Lesson Title	Introduction to the Respiratory System
Length of Lesson	50 minute class period
Created By	Bo Cherry
Subject	General Science
Grade Level	8th grade
State Standards	8th: 1 e (Inquiry); 3 b (Life Science)
DOK Level	DOK 3
DOK Application	Develop Logical Argument, Compare
National Standards	5-8: A (Inquiry); C (Life Science)
Graduate Research Element	The respiratory system is an important, but fragile, part of our body which many geologists must protect when working with many geologic hazards.

Student Learning Goal:
MS 8th Grade:
(Inquiry) 1 (e) Develop a logical argument defending conclusions of an experimental method; (Life Science) 3 (b) Compare and contrast the major components and functions of different types of cells - Different types of cells and tissues.

National Science Education Standards of Content 5-8:
(Inquiry - A) Think critically and logically to make the relationships between evidence and explanations; Develop descriptions, explanations, predictions, and models using evidence; Communicate scientific procedures and explanations; (Life Science - C) Structure and Function in Living Systems

Materials Needed (supplies, hand-outs, resources):
Computer; Projector; Powerpoint Presentation (INSPIRE_Cherry_04.15.11_PP); Class Notes (INSPIRE_Cherry_04.15.11_Notes); plastic bottles; large balloons; small balloons; rubber bands; play-doh; straws

Lesson Performance Task/Assessment:
This lesson introduces students to the respiratory system. The lesson starts by identifying and describing each part of the respiratory system. A discussion of each part (i.e. trachea, larynx, etc.) is included so that students understand the function of each part in the system. After all of the individuals parts have been discussed, the class will divide into groups for the activity. For the activity, students will each build a model of the respiratory system, using the materials provided. The model will consist of a plastic bottle (cut in half) with a straw through the cap. A small balloon will be fixed to the end of the straw that is inside the bottle using a rubber band. The cap is screwed on the bottle and play-doh is used to seal around the straw, on top of the cap. Finally, the large balloon is cut in half and stretched around the bottom of the bottle. Students then move the large balloon up and down to observe what happens to the small balloon inside the bottle. This

gives students a way to see exactly how we get air into and out of our lungs. Students are then asked to break down their models. More lecture on gas exchange follows this activity. This gives students an idea of how the system not only physically moves air in and out of our lungs, but also how it moves oxygen into our body and cells.

Lesson Relevance to Performance Task and Students:
This lesson not only gives students some vocabulary that they should be familiar with, but also provides a hands-on approach to understanding the mechanics of the respiratory system. The lesson also highlights the effects of air pollution and smoking at the end of the lesson, so that students understand what actually happens to smokers.

Anticipatory Set/Capture Interest:
As an introduction to the lesson, students will be asked to describe what happens to their body as they are involved in intense physical activities. This allows students to be engaged at the beginning of the lesson, and forces them to think about what is actually happening when you begin to breathe heavily and sweat.

Guided Practice:
This powerpoint presentation is guided by the instructor. Notes are given to the class, which closely follow the presentation.

Independent Practice:
Students take notes throughout the lecture using the page of notes provided (INSPIRE_Cherry_04.15.11_Notes).

Remediation and/or Enrichment:
Remediation – Individual IEP; the PowerPoint will be made available to resource teacher;
Enrichment – Instead of showing the last two slides in the powerpoint (which are on the effects of smoking), have the students research this topic and report to the class exactly *how* smoking effects the respiratory system.

Check(s) for Understanding:
There is much room for discussion in the lesson, which will provide formative feedback for the instructor.

Closure:
Ask the students what the *physical* driver is for the respiratory system (should answer diaphragm). Also, make sure the students understand that the blood is used to bring fresh oxygen to the cells, as well as carry away carbon dioxide and water from the cells.

Possible Alternate Subject Integrations:
Ecology, Life Science

Teacher Notes:
None