



Weathering Good Times with Research

OVERVIEW

In this lesson students will investigate different topics in weather using the Independent Investigation Method (IIM) of research.

GRADE LEVELS

2nd – 4th grade for weather
K-12 and beyond for the research method

TIME ALLOTMENT

Two to three weeks

SUBJECT MATTER

This lesson includes instructional goals in science, information acquisition, writing, reading, and technology.

LEARNING OBJECTIVES

The students will be able to:

- Participate in immersion or presearch activities in order to explore the topic of study, weather, and generate a concept map.

- Set goals on what questions need answered about the topic, number of resources, types of resources, number of glossary entries, and required amount of notes.
- Conduct research and take notefacts that answer their goal-setting questions in a way that discourages plagiarism.
- Organize collected information from various sources in a way that is unique to the questions they are trying to answer.
- Evaluate their goals to decide whether they need more information or have met their needs
- Create a product and present their findings as experts in their subject matter.
- See how this method has created a unique product that is unlike any other and has helped them avoid plagiarism.

STANDARDS

Texas Essential Knowledge and Skills (TEKS)
(<http://www.tea.state.tx.us/teks>)



§112.4. Science, Grade 2

- 1A Demonstrate safe practices
- 2A Ask questions about organisms, objects and events
- 2B Plan and conduct simple descriptive investigations
- 2C Compare results with knowledge and scientists
- 2D Use equipment and tools - extend senses
- 2E Explanations based on information and draw conclusions
- 3A Make decisions using information
- 3B Discuss and justify merit of decisions
- 4A Collect information using tools, rulers, meter sticks, measuring cups, clocks, hand lenses, computers, thermometers, balances
- 6A Manipulate, predict, identify separated parts from whole may not work
- 6B Manipulate, predict & identify parts put together that do things
- 7A Observe, measure, record, analyze, predict, illustrate changes in size, mass, temperature, color, position, quantity, sound and movement
- 7B Identify predict, test uses of heat to cause changes
- 7D Observe, measure and record changes in weather, the night sky, seasons
- 8B Identify characteristics of nonliving objects
- 10A Describe and illustrate the water cycle
- 10B Identify uses of natural resources

MEDIA COMPONENTS

WEBSITES

KLRN – unitedstreaming

<http://klrn.unitedstreaming.com>

Discovery Education's wealth of videos, segments, images, clips, audio, quizzes, and teacher materials to support almost any subject you are teaching. Great as a teaching tool and also to help immerse students the subject matter before you begin a research project.

ReadWriteThink: Student Materials: Fact Fragment Frenzy

<http://www.readwritethink.org/materials/fact-fragment-frenzy/opening.html>

This site helps students learn to only write down the most important information when taking notes. It also contains an interactive portion to help them practice.

Weather Wiz Kids

<http://www.weatherwizkids.com/>

A great, kid-friendly website for learning about weather.

The Weather Channel

<http://www.weather.com/education/?from=footer&ref=/index.html>

Another great resource for teachers and students about weather topics.

VIDEOS

Use any video on weather that fits the topics chosen by the students.

SOFTWARE

Inspiration by Inspiration Software Inc.

<http://www.inspiration.com>

Download a 30-day trial of fully functioning software, which allows the ability to save and print graphic organizers, timelines, diagrams, outlines, and concept maps. Available for both Mac and PC users.

Additional software will vary depending on the product types chosen by students. Examples include Appleworks Database, word processing, multimedia presentation software, iMovie or Windows Movie Maker, etc.

MATERIALS

You will need the following to complete these activities:



PER CLASS

Post-It notes and chart paper

PER COOPERATIVE GROUP /PER STUDENT

IIM worksheet packet
Notefact pages
Question cubes
Organization folder

VOCABULARY

In addition to glossary terms that students will be adding to their individual glossaries about weather, students will be expected to understand research terminology such as:

Research – Focused investigation and experimentation about a topic to discover new facts

Notefact – A short, true piece of information extracted and recorded from text source or from observations during action research.

Plagiarism – Using other authors' words and ideas in your writing without giving them credit.

Resource – Any book, article, interview, experiment, survey...used to gather the information for a research study.
(Nottage & Morse p.221-222)

PREP FOR TEACHERS

Make copies of IIM notefact pages and reproducible packet for each group or individual student. Collect weather resources for immersion and/or presearch activities.

INTRODUCTORY ACTIVITY: SETTING THE STAGE

Immerse the students in weather by creating a station filled with weather related objects (umbrella, gloves, goulashes, etc.) and books. Allow students to explore the items and show them a brief clip from unitedstreaming or a series of images related to weather.

LEARNING ACTIVITIES

1. Step 1 - Topic

Create a concept map using Inspiration software as a class. Brainstorm all things students know or want to know about weather. Start a glossary of new vocabulary being discussed. Make sure that the students help you group their brainstorming into categories, or at least hear you think aloud the organization process.

2. Step 2 – Goal Setting

Using question cubes, have students generate questions about weather categories from step one that need to be answered or discovered in this research project. The teacher's essential questions will also be given to students. Depending on the students' research experience, students will either work as a class, small groups or individually to find answers to questions in either each category, or maybe just one category. Number of notefacts, required glossary entries, number of resources and resource types will also be determined. A modification for more advanced students at this stage is to have them develop a thesis statement.

2. Step 3 – Research

Students will learn the proper way to record information about their sources whether using MLA or the ABCDE method. They will also



learn how to take notefacts and number each source and its corresponding notefact. The students will then collect data and find answers to their questions from step 2, taking notes on notefact paper while collecting new vocabulary for their glossary.

2. Step 4 – Organizing

Students will decide on categories for the information they gathered. The categories can match or be different from the categories created in step 1's concept map, depending on where the research findings take them. Students will color code each category and cut apart their notefacts. Each notefact will be placed in a category and color coded to match. Students should be able to defend their reason for placing each notefact in a category. One possible way to help students not lose their notefacts is to have a manila folder with pockets (or if it's a class, a tri-fold board with pocket folders) to place the notefacts in per category. Plagiarism should not be an issue at this point if all steps have been followed. At this point, students are putting together information from multiple sources into a unique organization specific to questions they are answering.

2. Step 5 – Goal Evaluation

Students should be able to list off some of their major findings at this point (or defend a thesis statement.) They can visually look at their notefacts set in categories and see if there is a deficit that requires them to do more research. Students should also be checking to make sure that they have answered all the questions generated in step 2 as well as finding the required number of glossary entries, notefacts, resources, etc. This is one of many points along the way that gives teachers the chance to check

for plagiarism before the major product/presentation.

CULMINATING ACTIVITY

2. Step 6 – Product

Students will create a quality product that shares what they learned about weather during their research. It is fun to give students a variety of choices for product beyond the research paper. When students are given the chance to create something they enjoy, they will be more invested in doing a good job. If they are unable to share all the information they learned in the product type they choose, they need to make sure that the presentation fills in the gaps.

2. Step 7 – Presentation

Students will present what they have learned to an audience (class, peers, another group of students or parents, etc.) This step is very important as it makes the students even more accountable for doing a good job and truly becoming an expert. Have audience members gather facts from each presentation. Again, presentations should also be creative. No one wants to hear a research paper being read aloud.

Assessment should be occurring at each of the seven stages. Ideally 20% of your grade should be about the process of research and 80% should be on the product. Having students create rubrics with you for the product and presentation is also important so they understand what is expected of them. Students at the end of a full research process should feel like experts on their topic.



COMMUNITY CONNECTIONS

In both the basic and proficient levels of this research process, authentic connections to real people are embedded in the process, particularly when you get to product and presentation. In the proficient level it is even more critical for this connection to be made for the students, giving them opportunities to present in the community and/or with professionals of the subject area.