# Wild Weather Teacher's Guide

The Rock by Rock Changemaker projects are a great addition to instruction either as a whole class or small group interdisciplinary unit or as a self-directed learning opportunity. Each project includes character growth, reading, writing, science, social studies and the arts.

At Rock by Rock, we believe that children learn best when they are having fun and are deeply engaged in rigorous, hands-on learning that has real-world applications. We also believe that habits and character education are a core part of instruction. By infusing habits with academics we can better prepare children to thrive in our ever-changing world and to help make the world a better place.

The Hybrid Learning Series is ideal for students in 3rd-5th grade..

## **Classroom Application and Module Structure:**



Each module in the Hybrid Learning Series can be done together as a class, in small groups or individually as a self-directed project. Each project centers around one mission that is focused on how we can take small actions to address environmental or social challenges.

#### Each Project has a real-world mission that empowers students to take action. Each project follows an inquiry arc:

- 1. Invest: Invest students in the Mission / Project.
- 2. Reflect: Reflect on the life habit focus: Learner, Creativity, Curiosity, Empathy, Courage, Kinship, Impact Awareness.
- 3. **Explore**: Understand the problem and real-world needs through reading, video and activities that enable students to connect personally to the issue or problem through writing and art.
- 4. Take Action: Engage in a take action project that involves taking action through writing, art and making crafts, performance, etc.
- 5. Share: Enlist others to work towards or rally around a cause.
- 6. Reflect: Reflect on what students learned about themselves as leaders and how they grew in their life habits.

At Rock by Rock, we believe in creating flexible tools teachers can adapt based on student needs. Each project is a teacher-designed, interdisciplinary unit that can be flexibly customized. Teachers can follow our recommended lesson flow, or tailor activities to cater to specific student needs.

Use Case	Integrated as part of ELA instructional time.	Specific Science or Social Studies Learning Time	Self Directed Learning
Grouping	Whole Class , Sma	ll Group or Individual	Individual
Purpose	<ul> <li>Authentic Application- Reading is a means to learning - I want kids to see real world applications of reading.</li> <li>21st century literacies - I need my kids to be developing reading and writing skills in modern day multimedia formats (i.e. podcast, videos, dramatic play etc).</li> <li>Word and world Knowledge - My kids need to continue to develop their vocabulary and word and world knowledge to aid in literacy development.</li> </ul>	<ul> <li>Hands-on Learning: I want students to use multiple modes of learning from literacy to hands-on experiments to the arts.</li> <li>Real-world Relevance: My kids need to see how what they are learning is relevant to their lives today.</li> <li>Global Citizenship/ Science Citizenship: Foster global citizens that are engaged in taking action and developing the life habits that they need.</li> </ul>	<ul> <li>Enrichment: more advanced students can do projects independently to enhance learning.</li> <li>Remediation: teacher uses projects with small groups to provide high engagement opportunities for learning.</li> </ul>
Time Period	Used during a language art or interdisciplinary/ humanities block.	Used to replace Science or Social Studies time and/or a specific project based learning time during the week.	Used as a learning center during traditional guided reading or small group rotations. Some kids engage independently while teachers pull groups to support as needed.
Structure	Whole Group Reading Lessons - Pre/During/Post Reading Close Reading or Read A-loud	Science and Social Studies Lessons	Guided Reading or Centers Time Independent Learning.

# Materials and Technology:

#### Materials:

- **Student Mission Log:** You have the choice between a print Mission Log where students can write and take notes by hand or a digital Mission Log you can share with students in a variety of ways. Mission Logs have editable text to enable teacher customization.
- **Project Materials:** In the first lesson of the online module we outline all of the materials that students will need for the project and activities. Most materials are things that can be found in a classroom and/or purchased easily through amazon and/or teacher stores (i.e. discount school supplies).

Materials List:			
<ul> <li>Local map</li> <li>Poster board</li> <li>Markers or coloring tools</li> <li>Baking sheet</li> <li>Damp sand</li> <li>Ice cubes</li> <li>straw</li> <li>Pitcher of water</li> <li>Watering can</li> </ul>	<ul> <li>Students can use any available materials to construct their design solutions models. Here are a few suggested items: <ul> <li>Modeling clay</li> <li>Popsicle sticks</li> <li>Glue</li> <li>Pipe cleaners</li> <li>Cardboard</li> <li>String</li> <li>Foam shapes</li> <li>Cardboard rolls</li> <li>Scissors</li> </ul> </li> </ul>		

Technology: All technology requirements include technology found in most classrooms.

- If doing this as a self-directed project we recommend every student have access to a laptop/computer, wifi, Chrome browser and headphones.
- For teachers who are interested in whole group instruction we recommend additional technology such as a projector or smartboard and speakers.

# Standards Alignment:

Each project is aligned to national and state standards for reading, writing, science, social studies and the arts. Each module was designed to help students progress towards standards holistically. There is not a 1-1 correspondence between each standard and each lesson. Research shows that reading and writing standards develop holistically and more effectively when approached as a whole rather than teaching standards and skills in isolation. Our modules build NGSS aligned science content and practices, CCSS aligned reading, writing, listening and speaking skills, and 21st Century SEL competencies. While many lessons address all clusters of standards, one standard cluster often leads over others.

#### This modules specifically supports:

Reading	Writing	Listening and Speaking	Science	SEL
CCSS	CCSS	CCSS	NGSS	21st Century Skills/Arts
Key Ideas and Details: 1-3 Craft and Structure: 4-6 Integration of Knowledge 7-9 Text Complexity 10	Text Types and Purposes 1 Production and Distribution of Writing 4-6 Research and Build to Present Knowledge 7-9	.Comprehension and Collaboration 1,2 Presentation of Knowledge and ideas 4	Performance Expectations (PE): • 4-ESS2-1. Make observations and/or measurements to provide evidence of	Life Habit: Kinship CASEL: Social Awareness

	<ul> <li>the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</li> <li>4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.</li> <li>4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.*</li> <li>3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</li> </ul>	<ul> <li>Recognizing situational demands and opportunities</li> <li>Responsible Decision-Making         <ul> <li>Identifying solutions for personal and social problems.</li> <li>Evaluating personal, interpersonal, community, and institutional impacts.</li> </ul> </li> </ul>
	Science and Engineering Practices (SEP):   Planning and carrying out investigations.  Make observations and/or measurements to produce data.  Analyze and interpret data.  Generate and compare multiple solutions.  Disciplinary Core Ideas (DCI):  ESS2.A ESS2.B ESS3.B  Crosscutting Concepts (CC): Cause and effect Patterns	

This Project's Focus: Wild Weather: How can we protect ourselves from natural disasters and reduce the impact of natural disasters?

Real-World Mission	Real-World Project	Character Focus
Protect ourselves and others by reducing the impact of natural disasters.	Interactive Exhibit: Students will create an interactive exhibit that teaches others about the impact of weather and/or ways we can help cope with that impact.	Kinship: How can we use kinship to protect ourselves and others from natural disasters?

# Types of Lessons within a module:

Туре	Description	Student Output.
Informational Text Based Lessons	<ul> <li>Lessons that develop informational text skills (reading, graphic organizers, charts, graphs, science concepts, social studies concepts). All lessons follow a similar flow: <ul> <li>Pre-reading: Intro/hook</li> <li>During Reading: Interactive Questions</li> <li>Post Reading: Application activity - many times the post activity can lead to a discussion or supplemental activity aligned with particular class or student needs.</li> </ul> </li> </ul>	<ul> <li>Student mission log</li> <li>Group discussion.</li> </ul>
Hands-on Activities	<ul> <li>Experiential learning opportunities that are hands-on and require kids to go offline to learn by doing and making.</li> <li>Focused on leveraging different learning modalities to engage kids and increase motivation, support internalization of content and aid retention.</li> </ul>	<ul> <li>Student mission log</li> <li>Activity products.</li> </ul>
Habit Focus and Reflections	<ul> <li>Integrated life-habit lessons that develop a 21st century skill/habit.</li> <li>Each project starts and ends with a habit reflection to show growth.</li> </ul>	<ul><li>Activity products.</li><li>Student reflections</li></ul>
Take Action Project	<ul> <li>Short texts/videos/lessons that develop foundational project content (i.e. what is a song) and project skills (i.e. how do I create effective songs).</li> <li>Short and quick application of the lesson as a guided practice before applying it to the project to ensure kids have internalized the concepts.</li> <li>Creation of a take action project that leads to genuine impact. Projects use a modern day multimedia form of communication.</li> <li>An opportunity to share with an authentic audience where kids present what they have learned.</li> </ul>	<ul> <li>Student mission log</li> <li>Take action project</li> <li>Share/ presentation</li> </ul>

#### Unit Overview: (Whole Class or Small Group)

From snowy blizzards, to booming thunder, to earth-shaking quakes - wild weather and natural disasters are fascinating! But, they can also present danger to human health, property and the natural world. While we cannot prevent wild weather and natural disasters from happening, there is a lot that we can do to reduce the harm that they cause.

In this project students will learn about different types of wild weather and natural disasters. They'll look at the harmful effects caused by such events, such as the natural processes of weathering and erosion. Students will learn about ways they can protect themselves and others by building an emergency supply kit and learning some basic safety rules. Students will also explore ways that scientists and engineers are designing innovative solutions to reduce the harmful effects caused by natural disasters.



#### **Virtual Field Trips**



#### Jennifer Walton

In this module, students meet Jennifer Walton. Jennifer is a storm chaser and founder of the organization, Girls Who Chase. Jennifer will teach students about the work that storm chasers do and the tools they use to conduct their work.



#### Karima Grant

In their Take Action Project, students meet Karima Grant, the founder and executive director of ImagiNation Afrika. Karima will teach students how to create an engaging interactive exhibit that teaches others about important topics.

#### Sample Unit Goal: Wild Weather

- 1. Describe different examples of wild weather and other natural disasters.
- 2. Identify the harmful effects of wild weather and other natural disasters on human health, property, and the natural world.
- 3. Make observations about the natural processes of weathering and erosion.

4. Create an original design solution to reduce the impact of natural disasters.

extreme weather	natural disaster	weathering	erosion	disaster relief	prone
n. Any weather that falls outside normal patterns.	n. A sudden and terrible event in nature that usually results in serious damage.	n. When the earth's surface is broken down into smaller pieces, often due to weather conditions.	n. When pieces of the earth are moved and deposited somewhere else.	n. Efforts to help after a disaster.	adj. Likely to suffer from, do, or experience something.

### **Key Vocabulary**

# Pro Tip

Before you begin your planning, we suggest you read this teacher's guide, the student Mission Log and that you skim the online course to become familiar with the content. If you want to build your own background knowledge on natural disasters and wild weather, you can complete the online module as a student.

# At-A-Glance

The table below provides an overview of how you could implement this project. Students can either work with a partner and complete this project at their own pace or teachers can lead students through the content as a class. Our hope is that all of these materials provide additional opportunities for kids to explore the content, answer the driving question and apply it to the take action project at the end of the unit.

Module	Description	Activities
1: Your Mission 1-2 Days	Students are introduced to their "Wild Weather" mission and are introduced to different examples of natural disasters. Students explore some of the reasons for learning about wild weather and other natural disasters.	<ul> <li>Online:</li> <li>Mission introduction.</li> <li>Take a look at the story of Hurricane Harvey and explore other historical examples of natural disasters.</li> <li>Explore some reasons for why it is important to learn about natural disasters.</li> </ul>
2: Kinship 1-2 Days	Students define kinship and explore kinship examples. Students are then prompted to think through the importance of the life habit of kinship in times of disaster. Then, students	<ul> <li>Online:</li> <li>Students learn the meaning of kinship and create a dictionary definition.</li> </ul>

	reflect on how they have used the life habit of kinship.	<ul> <li>Students explore an example of how kinship can play a role in natural disaster relief efforts.</li> <li>Students reflect on their own kinship habits and create a kinship timeline.</li> </ul>
3A: What are Natural Disasters and Wild Weather? 2-5 Days	Students dive into learning about different types of wild weather and natural disasters. They learn about how maps can help us better understand natural disasters, and how some places are more prone to natural disasters given their features. Students take a virtual field trip to meet storm chaser Jennifer Walton. Jennifer teaches students about her work as a storm chaser, describes a memorable chase, and also shares tools storm chasers use to carry out their work.	<ul> <li>Online: <ul> <li>Engage in interactive activities and reading to explore what natural disasters are, where they occur, and how maps can help us better understand them.</li> <li>Virtual field trip to meet Jennifer Walton, storm chaser and founder of Girls Who Chase.</li> </ul> </li> <li>Hands on: <ul> <li>Make a Natural Disaster Map: Students create a map of where they live, labeling important landforms and bodies of water. Students include a pop-out with an explanation of which features exist in their area, and how these features make certain natural disasters more or less likely to occur.</li> </ul></li></ul>
3B: What are the Effects of Natural Disasters and Wild Weather? 2-4 Days	In this section, students learn about the harmful effects of wild weather and natural disasters on human health, property, and the community. Students learn about the earth's natural processes of weathering and erosion and think through how these processes are impacted by natural disasters.	<ul> <li>Online:         <ul> <li>Examine the effects of natural disasters on human health, property, and the natural world.</li> <li>Explore the processes of weathering and erosion.</li> </ul> </li> <li>Hands on:         <ul> <li>Weathering and Erosion Experiment: Students conduct an experiment to make observations about the earth's natural processes of weathering and erosion. Using materials such as sand, ice and water, students simulate natural weather events such as wind, flooding and rain.</li> </ul> </li> </ul>
3C: How Can We Protect Ourselves, Our Homes, and Our Communities ? 2-4 Days	Students learn about innovative ways scientists and engineers are working to design solutions to reduce the impact of natural disasters. Students also explore different ways individuals can protect themselves, and how groups and organizations are helping.	<ul> <li>Online: <ul> <li>Students learn about design solutions used to reduce the impact of natural disasters. They'll also learn how individuals can stay safe, and how groups and organizations provide relief when disasters strike.</li> <li>Prepare a case and engage in a debate.</li> <li>Select a topic for the Take Action Project.</li> </ul> </li> <li>Hands on: <ul> <li>Create a Design Solution: Students will identify one natural disaster to create an innovative solution for. They will create a plan for an invention that will reduce the impact of the natural</li> </ul></li></ul>

		disaster. Then, students will create a 3D model of their design solution.
4A+4B: Take Action Project: Create an Interactive Exhibit 3-6 Days	Students will create interactive exhibits in which they'll teach others about natural disasters. <b>Virtual Field Trip:</b> Students will meet founder and executive director of ImagiNationAfrika, Karima Grant. Karima will teach students strategies she uses to create engaging interactive exhibits.	<ul> <li>Online:         <ul> <li>Virtual Field Trip: Meet Karima Grant and learn key interactive exhibit strategies to use in their final project.</li> </ul> </li> <li>Hands on:         <ul> <li>Create an Interactive Exhibit: Students create an interactive exhibit.</li> </ul> </li> </ul>
4C: Share & Reflect 1 Day	Students share their interactive exhibits with an authentic audience to teach the audience about natural disasters. Finally, students will reflect on what they've learned about kinship and how they can extend those skills to other areas of school and life.	<ul> <li>Hands on:</li> <li>Share: Students share their interactive exhibit with an audience.</li> <li>Reflect: Engage in personal reflection (1-1, small group, whole group) to reflect on ways to use kinship beyond the scope of this project.</li> </ul>

# Sample Lesson Flow

This project could be done in as little as 1-2 weeks with several full days devoted to project-based learning or as many as 4 weeks depending on how much time each day teachers allot to the project and how much depth they choose to explore with each activity. The below lesson sequence is designed to be a flexible jumping-off point for teacher planning and should be modified based on student need and teacher discretion.

Category	Objective and Description	Materials Needed	Standards Alignment		
Invest	Invest				
Module 1: What's the Problem: Introduction to "Wild Weather" (1-2 Days)					
1-1	Your Mission: Protect Yourself and Others by Reducing the Impact of Wild Weather. Objectives:	<ul><li> Project Module</li><li> Video</li><li> Mission Log</li></ul>	<i>Preparation for:</i> 4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of		

	<ul> <li>Build investment in the Wild Weather project.</li> <li>Explain that the mission of the Wild Weather project is to protect ourselves and others by reducing the impact of natural disasters and wild weather.</li> <li>Methods: <ul> <li>Intro Video: Watch the intro to the project video to build investment in the overall project mission.</li> <li>Interactive Exhibit: Preview the interactive exhibit take action project through a short intro video.</li> <li>Mission Log: Explain that students will use their Mission Log to write down important information that will help them with their project.</li> </ul> </li> </ul>		natural Earth processes on humans.
1-2	<ul> <li>The Impact of Natural Disasters</li> <li>Objectives: <ul> <li>Articulate prior knowledge of everything they know about natural disasters.</li> <li>Identify different types of natural disasters and the impact they can have.</li> </ul> </li> <li>Methods: <ul> <li>Did you Know: Read the "did you know" fact together. Activate prior knowledge by asking students to share what they know about natural disasters and make observations about the impact that natural disasters can have on a community.</li> <li>Video: Students watch a video that shares the story of one natural disaster. In advance of the video, prepare students to make observations about what they see happening in the video and what effect it had on the people that lived there.</li> <li>Disaster Examples: Students use pop-ups to explore examples of other natural disasters.</li> </ul> </li> </ul>	<ul> <li>Project Module</li> <li>Video</li> <li>Mission Log</li> </ul>	<ul> <li>Preparation for: 4-ESS3-2. Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</li> <li>ESS3.B: A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.</li> </ul>
1-3	<ul> <li>Why is it Important to Learn About Natural Disasters?</li> <li>Objectives: <ul> <li>Describe reasons it is important to learn about natural disasters.</li> <li>Identify questions they are hoping to answer throughout the course of the project to help create their take action project.</li> </ul> </li> </ul>	<ul> <li>Project Module</li> <li>Video</li> <li>Mission Log</li> </ul>	ESS3.B: A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). Humans cannot eliminate the hazards but can take steps to reduce their impacts.

# End of Preview

If you want to see the rest of the teacher's guide, sign-up for a free-trial.

