**Title of Project:** Weather All Around Us **Created by:** M. Kalista & G. Miller

**Subject(s):** Science

**Grade Level(s):** 1st

**Abstract:** Students will understand, evaluate, and produce content based on weather patterns. First, using authentic tools, students will collect data collaboratively, and keep a digital log of data collected. Next, students will make charts and graphs of the data and compare their data with others in the state and around the world. Ultimately, students will lead the professional role of being a meteorologist, creating a multimedia project that includes future weather predictions based on data and weather patterns. These predictions will be shared in the school environment, local (state) environment, and globally with ongoing collaborators.

Two different schools are intended to implement this project simultaneously. Throughout the process, the classes will collaborate and compare data.

**Learner Description/Context:**

**Kalista***:* My school, Cliftondale Elementary School, is located in College Park, Ga, which is part of the South Learning Community/ Achievement Zone of Fulton County Schools. The school is a Title 1 school which services 97% African American, 1% Hispanic, 1% white and 1% multiracial students. Of those students, approximately 67% receive free/reduced-priced lunch. The demographics of my first-grade classroom include a total of 21 students, nine boys and 11 girls. Of the 21 students, 20 of the students are African American, and the remaining are multiracial. A total of three students receive EIP services (reading and math), and two students have IEPs (both for speech).

Most of the students come from a background of using technology sufficiently. The school offers a 1:1 technology model in all grades K-5. By the time the students enter the first grade, most students have received adequate training in several types of digital software and productivity tools. The students are familiar with using iPads, Chromebooks, desktop computers and Interactive Whiteboards. All students have the opportunity take a bimonthly STEM class and join extracurricular technology based clubs, including the Computer Club and Engineering for Kids. These opportunities increase their interactions and authentic use of various type of technology, which further allows them to garner the skills to learn new technology quickly.

**Miller***:* I am a second grade teacher at an elementary School in Smyrna, Georgia. My school is located in the Concord Covered Bridge-Ruff’s Mill Historic area near the remains of several early pioneer communities and Civil War battlefields. Over the years, my school’s enrollment has multiplied. The city has grown from a sleepy rural town into a bustling community. My school is a Title I school that receives financial assistance from the state, due to the high numbers of children from low-income families. Of the 676 students attending, Russell, 41% are Black, 38% are Hispanic, 18% are White, and the other 4% are Multiracial or Asian /Pacific. Islander. In addition, 77% of our students are eligible for free/reduced meals. I have the pleasure of teaching 20 students, 13 are boys and seven are girls. Out of the 20 students in my class, three are African American, nine are Hispanic, three are Multiracial, and five are Caucasian. Five of my students receive Early Intervention Program (EIP) services for math and reading, and nine of my students receive English Language Learners (ELL) services. I have one student who qualifies for special education services due to a learning disability (LD). At the same time, I have 17 students that receive free/reduced lunch. Overall, I think my classroom represents a diverse population.

 Whether it is playing with tablets, computers, or cell phones at home, students that attend my school, and that I have taught in the past, come to us with some sense of technology usage. In order to build off students’ skills, my school has purchased a number of devices such as classroom computers (six), mobile carts (one laptop cart and three iPad carts), and computer labs (two). Our goal is to use these devices to support whole class instruction, independent work, centers or small group, and independent learning. However, we are not using our resources to its full potential. Sadly, the only productivity tools that I have used in my classroom are Microsoft Word, KidPix, Graph Club, and a few other instructional software. I could say the same about others within my school, although they might use PowerPoint presentations. If my school wants to do a better job at preparing digital age learners, they have to find a way to use technology to reinforce the curriculum in a way that will heighten students’ interest as well as increase students’ motivation.

**Time Frame:**

The learning experience will take a total of 6 - 7 weeks to complete. Here is a weekly breakdown:

* 1 Week: Background knowledge, mentoring, data collection
* 3 weeks: Data collection, collaboration
* 1 week: Writing script of predictions (writing process)
* 1 Week: Creating videos/ sharing predictions

Students will complete the process/product during:

* Data collection: Morning/Afternoon
* Background knowledge/content acquisition: Science, ELA Centers
* Analyze data/produce graphs: Math
* Mentoring/Collaboration: Science, ELA
* Producing videos: Science, ELA Centers, Writing

**Standards Assessed:**

**Content Standards:**

**Science:**

S1E1. Obtain, evaluate, and communicate weather data to identify weather patterns.

a. Represent data in tables and/or graphs to identify and describe different types of weather and the characteristics of each type.

b. Ask questions to identify forms of precipitation such as rain, snow, sleet, and hailstones as either solid (ice) or liquid (water).

c. Plan and carry out investigations on current weather conditions by observing, measuring with simple weather instruments (thermometer, wind vane, rain gauge), and recording weather data (temperature, precipitation, sky conditions, and weather events) in a periodic journal, on a calendar, and graphically.

d. Analyze data to identify seasonal patterns of change. (Clarification statement: Examples could include temperature, rainfall/snowfall, and changes to the environment.)

**Math:**

MGSE1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

**ELA:**

ELAGSE1W2: Write informative/ explanatory texts in which they name a topic, supply some facts about the topic, and provide some sense of closure.

ELAGSE1W6: With guidance and support from adults, use a variety of tools to produce and publish writing, including digital tools and collaboration with peers. Research to Build and Peers.

ELAGSE1W7: Participate in shared research and writing projects.

**Technology Standards:**

**ISTE Standards**:

Standard 3: Knowledge Constructor: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.

Standard 5: Computational Thinker; Students develop and employ strategies for understanding and solving problems in ways that leverage the power of technological methods to develop and test solutions.

Standard 6: Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

Standard 7: Global Collaborator: Students use digital tools to broaden their perspectives and enrich their learning by collaborating with others and working effectively in teams locally and globally.

**Learner Objectives:**

After this engaged learning project:

* Students will identify and describe different types of weather and the characteristics of each weather type.
* Students will identify forms of precipitation (rain, snow, sleet, hailstones).
* Students will measure weather (precipitation, wind speed, etc.) using professional tools
* Students will compile data to generate graphs.
* Student will compare data to that of professionals and others.
* Students will analyze data to identify seasonal patterns of change.
* Students will hypothesize about future weather patterns.
* Students will produce a video sharing future weather patterns.

**The “hook” or Introduction**:

The learning experience will begin with students using  [AR/VR](https://www.oculus.com/experiences/go/1196489400366340/) experiences to immerse themselves in different types of weather, especially those that are not part of the local climate, such as sleet and snow. The teacher will ask probing questions about the different types of weather they are seeing using [AR/VR](https://www.oculus.com/experiences/go/1196489400366340/) device. The students will then watch a meteorologist’s broadcast and try to synthesize what the new learning objectives will be collaboratively. After giving students time to brainstorm, the teacher will guide them in developing the learning objectives.

**Process:**

 First students will gain content knowledge of types of weather, weather patterns, and weather instruments. The students will gain background knowledge on data they will be collecting and the professional tools they will use. Through multiple means of representation, content is presented using a [Blendspace](https://www.tes.com/lessons/GvKxakYK5THpaA/weather-all-around-us) with various sources including audiobooks, videos, games, songs, and websites. Furthermore, the students will Skype with an actual [meteorologist](http://www.hookedonscience.org/skypehookedonscienceschoolprogram.html) to get an authentic experience from a real-life professional. The teacher will monitor the acquisition of background knowledge through ongoing assessments, such as observational/anecdotal notes, content quizzes, and checklists.

After gaining background knowledge, the students will use authentic tools (thermometer, rain gauge, etc.) to collaboratively (groups of 5) collect data about weather patterns in their area. This data will be collected twice a day, once in the morning and once in the afternoon. The specific data includes temperature, participation amount, wind speed, atmospheric pressure, and an illustration of local weather environment/weather type. Each day the student will be tasked with collecting a different kinds of data to receive sufficient practice using all professional tools. The students will use [SeeSaw](https://app.seesaw.me/) to make group portfolios of the data collected and demonstrate their knowledge through multiple means of expressions using pictures, videos, text, or drawings. Students will also complete individual portfolios, sharing daily reflections of experiences newly developed knowledge. Once the students collect daily data, the groups will compare the data to discuss discrepancies and decide on a class consensus about the weather for that day. The class will analyze their data and compare it to the data collected by the professional tools of [weather.com](https://weather.com/). During the entire month, the teacher will continuously monitor students’ data collection and reflections using teacher created checklists.

After a month of data collection, with teacher support, the students will input the data into the [Graph Club](http://www.cobbk12.org/centraloffice/instructionaltechnology/CR/GraphClub/GraphClub_QuickStartGuide.pdf) website to generate graphs that illustrate the collected data. Once the students have created the weather data graphs, they will Skype with another 1st grade class in Georgia to compare similarities and differences of weather data in a local surrounding. After students connect with locals, students will compare their data with a class from Australia (using [Skype in the Classroom](https://education.microsoft.com/skype-in-the-classroom/skype-collaborations)); thus allowing them to engage with others who are currently on an opposite seasonal pattern. After students have collected, analyzed and shared weather data, students will create a final product making at least one week of predictions about future weather patterns.

**Differentiation**:

Here are some of the actions we will take to differentiate for our students.

**Kalista:** For students who receive services for speech, I would follow the lead of the speech therapist about classroom accommodations that are needed to enable success for the students. If necessary, I plan to provide assistive technology, such as Low-Tech Augmentative and Alternative Communication Devices and High-Tech Augmentative and Alternative Communication Devices (LibGuides: Speech Disorders). These types of assistive technology will enable the student to communicate effectively, allowing them to collaborate during the engaged learning project successfully.

**Miller**: ELLs receive services through English as a Second Language (ESL); however, I am still responsible for making sure that they are successful in all academic areas. Here are few strategies to I will use for this particular lesson; word walls, modeling sentence structure, manipulatives, realia, pictures, videos, and demonstrations.

**Kalista/Miller**: EIP students receive services along with regular education students in a reduced classroom model. Students will receive strategies based on individual needs. These students will also be given extra time, support through modeling, and closely monitored through ongoing observations.

**Product**:

For the final product, students will emulate a meteorologist by hypothesizing future weather patterns and produce a multimedia video of weather predictions. The video product will be developed and produced in collaborative groups. Students in each group will have a different role and work together to decide which role they would like, including the roles of scriptwriting, video recorder, audio/visual producer, and two meteorologist broadcasters. Even though the students will have specific tasks, their ability to collaborate to produce the final product will be assessed. To record and create the video, students will use an iPad and a [green screen](http://www.doink.com/). Within the video, the students will predict about weather patterns and data, including temperature, precipitation amount, wind speed, atmospheric pressure, an illustration of local weather environment/weather type, and weather implications. The video should also incorporate other student selected multimedia elements, including graphs, images, and background music. As students are developing the video, the teacher will facilitate and monitor as necessary.

The students will then share their final products with authentic audiences. The initial audience will be other students in the school on the morning news broadcast. In addition, the students will share their products with the collaborative class via Skype (Another class in Georgia). The two classes will then share their results and compare products to recognize and reflect upon the similarities/differences. Last, the students will share their products with the class from Australia.

After the students have completed all of the product stages, a rubric will be used to assess the multimedia project in five different categories.

**Rubric**:



**Technology Use:**

|  |  |
| --- | --- |
| **Technology:** | **Indicator of Engaged Learning Supported:** |
| Blendspace: <http://blendspace.com/>  | Standards- BasedMulti-disciplinary  |
| Skype in the Classroom: Collaborate with others from around the world:<https://education.microsoft.com/skype-in-the-classroom/skype-collaborations> | CollaborationStudents as the teacher |
| Collaborate with Meteorologist:<http://www.hookedonscience.org/skypehookedonscienceschoolprogram.html> | Authentic/ Meaningful |
| Graph Club to analyze data generate graphs:<http://www.cobbk12.org/centraloffice/instructionaltechnology/CR/GraphClub/GraphClub_QuickStartGuide.pdf> | Standards-BasedChallenging |
| Green Screen for video production and enhancement: <http://www.doink.com/> | ChallengingPerformance-Based |
| SeeSaw for portfolios:<https://app.seesaw.me/> | Standards-basedCollaborativeOngoing, seamless |
| AR/VR of weather:<https://www.oculus.com/experiences/go/1196489400366340/> | Standards-basedExplorer |

**References and Supporting Material**:

**Books:**

Breen, M., & Friestad, K. (2008). The kids' book of weather forecasting: Build a weather station, "read" the sky & make predictions! Nashville, TN: Williamson Books.

Furgang, K., & Samaras, T. (2012). Everything weather / Facts, Photos, and Fun That Will Blow Your Mind! Washington, D.C.: National Geographic.

Gibbons, G., & Barden, C. (1990). Weather words and what they mean / Gail Gibbons. New York: Holiday House.

Rattini, K. B. (2013). Weather. Washington, D.C.: National Geographic Society.

**Videos:**

Mazzarella Media. (2014). Precipitation [Video File]. Retrieved from SAFARI Montage. [http://safari.fultonschools.org](http://safari.fultonschools.org/)

Schlessinger Media. (2000). All About Meteorology [Video File]. Retrieved from SAFARI Montage. [http://safari.fultonschools.org](http://safari.fultonschools.org/)

**Multimedia:**

Kalista, M., & Miller, G. (2018, July 12). Weather All Around Us! - Lessons - Tes Teach. Retrieved July 12, 2018, from https://www.tes.com/lessons/GvKxakYK5THpaA/weather-all-around-us