It takes a TEAM to be STEAM

Rocky Branch Elementary
Oconee County
Presenters

Laura Mason  Principal
Kandice Ivarie  Assistant Principal
Jolaine Whitehead  5th Grade
                  Math/Science Teacher
Stephanie Dickson  Art Teacher
Sharing what we have learned

➔ Changes we made since initial certification

➔ Steps to move from STEM to STEAM and how it takes a TEAM approach

➔ How we overcame struggles and kept momentum going
Since 2015...

Earning the certification was just the beginning of the journey.

_Excitement, Frustration, Reflection, Growth, Mindset_

We now know....the journey is a continuous process.
And it will not end with our next certification.
STEAM.... Establishing a clear focus
Developed a newly formed common understanding and definition

Rocky Branch Elementary STEAM Vision

Rocky Branch will be known for empathizing and identifying solutions to relevant, real-world problems in order to adapt and contribute to the global community utilizing Science, Technology, Engineering, Art, and Math.
RBES STEAM “Givens”

1. STEAM units are grounded in grade-level standards. There should be equal weight of standards in other areas.

2. STEAM units are interdisciplinary when a natural, purposeful content connection exists. Integration of arts and technology, in collaboration with the connections team, is a focus.

3. STEAM journals are used throughout the unit to record all steps in the process-based thinking, and they include frequent reflections on the project.
   a. Journals are separate from content standards and interactive notebooks.
   b. Journals are in a bound composition notebook.
   c. Journals may include reference pages (process-based thinking cycles, standards, concept maps for planning and thinking).
   d. Most all information in the journals is for student thinking, reflection, planning, research, data collection, etc.
   e. Journals will be kept by the students and used in multiple classes working on the same projects.
STEAM....Just what does it mean for us?

RBES STEAM “Givens”

4. STEAM units include the Rockets’ Design Process: STEAM units are grounded in 21st century skills, as we aim to teach and sharpen skills in addition content standards.

5. STEAM units are connected to the community and they include partnerships of various levels within the unit; some may include service opportunities.

6. STEAM units include opportunities for student voice and choice. They include hands-on, active learning experiences that connect to real-world problem solving.

7. STEAM units include formative and summative assessments of the content standards. There is an assessment included in the unit for each standard that is listed.

8. Quality of STEAM units are preferred over quantity. Year-long and quarter-long projects are encouraged.

9. All students in the grade participate in the STEAM units.
How does the administration support teachers, if you are pursuing certification, or recertification?

Collaborative Planning

Professional Learning
What does administration need to do to keep the momentum going?
Changes at the School Level to support STEAM

➔ Schedule
➔ Use of Spaces
➔ Teacher Assignments
## Master Schedule: designated STEAM block

<table>
<thead>
<tr>
<th></th>
<th>1st</th>
<th>2nd</th>
<th>3rd</th>
<th>4th</th>
<th>5th</th>
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</thead>
<tbody>
<tr>
<td>7:30-7:45</td>
<td>arrival</td>
<td>arrival</td>
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<tr>
<td>7:45-8</td>
<td>Morning Meeting</td>
<td>Morning Meeting</td>
<td>Morning Meeting</td>
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</tr>
<tr>
<td>8:10-8:15</td>
<td>STEAM Block 120 min</td>
<td>STEAM Block 120 min</td>
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<tr>
<td>8:30-8:45</td>
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<tr>
<td>8:45-9</td>
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<tr>
<td>9:10-9:15</td>
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<td>10:00-11:15</td>
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<td>10:45-11</td>
<td>Lunch 45</td>
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<td>11:30-11:45</td>
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<tr>
<td>11:45-12</td>
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<td>12:45-1</td>
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<td>1:45-2</td>
<td>STAR</td>
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<td>STAR</td>
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<td>STAR</td>
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<tr>
<td>2:15-2:30</td>
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<td>2:30-2:30</td>
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</tbody>
</table>
STEAM Spaces

Garden Spaces

Collaboration Corners

Imagination Station

Outdoor Learning Space

under construction

Makerspace

Atlas and Saturn Galleries
STEAM is EVERYWHERE!

One STEM Teacher → All STEAM Teachers

STEM Classroom → TIE Classroom (Technology Integration Engineering)

STEM Lab → Imagination Station

Journals travel with students to all classes supporting STEAM projects!
STEAM Units: Design Process and Journals
Original Engineering Design Process

Engineering Design Process

ASK

- Write the problem
- What are the constraints?

IMAGINE

- What are the options?
- What are the materials?
- What are the tools?

PLAN

- Create a design
- Make a model or prototype
- List the materials and tools needed

CREATE

- Make a prototype
- Write a plan

IMPROVE

- Test the design
- Get feedback
- Make adjustments
- Repeat the process
ROCKETS’ DESIGN PROCESS

LEARN ABOUT THE PROBLEM
Try to understand others’ perspective
How do they feel? How do I feel?

EMPATHIZE

ASK
What is the problem or need?
What information do I need to know?
What is most important to fix?

REFLECT
How does the problem relate to standards?
Did I contribute to solving the problem?
How do they feel? How do I feel?

PLAN
Choose an idea and make a plan.
What steps are involved?
What materials do I need?

TEST
Collect data and/or observations.
Identify what is or is not working.
Do I need to change my design?

CREATE
Build my design.
Put my plan into action.
STEAM Planning Template Needs

Georgia Standards of Excellence

Interdisciplinary Learning/Teaching
- trust
- cooperation across disciplines
- respect
- work together
- professionalism
- team-based competencies

When will we ever use this in the real world?

PROJECT-BASED LEARNING
- Ownership
- Creativity
- Collaboration
- Critical Thinking

Driving Question
RBES STEAM Unit Plan

The italicized and highlighted portion of this template is designed to help guide your work. The explanations and questions to guide your work should be removed when the plan is finalized.

<table>
<thead>
<tr>
<th>Project Title:</th>
<th>Grade Level:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving Question: {The driving question should engage students with a real-world problem, challenge, or complex question that requires knowledge and skills from multiple STEAM domains. This is different than the “EQs” of learning units.}</td>
<td>Integrated Content Areas: S T E A M</td>
</tr>
<tr>
<td>Standards: {Type abbreviated standards here that are directly related to the unit. Label each subject area (Science, Technology, Engineering, Arts, and Mathematics) and create sections as needed. Include applicable ELA standards as well. Standards should have equal importance in the unit.}</td>
<td>Learning Targets: {What will your students know and be able to do as a result of this unit? Write these in student-friendly language. How will students create original works of art (dance, theatre, music, visual art, or media art), opposed to copying or following prescribed steps?}</td>
</tr>
</tbody>
</table>
Learning Targets

How does climate change affect the Monarch butterfly, and what can we do about it?

SGSE4E2c
I can construct an explanation of how the Earth’s orbit, with its consistent tilt, affects seasonal changes.

Learning Target 866
I can develop a model to explain the repeating patterns of phases of the moon.

Ask
What are the phases of the moon?
Key Terms: {What key terms will students be able to articulate by the conclusion of this unit? Which supporting vocabulary will be addressed?}
21st Century Skills: Learning Skills: {Select those that apply to this unit only!}

How to use the rubrics, which are linked below
- Collaboration (K-2, 3-5)
- Creativity (K-2, 3-5)
- Communication (K-2, 3-5)
- Critical Thinking (K-2, 3-5)

Service Learning:
{Is there an opportunity for service learning as part of this unit? If so, describe the connection here. If not, this will remain blank.}

Science and Engineering Practices: {Highlight those that apply to this unit only! If they are selected here, then they should be directly addressed in the lesson procedures.}
- Asking Questions and Defining Problems
- Developing and Using Models
- Planning and Carrying Out Investigations
- Analyzing and Interpreting Data
- Using Mathematical and Computational Thinking
- Constructing Explanations and Designing Solutions (Use Claim, Evidence, Reasoning framework.)
- Engaging in Argument from Evidence (Use Claim, Evidence, Reasoning framework.)
- Obtain, Evaluate, and Communicate Information
<table>
<thead>
<tr>
<th>Community Connections and Partners:</th>
<th>Materials and Resources:</th>
</tr>
</thead>
<tbody>
<tr>
<td>{Who in your community might you partner with? Is there a real-world connection? During which parts of the unit will the community partners be supportive to the learning?}</td>
<td>{What materials are needed? What websites or other resources will you use?}</td>
</tr>
<tr>
<td>{Is there an opportunity for service learning as part of this unit? If so, describe the school or community partners here.}</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Formative Assessment(s):</th>
<th>Summative Assessment:</th>
</tr>
</thead>
<tbody>
<tr>
<td>{What strategies will be used to measure student understanding? What open-ended questions will you ask to assess student mastery of content? Are assessment strategies present for all content areas? Do assessments clearly reflect the learning objectives? Formative assessments can be listed and linked here. Formative Assessments can include a checklist where teachers verbally assess student understanding of specific standards and document on the checklist. You should also include any journal entries or explanations that may serve as a formative assessment.}</td>
<td>{What are the criteria for success in the summative assessment task? This could be a rubric linked here and/or task instructions. The rubric should include elements of all disciplines in the unit. Is there a summative assessment for each content area?}</td>
</tr>
</tbody>
</table>
Lesson Procedures

Real-world Hook/Introduction/Entry Event:
{How will you engage the students? What will intrigue their interests? How does it connect to the real-world? This is when you will present the driving question that guides the work of the unit.}

{Could your community partner help in some way? This may match up with Empathize below!}

Student Engagement through Process-based Thinking:
This section is where you will organize each lesson/work session for the STEAM unit. This is where the “day to day” lessons, activities, etc. are listed. It is appropriate to give approximate time for each step and sometimes that may be observations over a period of time. It is also appropriate to link a powerpoint presentation you may be using with your students that will outline what they are doing and recording in their STEAM journals.
STEAM Journals

- Used by students for thinking, designing, sketching, reflecting, jotting notes, making plans, writing claims, collecting evidence, writing scripts, etc.

- Entries are planned during unit development to guide student thinking.

Reflection:

How can you apply the art skills and knowledge learned from Carrie Shryock to better understand cloud formation and types?

Next, we will use what we have learned to paint our own clouds. How can you take what you’ve seen in these paintings today and apply it to painting your own cloud paintings?

Students should write “Reflection”, the questions, and answers in their journals. Should be individual student reflection. Give plenty of time and have a few shares the class.
<table>
<thead>
<tr>
<th>EMPATHIZE</th>
<th>List abbreviated standards here for this step. (There may not be standards here.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASK</td>
<td>List abbreviated standards here for this step.</td>
</tr>
<tr>
<td>PLAN</td>
<td>List abbreviated standards here for this step.</td>
</tr>
<tr>
<td>CREATE</td>
<td>List abbreviated standards here for this step.</td>
</tr>
<tr>
<td>TEST</td>
<td>List abbreviated standards here for this step.</td>
</tr>
<tr>
<td>REFLECT</td>
<td>List abbreviated standards here for this step.</td>
</tr>
<tr>
<td>Student Presentation:</td>
<td>Student Reflection:</td>
</tr>
<tr>
<td>----------------------</td>
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</tr>
<tr>
<td>{How will students share their findings? What form of presentation will they use? Which community partners might provide feedback? It is fine to list here that students will be given options among a list of presentation styles.}</td>
<td>{How will you help students summarize their efforts in this unit and pose questions that will lead to the next one (if applicable)? When will students be asked to reflect during the unit and what will be the reflection question? Be sure to also include reflection related to the service portion, if applicable. You should also include if students will be completing a self-rating of the rubric or work habits.}</td>
</tr>
</tbody>
</table>
STEAM Unit Development

In developing your STEM/STEAM curriculum, what has been your inspiration for unit projects?
STEAM Unit Development
Professional Learning and Partnerships
**Outside Expert PLs**

**STEAM Journals PD**
by: Megan McFerrin & Felicia Cullars

**Arts Integration in the Classroom**
by: Emily Hogrefe-Ribeiro

**Project Based Learning**
by: Jolaine Whitehead

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**STEM/ STEAM Journaling**

Tables, Charts, and Graphs

This document will be updated periodically to include examples of student investigative research and data collection in STEM/ STEAM journals.
# Conference and PL Re-Deliveries

<table>
<thead>
<tr>
<th>Name(s)</th>
<th>PL Event/Activity</th>
</tr>
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<tbody>
<tr>
<td>Angela Harris</td>
<td>GaETC</td>
</tr>
<tr>
<td>Julie House</td>
<td>GaETC</td>
</tr>
<tr>
<td>Kenda</td>
<td>STE/M Georgia Teachers Academy - Augusta, GA</td>
</tr>
<tr>
<td>Skye, Christopher,</td>
<td></td>
</tr>
<tr>
<td>Christine, Candice,</td>
<td></td>
</tr>
<tr>
<td>and Lindsey Abney</td>
<td></td>
</tr>
<tr>
<td>Angela Harris, Claire Addley</td>
<td>STEAM Forum</td>
</tr>
<tr>
<td>One teacher from each professional</td>
<td></td>
</tr>
<tr>
<td>Lisa Lampe</td>
<td>PBL training hosted by Busk Institute, training grant in California</td>
</tr>
<tr>
<td>Laura Allen</td>
<td>Georgia Association for Gifted Children (GAGC) annual conference</td>
</tr>
<tr>
<td>Yolanda Gaines</td>
<td>Georgia Stems for Gifted Teachers (GAGC) annual conference</td>
</tr>
<tr>
<td>Angela Harris, Meric Johnstone</td>
<td>CEISMC STEAM Leadership</td>
</tr>
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<table>
<thead>
<tr>
<th></th>
<th>Georgia STEM/GaDOE</th>
<th>November 2017</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Jolene Whitehead</td>
<td>November 2017</td>
</tr>
<tr>
<td></td>
<td>Various speakers, including STEAM workshops</td>
<td>March 2018, 2019</td>
</tr>
<tr>
<td></td>
<td>Georgia Tech</td>
<td>March 2017</td>
</tr>
</tbody>
</table>

*Image: Group of people smiling.*
Inside Expert PLs

VISUAL ART STANDARDS include 4 domains:

1. **CREATING:** plan and create art based on ideas and themes, using various techniques and materials of 2D and 3D art as well as knowledge of elements or art and principles of design that progress in difficulty

2. **PRESENTING:** exhibit own works of art; give title and write artist statement (older grades)

3. **RESPONDING:** build visual literacy, use art vocabulary, follow steps of art criticism, develop appreciation for processes of artmaking

4. **CONNECTING:** understand how art fits into community, culture, history; relate art to the study of other subjects; develop life skills of communication, collaboration, creativity, and critical thinking
Gallery Walks

ELA/SCIENCE: Ask and answer such questions as who, what, why, when, where, and how to demonstrate understanding of key details in a text.

Learning Target: I am able to ask and answer questions about an interesting scientific topic. I am able to use what I have learned and write a script, act with a friend, and record a video to share with the class!

STEAM Professional Learning Reflection
* Required

How would you rate your confidence on STEAM instruction and planning BEFORE our work? *

Low 1 2

Challenging Problem/Driving Question

Does the display reflect students engaging with an authentic, relevant, and challenging problem that drives their learning?

What specific evidence of a challenging problem/driving question is provided in the display? (Take a picture and save it in your drive, then upload it.)

ADD FILE

1 2

1 2
STEAM Partnerships at RBES

We will now show a video describing our different levels of partnerships.
How to Find Partners

ASK

If you can’t help me, do you know someone else who can?

Pitch the idea as its evolving so the partner can help you plan.

Look for partnerships that are MUTUALLY BENEFICIAL.
## STEAM and FINE ARTS Family Nights

**RBES STEAM NIGHT**

Tues. Sept. 10 from 5-7 pm

Come and enjoy STEAM stations, Ice Cream and the Book Fair!

We look forward to seeing you!

**RBES FAMILY NIGHT**

7-7 pm

Thursday, Jan. 30th

**STEAM and FINE ARTS FAMILY NIGHT**

**GUIDE TO ACTIVITIES**

<table>
<thead>
<tr>
<th>Scheduled Activities</th>
<th>Ongoing Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 minute sessions beginning at 5:15, 5:45, 6:15</td>
<td>A - Sew Studio: Try your hand at a small project on a sewing machine with this local sewing studio.</td>
</tr>
<tr>
<td>C - Hands in Presence: Try some sign language &amp; understand how it can be used in theater productions with this local troupe.</td>
<td>B - Printmaking with American Pest Control: Create art using styrofoam with our business partner.</td>
</tr>
<tr>
<td>J - Brightstone Productions: Develop your singing &amp; acting skills with this local theater group.</td>
<td>D - Chair Caning &amp; Weaving: Learn the craft of weaving for furniture from an RBES grandparent expert!</td>
</tr>
<tr>
<td>K - Puppetry with Mrs. Donna: Enjoy stories told by our Bogart librarian with her beloved puppets.</td>
<td>E - Cartoon &amp; Sculpt with Mr. Kriss: Transform your 2D art to 3D art with our resident parent artist.</td>
</tr>
<tr>
<td>P - Dance FX: Try out some new dance moves with this local dance company.</td>
<td>F - Weave on our new Community Loom from the Walton EMC grant.</td>
</tr>
</tbody>
</table>

**RBES Student Art Displays**

Each grade level display is marked on the hallway map. Please enjoy our RBES students’ hard work & creativity!

**R - Chick-fil-a Dinner**

Enjoy your pre-ordered dinner in the cafeteria or take it to-go.
Is the Journey.....

➢ Hard?
➢ Frustrating?
➢ A growth experience?

Yes to all the above!

Is it worth it?
Absolutely!

Archaeologist~Botanist~Marine Biologist~Paleontologist~Chemist
Questions?
Contact us

Laura Mason  lmasen@oconeeschools.org
Kandice Ivarie  kivarie@oconeeschools.org
Jolaine Whitehead  jwhitehead@oconeeschools.org
Stephanie Dickson  sdickson@oconeeschools.org

Find RBES online at
https://www.oconeeschools.org/RBES
Check out our STEAM section!