Post-Test #1 GC Text Structure

Name: _____
Date: _____
Teacher: kristio

Instructions: Write the letter of the best answer on the line next to the question number.

Classroom Science Gets a Makeover

by Sarah Goforth

For one North Carolina engineering professor, making science accessible to all means starting young. Together with a team of university engineering students, Laura Bottomley brought hands-on science to every elementary classroom in a local district.

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Laura Bottomley is handing out oranges in a fifth-grade classroom at Combs Elementary School in Wake County, North Carolina. Each fruit has been precut so that, when squeezed, the peels slip around and dribble juice. The lesson is not on nutrition, but plate tectonics, and the students are . . . well . . . eating it up.

The approach may be a little unusual, but then Bottomley is not an ordinary elementary school teacher. She's an engineering professor at North Carolina State University. For the past seven years, she and her colleague Elizabeth Parry have teamed engineering graduate students with Wake County teachers to make science more palatable to kids, hoping to persuade some to choose careers in science and engineering.

When Bottomley learned one of the schools was short one science teacher, she volunteered. Her own interest in engineering sprang from childhood ambitions of being an astronaut. Now she takes the helm for an hour every morning, bringing what she calls an "inquiry-based" approach to the material.

The idea, she explains, is to teach science as science is done: as an ongoing, hands-on experiment rather than as a set of facts to be learned from books. To explain how the Earth's tectonic plates shift and collide, for example, Bottomley told the students to play around with their oranges, inspect them and ask questions. She explained how orange juice is like lava, and how the upward bunching of peels is like the formation of mountain ridges.

"If you really want kids to learn science," Bottomley says, "you teach them not with facts and figures, but by doing . . . What matters is that they remember the process."

Traditional textbook methods aren't appropriate for all learning styles, Bottomley argues, whereas an inquiry-based approach offers something for every sense — something to look at, probe, listen to, even smell. The kids love it, she says. And teachers, though often cautious at first, quickly see how a change in teaching style can help their students meet new curriculum standards.

Some teachers, especially those who don't have a science background, may not be comfortable teaching technical subjects. Bottomley believes the resulting shortage of fun, hands-on science lessons explains, in part, why many groups — most notably women — are under-represented in the research community.

In 1999, she received a grant from the National Science Foundation's Graduate Teaching Fellows program to bring North Carolina State University engineering students into local schools. The Graduate Teaching Fellows program has twin goals: to offer graduate students teaching and outreach experiences, and to enhance science instruction in participating schools. The partnerships are a powerful force for innovation, Bottomley says.

She began by working with teenagers, but quickly saw that high school students had already elected to pursue careers in science or not. Even middle school students, she learned, have already decided whether they are interested in science. So she decided that her time was most needed in elementary schools.

But the youngest learners, too, have some opinions about science.

To size up her new audience, Bottomley collected a series of photographs of famous scientists, representing both sexes and a range of ages and ethnic groups. She showed the pictures to groups of elementary students, asking them to spot the scientists.

"We were certain, absolutely certain, they would pick all the white males, but the overwhelming correlation was that the scientists were the people who were not smiling," Bottomley recalls. "It was hilarious."

And, for her, motivating. Introducing students to the amusing side of science, Bottomley reasoned, might get their attention. And showing students how science is done might even hold their attention for life.

In the next four years, Bottomley and 23 engineering graduate fellows went to every elementary school in the county, first meeting with teachers to design new types of science lessons and then helping to deliver them.

One of the graduate fellows, who was fluent in American Sign Language (ASL), worked directly with the hearing-impaired students at Combs Elementary in Raleigh. As she spoke with the students and their ASL-fluent teacher, she came to realize many basic scientific concepts cannot be communicated with ASL. The same sign, for example, is used for chemistry and physics. And there are no signs at all to describe the basic parts of an atom.

Bottomley and the graduate fellow kept a running list of ASL words that could be useful in the classroom. Where no words existed, they invented new ones.

For an electron, they would form the letter "E" and rotate the same hand in a circle to represent how electrons orbit the shell of an atom. "If you're going to make up signs, you might as well make ones up that represent what we're talking about," Bottomley explains. With help from the ASL-fluent teacher, the graduate fellow produced a handbook to help explain science to hearing-impaired students.

By the project's end in 2003, Bottomley's group had worked with more than 2,000 children and 75 teachers. The teachers learned how to mix science into math, social studies and physical education lessons, and how to appeal to children with different learning styles. The strategy worked: By the end of the program, the students expressed more interest at school, and parents reported that their children were talking about science and math more at home.

"All of our graduate fellows have told us that involvement in this program has been of great interest to potential employers when they graduate," Bottomley reports, adding that the teaching experience convinced several of the fellows to become professors themselves.

Another indication of the program's impact came during the local science fair. In a first for the school, two hearing-impaired students entered, and one of them won. "I don't remember exactly what his project involved," mused Bottomley. "But I remember the look on his face when they called his name."

Bottomley received another NSF grant in 2004 to develop inquiry-based math lessons. And this time, she has an eager cohort of fifth graders to help try out new ideas. "Here I am, writing all these proposals associated with inquiry-based learning," she says, "and now I get to try them out every morning. I love it."

_____ 1. Read the sentence below from the passage.

The lesson is not on nutrition, but plate tectonics, and the students are...well...eating it up.

The sentence contains an example of which type of figurative language?

A. simile
B. analogy
C. idiom
D. hyperbole

_____ 2. The inquiry-based approach to teaching science is **different** from the textbook approach because the inquiry-based approach

A. involves doing experiments.
B. requires learning facts and figures.
C. works best for older students.
D. can be used to teach plate tectonics.

_____ 3. Read the sentence below from the passage.

For the past seven years, she and her colleague Elizabeth Parry have teamed engineering graduate students with Wake County teachers to make science more palatable to kids, hoping to persuade some to choose careers in science and engineering.

In the sentence, the word palatable probably means

A. ignorant.
B. historical.
C. reckless.
D. attractive.

_____ 4. Read the sentence below from the passage.

The Graduate Teaching Fellows program has twin goals: to offer graduate students teaching and outreach experiences, and to enhance science instruction in participating schools.

In the sentence, the word enhance probably means

A. cease.
B. forecast.
C. mock.
D. improve.

_____ 5. How did Bottomley's Graduate Teaching Fellows program affect the elementary school students she taught?

A. They won many local school science fairs.
B. They invented new words for scientific concepts.
C. They decided to go on to become science professors themselves.
D. They showed more interest in school and talked about science and math.

_____ 6. The author uses problem and solution as the structure of the passage **mainly** to

A. show how imaginative teaching methods can get more kids interested in science.
B. compare traditional textbook methods of science teaching to the inquiry-based approach.
C. explain how using new methods to teach science will cause more kids to become astronauts.
D. describe the history of science education from textbook methods to hands-on methods.

_____ 7. Bottomley decided to work with elementary school students rather than older students because

A. older students are not comfortable learning technical subjects.
B. elementary school students have strong opinions about science.
C. older students have already decided whether they like science.
D. elementary school students have many different learning styles.

Reduce, Reuse, and Recycle

Waste, and how we choose to handle it, affects our world's environment. And since by now you probably know that you need a healthy environment for your own health and happiness, you can understand why effective waste management is so important to YOU and everyone else. How can you help?

You can help by learning about and PRACTICING the three R's of waste management: Reduce, reuse, and recycle! Practicing all three of these activities every day is not only important for a healthy environment, but it can also be fun too. Reduce

You can practice reduction by selecting products that do not have to be added to landfills or the waste stream in general. This is really easy to do . . .

· First and foremost, buy and use less! If all the other people on the Earth used as much "stuff" as we do in the United States, there would need to be three to five times more space just to hold and sustain everybody! So buy only what you need and use all of what you buy. Or make sure that when you are through with something, you pass it along to other people who can continue to put it to good use. This is especially important when it comes to items where disposal is difficult or could be particularly dangerous to our environment, such as paint and chemicals (cleaners, strippers, pesticides, herbicides, etc.).

· Start making wise "package" selections. Why is it important to consider how something is packaged when you consider what to buy? You can reduce waste by selecting products that are not wasteful in their packaging. So keep the following package-related tips in mind no matter what you are buying:

· *Precycle* by purchasing products in materials/packaging that can be readily recycled. Flashy and fun packaging costs more, usually adds little or no value to the product, and (worst of all!) can do considerable harm to our environment by creating more waste or waste disposal difficulties.

· Avoid single-serve containers whenever possible. You can buy juice or water in large recyclable bottles or cans and then divide it up into smaller portions in reusable, washable containers as you need it at home or to take with you. And if you want to take juice or water with you on your bike rides or to the gym, just take it along in your own reusable sports bottle.

· Think BIG! Buying in "bulk" *(a large amount that is not divided into separate containers)* gives you the best "product to package" ratio. Many stores allow shoppers to scoop out the amount they need of bulk goods like nuts or coffee. This considerably reduces waste and packaging materials.

· Refuse store bags! When you buy one or two items at a store, carry them out in your hands; or take a reusable bag with you to carry the items you buy. And don't forget to take your old plastic and paper bags back to the grocery store for reuse or recycling. Most grocery stores have convenient paper and plastic recycling bins located near the entrance.

· Use durable items rather than disposable items whenever possible. For example, select reusable razors rather than the disposable one that you can only use a few times and then have to throw away.

· Start a garden. Food that you grow yourself does not have to be "processed" or "packaged," and no fossil fuels are needed to get it to the store and then to your house.

· Start a compost or vermiculture to transform your household garbage (food wastes, coffee grounds, etc.) into a rich earth-like material that can be added to a garden to help plants grow. Grass, leaves, paper, and some other types of food can naturally decay and turn into compost, and that compost can then be put to good use in your garden. You can also help your family replace lawns with mulched gardens that are just as pretty, but are

better for our environment. Reuse

You can "reuse" materials in their original form instead of throwing them away, or pass those materials on to others who could use them too! Remember, one man's trash is another man's treasure! Here are some examples of reuse . . .

· Take along washable cups or travel mugs instead of disposables; a lot of restaurants and convenience stores will be glad to fill or refill your own mug.

· When you do use disposables like plastic cups, plates, utensils, and plastic food storage bags, don't throw them away! Wash and reuse them — most of them will last for a long time with many uses.

· When you decide to replace something large and "reusable," be sure to donate the old one to charitable outlets like Goodwill, Salvation Army, Habitat for Humanity, Vietnam Veterans, and the many others that are probably in your area. Most of the time the item can be repaired by those groups, and then redistributed into other homes rather than landfills.

· Hold a yard sale or give-away. And ask your neighbors to join in too — this shares the work and increases the number of unused things that can find new homes and new uses.

· Use cloth gift bags and stop ripping the paper off gifts! If you remove the wrapping paper carefully, you can use it again, and there's nothing wrong with doing just that! And don't forget to use canvas or cloth bags when shopping so you don't need to make the choice between "paper or plastic."

· Use washable table napkins instead of paper napkins — cloth napkins are usually much larger and more absorbent than paper products, and they can dress up your dinner table too! Recycle

Recycling occurs when you save and take reusable materials to places where they can be remade into either the same product or new products, rather than to just toss them in the trash. Making new items from recycled ones also takes fewer energy and other resources than making products from brand new materials.

Just about anything in your home (or office or school, etc.) that cannot be reused CAN be recycled into something else. You'd be amazed what can be done with a recycled product . . . a recycled soda bottle, for example, can be made into T-shirts, combs, or hundreds of other plastic goods that can be used for many years. Even your brand new computer case might be made from ordinary recycled plastics.

Here is a list of things you should always recycle (or reuse!) . . .

· Acid Batteries
· Aluminum Cans
· Building Materials
· Cardboard
· Chemicals
· Electronic equipment
· Glass (particularly bottles and jars)
· Lead
· Magazines
· Metal
· Newspaper
· Oil
· Paint
· Paper
· Plastic Bags
· Plastic Bottles
· Steel Cans
· Tires
· White Goods (Appliances)

· Wood
· Writing/Copy Paper
· Yard Waste

Some of the items listed above will require special handling procedures and special recycling places or events. Just ask your local recycling office (city, county, or state) for assistance and information.

_____ 8. The **main** reason to reuse items is most likely to
A. have some fun.
B. dress up your house.
C. save money for stores.
D. decrease trash in landfills.

_____ 9. The author uses problem and solution as the text structure of the passage in order to
A. explain how to reduce waste.
B. show why reducing waste is important.
C. tell in what order you should start reducing waste.
D. describe what will happen if people do not reduce waste.

____ 10. What would **probably** happen if everyone followed the author's advice?
A. the number of landfills would increase
B. stores would begin to make more money
C. nuts and coffee would become more popular
D. the amount of trash in landfills would decrease

____ 11. According to the passage, flashy and fun packaging can result in
A. dressing up your living space.
B. helping to protect the environment.
C. making more waste and disposal problems.
D. redistributing items to people who need them.

____ 12. The difference between "durable" items and "disposable" items is most likely that "durable" items
A. are divided up into several containers.
B. do not get thrown away after a few uses.
C. are not as healthy for the environment.
D. come with smaller and less flashy packaging.