

LESSON: Weather Overview

Title: Weather Overview
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Lesson Overview:

This lesson is designed so students can learn more about launch commit criteria (LCC) that the weather team uses to ensure safety for everyone during a shuttle launch. Core to this lesson is the weather reading material. There is also a great video by The Weather Channel that features Kathy Winters, Space Shuttle Launch Weather Officer. Depending on how quickly your students can move through the material, this series of lessons may be covered in 2-5 days. It is essential, however, that they spend as much time as needed to grasp the important concepts that are being taught so they can get the most out of the simulation activities which come next.

Suggested Classroom Time: 120-300 minutes

Grade Levels: 6-10

KLASS Module: 1-Training

Topic/Console: Weather

Materials Needed:

Activity	Documents	Other Materials
1	PRES_Weather-LWO.htm (video)	Demonstration computer with projection
2	RDG_Weather.doc ACT_Weather-Ant-Guide.doc ACT_Weather-KWL.doc KEY_Weather-KWL.doc	Writing tools
3	RDG_KLASS-Team-Roles.doc	

National Standards/Objectives:

Discipline	Standard	Objective
Science	F. Science in Personal and Social Perspectives	Students understand the risks and benefits and the importance of environmental quality.
Science	Science as Inquiry	Individuals can use a systematic approach to thinking critically about risks and benefits.
Technology	Technology problem-solving and decision-making tools	Students use technology resources for solving problems and making informed decisions.
Math	Representation	Students create and use representations to organize, record, and communicate mathematical ideas.

Desired Results:

Students will be able to answer these essential questions

- What weather conditions are necessary for a successful Shuttle Launch?
- What types of responsibilities does the shuttle weather team have?

Students will know

- What tools are necessary to monitor launch weather conditions and what the launch weather constraints will prevent the shuttle from launching.

Students will be able to

- Predict, read, and adjust their predictions for launch weather.
- Reflect on what they learned by reading the launch weather information.

Learning Plan/Activities:**1. Introducing the Lesson.**

Script: "The space shuttle team relies on a highly dedicated group of weather officers to help determine whether or not weather conditions are GREEN (go for launch) or RED (no go for launch). They actually hire the United States Air Force to help with this major task. The Launch Weather Officer (LWO) plays a very critical role in making sure that all personnel are safe, that all systems are protected against the weather, and that her client, NASA remains satisfied with the job that she and her team of meteorologists at the 45th Weather Squadron are performing. Let's get a better picture of what the weather officers, technicians and meteorologists do on launch day."

Play the video (PRES_Weather-LWO.htm) so all can see, and review the slides referencing the notes that have been provided in the PowerPoint notes area. You can print these notes so you have them handy as you are presenting (File>Print>choose Notes and Print).

2. Predicting, Reading, and Reflecting.

There are 3 sections of readings in the RDG_Weather.doc. Use the following plan for each of the three sections, *Weather Overview*, *Looking at the Weather Conditions* and *Monitoring Weather Conditions*.

- Ask students to complete the Anticipation Guide for each section before reading or going over the document.
- Go over the main headings to preview the reading.
- Use a KWL chart to build background knowledge of what students think they *Know* (K), and *Want to Learn* (W) from the reading.
- Read the section. For younger grades you may want to provide more modeling, pausing to make connections, stopping at topic headings to discuss what was just read.
- After reading ask students to complete their anticipation guides, then reflect on what was different from the before reading knowledge/predictions.
- Write what was learned in the L section of the KWL chart.
- Students should then write their reflection on the worksheet.
- The worksheets may be used to assess student interaction with the reading material.

3. Evaluating the Lesson.

During the above activities, students should be making the connection between the real weather launch

criteria and the KLASS weather console. Follow-up this activity by reinforcing the key roles that will be needed for the KLASS simulation. Revisit the KLASS Shuttle Launch Team Roles handout, paying attention to the weather description of responsibilities. The anticipation guides and the KWL chart will help guide the learning and evaluation of learning.

Assessment Evidence:

Performance Tasks

1. Students will identify what they learned in the KWL charts. As well, they will identify that there was a positive connection by the information they provide in the anticipation guides.
2. Class discussion will reveal what students have learned and what they still need to grasp.

Extensions and Going Further:

- The data being recorded in these activities can be used for computational math sets. Build out some of the math sets or create additional conversion sets based on the concepts being introduced and the learning progression of your students.
- To get everyone used to time sensitive operations and the pressure of launch day, do some timed math exercises based on the data.
- Be sure to check for student opportunities, additional educational resources and more at: <http://www.nasa.gov/education>