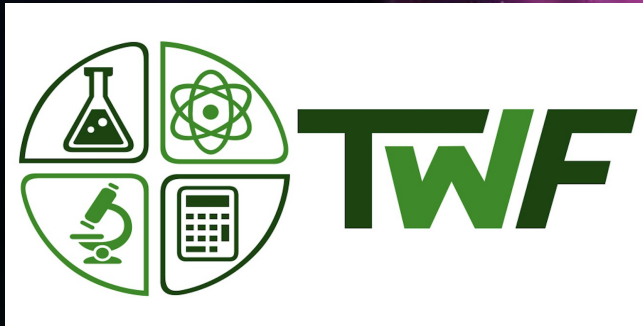


Meteorology

5E Lesson

The 5E model is a scientifically proven method to improve student engagement and learning in your classroom

- ✓ Engagement
- ✓ Exploration
- ✓ Explanation
- ✓ Elaborate
- ✓ Evaluate



Complete Teacher Instructions

Meteorology 5E Lesson

Grades 8-12	Meteorology	Ongoing Les
Lesson Objective: Students will learn about: • Weather vs. Climate • The Atmosphere • Types of Weather • Causes of Weather • Convection Cells & Jet Streams • The Coriolis Effect • Clouds & Precipitation • Storms • Air Masses & Fronts • Ocean Currents & Gyres • Thermohaline Circulation		
Possible Student Misconceptions: • Weather and climate are the same thing • Clouds form because cold air doesn't hold as much water as warm air • Clouds are made of water vapor • Clouds always predict rain • Rain falls when clouds become too heavy and the rain drips out or bu • Rain comes from holes in clouds, sweating clouds, funnels in clouds, • Thunder occurs when two clouds collide • Clouds come from somewhere above the sky • Clouds are made of smoke • Frontal rain is caused when cold fronts cool down warm fronts • Heated air weighs more than cold air • The Coriolis Effect causes toilets to drain in opposite directions in the hemispheres		
Materials: • 1 device (smartphone, Chromebook, laptop, tablet, or computer) per 3 • A means of projecting a PowerPoint presentation • Internet access • General classroom objects		
Teacher Notes: ➢ All videos can be accessed directly from the PowerPoint. To retrieve t icon while in slideshow mode and it will automatically open for you. If i reason, right-click on the image and click Edit Hyperlink or something ➢ I've created a video walkthrough if needed. It can be accessed here - https://youtu.be/oCIKIP9SaDQ ➢ I don't believe in long lessons. If you feel your students are losing the Stop the PowerPoint and give them a 5-minute break. If you'd like to s recommend my video collection here - http://www.teachwithfergy.com are tons of brain-break videos to choose from all grouped by category		

Meteorology – 5E Lesson

Engagement Phase

Your students will watch the video 'Why Does the Wind Blow?' and complete the questions found in the file – [Engagement – Why Does the Wind Blow Video](#)

Teacher Notes:

- The video is about three minutes long
- You may need to show the video more than once or pause when an answer is given to one of the questions.

Exploration Phase

Exploration – Lab Station Activity

- In groups of 2-3, have your students complete [Exploration – Lab Station Activity](#). Once they're done, they will submit their passport to you.

Teacher Notes:

- The complete instructions for my Lab Station activity can be found in the [START HERE – Instructions](#) file.

Explanation Phase

PowerPoint Lessons

- The lesson is found in the folder – [Explanation – Lesson](#)
- This lesson is designed to be completed over two days
- There are multiple embedded videos and plenty of opportunity to engage, interact and check for your students' understanding throughout the lesson

- The lesson covers the following topics:
 - Weather vs. Climate
 - The Atmosphere
 - Types of Weather
 - What Causes Weather?
 - Convection Cells
 - Coriolis Effect
 - Jet Streams
 - Cloud Formation
 - Precipitation
 - Ten Fundamental Cloud Types
 - Storms
 - Air Masses
 - Ocean Currents
 - Gyres

Teacher Notes:

- Students are able to connect the content presented to previous experiences

- All videos can be accessed directly from the PowerPoint. To retrieve them, click on the video icon while in slideshow mode and it will automatically open for you. If they don't open, right-click the image and select **Edit Hyperlink** or something similar.
- I've created a video walkthrough if needed. It can be accessed here - <https://youtu.be/oCIKIP9SaDQ>
- I have also enclosed a .PDF version of both the teacher and student versions.

Elaborate Phase

Elaborate – Reading

Your students will complete – [Elaborate – Reading](#). This reading will require your students to move beyond what was covered directly in the lesson and allow them to further develop their understanding.

Teacher Notes:

- Students will work individually or in small groups
- This reading contains 14 comprehension questions and 3 extension questions. It is fully editable so I encourage you to remove any question(s) in order to meet the needs of your students as well as your time frame.

Evaluate Phase

Quiz

Have your students complete - [Evaluate – Meteorology Quiz](#)

Teacher Notes:

- It's sometimes best to have the students peer evaluate
- Placing students in small groups and having them exchange papers to mark will accomplish two things
 - 1) Provide immediate feedback on the questions they just completed
 - 2) Significantly reduce your marking time
- Peer evaluation is not needed, only suggested when appropriate

Duration: 1 hour

Teacher Role – Facilitate learning and keep students focused

Goal

- Students use their newly obtained knowledge to propose solutions and extend their learning to new situations

Duration: 30 min

Teacher Role – Distribute and collect evaluation

Goal

- Students are given the opportunity to demonstrate their understanding and evaluate their own progress

Each phase is clearly described

A Complete Lesson

The Atmosphere

- Main components
 - Nitrogen
 - Oxygen
 - Argon
- Minor components
 - Water vapor
 - Carbon dioxide
 - Methane



← Make sure your students are on track

Student copies with blanks
Videos embedded right into
your slideshow

The Atmosphere

- Main components
 - _____
 - _____
 - _____
- Minor components
 - _____
 - _____
 - _____



Synthesis

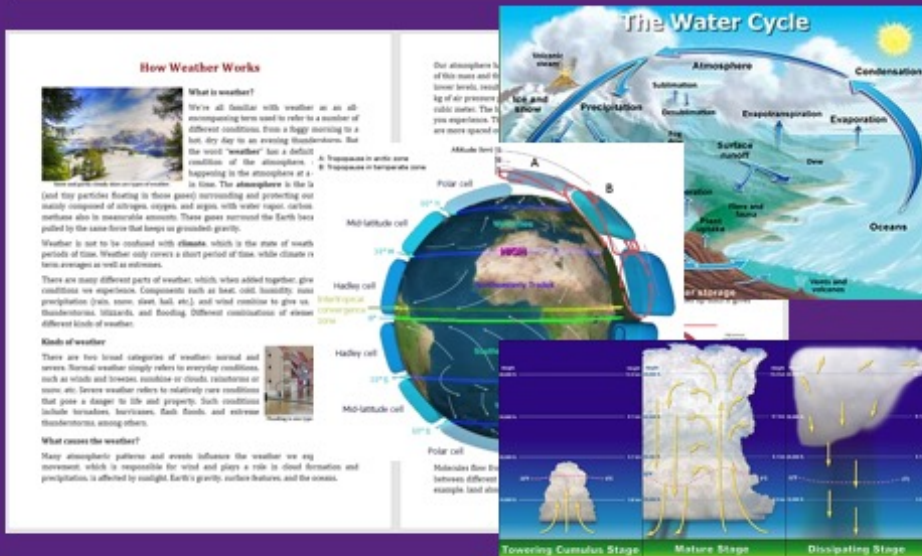
- With so many factors contributing to weather, it's no wonder weather forecasts can be wrong



Interactive and Engaging Activities

How Weather Works

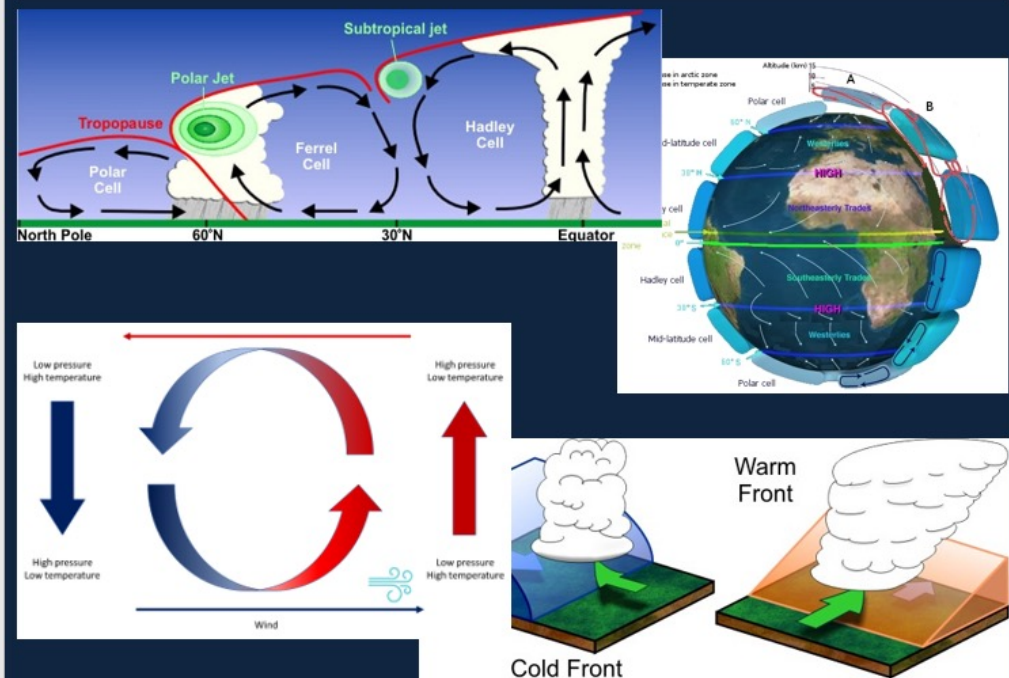
Scientific Reading Comprehension Article and Extension Activity



Improve your students' **Literacy** and **Analysis Skills**,
use as an **Emergency Substitute Plan**, or create
Applicability in your classroom

Meteorology

Lab Station Activity



7 Lab Station Activities to get your kids out of their seats and engaged in their learning

Get away from tired practices and unengaged students



Provide a Scientifically-Proven means of instruction



Incorporate Technology and Increase Collaboration

