


A Pinwheel of Planting: Energy and the Wind

Grade Level: 2nd
minutes

Lesson Time: 45-50

Objective: Students will better understand and be able to describe how the wind helps in the cross-pollination and planting of crops. Students will be introduced to how wind is collected using windmills to help create energy by using and preserving our natural resources.

Materials:

- A classroom copy of *Weslandia* by Paul Fleischman; illustrated by Kevin Hawkes. (ISBN: 0-439-22777-1, \$4.99 from Scholastic)
- A Pinwheel for each student. Direction can be found at the end of the lesson. (Needed supplies for the pinwheel are a pencil, 6" square piece of paper, and a sewing pin.)
- 36" x 24" piece of butcher paper (one for each group of 5 students). Draw a line 9" from one of the edges of the paper so that it looks like this 
- 3 packets of seeds for each group of 5 students. It helps if the seeds are of vegetables, or something the students will be familiar with. The seeds should be of varying sizes (i.e., small=tomato, medium=green beans, & large=pumpkin).
- One bar graph for each group. (See attached.) This could be done for each student if you want individual summative assessment.
- Pictures of different types of wind mills.

Procedures/Steps:

1. Anticipatory Set—Have the students desks pushed together in groups of 5 and place all of the items (pinwheels, seed packets, bar graph, and butcher paper) on their desks. The students are curious enough about what all of this is that it is enough of an anticipatory set on its own.
2. Cover-up the front cover of *Weslandia*, everything but the title. Ask students to predict what they think this story might be about just by knowing the title. Then reveal the cover and ask the students how their predictions have changed. Read *Weslandia* to the students. During the reading, ask students to look for connections and give them the opportunity to discuss them throughout the book.
3. Discuss how Wesley's garden was planted by the wind. Talk with students about how the wind and how it helps us, and takes a toll on out agriculture. Discuss the Dust Bowl during the Great Depression. Also how seeds are carried by the wind. Divide the students into groups of 5. Assign each of the members in the group one of the following jobs: breather, blower, planter, recorder, and spokes person. Have the students place their butcher paper on the floor. Then the planter will "plant" their seeds on the smaller section of the paper. Place all 3 kinds of the seeds on that side of the paper in a little pile. Have the breather, breath on the seeds (this means just breathing normal with their mouth open,

- like if they had a stuffed up nose). Have the students count and graph how many of each size seed crosses the line. Next have the blower blow on the seeds. Remind them that they don't want to blow SUPER hard, because the seeds will fly and might hit someone in the eye. Now have them count and graph how many made it. Discuss which seeds are easily carried by the wind, and which don't travel as well. Then have the groups share their findings with the class. Taking this information into account, what size do we think the seeds were that were planted in Wesley's garden to create an entire backyard of the plant?
4. Show the students the different pictures of wind mills. Ask them if they have ever seen anything like this, and if they know what they are. Then probe more by asking them if they know what they are used for. Explain to the students that we use wind mills to collect wind to help with energy and protect some of our natural resources. Have the students predict how they think wind mills create energy... then explain that there is wire inside that is wrapped around a magnet which then creates the kinetic energy. (This will be enough of an explanation for students this age.)
 5. (Remind the students of safety with the pinwheels and that they are not to take them apart at school because the pins could hurt someone if they got left on the floor.) Have the students pick up their pinwheels and make a mark on one of the sections. Have them just breath on their pinwheels, and then blow on them. See if they can count how many times they can get it to go around with one strong breath. (It is important to remind the students to stop if they get a little out of breath, because they will get light headed.) Ask students to share their numbers, write responses on the board and talk about frequency. Did the strength with which students blew make a difference? Is there maybe a difference in student size, thus lung capacity? Discuss with the students what forces of "wind" helped their pinwheels to go around more. Knowing that, what kinds of places would be good to build wind mills to help produce more energy? Listening to the students' responses, discuss what might be the pros and cons of their suggestions, then discuss how most wind mills are built in places that aren't surrounded too close by mountains and things like that so that they are able to receive the wind from all directions.
 6. Bring the lesson to a close by having the students discuss how wind helps us in our lives.

Assessment: The completed bar graphs will act as a summative assessment for students' knowledge

of graphing. During seed counting, students can be observed for thought processes about how to count the seeds. (Look for grouping, multiplying, skip-counting by 5s & 10s, etc.)

Reflection: To be honest I was not excited about this lesson at all. I didn't feel like it was very good,

needless to say I was SHOCKED by the students' response to the lesson. They loved it and were ALL engaged. When we were done they asked if we were going to do math that day, when I told them that was math they said, "no it wasn't that was just a fun game." There is nothing better than students learning and having a great time, and not even realizing they are learning. Suggestion number one is to make sure that you have a job for every member of the group, even if you have to have two recorders, or extend the lesson in another way. Suggestion number two is to anticipate students wanting to eat the seeds. I would recommend having each group use a packet of pumpkin seeds for their observations and then allowing them each to eat one of those. That seemed to subside the need for them to eat all of the seeds.

Pinwheel instructions: cut 6" piece of construction paper. Using a ruler, draw a line from corner to corner forming a cross on the square, place a nickel on the center of the cross on trace it, then cut from the corner to the edge of the circle. Cut all four corners to the center. Then roll each of the corners into the center, do every-other corner and be careful not to fold and crease. Place pin through the center and secure into the eraser on the pencil. If you push in the pin into the eraser at a little bit of angle down, the pin will hit the medal band around the eraser rather than coming through the eraser.