Going, Going, Gone With the Wind

Application

Challenge: Can you determine what events cause wind?

Materials: 9 "wind" cards
1 blank card

Let's Dig In:

You will be given a set of "wind" cards by your instructor. Some of the cards describe a step in the formation of wind. Some of the cards do not. Your task is to decide which cards are the ones involved in the formation of wind and put them in the proper order. The blank card represents the last stage in wind formation. After you have decided which cards are correct and have placed them in order, write the last step on the blank card.

Go Figure:

1. List the proper order of cards here. If you don't use all of the cards, leave spaces blank.

_____ _____ _____ _____ _____ _____ _____ _____ _____

2. What is the final step in wind formation as you wrote it on your blank index card.

3. Choose one of the cards you did not use and explain why it is not important in the formation of wind.

Teacher Notes

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Application

GEOMES Topic: Earth's Air and Water - Meteorology

Lab setup:	none	**easy**	moderate	difficult
Reasoning level:	**easy**	moderate	difficult	
Time required:	**20-40 minutes**	40-60 minutes	60-90 minutes	
Process skills:	**classifying**	**interpreting data**	**comparing**	

Objectives: Students will determine what events are associated with wind formation and in which order they occur.

National Science Education Standards:

Content Standards: Earth and Space Science - Energy in the earth system
Geochemical cycles

Unifying Concepts and Processes: Systems, orders, & organization; Form and function

Materials: 9 "wind" cards per student group
1 blank card per student group

Teaching Strategies:

The wind cards are provided on the next page. You will need to prepare enough sets for each group of two students to have their own set. If you laminate them, they will last much longer. Inform students that the letters on each card do not indicate the order in which the events occur. The letters are just there to help students easily refer to a particular card.

Sample Responses to Go Figure:

1. The correct order of the cards are shown below. Note that some of the cards were never used, as they are not part of the wind process.
   - B. The Sun's radiation warms the surface of the Earth.
   - E. The Earth emits heat and increases the temperature of air near the surface.
   - F. Cold air is heated and becomes less dense.
   - A. Air rises, expands, and cools.
   - I. Less dense air will rise causing a low pressure zone.
   - D. Dense, cool air sinks resulting in higher air pressure.
2. The blank card, which is the last step in the development of wind, should be similar to the following: The difference in pressure between the high and low pressure results in a pressure gradient force. Air will move from the high pressure to the low pressure to try and equalize this force. This is wind.
3. Students will not be using cards C, G, and H. C and H both deal with water vapor. Students' rationale for omitting these cards is likely to include mention of the existence of strong desert winds in the absence of water vapor. The Coriolis Effect does affect the rotation of winds, but not the creation of wind itself.

A. Air rises, expands, and cools.	
B. The Sun's radiation warms the surface of the Earth.	C. Water evaporates and creates a low pressure.
D. Dense, cool air sinks resulting in higher air pressure.	E. The Earth emits heat and increases the temperature of air near the surface.
F. Cold air is heated and becomes less dense.	G. The Earth's rotation results in the Coriolis Effect.
H. Water vapor condenses, resulting in high pressure.	I. Less dense air will rise causing a low pressure zone.