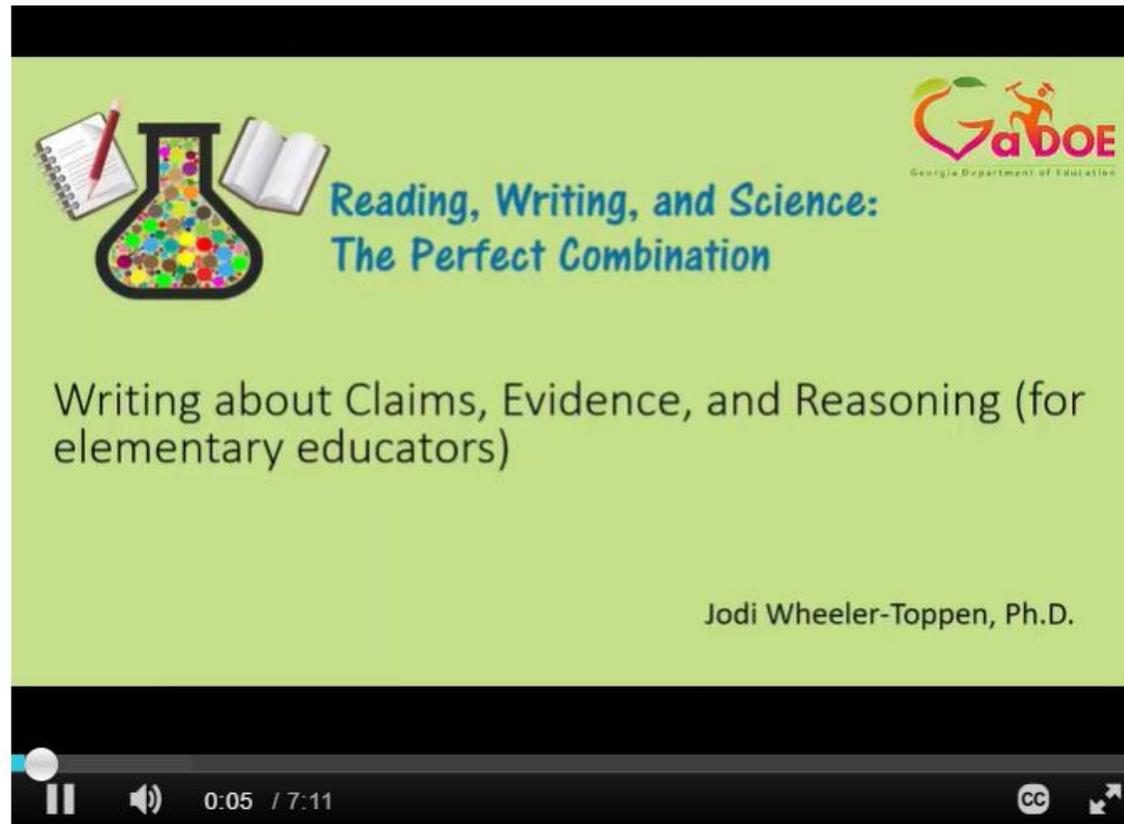
Science Professional Learning Playlist

- This is the link to the GaDOE science page: bit.ly/GaDOEScience
- Science also has a Ga Learns Course is available for 3-D science instruction.

Reading, Writing & Science Videos

New Resources

New Updates

- Sample Learning Menu Strategies for K-12 Science
- Science Support for Families During School Closures
- Science Support for Students' Learning During School Closures

- Self-Care Resources: Resources for caring for yourself in the face of difficult work

Supporting Students with Distance Learning Documents

Supporting Students with Disabilities with Distance Learning

Plans for Support				
Teachers are encouraged to collaborate with parents or guardians as plans for support are developed.			
Choice of Tools	***Preferred Types of Activities**	**Aligning to IEP Goals**	**Documentation**
✓ Learning Management System (LMS) ✓ Virtual Platform ✓ Telephone/Cell Phone Pencil/Paper	✓ Games ✓ Videos ✓ Discussions ✓ Puzzles ✓ Challenges	✓ Educators curate and/or share learning activities for families and students which support IEP goals. ✓ Students with 504 Plans and Individual Education Plans should be administered their standard classroom instructional accommodations.	✓ Development of a distance learning plan ✓ Document schedule of parent-teacher consultation ✓ Document accommodations offered to students ✓ Document communication to students

Instructional Ideas for Supporting Students with Disabilities	
Specially Designed Instruction, generally, is adapting content, methods, and/or instructional delivery to address the unique needs of a student.	
Time of Instruction	✓ Assignments in small chunks with high levels of student engagement ✓ A fraction of the face-to-face, classroom time ✓ Mini lessons for no more than 5-7 minutes ✓ Consider student interest
Student Choice	✓ Choice in demonstrating knowledge ✓ Choice in receiving information ✓ Choice Board of activities/tasks: low and no tech options ✓ Choice in what to study with help connecting to grade appropriate learning

Supporting Students with Distance Learning Documents

Kindergarten
Choice Board Tasks and Activities

Option 1: American Symbols **Why do we have flags? What do they represent?**	**Option 2: Time Patterns** **Can you use time words?**
• Draw a picture of the American flag. How many stars? How many stripes? • Create your own flag using shapes (squares, circles, triangles, rectangles, or hexagon). Write about what it represents. What do the colors or shapes mean? • Ask questions about what the flags are made of and then investigate the flags that are safe to approach and touch. Are all of the flags made of the same material? What are the characteristics of the material that the flags are made of? Talk to a friend, make a list, or draw and label what you noticed. *SSKH2a, SKP1b, MGSEK.G.3, ELAGSEKRI7*	• Make a timeline of your life with pictures or drawings. Don't forget to label your timeline using time words. • Use pictures or drawings to make a schedule of your day. Don't forget to use your time words. • Create a model of the sky showing day, evening, night and morning on a paper plate. Remember to use time words to show changes in time to describe changes in the sky. *SKE1b, SSKH3, ELAGSEKW3*
Option 3: Earth Materials **What about the ground?**	**Additional Family Connections** **(Essential Skills to Practice Weekly)**
• Compare two types of soil, for example, Georgia red clay vs potting soil or sand. Create a list of similarities and differences. • Directly compare the two types of soil. Describe the difference between the two with a "more of/less of" statement. • Look at a simple map. Identify and count how many places where you would find soil. Using the numbers 0 to 20, represent the number of places you would find soil with a written numeral. Explain why soil would be found there.	• *Notice and Wonder:* Take a walk with a grown up. Did you see any flags? What kind of flags did you see? How many did you see? • *Text Connection:* Read a book for 20 minutes. Do you notice any symbols in the book? • *Purposeful Counting:* Observe nature with a parent. Each of you look for a different kind of animal, count it, and then discuss who saw more/less? *Reading and Comprehension:* Play "I Spy" with sounds. For example, "I spy something that starts with the letter S." or "I spy something that starts with the /m/ sound." • *Purposeful Counting:* Work with one person to make collections with no more than 10 objects (coins, Legos, dolls, rocks, etc.). Count your collections. Identify whether the number of objects in your collection is greater than, less than or equal to the other collection.

Supporting Students with Distance Learning Documents

Virtual Supports for Struggling Learners

Equity Instructional Planning Look For Document

- This document is to assist teachers in evaluating their lessons for equity during the planning process.

- This document can be found in the Teacher Resource Link (TRL) essential tool kit in the need to know bucket

- It can also be found at the following link Look Fors document

Equity Instructional Planning Look Fors

Big Ideas	Teacher Look Fors	Student Supports
Content Standards	This lesson aligns to the Georgia Standards of Excellence. This lesson addresses all parts of the Georgia Standards of Excellence (not just the content).	All our students should be working toward learning the content that is outlined in the Georgia Standards of Excellence. Making content more accessible for all students can be accomplished using High Leverage Practices. These high leverage practices can be used to in every classroom to assist students in learning the material. Some examples of high leverage practices are providing scaffolded supports, use explicit instruction, use flexible grouping and use strategies to promote active student engagement. More information is available on the CEEDAR-GA Project website. Use the following link to access that information: Georgia Department of Education
Multiple Modalities	This lesson utilizes the principles of Universal Design for Learning to assist ALL students in accessing, using and expressing the material.	Present materials in multiple ways. This could include using articles, videos, verbally explaining to the student, making the lesson tactile, making the lesson visual and having inquiry. The students should be able to show their knowledge in multiple formats. Some of these formats could include writing, verbally explaining, discussion, creating a play, drawing or creating a presentation.
Coherent Instruction	This lesson considers the needs of students in the classroom and provides for the needs of those students using differentiated instruction to reach ALL students.	Providing equity in the classroom can take many forms depending on the student population which leads to the importance of differentiated instruction. The teacher should consider student needs and then differentiate instruction. A few examples of things to consider when differentiating are included below: • Add some time for students to process material. • Provide explicit instruction in using graphic organizers, other instructional materials and social-emotional behaviors. • Chunking the material. • Repetition may be required for some students. • Provide visual representations.
Individualized Education Program	This lesson is providing Specially Designed Instruction for each student with disabilities in the classroom.	The accommodations that are laid out by the IEP are required by federal law and the IEP committee has determined that the student requires this accommodation to be successful in the general education classroom. Make sure to add in any accommodations that are required by each student's IEP before proceeding. Ensure that the lesson adapts content, methodology and delivery of instruction as part of Specially Designed Instruction to address each student's unique needs in the class based on their disability to ensure access of the child to the general curriculum so that students can meet the same education standards that apply to all children. More information is available at the following link Georgia Department of Education.

GPB & GaDOE Resources
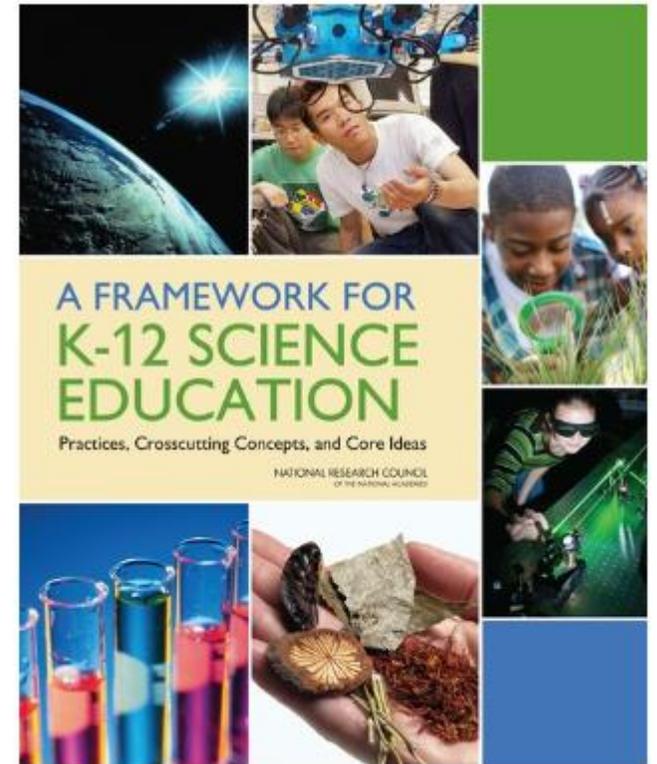

Georgia Home Classroom

K-12 Remote Learning Plans

Additional Resources

- GSTA Phenomena bank
- STEMteachingtools.org
- Framework for K-12 Science Education

Meeting Other Passengers

Passengers on the LeaderSHIP

- We have a leadership PLC on the edweb.net platform and will continue to host it there for now. Join for free and look for our community:

GaDOE Science
Administration Leadership
PLC
Sponsored by
**Georgia Department of
Education**

Virtual Communities

community.gadoe.org

The Georgia Department of Education has launched a new innovative platform to provide the opportunity for science teachers and leaders and GaDOE staff to collaborate, connect and share thoughts and resources.

To get started, Visit the GaDOE community website. select Create an Account and follow the prompts for setting up a new account on the platform. Navigate to the Groups section, select and join the groups you are most interested in. We look forward to connecting!

We've hired educators in the field to serve as virtual specialists assisting with science teacher communities.

A Deep Dive Excursion

Deep Dive – Our Instructional Focus

- Teach 3D standards
- Utilize phenomena
- Develop a classroom culture that supports "figuring out" not just learning about
- The science is the engine for the reading and the writing.
- We want to know and figure out, so there is a reason to read.
- When we have something to say, we want to share our findings, so there is a reason to write.
- Create that sense of wonder, build on student interests, focus on the SEPs/CCCs as much as DCI

Designing Phenomenon-Based Instruction

1. Think About the Performance Expectation

Disciplinary Core Ideas

2. What phenomenon requires the core idea to explain?

Phenomenon

3. How will students interact with the phenomenon?

Science & Engineering Practices

4. What "lens" will the students use to study the phenomenon?

Crosscutting Concepts

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The Ship's Cat – Why So Common?

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Phenomenon- House Cats

- Closer to home…Cats exist all over the State. They live indoors, outdoors and in between. What patterns would people notice in the outdoor environments where lots of cats live?

Ask Questions

- Develop two or three questions about how cats might impact the stability of an ecosystem.

Obtain Information

- Students *obtain information* from reliable sources for how house cats impact the ecosystems that they are introduced to.

Design a Solution

- Design a solution to reduce the impact of cats on the ecosystems that they live in.

Set Sail – Have a Great Year

Your Crew is Here for YOU!
@GaDOEScience

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Session Feedback

The Georgia Department of Education believes in continuous improvement and would appreciate your feedback to ensure the presentations we provide are of the highest quality and meet the needs of the specific audience.

Please take a moment after the session ends to complete the pop-up feedback survey.

Share your conference highlights now!

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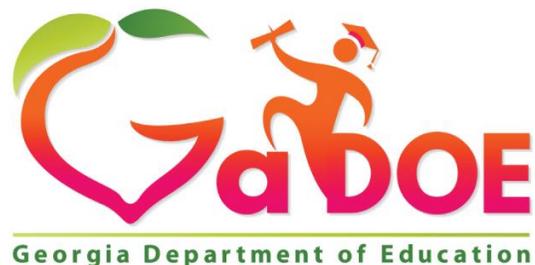
EDUCATING
GEORGIA'S FUTURE