



Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
2005 Volume V: Ecology and Biodiversity Conservation

After the Garbage Can: Where Does Our Trash Go?

Curriculum Unit 05.05.08
by Julianne K. Kaphar

Goals for Enduring Understanding

- Nature functions in cycles, and there are consequences for disrupting these cycles.
- Humans can participate in protecting the cycles of the Earth through limiting their waste and recycling.
- Humans are closely connected to their environments, and therefore, every action they take has consequences.

Objectives

- Students will understand how waste disposal has changed throughout history
- Students will become familiar with current issues involved in solid waste management
- Students will be able to identify various cycles in nature
- Students will collect data to create bar graphs, circle graphs, and line plot graphs
- Students will understand the need to reduce, reuse, and recycle whenever possible and apply the principle to their own lives
- Students will understand that certain materials cannot be recycled and are therefore harmful to the environment
- Students will be able to identify features of expository text
- Students will use observational skills to compare/contrast
- Students will use knowledge of common prefixes, base words and suffixes to read and spell new

words

- Students will develop oral language skills through targeted discussions using specific academic vocabulary and concepts

Context

I teach a fourth and fifth grade combination bilingual class at Fair Haven Middle School. My students are all in their first year (under 10 months) in the United States from Spanish speaking countries. I instruct my students in Spanish in the content areas to provide them access to the demanding curriculum. I also teach them E.S.L. so that they may be better prepared when they enter the regular classroom the following year. My students come from many countries in Latin America: Peru, Mexico, Guatemala, and Puerto Rico. They range from being non-literate and unschooled to being highly literate and functional in the classroom setting. My students are all here for "a better life:" their parents have all expressed high hopes for them to obtain a better quality of life than they are currently experiencing. Most of them have had very little exposure to science, yet are deeply curious about the world in which they live. Because of this, I believe that it is crucial for me to create opportunities in which they can develop their scientific thinking skills and thus broaden their understanding of their world.

Rationales

Rationale for theme

I chose "trash" as the topic for this unit for a variety of reasons. First, I believe that as responsible citizens in our society, we need to understand the consequences our choices have on our environment. I believe that children need to be educated at an early age as to how they are intimately connected to their environment, especially since many of my students do not receive this message at home. Also, students in middle childhood are still at a very concrete level of thinking. They are just beginning to be able to think abstractly, and they are becoming more aware of the world around them. The notion of "trash" is a concrete experience that children can connect with. It provides them with an open door to learning about a variety of important

scientific concepts (e.g. decomposition, the water cycle, and ecosystems.) It is also something that children are naturally curious about, and it is a topic that can lead to a variety of forms of action.

Rationale for instructional strategies

The instructional strategies in the unit are all designed to be effective for all levels of students, from ELLs (English Language Learners) to fluent English speakers, from low-literacy levels to highly literate students. The use of homogeneous grouping for certain activities allows for students to be challenged at their levels (e.g., guided reading groups). The use of heterogeneous grouping allows for students to mix with other students of different ability levels, which allows for struggling students to participate in activities they would not be able to do independently, while higher level students can engage in deeper thinking skills by assisting the struggling students in their learning (e.g. through explaining, summarizing, teaching, etc.)

I am a firm believer in the power of oral language development; therefore, many of the instructional strategies in the unit are centered around oral language. One of the most important strategies which is referred to throughout the unit is the 10-2, in which the teacher stops talking after ten minutes to allow students to talk for two minutes. This allows students to orally reprocess newly learned information by discussing with a partner or small group. Students can simply restate vocabulary, discuss a concept in their primary language, or formulate questions. It is a time for "target talk"- for students to develop their oral language skills in a constructive, academic setting. I also highly utilize structured oral language development through poems and chants. Throughout the year, my students become familiar with the frames I use for these poems and chants, so that when new content is introduced in the familiar frame, struggling readers and ELLs have greater opportunities for success and can quickly catch on. I also encourage students to repeat, restate, and retell frequently. This provides simple opportunities for students to practice the new language in a safe, choral setting before they are asked to read or write it.

Because many of my students are ELLs, it is important for me to be very intentional about the vocabulary and concepts that I want them to come away with. I have designed this unit thematically to incorporate science, math, language arts, reading, and art. Brain research shows that students are more likely to retain newly learned information when it is connected to something previously known. Thematic units that integrate the subject areas are powerful instructional tools because by connecting the content across the curricular areas, students can develop their skills in each area **while** they are learning the content. Research also shows that the more exposure the brain has to new information in a variety of contexts, the more likely it is that the information will be retained. This is true not only for content, but also for language learning. For this reason, I have designed the instructional activities in this unit to use the same repeated key vocabulary and concepts in a variety of contexts. I want the students to have repeated exposure to increase their learning opportunities.

I have tried to create learning opportunities that are highly contextualized to support ELLs as well as to engage all students. Demonstrations are hands-on so that students can develop understanding at a concrete level before being expected to think abstractly. I highly utilize visuals and realia (actual objects) whenever possible to allow students greater access to the content, especially for language learners and struggling readers. Field trips will be utilized so students can have first-hand knowledge and to create more opportunities for student engagement in the content. Where visual aides are not enough, graphic organizers such as story maps, cause/effect charts, and flow charts are used to help students organize information. Basically, I make every effort to ensure that all students have access to the curriculum and are able to learn, regardless of their reading level or language ability.

Introduction

In the United States, we live in a society of mounting consumerism, which is having severe consequences on the environment in which we live in many ways. In particular, trash has created a specific threat to our environment as the amount of waste per capita in the U.S. increases (4.4 lbs per person, per day) (Blair 2000) and available land for landfills remains constant and thus increasingly limiting.

Trash has always been an issue for societies in the past. The very first garbage dumps were created about 10,000 years ago, when prehistoric peoples began forming villages around farms. Because they were no longer nomadic, they had to now live with the problems that their waste brought, such as wild animals and bad smells. These people groups dealt with this problem by digging pits outside their villages to dispose of their waste. In 2100 B.C.E., the ancient Egyptians began a system of collecting garbage from the wealthy to be dumped into the Nile River. At around 500 B.C.E., the first garbage dump law was passed in Athens, requiring that trash be dumped at least one mile outside the city walls. Many of us are familiar with images of the Middle Ages, with trash and raw sewage being dumped into the city streets. By 1400 in Paris, the piles of garbage were as high as the city walls!

The Industrial Revolution created conditions that began to have irreversible effects on the environment. Factories dumped their waste and chemicals into rivers and lakes, and cities poured their sewage into these same rivers and lakes. Garbage was deposited into dumps without any thought to how they would affect the environment. However, when scientists began to connect disease and high infant mortality rates to the unsanitary conditions of the cities and the polluted water, city leaders began to realize something needed to be done. As a result, cities began to burn their garbage in incinerators. Many cities also began dumping their trash out in the ocean, although much of the trash returned to the beaches.

Over the past several decades, people have become more and more concerned about the long-term effects of trash and pollution on the environment. As a result, more research has been done on how to effectively deal with waste with minimal harm done to the environment. While scientists have indeed been able to develop new technologies to deal with waste (e.g., better landfills, recycling technology, etc.), the amount of waste being produced has increased astronomically.

Though proponents of our consumerist society would argue that there is plentiful space in our vast nation for future landfills, the reality is that each time a landfill is created, an ecosystem is destroyed. Many states rely on other states to import their trash because of a lack of space for landfills. This industry of shipping trash has become profitable and popular. In fact, it is estimated that more than 17 million tons of trash are exported to out-of-state landfills every year (Montague 1998). This massive transportation of trash adds significantly to the amount of greenhouse gasses emitted into the air, leading to increased global warming.

Though the technology involved in designing landfills has significantly improved over recent years, problems still exist. One issue is the fact that although landfills are protected with a thick layer of resistant plastic and a layer of absorbent clay to prevent the leachate (dirty water generated by the waste) from going to the groundwater, the plastic is not designed to last and could possibly begin breaking down in as little as thirty years. The clay could easily dry up and crack, and the elaborate drainage system designed to carry the leachate to treatment facilities is prone to clogging. Also, the gasses that escape are toxic to the environment, and many studies show high rates of different cancers and low birth rates among populations close to landfills (Montague, 1998).

Furthermore, because of our thirst for the newest, most updated technology, the disposal of computers, cell phones and other devices has created a monstrous addition to an already problematic situation. Developing nations have become toxic dumping grounds for our technological trash, creating severe environmental hazards.

The notion of "garbage" carries a huge stigma in our society. Once it is thrown out, it is not to be discussed or thought of again. Where once people were largely responsible for disposing their own waste, people are now totally disconnected from it. Because of this disconnection, our society has grown more and more thoughtless about the amount of waste it creates. There is a sense of general satisfaction that recycling can take care of the issue. However, the unfortunate reality of recent years has been that even though we recycle more as a nation, we are producing even more solid waste than ever before.

Target Vocabulary

Dispose

Compactor

Recycle

Dump

Contaminate

Landfill

Garbage

Bacteria

Pollution

Trash

HDPE

Biodegradable

Litter

MSW (municipal solid waste)

Compost

Waste

Methane

Groundwater

Dispose

Incinerator

Toxic waste

Decompose

Combustion

Reduce

Bale

Ecologist

Environmentalist

Conservationist

Leachate

Reuse

Classroom set-up

At the set-up stage of this unit, the teacher should be sure to design the walls so as to provide every opportunity for students to revisit the content and the academic language. The poems for the unit should be posted, the title of the unit should be posted, and pictures should be placed all around the room. Students can sit in mixed-ability groups of 4 (or 5, if necessary) students. Each table group can have a name posted on their table that is related to the unit of study, for example:

Recyclers

Landfill workers

Waste Management engineers

Environmentalists

Ecologists

Conservationists

The teacher and students should use their table names whenever possible, such as when giving praise ("the ecologists are working so quietly...") or for management purposes (the landfill workers may go back to their seats...").

Instructional Design and Strategies

While this thematic unit of instruction will primarily focus on science, I plan to also integrate language arts, math, and social studies wherever possible (see standards in Appendix 1). The unit will be taught in the last quarter of the year, when students have acquired a basic knowledge of English and are able to begin sheltered content instruction with primary language support. It will last 3-4 weeks.

I will open the unit with a strategy called a "gallery walk." In this activity, several photographs pertaining to the topic (garbage dumps, pristine forests, beaches, city streets) and a variety of objects (Dunkin' Donuts coffee cups, candy wrappers, and other commonly found litter) will be posted at different stations throughout the room. Students will rotate around the room, study the photographs/objects, and write their observations and questions on a paper next to the photograph that has a specific prompt, such as "I observe," "I wonder," or "I predict." These objects and cards can be left up for the duration of the unit. At the end of the unit, students can go back and do the activity again, this time writing what they have learned about each object/picture.

Next, I will do an "inquiry chart." In this activity, which is detailed below, students' prior knowledge, which has been activated during the gallery walk, is recorded on a chart with student initials by each statement. Student questions are also generated which can be added to throughout the unit and researched by the students to create greater enthusiasm for learning.

Sometime during the first week of the unit, I will set up an experiment involving two compost piles in the schoolyard using mesh baskets, potting soil and worms. For five days, students will collect their waste and place it in one of the two piles- one for organic waste (things such as food and paper) and one for inorganic waste (cans, plastic, etc.). They will record their predictions of what they will see in one month in their science notebooks. Students will regularly observe (once a week) the process of decomposition (or lack thereof) through recording with drawings and notes in their notebooks.

Next, I will introduce a Big Book, which is also detailed below, called "The Important Book about Trash." Each page in this book follows the same pattern. The repeated line is "The important thing about trash is that we need to reduce, reuse, and recycle to protect the environment." Each page will begin and end with this line, and in the middle, it will talk about different aspects of trash (where it goes, what's in a landfill, problems with landfills, effects on the environment, etc.). This book will incorporate key vocabulary for the unit.

Students will also, at this point, become exposed to some chants and poems which will reinforce the target vocabulary (see lesson plan 3). In these poems, the parts of speech will be color-coded. The poems follow a specific frame, and are highly contextualized with pictures and photographs to support struggling readers and

ELLs. Three such poems are "Trash here, trash there," "Unusual Conservationist" and "Water Cycle Boogie." Once students have mastered the poems toward the end of the unit, they will do a Sentence Patterning Chart in which they practice building sentences in English using newly learned vocabulary (lesson 4).

The next lesson will be a time line of trash history. First, I will place a thin line of paper across one wall of the classroom. Then, I will place the date 2005 at one end to show students where we are on the time line. From there, I will proceed to place dates associated with certain time periods in history, labeling the eras. Below each date and label, I will place a picture of what "trash" looked like for that people group, along with some key words. In this way, students will become familiar with World History terms such as "Prehistoric," "nomadic," "Ancient civilizations," "Greeks," "Romans," "Middle Ages," and "Industrial Revolution." Students will then be given their own time lines to fill out and label with the same information.

Following these activities, I plan to introduce students to the concept of cycles in nature. I hope that as students begin to understand that nature functions in cycles, they will have a better foundation for understanding why **re** cycling is important for emulating nature. I will use two models to demonstrate the water cycle. First, I will design a mini-ecosystem in a terrarium to demonstrate the water cycle. In the center of the terrarium, I will place a cup of water with measurements marked on the outside. Inside this cup, I will place two smaller communion cups: one upside down to hold up another one on top, which will be used to catch the water that eventually falls as precipitation. Around the cup of water, which will act as a lake, I will put various plants. The entire terrarium will be covered in plastic, and a weight will be placed in the middle of the plastic. The terrarium will be placed in a sunny spot, and students will observe the terrarium over a day or two. From this demonstration, students will come to understand the processes of evaporation, transpiration, condensation, and precipitation.

The next demonstration will clearly show how water moves throughout the earth, carrying pollutants and toxins to bodies of water. For this demonstration, each group of students will receive their own tub of wet diatomaceous earth, tilted up at one end, thus forming a "lake" or "ocean" at the bottom. A cup of blue tinted water with 2 notches around the rim will be placed at the top of the tub- this will be the "source" of the river. A bent straw will be placed in the notch, and the teacher will suck some water to begin the flow of the river (it should continue dripping once started). Once the river has formed and is flowing to the sea, students can place monopoly houses at various points around the river. Then, the teacher will pass out pre-dyed Q-Tips of different colors, which the students will stick in the earth to represent landfills, pollution from factories, or other forms of pollution. The teacher then comes around with a spray bottle to create a "rainstorm." Students should be able to observe the pollutants dying all the water different colors from the storm. This will help students understand the significance of landfills in polluting groundwater sources as well as nearby bodies of water (Adopted from the URI/ Open Spaces as Learning Places project.)

Following this, I will use a direct instruction strategy called a "pictorial input" to explain the water cycle. In this strategy, I will first pencil in the diagram and labels on a piece of large chart paper so that students cannot see it. Then, as I explain the water cycle, I will draw it and label it at the same time. Students can then copy the diagram and labels into their learning logs. This is one way of "contextualizing" the learning so that language learners can better understand and follow along.

Once students begin to grasp the concept that nature functions in cycles, I will use a strategy called a "narrative input," in which I place pictures/photos on a backdrop large enough for all students to see as I relate a story about a piece of plastic trash. In the story, the piece of trash will follow other pieces of trash

which decompose, get recycled, or remain untouched in the garbage dump. The story will introduce students to the world of "life after the garbage can." The students will hear the story several times over a few days, and after practicing retelling, story mapping, and summarizing, they will list the cycles that they saw occurring in the story (carbon cycle, recycled materials). We will discuss why certain things in the garbage cannot be recycled.

We will then make our final observations of our compost piles and connect our observations with the narrative input. Students will explain in writing why they think the items in one compost pile decomposed faster than the other. This will provide important background knowledge for our trip to the garbage dump.

Following this, students will begin to use observation skills to see how human activity has altered nature's cycles. We will take a field trip to a meadow where students will record their observations of living things and the environment. Then we will go to the local garbage dump, where they will observe how the natural environment has been disrupted. They will record their observations in their science notebooks using their five senses. I would like to also take students to the local recycling plant for a tour.

By this time, it is my hope that students will have a heightened awareness of the effects of our waste on the environment. Now, they will begin to focus on graphing using data that they collect on their own. Because my students typically have had very little exposure to graphing and organizing information in their schooling experiences, they will have homework assignments where they survey the different types of litter they see within 1-2 blocks of their residence and record what they see over 1-2 weeks. They will be challenged to come up with different ways to collect data more efficiently (e.g. using tables, tally marks, etc.). They will keep a "trash journal" in which they record their own trash for several days.

Once we have compiled the data as a class, we will set up a "trash pizza." In this activity, students will decide on the major categories of trash that they have observed through their own monitoring of their trash (e.g. paper products, yard clippings, plastics, aluminum, food scraps, etc.). They will then figure out the percentages of each and compare them to the national percentages. Using this data, we will then design a pie chart by cutting out a thick cardboard circle, surrounding it with a paper mache crust, and filling it with samples of the various types of trash (e.g., cut up pieces of newspaper, magazines, and office paper for the paper section, twigs and leaves for yard waste, etc.). This can be done in small groups with an adult assigned to each group to help with the materials. To tie this in with the theme of cycling, we will identify which categories of trash easily decompose and which ones do not.

We will also look at some statistics of local stores/fast food places (for example, how many cups of coffee are sold a day at Dunkin' Donuts) and figure out how much area that certain item of trash takes up in a landfill over a year.

Another way to integrate math would be to set up a system to weigh the class's trash at the end of each lunch. A fun way to get kids to reduce their trash would be to have a competition to reduce their waste to reach a certain goal weight, with a "trash-free" party that they could design as the prize.

To integrate geography, I will do a "world map input," in which I post a sketch of a world map and identify (using photographs and labels) different locations on the map where there are particular problems related to waste disposal (e.g., technology junkyards in Southeast Asia). This strategy is designed to expand students' understanding of world geography while they learn important current issues pertaining to the topic. I will also

label the map with some statistics from different countries about amount of trash per capita. Students can take those numbers and create bar graphs to better visualize the discrepancies of the amount of trash coming from different parts of the world and how that relates to lifestyles.

For the literacy component of this unit, I will do a variety of read-alouds (listed in reading list) in which I model with "think-alouds" the reading strategies of questioning and determining importance. I will use expository texts that are related to the theme during small, guided reading groups in which we focus on pre-reading strategies for expository text (reading subtitles, captions, diagrams, etc.). Students will do a "scavenger hunt" for these features in a variety of texts. The unit will also include a series of poems and chants to be sung for daily shared reading and/or partner reading. These poems will include target vocabulary and key concepts from the objectives. Finally, students will create cause-effect charts which demonstrate their knowledge in written form of how specific types of trash harm the environment, or how recycling can positively affect the course of nature.

One final activity to help raise students' awareness of the trash problem is to have them participate in a clean-up of a section of a local street. Once they have cleaned it, I will take them out again two days later to observe how clean (or not) the street still is.

Finally, students will take action by writing persuasive letters to address an issue they have learned about. One example would be to have them write to businesses asking them to reduce the amount of packaging involved in their products. In my case, I will have students write letters to our school board requesting that recycling be implemented in every school. These letters can be either written individually or as a shared writing project, depending on the fluency of the students.

Homework

Homework is an important component of any unit. It allows the students an opportunity to reprocess what they have learned with their families. It also allows parents and other family members a chance to be involved in their child's education, thus strengthening the home-school connection. A variety of different types of homework will be given throughout the unit, titled "The Home-School Connection." Each of these assignments will be two-way, giving the students a chance to share something new they learned with their parents, while allowing the parents to respond as well. The following are some examples:

Talk to your parents about a time they threw away something that was really important to them. What happened? Write the story below. (Parent signature required)

Explain to a parent how a landfill works. Draw a picture of a landfill. Then, list ten things that you and your parent think you might find a lot of in the landfill. (Parent signature required)

Before you or anyone in your house throw away any trash today, write down what it is. What types of things did your family throw away today?

Explain the water cycle to your parent. Then, sing them the water cycle boogie song. Draw a picture of the water cycle below. (Parent signature required)

Three Sample Lesson Plans

Lesson 1: Inquiry Chart

Goal

The goal of this activity is to have students discuss their prior knowledge of the subject, which was generated through the gallery walk, and to list that knowledge. This helps the teacher to find out what level students are at in their knowledge of the subject and where their interests lie.

Objective

Students will be able to share prior knowledge orally with a partner and formulate questions they have about the topic.

Materials

A piece of chart paper with two columns, each with a heading: "What we think we know about trash," and "What we want to know about trash."

Lesson Design

Students will first discuss with a partner what they think they know (I emphasize *think* because sometimes they are mistaken!), and then they will share out one fact they want me to write down on the chart. I write their initials after each statement. Fill out both sides of the chart in this manner- with students discussing first with a partner, and then reporting out. One possible modification of this is to have the students report out on what their partner said. If needed, they can refer to a chart with discussion stems, such as:

"_____ told me that...."

"_____ pointed out that..."

"One interesting thing I learned from _____ is that...."

This chart helps develop students' academic language. I write exactly what the students say, modeling correct usage of quotation marks and punctuation. This chart stays up for the duration of the unit. Each time one of the questions is answered, I go back to the chart and code it with an "A" for answered.

Lesson 2: Big Book

Goal

Students will gain a deeper understanding of the "big idea" about trash and recycling

Objective

Students will be able to read fluently with the teacher in shared reading as they become familiar with the patterned text

Materials

Teacher-created big book using attached text (Note: when assembling this book, the text can be enlarged, cut out and glued onto large construction paper with pictures that relate to each page, then laminated. This creates an enjoyable big book for the students to reread on their own.)

Lesson design

First, read the book to the class during a read aloud period. For younger children, it can be broken up into two sessions. The book can be reread everyday (or a page a day, depending on the students). With repeated readings, students will begin to read the repeated line along with the teacher, thus developing their oral language and fluency in reading. After each page, the teacher can also have the students share with a partner one fact they learned. Students can also write what they have learned in their learning logs.

Text

The Important Book About Trash

By Julianne Kaphar

(page 1)

The important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

People like you and me throw away lots of things every day. Did you know that the average person in the United States throws away 4-6 pounds of trash a day? Imagine that!

But, the important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

(page 2)

The important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

All through history, humans have had trash. Sometimes people would dig a hole in the ground for their trash. Sometimes they would throw it in a river. Sometimes they would burn it. Now, we have learned that trash impacts, or causes damage to, the environment. Scientists have been working hard to find the best ways to get rid of all our trash.

But, the important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

(page 3)

The important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

Most of our trash goes to a place called the landfill. To make a landfill, a deep hole is dug. A protective layer of plastic surrounds the hole. This is to protect the leachate, or the liquid from the decaying trash, from mixing with the groundwater. Then, trucks bring trash from the city, which is poured in the hole in layers. Each layer is pressed down, or compacted, and covered by soil. When the landfill is finally full, it is covered with more plastic, soil and grass. You can walk by a landfill and not know it is there!

But, the important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

(page 4)

The important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

Trash has become a big problem in our society. More and more people are consuming, or using, more and more things. This causes a lot more trash than we have room for! Also, landfills disrupt nature and destroy habitats for animals. They can also leak poisonous fluids or gasses that are harmful for living things.

But, the important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

(page 5)

The important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

We can help solve the trash problem if we learn to reduce, reuse and recycle. To *reduce* our trash means to not throw so much away. If we use less of things, we won't make so much trash. For example, we can bring a cloth bag to the grocery store instead of using paper bags each time. That way, we will have less paper bags to throw away. To *reuse* means to use things over and over again. For example, instead of throwing away your old homework papers, turn them over and use them as scratch paper. Finally, when certain things are too old to reuse, we can *recycle* them, which means that they can be turned back into usable products again. Usually, you can place recyclable goods in special trash cans that have the recycle symbol on them. This means they will go to a different place than the landfill, where they will go through a special process to be used again.

But, the important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

(page 6)

The important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

Remember, we all make trash, but we can be responsible about what we do with it! So next time you go to the garbage can to throw something away, think about if you can *reduce* , *reuse* , or *recycle* ! You can make a big difference!

But, the important thing about trash is that we need to reduce, reuse, and recycle to protect the environment.

Lesson 3: Poems and Chants

Goal

Students will develop their fluency in reading content-specific text through repeated choral readings

Objective

Students will be able to read the poems independently and recognize the content-specific words in other contexts by the end of the unit

Materials

Teacher-created charts of the following poems, using the color-coding system for the various parts of speech (adjectives- orange, nouns-blue, verbs- red, adverbs- green, prepositional phrases- purple). Also, pictures can be placed on the poems to support the content.

Lesson Design

First, the teacher will introduce the poems one at a time. The teacher should read them aloud as the students listen. The teacher and students can invent hand signals to go along with each line. New vocabulary should be highlighted with highlighting tape and discussed. As students become more familiar with the poems, they can get their own copies of "poetry books" where they can highlight important words and illustrate the poems. They can become paired reading activities as well.

The teacher can reinforce the newly learned vocabulary through games. One possible game is to tell the class, "I'm looking for a word that means..." Students can come up with post-it notes and tag the word, or all students can write the "mystery word" in their learning logs.

Trash Here, Trash There

Trash here, trash there

Trash, trash everywhere!

Contaminated trash polluting,

Recycled trash being reused,

Biodegradable trash decomposing,

And toxic trash destroying.

Trash in landfills,

Trash around wildlife,

Trash between incinerators,

And trash along the highway.

Trash here, trash there

Trash, trash everywhere!

Trash! Trash! Trash!

Water Cycle Boogie

Evaporation, Condensation, Precipitation, Transportation

The water cycle boogie goes round and round,

The water cycle boogie goes up and down

Round and round

Up and down

The water cycle boogie goes round and round.

(hand signals for: evaporation- fingers moving up

Condensation- fingers make cloud shape

Precipitation- fingers move down like rain

Transportation- hands move sideways like a river)

Unusual Conservationist

I know an unusual conservationist

An extremely unusual conservationist

An extremely unusual conservationist

Who thinks like me

Reducing waste day and night

Reusing paper and plastic

Recycling cans, bottles, and paper

Composting biodegradable scraps

Speaking out against pollution

And respecting the environment

I know an unusual conservationist

An extremely unusual conservationist

An extremely unusual conservationist

Whose name is _____ ! (student name here)

Lesson 4: Sentence Patterning Chart

Goal

Students will learn about the parts of speech by looking at the function of newly and previously learned vocabulary, as well as develop reading and writing fluency in English.

Objectives

Students will be able to categorize new words into parts of speech, and students will be able to write complete sentences in English.

Materials

A large chart broken up in to the following sections: Articles, Adjectives, Noun, Verbs, Adverbs, Prepositional Phrases. Use the same color-coding system from Lesson 3. Under "Noun," choose one noun from the table groups (e.g. conservationist)

Lesson Design

Begin by showing students the chart with only the parts of speech headings and the noun. Explain that they are going to think about words that describe conservationists, which are adjectives. Give a few examples to get them started, and see if they can refer to the poems for other adjectives to describe the noun. Then, move on to verbs, adverbs, etc., explaining each part of speech first and giving examples. Remind the students that the word they give must make sense in the context of the sentence. This activity is best done in short segments (1-2 columns in a sitting).

Once the chart has been filled up, students can come up in pairs and create a sentence (using 2 adjectives) by placing post-it notes beneath the words they choose. Then, the whole class can sing the sentence to the tune of "Farmer in the Dell." Also, students can create their own sentences in their learning logs.

Many variations of this activity can be done, depending on the ability level of the students. For example, for beginners, the noun can be plural and the articles and adverbs removed. Or, for more advanced students, this activity can be used to show subject/predicate, or dependent clauses (which can be cut out and moved around).

Example:

(table available in print form)

Assessment

Assessments will be ongoing throughout the unit.

- 1.) Students will be required to sketch, label and describe the water cycle
- 2.) Students will participate in the creation of a mock "community action plan" in which they take on roles of different community members (e.g. store owner, homeowner, city planner, environmentalist) to come up with a written plan for their community's trash problem
- 3.) Each child in the class will contribute one page toward the class "Important Book About Trash" that expresses their knowledge of the big ideas of the unit.

References

Blair, C. 2000. *Garbage and other pollution*. Gale Group, Detroit.

Montague P. 2003. "Landfills are dangerous." From Cothran, H. (Ed) *Garbage and recycling: opposing viewpoints* . Greenhaven Press, San Diego. *This is a helpful, highly readable book for gaining a broader understanding of the issues involved with waste management. It provides articles from opposing viewpoints on the same issue.*

Teacher Bibliography

Alexander, J. 1993. *In defense of garbage* . Praeger, Westport, Connecticut. *This is an interesting book that provides "the other side" of the perspective on how waste positively contributes to the environment.*

Blair, C. 2000. *Garbage and other pollution*. Gale Group, Detroit. *This is a very helpful resource for tables, charts, illustrations, and maps as a quick reference, and it is loaded with information.*

Cothran H. (Ed). 2003. *Garbage and recycling: opposing viewpoints* . Greenhaven Press, San Diego, CA. *This is a helpful, highly readable book for gaining a broader understanding of the issues involved with waste management. It provides articles from opposing viewpoints on the same issue.*

Gay K. 1991. *Garbage and recycling* . Enslow Publishers, Hillside, NJ. *This book provides a solid background in the basic issues involved in recycling different types of materials .*

Pellow D. 2002. *Garbage wars: the struggle for environmental justice in Chicago* . MIT Press, Cambridge, MA. *This fascinating book provides an overview of environmental justice issues related to waste management. It begins with a history of these issues in the U.S., and then focuses specifically on an ironic situation in Chicago in which recycling plants which were intended for good, actually created hazards for its workers and surrounding communities.*

Rathje W. & Murphy C. 2001. *Rubbish!: the archaeology of garbage* . HarperCollins Publishers, New York, NY. *This is a fascinating, highly readable book that presents the issues involved in living in a wasteful society from an archaeological perspective.*

Student Bibliography

Brimner L. 2003. *Trash trouble: the corner kids* . Scholastic, New York. *A great, environmentally sound small book that would be appropriate for lower level guided reading groups.*

Butler A. 1994. *Recycling dump* . Goodyear Books, Glenview, Illinois. *This is a great text for struggling readers to be used in a guided reading group.*

Chandler G. & Graham K. 1996. *Recycling* . Twenty-First Century Books, New York. *This book can be used for higher level guided reading groups. It provides many specific examples of how waste can be recycled creatively.*

Gutnik M. 1992. *Experiments that explore recycling* . Millbrook Press, Brookfield, Connecticut. *As the title states, this is a helpful book*

that can give kids a hand-on approach to recycling through the experiments.

Gutnik M. 1993. *Recycling: learning the four R's*. Enslow, Hillside, NJ. *This text is appropriate for middle schoolers (high-level text, some photos), or it can be used as a reference for teachers. It spells out the four R's and provides practical ways that kids can practice them.*

Hare T. 1992. *Los residuos domésticos*. Ediciones SM, Madrid, Spain. *This is a quality expository text in Spanish with great photos, diagrams, and layout for text instruction.*

Knapp B. 1991. *Don't throw it away!* Grolier, Toronto. *This is a neat book with ideas for how to creatively recycle trash.*

Leedy L. 1991. *The great trash bash*. Holiday House, New York, New York. *This can be another good resource for lower level guided reading groups.*

Lowery L. & Lorbeicki M. 1993. *Earthwise at home*. Carolrhoda Books, Inc., Minneapolis. *(see below)*

Lowery L. & Lorbeicki M. 1993. *Earthwise at school*. Carolrhoda Books, Inc., Minneapolis. *(see below)*

These two books provide an overview of environmental issues such as waste, deforestation, and global warming in a kid-friendly style. They discuss ways kids can make responsible choices at home with their families or at school. They encourage action through letter writing and provide excellent resources. Each page has a variety of graphics and different expository text structures, making it a great resource for teachers to use for short text examples to teach expository text structures.

Programa de las Naciones Unidas para el Medio Ambiente & Peace Child International. 1999. *Pachamama : nuestra tierra, nuestro futuro*. Editorial Sudamericana, Buenos Aires. *This is an incredible book (written in Spanish) that covers the range of environmental issues in kid-friendly language. It has great illustrations, poems, quotes, statistics, and it includes responses from kids around the world. This is a precious resource that should be in every bilingual teacher's library!*

Stwertka E. & A. 1993. *Cleaning up: how trash becomes treasure*. Julian Messner, New York, NY. *This is a great book for upper elementary aged kids, as well as for struggling readers. It has a fun comic-book style narrative that goes along with the higher-level text on each page, so both struggling and advanced readers can enjoy it.*

Tesar J. 1991. *The waste crisis*. Facts on File, New York, New York. *This book is appropriate for much more advanced readers. It explores the issues in depth. The text is in longer chapters, but is still broken up by subsections. It has a great section of color photographs that can be used for discussion (they would make great pictures to put up around the room for the gallery walk).*

Electronic Resources

<http://www.epa.gov/epaoswer/non-hw/muncpl/pubs/msw2001.pdf> *This is a helpful website with all kinds of data on municipal solid waste. The graphs are especially helpful for a quick reference.*

<http://www.kid-at-art.com/htdoc/lesson59.html> *This website provides the complete art lesson plan for the "Trash a Pizza" lesson.*

<http://dep.state.ct.us/wst/compost/comindex.htm> *This is a great website from the State of Connecticut that has a link for setting up your own school compost system.*

Appendix 1

Standards:

Science

1.1a: Students will ask questions about objects, organisms and events in the environment. *This standard will be met in a variety of ways throughout the unit, particularly in the inquiry chart at the beginning of the unit. Also, as students record observations in their science notebooks, they will be encouraged to ask questions and make predictions.*

1.2b: Students will use different kinds of investigation, including observation and description, experimentation and theorizing to achieve broad understandings in science. *Students will achieve this through their observations in their science notebooks of the compost pits, the water cycle demonstrations, and the field trips.*

3.3b: Students will explore the ways in which humans alter their natural environment beneficially or harmfully. *Students will recognize this as they compare and contrast from their trips to the garbage dump and to the meadow.*

6.2c: Students will learn about the consequences of pollution its various impacts on quality of life. *This will be especially evident from the model of the river and pollution.*

6.2b: Students will analyze the important resources needed by living things and the effect of man's use or abuse of these resources on the health of our earth.

6.4c: Students will identify and describe human-caused alterations of the environment and compare and contrast the positive and the negative effects of these alterations on living organisms.

As a result of this unit, I hope students will come away with the big ideas stated in 6.2b and 6.4c.

Mathematics

4.1: Students will collect and organize data to answer a question or test a hypothesis by comparing sets of data.

4.1a: Students will display data in graphs, tables, and charts.

4.2f: Students will use data, including statements about the data, to make a simple concluding statement about a situation

Standards 4.1, 4.1a and 4.2f will be implemented as students collect data about their own waste and organize that data into pie charts.

6.2: Students will estimate numerically and spatially.

6.3: Students will measure length, area, perimeter, circumference, diameter, height, weight, and volume

accurately in both the customary and metric systems.

Standards 6.2 and 6.3 will be implemented as students measure different types of trash and estimate the amount of space taken up in landfills.

Language Arts

1.3a: Students will demonstrate strategic reading behaviors *before specific reading tasks* ; they will:

1. Establish a purpose for reading. (gathering information, enjoying a literary experience, performing a task)
2. Use prior knowledge to connect previous experience to material being read (e.g., KWL Charts)
3. Preview selections and predict what will be included in them.

These three standards will be met as students meet in their guided reading groups: they will determine the purpose for the text they read, make predictions before reading, and make connections to the texts before, during and after reading.

1.5b. Students will demonstrate fluency through shared reading. *This will be accomplished through the poems and chants set up around the classroom.*

1.5c. Students will demonstrate fluency through guided reading. *Students will meet in small, needs-based guided reading groups using texts related to the theme.*

<https://teachersinstitute.yale.edu>

©2019 by the Yale-New Haven Teachers Institute, Yale University

For terms of use visit <https://teachersinstitute.yale.edu/terms>