Mr. Dixon’s Example:

Convection Currents that Produce Wind and Severe Weather

Unit 4 Wind, Climate and Severe Weather

By Divine, Kenneth and Mr. Dixon

Standard: S6E4 B: Relate unequal heating of water to form large global wind systems and weather events such as tornados and thunderstorms.

<https://www.youtube.com/watch?v=YBChGotBJ9Y>

Convection Currents:

Definition: Convection currents is the process by which energy from the sun’s rays in hotter fluids that is less dense to rise and cools off and sinks again therefor producing circulation of material and transfers heat.

Convection Current Activity:

Purpose: The purpose of the activity is to demonstrate what convection currents are and how they relate to the creation of wind and weather.

Materials:

* Four clear cups
* Two colors (blue and red) of food dye.
* Two large index cards.
* One bottle of cold water and one bottle of hot water.

Procedure:

1. Add blue dye to two of the clear cups
2. Add cold water to the blue dye clear cups.
3. Add red dye to the remaining clear cups.
4. Add hot water to the clear cups with red dye.
5. Use the large index card and place one on one cold clear cup and one on a hot clear cup.
6. Take the cold clear cup with the card and turn it upside down on the hot clear cup. Then slowly remove the card to watch what happens.
7. Follow step 6 but this time turn the hot clear cup with the index card on top of the cold clear cup and then remove the card slowly and then watch what happens.
8. Draw what you see in both demonstration.
9. Infer as to why what you see is taken place.
10. Explain how this activity relates to producing wind and weather.

Quiz Questions:

1. When cold material falls and warm material rises, this happens due to what?
2. The density of both materials is the same and they are trying to balance out.
3. The density of both materials are different.
4. The Chemicals in the dye are trying mix
5. Because hot material always try to chase the cold material in liquid.
6. The molecules of cold liquid move slower than warm liquid because it’s what?
7. Less dense.
8. Less weight
9. More dense
10. More heavy
11. Convection Currents is considered an energy system. Where else may you see the system of convection currents taking place?
12. Inside of an electrical wire.
13. Inside of the human body.
14. Inside of a microwave.
15. Inside of the movement of the ocean.

Climate and Weather Project Part **Two** and **Three**

**Creating a Model and Power Point Presentation**

Part two of the project consist of students creating a model that relates to the groups weather system, and a Power Point. The model will display students mastery and knowledge of major factors that develop weather systems such as tornados, hurricanes, thunderstorms, snowstorms, and any other storms relating to the student’s part one activity. The Power Point will also relate to the students understanding of major factors that develop weather systems. In the Power Point students will present in front of the class. Students will have to include vocabulary such as **convection** and **convection currents**, **radiation**, **conduction**, **high** and **low pressure**, **density differences**, **unequal heating**, and **air masses**.

**Group Names:**

**Standard:** Standard: S6E4 B: Relate unequal heating of water to form large global wind systems and weather events such as tornados and thunderstorms.

**Purpose:** The purpose of the model and presentation is to demonstrate knowledge of major factors that develop weather systems across the globe. The model should connect to the student’s Lab Activity and Written Cause and Effect Paper. The model will be rated on student’s knowledge of content, creativity, and connection to the other parts of the project.

Rubric:

Mr. Dixon Science

Project Rubric

Name Date Period

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 5 Points | 10 Points  | 15 Points  | 20 Points |
| Organization: | Could not follow the direction of the project. | Could only follow certain parts of the project.  | Organization was clear with a few minor flaws. | Well organized with no directional flaws.  |
| Use of Vocabulary | No vocabulary was mentioned. | 50% of the vocabulary was properly used | 75% of the vocabulary was properly used | 90% to 100% of the vocabulary was properly used.  |
| Content Knowledge | Student demonstrated no clear knowledge of the content.  | Student displayed a little knowledge of the content but struggled to properly connect it in a way to comprehend.  | Student demonstrated knowledge with a few flaws with relating proper usage of some content to project.  | Student demonstrated a strong knowledge of the content with in the project.  |
| Creativity | Project had no creativity and was plain.  | Project had some creative elements, but not consistent with the project’s objectives. | Project was creative and neat but could have expressed a little more detail.  | Project was very creative and neat.  |
| Oral presentation | Oral presentation was missing.  | Oral presentation failed to communicate effectively.  | Oral presentation was clear, but needs just a little work.  | Oral presentation was clear and professional  |

Total point from a /100

Part 5. Written **Cause** and **Effect** Paper

The purpose of the written paper is to assess student’s content knowledge through written form. Students will be assessed on creativity, clarity, paragraph flow, vocabulary use and content understanding. The paper will also serve as information for connecting the other parts of the project. The paper should have four paragraphs, five sentences in each paragraph. The students will be grade accordingly:

1. Content knowledge and comprehension
2. Use of Vocabulary: **Convection, Conduction, Radiation, Unequal Heating, Difference in Density, High Pressure and Low Pressure.**
3. Proper Structure and Transition
4. Creativity
5. Activity, Model, and Power Point Connection.

Paragraph Structure:

Paragraph 1: Introduction: **(Restate the question)**

Paragraph 2. Use a real-world situation that relates to the cause and effect of your particular weather system.

Paragraph 3. This paragraph should reflect the connection of the model with the paper.

Paragraph 4. This paragraph should summarize the other parts of the paper.

It should also have a title, name, Period and Date. Each student will write their own paper. Do not plagiarize and do not copy and paste from the internet.