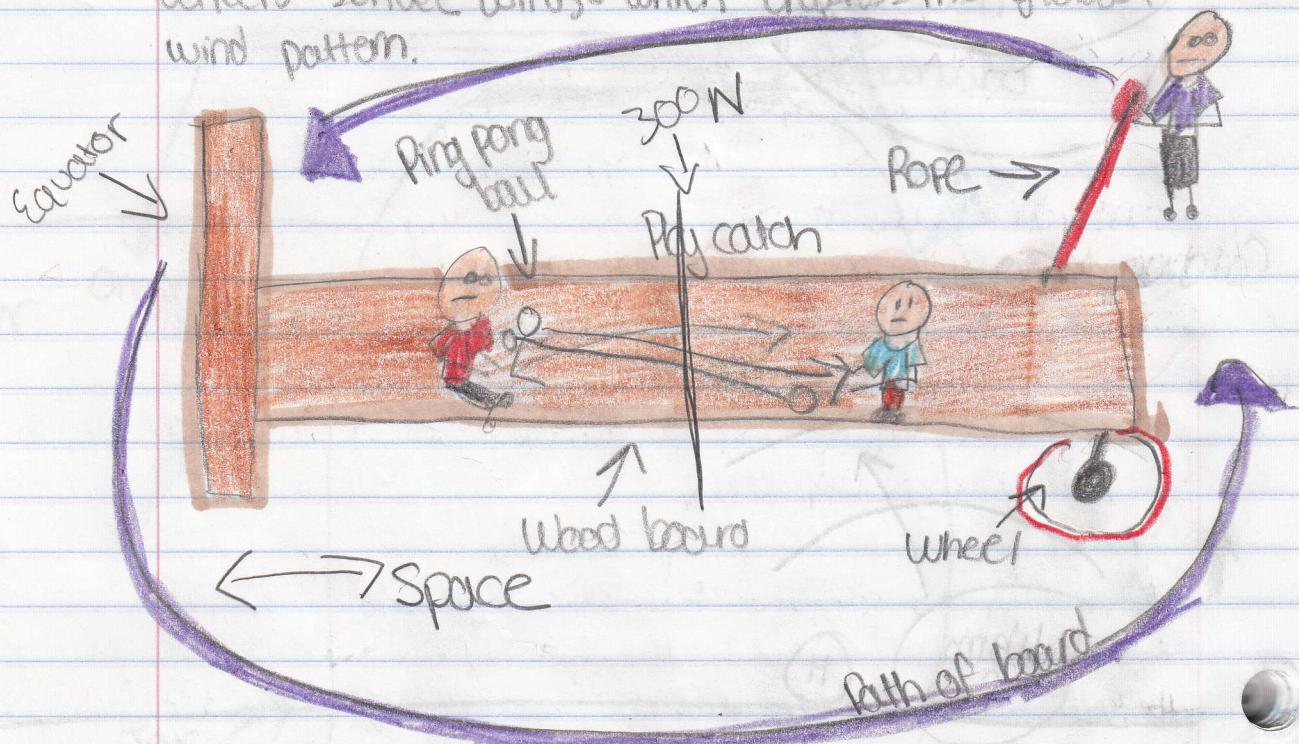
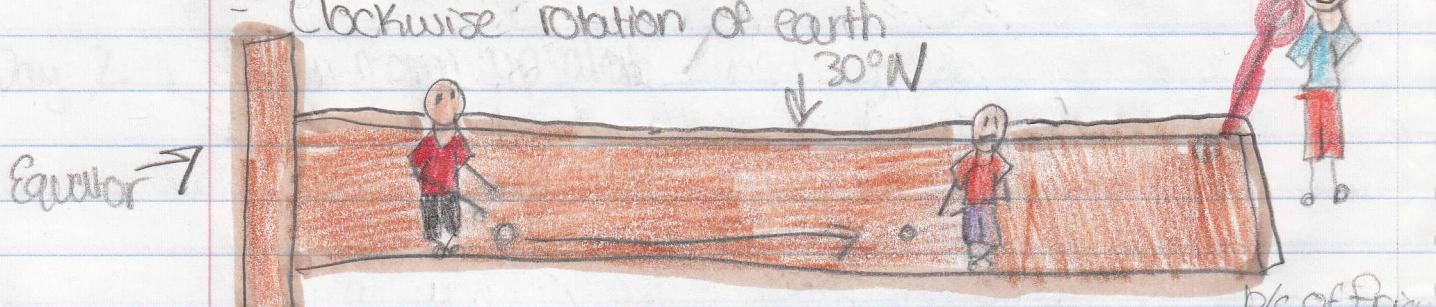


Spinning Earth

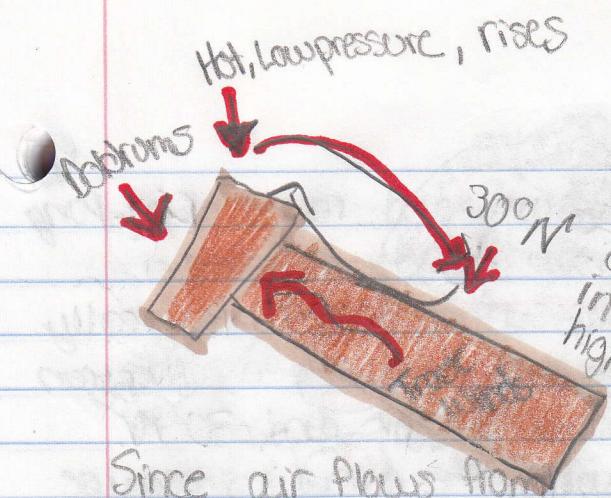
LT: Identify evidence of how the rotation of the Earth deflects surface winds - which creates the global wind pattern.



- Friction between ball and board when they roll the ball
- When they play catch the ball is deflecting to thrower's right (their left shoulder)
- Clockwise rotation of earth



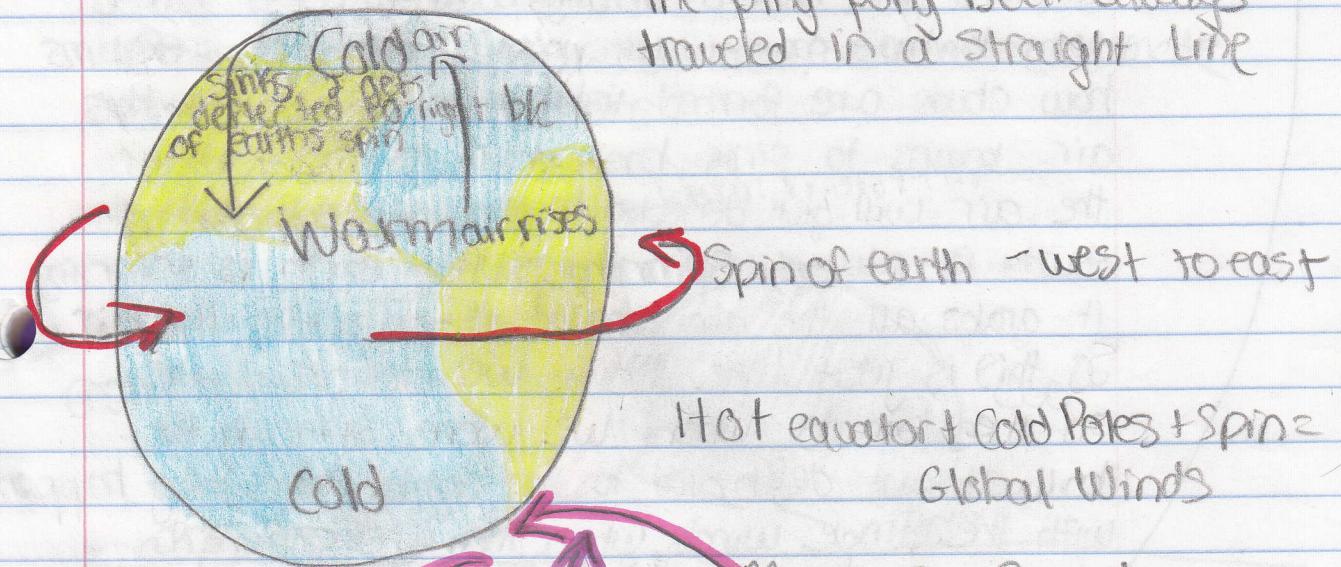
- When you roll the ball it's much more dramatic
- When Earth is spinning it grabs all the air around it



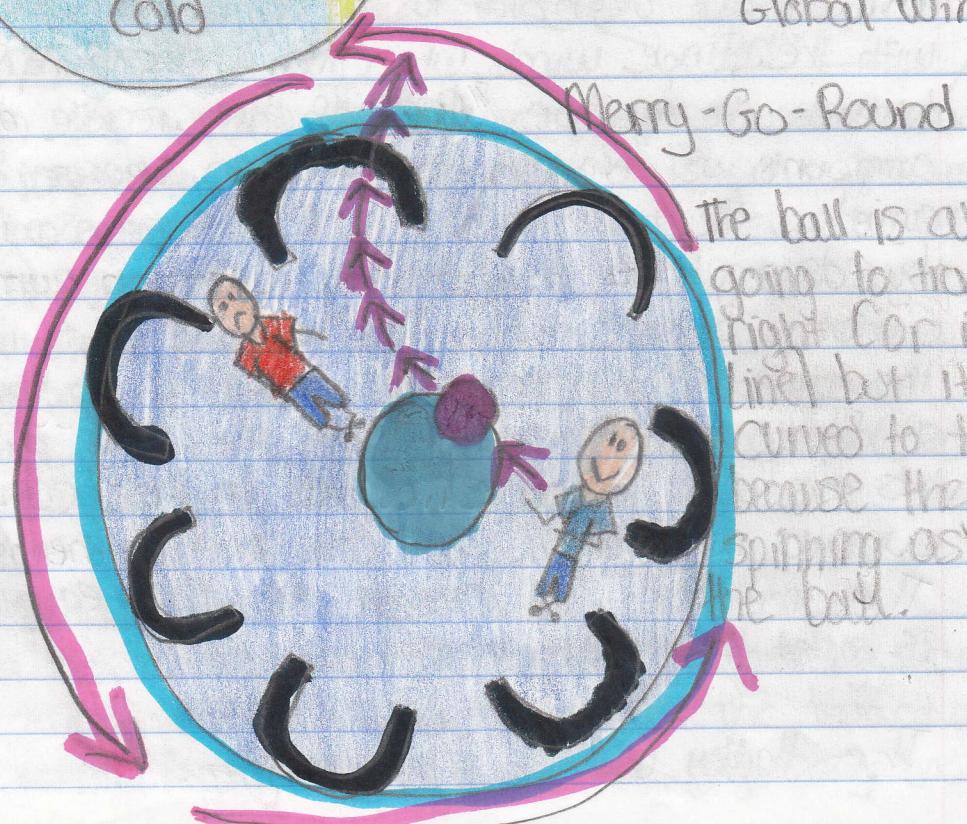
-Couloube made the ping pong balls go at the same time to demonstrate convection as air rises if it's high temp b/c of altitude or pressure current

Since air flows from high to low the air creates a convection current - air deflected to right as goes toward equator

-The ping pong ball always traveled in a straight line



Hot equator Cold Poles + Spin = Global Winds



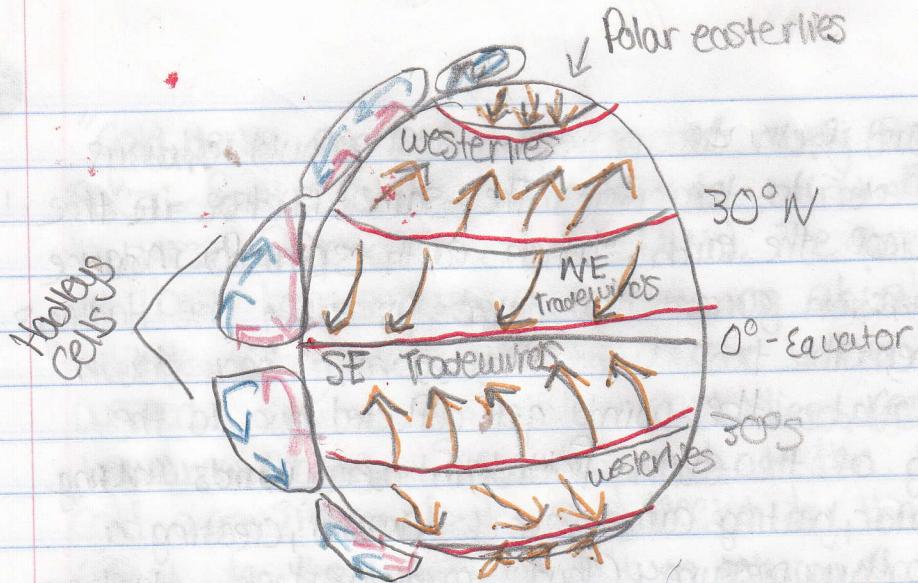
The ball is always going to travel to the right. Or in a straight line but it looks curved to the right because they are also spinning as they throw the ball.

Paragraph #2

Summary Paragraphs

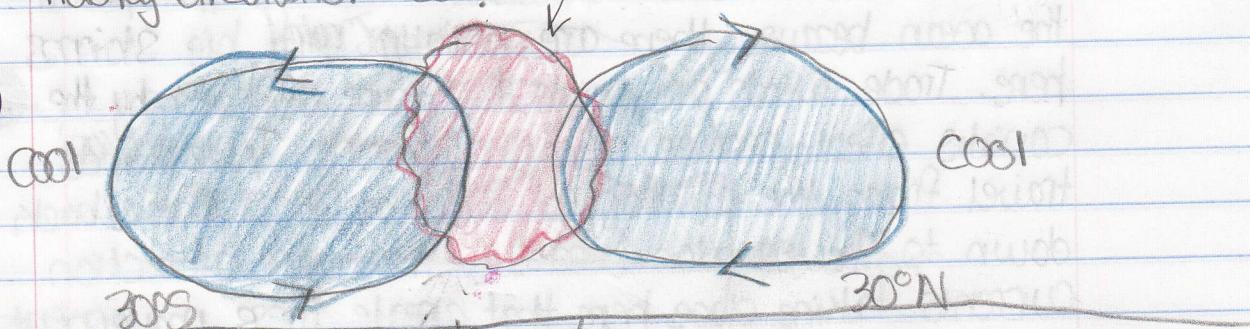
In this lab we used a board and rope, a ~~Ping-Pong~~ ball, and a couple people, in order to demonstrate how Earth's rotation deflects surface winds. Basically as the earth spins on its axis there is always a convection current going on between the equator and 30° N. Because the equator is very warm, the air rises because heat always rises. But as this warm air gets closer and closer to the North Pole it starts to get cold air and gain a lot of density because colder air is going to have more water vapor - which also explains how clouds are formed in this cold air. So as this air begins to sink back down to the equator the air will get deflected because of the fact that Earth is always spinning. When Earth is spinning it grabs all the air around it - deflecting the air. So this is just like how we demonstrated on the boards when we were spinning the ball always deflected to the right, same thing happens with the trade winds when they are coming back towards the equator. "Areas of Earth receive different amounts of radiation from the sun because Earth is curved... the heated equator is less dense, so it is displaced by denser, colder air, creating convection currents" (Glencoe Science 439). This basically says it all, the equator is hotter because it is in the middle of Earth and radiation from the sun directly hits this area. Wind circulates in these convection currents in three distinct cells in each hemisphere. The circulation cell closest to the equator is called the Hadley cell.

The Hadley Cell:



Changes in the Hadley can make dramatic climate changes in many regions

Hadley circulation cell: Warm, moist air



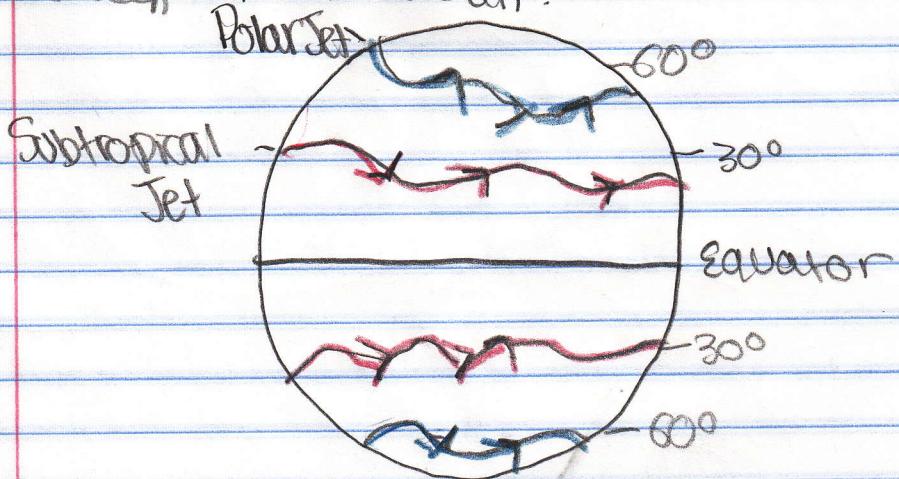
When the warm air equator rises this causes clouds and instability in the atmosphere. The air pressure at the equator is always going to be very low (sea level), but the air pressure at 30° N & 30° S will always be a higher pressure because there is colder air in these regions. The Hadley cell occurs on both sides of the equator (30° N & 30° S).

Paragraph 1:

In this lab we saw how the earth's spinning always deflect the wind. When we were on the board and we were trying to roll/throw the ping-pong ball

back and forth the ping-pong ball would always get deflected to the right. The same is true in the spinning of the earth. When earth spins for instance the convection current that takes place in the Hadley's Cell, when the trade winds are coming back down to the equator the winds get deflected due to the spinning of the earth. Doldrums are winds "along the equator, heating causes air to expand, creating a zone of low pressure. Cloudy, rainy weather... develops almost every afternoon" (Glencoe Science 441). I don't think our model demonstrated this but there really wasn't anyway to demonstrate it. The doldrums are what sailors have to watch out for when they sail the ocean because there are usually very big storms here. Trade winds are winds that are deflected by the coriolis effect because of earth's spinning. Trade winds travel from the equator to 30°N or 30°S then back down to the equator because there are convection currents taking place here that create these movements in the air. At 30° latitude "some of the air that sinks to the surface returns to the equator to complete the Hadley Cell." (Climat education for K-12). This basically produces you northeast trade winds/southeast trade winds. Westerlies blow from west to east because "Earth's rotation deflects air from west to east as air moves toward the polar regions" (Glencoe Science 441). So westerlies generally are the winds between 30° & 60° in Southern & Northern Hemisphere. At the core of the westerly winds is a "jet stream" or extremely high-speed winds. Polar easterlies blow from east to west because

"Cold, dense air sinks and moves away from the poles. Earth's rotation deflects this wind from east to west" (Glencoe Science 441). The polar easterlies in both hemispheres are blowing at about 60° latitude. The polar easterlies occur when prevailing westerlies join with polar easterlies, reducing upward motion. Since it's cold at the poles the cold air sinks but is deflected by the Coriolis effect to the west. As I was talking about before about the jet stream which are usually narrow bands of strong wind in the upper levels of the atmosphere. Jet streams follow the boundaries between hot and cold air.



Jet streams form from the interaction between many variables like the location of high/low pressure systems, warm & cold air, and the changing of seasons. I do not think that our model demonstrated the jet stream because we could not see one area of the merry-go-round going extremely fast - indicating that there would be a jet stream there. So overall I think the model did demonstrate accurately the relationship between the earth's rotation and the deflection of the wind.