Project: Meteorologist Mission - Forecasting a Major Weather Event

Unit Focus: A one-week, hands-on project where the student acts as a field meteorologist. The goal is to track a real-time weather system, understand the forces driving it, and produce a creative, multi-media weather forecast and safety briefing. This project is designed to be dyslexia and dysgraphia-friendly by emphasizing visual, auditory, and kinesthetic learning over traditional reading and writing.

Materials Needed

- Computer with internet access
- Smartphone or camera for recording video/audio
- A clear glass jar, a balloon, a rubber band, a drinking straw, and tape (for a DIY barometer)
- A notebook or digital document for a "Field Log" (can be a spreadsheet, a voice memo log, or a document using speech-to-text software)
- Access to free presentation software (e.g., Google Slides, Canva) or video editing software (e.g., iMovie, DaVinci Resolve - free version)
- Access to websites like National Weather Service, Windy.com, and the UK Met Office YouTube Channel for data and video resources.
- Optional: Art supplies for drawing diagrams or maps (large paper, colored pencils/markers).

Daily Lesson Plan

Day 1: Mission Briefing & Basic Training

Learning Objective: Student will identify the primary tools and data points meteorologists use and construct a simple barometer to understand atmospheric pressure.

- **Engage (15 mins):** Watch a short, exciting documentary clip about storm chasers or a meteorologist broadcasting during a major weather event. Discuss: What skills do you think they need? What information are they sharing?
- **Activity 1 - Know Your Tools (45 mins):** Explore the Windy.com website together. Look at the different layers (wind, temperature, pressure, clouds). Instead of reading dense articles, watch short YouTube videos explaining key weather tools (Doppler radar, weather balloons, satellites). The goal is visual and auditory recognition, not written definition.
- **Activity 2 - Hands-On Science: Build a Barometer (30 mins):**
    1. Stretch a piece of a balloon tightly over the top of a glass jar and secure it with a rubber band.
    2. Tape a drinking straw horizontally to the center of the balloon membrane, so it extends out past the edge of the jar like a pointer.
    3. Place the barometer next to a wall and tape a piece of paper to the wall. Mark the starting position of the straw.
    4. **Explanation:** High pressure pushes the balloon down, making the straw point up. Low pressure lets the balloon bulge up, making the straw point down. This provides a tangible way to "feel" air pressure.
- **Mission Assignment (15 mins):** The student's mission for the week is to become the lead forecaster for a region of their choice that is expecting significant weather (a storm system, a cold front, a heatwave). They will use their "Field Log" to record observations.
- **Dyslexia/Dysgraphia Focus:** The "Field Log" can be a voice note diary where the student

verbally describes their barometer readings and online observations. They can also take screenshots of weather maps and verbally annotate them using a simple screen-recording tool.

Day 2: Understanding the Enemy - Air Masses & Fronts

Learning Objective: Student will demonstrate how different air masses and fronts interact to create weather by creating a visual model or explanation.

- **Engage (15 mins):** Check the DIY barometer. Has it changed? Discuss why. Look at the national pressure map on weather.gov to see the bigger picture.
- **Activity 1 - Visual Learning (45 mins):** Watch animated videos that explain high and low-pressure systems, air masses (Maritime, Continental, Polar, Tropical), and the four main types of fronts (cold, warm, stationary, occluded). The Met Office has excellent, clear animations for this. Pause and discuss, focusing on the "story" of what happens when cold air meets warm air.
- **Activity 2 - Creative Explanation (45 mins):** Instead of a written summary, the student must create a way to explain how a cold front works.
    - **Option A (Kinesthetic/Visual):** Use household items (e.g., blue and red blankets for air masses) to physically act out the front.
    - **Option B (Artistic):** Draw a large, colorful diagram or comic strip showing the "battle" between the air masses.
    - **Option C (Digital):** Create a simple 3-4 slide presentation with images and voice-over explaining the concept.
- **Field Log Entry:** Find the chosen weather system on a weather map. Identify any visible fronts or pressure centers. Record observations via voice note, sketch, or screenshot annotation.

Day 3: Data Collection & Tracking

Learning Objective: Student will gather and organize data about their chosen weather system from multiple sources to track its movement and intensity.

- **Activity 1 - The Data Dive (60 mins):** Today is about being a data detective. Using Windy.com and the National Weather Service, the student will fill out their Field Log for their chosen weather system. The focus is on gathering, not writing.
    - Record temperature changes over the last 12 hours.
    - Note the barometric pressure trend (rising/falling).
    - Describe the wind speed and direction.
    - Identify cloud types from satellite imagery (or look outside if the system is local!). Connect the clouds they see to the type of front they are tracking (e.g., towering cumulonimbus clouds at a cold front).
- **Activity 2 - Watch the Professionals (30 mins):** Watch a few local or national weather forecasts on YouTube.
    - **Scaffolding Question (Verbal Discussion):** How do they tell the story of the weather? What graphics do they use? What order do they present information in? What makes a forecast clear and easy to understand?
- **Dyslexia/Dysgraphia Focus:** Data collection can be done in a simple table or spreadsheet, minimizing writing. The goal is to spot patterns in the numbers and visuals, not to write sentences about them.

Day 4: Making the Call - Building the Forecast

Learning Objective: Student will synthesize collected data to make a 24-hour forecast and storyboard their final presentation.

- **Activity 1 - The Prediction (30 mins):** Based on all the data from the Field Log, the student will make a prediction. What will happen in the next 24 hours in their chosen location? They

should verbally explain their reasoning. "Because the cold front is moving southeast at 20 mph and the pressure is dropping, I predict that thunderstorms will arrive around 3 PM tomorrow."

- **Activity 2 - Storyboarding the Report (60 mins):** Plan the final project. The student chooses their format:
  - **Video Weather Report:** Standing in front of a map or a screen showing weather graphics.
  - **Podcast/Radio Broadcast:** An audio-only report with sound effects (wind, rain).
  - **Narrated Slideshow:** A presentation with powerful images, key data points (not paragraphs), and a voice-over.

  The storyboard can be a series of simple sketches or bullet points (dictated using speech-to-text) outlining the sequence: Introduction, Current Conditions, The Forecast, Safety/Impacts, and Conclusion.
- **Work Period (30 mins):** Begin creating the assets for the final project (finding maps, recording short audio clips, building slides).

Day 5: Going Live! - Presentation & Debrief

Learning Objective: Student will present their forecast in a clear and engaging multi-media format and reflect on the accuracy of their prediction.

- **Final Preparations (30 mins):** Rehearse the presentation a couple of times to feel confident. Check all tech to make sure it works.
- **Presentation - "The Weather Report" (15 mins):** The student presents their final project as if they are a real meteorologist broadcasting to the public. The focus is on clear communication, confidence, and demonstrating understanding through their visuals and speech.
- **Debrief & Reflection (45 mins):** This is a crucial step.
  1. Watch the presentation together and celebrate the great work.
  2. Go to the real-world weather data. How accurate was the student's forecast?
  3. Discuss: What was correct? What was different than predicted? Why do you think that was? (This introduces the concept of variability and chaos in weather systems).
  4. Talk about the project itself: What part was most fun? What was most challenging? What did you learn that surprised you?

Summative Assessment

The student's final project (the video, podcast, or presentation) serves as the summative assessment. It is evaluated based on:

- **Application of Concepts:** Did the student correctly identify and use concepts like fronts, pressure systems, and data points to justify their forecast?
- **Clarity and Communication:** Was the forecast easy to understand, well-organized, and engaging?
- **Data Integration:** Did the student use real data (maps, numbers, observations) to support their report?
- **Creativity and Effort:** Did the student show creativity and put thoughtful effort into the final product?