Cloud Catching

"How do you catch a cloud and pin it down?" So goes a line from a song in the well-known musical, *The Sound of Music*. Pinning a cloud down to the ground might not be a reasonable undertaking, but *catching* one? It just might work!

A biologist who studies the cloud forests of Monteverde, Costa Rica, has been working on this very task. In this activity, you will get a chance to examine his cloud catcher design, then you will have the opportunity to design a cloud catcher of your own.

Basic Cloud Information

Before we begin, let's review a few facts about clouds:

(1) Clouds are made up of billions of tiny water particles.
(2) Clouds form when water evaporates into the atmosphere. This water vapor then condenses on small particles of dust and other substances in the air, forming water droplets. When you see a cloud, you are seeing all of those water droplets bunched together.
(3) Clouds can form very close to the ground (fog) or higher up in the atmosphere (stratus, alto, and cirrus clouds).
(4) Wind and sunlight can affect the way clouds form, move, and dissipate.

Monteverde's Clouds

Now, let's take a look at the cloud forests of Monteverde to see what those clouds look like. First visit Panorama #3 (the high elevation forest), go up to the canopy, and watch video #1.

Describe what you see: _____

_____

_____

Next visit Panorama #4 (the elfin forest) and watch video #3.

Describe what you see: _____

_____

_____

As you know, one scientist has already created a device for cloud catching. Learn more about it by going to "Additional Media" and watching the "Harp Collector" video. After watching this video, click on "Photographs", and select the "Behind the Scenes-Wet Season" album. Move through the images until you get to the fourth picture. This is where the cloud catcher images start. Continue to go through the album, pausing to look closely at each image and to read each caption.

After you have watched the video and viewed the still photos, answer the following questions. You may have to go back and view the video and/or images again in order to get all of the information you need.

(1) What does this scientist call his cloud collector? _____

(2) What two questions is he trying to answer with the help of this device?

_____

_____

_____

_____

(3) How is this device designed to work?

_____

_____

_____

(4) Why does the device need to have a "roof" on it?

_____

_____

(5) How big is this cloud catcher? (Give approximate dimensions or compare it to a familiar object.) _____

(6) What do you think this cloud catcher is made of? (Make your best guess and provide as much information as you can. For example, does it seem to be made mostly of glass, plastic, metal, or some other material? Do any of its parts remind you of objects you have seen before?)

_____
_____
_____

 (7) Did this cloud catcher collect the data it was intended to? Why or why not?

_____

Designing a Cloud Catcher

Now it's your turn to design a cloud catcher! Answer the following questions before you begin to sketch your plans.

(1) What, if anything, is easy about catching a cloud?

_____
_____
_____

(2) What, if anything, is challenging about catching a cloud?

_____
_____
_____

 (3) What basic components should a cloud catcher include?

_____
_____
_____

Start sketching your design(s) on a separate sheet of paper. When you think you've come up with a feasible design, create a final draft of your drawing. Be sure to label all of the parts of your invention. When your final draft is complete, answer the following questions:

(1) What function will this invention serve (what is it designed to do)?

_____

(2a) What is it made of? List all materials.

_____
_____
_____

(b) Are any of these materials difficult to obtain? If so, list them.

_____

(c) Are any of these materials expensive? If so, list them.

_____

(d) Are any of these materials dangerous to Earth's biosphere (living things), atmosphere (air), lithosphere (rocks and soil), or hydrosphere (water)? If so, list them.

_____

(3) How does it work?

_____
_____
_____
_____
_____
_____

(4) What might be the limitations of this design? (Ask yourself: Is there anything that might not work?)

_____
_____
_____

Peer Conferencing

Fill in the areas below as you discuss your cloud catcher design with your partner.

Partner's name: _____

Part 1: Design Review

S/he thinks that these are the strengths of my design:

(List two.)

- _____

  _____

- _____

  _____

S/he thinks that my design could be improved by:

 (List two improvements your partner recommends.)

- _____

  _____

- _____

  _____

As a result of this peer conference, these are the modifications I plan on making to my design: (List at least one.)

- _____

_____

_____

Partner signs on the line above to signify that s/he made the comments noted above.

Part 2: Design Comparison

If you and your partner could only implement *one* of your designs, which would you select?

_____

Please explain why that would be your choice.

_____

_____

_____

_____