

Agatha's Feather Bed – A "Fowl" Experience!

These lessons were developed by Ana Houseal, middle school teacher, and Kristin Simon, East Central Iowa Council of Governments. Copyright Center for Energy and Environmental Education, University of Northern Iowa

- **Grade level:**
Upper Elementary, Middle School
- **Subject areas:**
Reading, Science, Social Studies
- **Estimated duration:**
Preparation time: 1-2 hours. *The teacher will need to read the book, Agatha's Feather Bed, and become familiar with the materials the class will use. Sorting through recyclables for the recycling game (Session two) will take additional time. If students do research, teachers may devote additional time to identify websites where students are likely to find the information they need.)*
 - ***Session one:** 50 minutes. Globe activity, reading the book, *Agatha's Feather Bed*, discussion about raw materials and final products, Memory Game.
 - ***Session two:** 50 minutes. Recycling game – looking at recycling in your community
 - ***Session three:** 50 minutes. Reread the book, focusing on language. Identify idioms and puns. Explore the meanings of more idioms, especially those related to fowl.

**Each could be done independently, or combined to form a larger lesson.*
- **Setting:** Classroom or library reading program
- **Skills:** Identifying world resources, reading for comprehension, making predictions, sorting, identifying idioms
- **Vocabulary:** Vocabulary found in the Memory Game (www.uni.edu/ceee/wastereduction/pdfs/agathas_memory_game.pdf); idioms listed on the Fowl Idiom and Puns Sheet at the end of this lesson plan

Summary

In this delightful story, Agatha explains that “everything comes from something”—wool from sheep, linen from flax, cotton from cotton bolls. Then, in a turn-about, naked geese remind Agatha that “everything comes from something,” and that her new feather bed is made from *their* feathers. Students explore the following concepts: everything comes from something; preparation for community recycling; and the use of “fowl idioms” in literature.

Objectives

Students will:

- Develop an understanding that raw materials are turned into familiar products
- Learn to accurately identify and sort recyclable materials for their own community
- Develop new language understandings of idioms, especially ones related to the story

Materials:

- The book, *Agatha's Feather Bed*, by Carmen Agra Deedy (It would be helpful to have several copies.)

For the Globe Activity:

- A globe: cut a hole in the globe so that you can pull out samples of natural resources
- Samples of resources, such as bauxite, hematite, oil (in a sample bottle with a tight lid), sand and glass cullet (in sample bottles) a small “model” tree or photo of a tree

For the Recycling Game:

- Examples of locally recyclable materials
- Recycling bins, boxes, or paper grocery bags
- Clean materials – some recyclable, some not
- Signs for bins (cans, plastic, glass, newspaper, magazines, cardboard, bottles for deposit) and/or on the back (hematite, bauxite, sand, wood, oil) If you laminate them, they can be easily reused for future sessions

For the Memory Game:

- One set of the Memory Game cards, printed on card stock and laminated if possible, for every 3-4 students. (See www.uni.edu/ceee/wastereduction/pdfs/agathas_concentration_game.pdf.) If each set is printed on different colored card stock, they will be easier to separate after the games.

For the Drawing Idioms¹ Activity:

- Fowl Idioms and Pun Sheet (see last page of this lesson)
- 11 x 17” white paper
- Colored pencils, crayons or other drawing materials

Background

The focus of this series of lessons and activities is the connection between raw materials and products. The globe activity can be extended in many different ways as explained in “Extensions.”

Some discussion may be controversial, based on some of the raw materials and products mentioned in both words and pictures in the book. For example, the drawings in the margins include those of tortoise shells, coral, and ivory tusks--all of which cannot legally be collected. [Retrieved July 19, 2005 at http://www.desertusa.com/june96/du_tort.html, http://www.slumaffe.org/Illegal_use_of_coral.pdf and <http://www.bornfree.org.uk/travellers.alert/trade.htm>.] In some places, it is not legal to own products made of these materials either.

The Memory Game associated with these lesson plans includes these materials. Please see the Author’s note to the reader on page 29 of *Agatha’s Feather Bed*, where she broaches this issue. There are other raw materials such as brightly colored feathers (not dyed ones) and animal skins, which could spark controversy. It is a good idea to keep administrators informed when potentially controversial topics will be discussed in classrooms. It is also important to discuss multiple sides to issues. For example, if hunting comes up, a respectful, informed parent who hunts could possibly be invited to the classroom to talk with students.

¹ An idiom is “an accepted phrase, construction, or expression contrary to the usual patterns of the language or having a meaning different from the literal” (Webster’s New World Dictionary, second college edition, 1984, p. 696).

It would be a good idea for the teacher to learn about some of the products to be discussed in the classroom. Many humans are far removed from the raw materials used to create the products used daily; it is not unusual for younger students to be totally unaware where bacon and eggs come from, and that venison (if they have heard of it) is deer meat. The globalization of products, and the outsourcing that manufacturing companies rely on today, can mean that raw materials have traveled a great distance to become final products, and then they are shipped back to this country. See the book, *Stuff: The Secret Lives of Everyday Things* by John C. Ryan and Alan Thein Durning for a look at the chain of production of various items. You may also ask your students to check their clothing and shoes to determine where they were produced.

Procedure

The Activities

Session #1

Warm-Up

Using a globe with an opening in the top, the teacher pulls out raw materials and invites students to make connections between these materials and products that could be made from them.

It is probably easiest to start with paper, since most students, even some of the youngest, are familiar with the fact that paper comes from trees. Be open to the connections that students make. Sometimes the connections do not seem appropriate until you hear their explanations.

After this, discussion might be generated about other materials, and then finally they could be directed to think about the variety of raw materials and products as they listen to the story, *Agatha's Feather Bed*.

Tip: If time or resources do not allow for preparing the globe with a cut-out, teachers may opt to have a globe in the front of the room (without the cut-out), and simply show examples of materials that come from the earth.

Activity – Reading the book

Alternatives to reading the book aloud to students include having the students listen to part of it (say the first half of the book - up to the point where Agatha is presented with the dilemma), and then invite students to read the remainder of the book on their own. Before the rest of the book is presented, students could predict what might happen to the geese – How Agatha might be able to solve the problem, whether or not she will be able to in time, and if she doesn't, what the geese might do to her. This could be done individually (on their own papers or in reading journals) or it could be done as a group.

There are many puns in the book (for example, when the geese report that they were given a "bill"). There might be room to discuss what exactly a goose might spend Agatha's money on – things in a hotel that might be particularly appealing to a goose, things that might be problematic.... this could be done in a serious vein, or a sillier one.

Older students would benefit from having copies of the book to view pictures only—before reading any of the book. This can be especially effective for low level readers at the middle school level. This technique is called a "Picture Walk."

Taking it the next step

Students could play a Memory Game (see www.uni.edu/ceee/wastereduction/pdfs/agathas_memory_game.pdf.) Depending on the age and level of the students, the cards could be reviewed first, and/or the book could be used as a resource.

Assessment

Assessment for this activity could be done in various ways. Three suggestions follow:

1. A matching quiz could easily be developed for students with raw materials on one side, and products on the other.
2. Students could be challenged to identify new pairs of cards for the game, and to document why each pair is appropriate.
3. Older students could read the book to younger students and teach them the concepts from this lesson.

Session #2

Warm-Up

Begin with a discussion of what is recycled locally, and how the materials should be prepared for recycling (i.e., cleaning, sorting as needed, etc.). Consult with local solid waste officials to ensure your information is accurate and up-to-date.

Activity – Playing the Game

Setting up the game:

Have as many bins and signs as you want sorted. Follow your community's recycling program guidelines (contact your local solid waste officials if necessary). If the recycling program does not require sorting because it is done by a recycling broker, discuss why sorting isn't required (more people may participate, it may save transportation costs). Approach the game as "The Recycling Center Sorting Game" if the local program doesn't require consumers to sort.

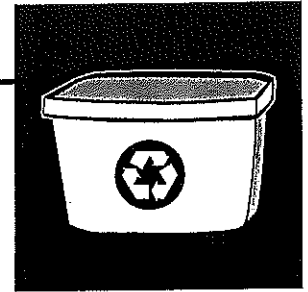
Set the materials and sort bins as far apart as possible. Give participants a set amount of time (possibly 60 seconds) to sort the materials into the proper bins. For every mistake (cap not off, wrong bin, not recyclable), the team gets one point. The team with the least amount of points wins. Stress that accuracy—not speed—is the point.

Note: Many solid waste agencies employ a solid waste educator, who likely could talk with the class if invited. You may ask if they would be willing to team teach this lesson.

This game may be used at all levels. Younger students may want to play several times. This can be done as a race against the clock or a collection of points, depending on the number of students and number of bins. It could also be done as teams competing against each other, if multiple sets of bins are available. Another version is to use the back sides of the signs and have students sort materials by resources.

Application/Assessment:

1. Students may design posters that publicize the local recycling program and the proper preparation of recycled materials. (Many people do not realize that if an unrecyclable material is put with recyclables, it may have the same result as placing a rotten egg in cookie dough—it could spoil the entire batch.)



WHAT'S A MRF?

Objectives

Students will be able to identify ways recyclable materials can be separated and sorted at a materials recovery facility (MRF), including these four: conveyor belts, blowers, flotation, and magnetism.

Method

Students will simulate four separation techniques commonly used by materials recovery facilities (MRFs).

Materials

recyclable paper, clean plastic containers, clean aluminum cans, clean steel cans, a fan, large magnets, a coil of copper wire, steel paper clips, a wide shallow dish pan, water, a large box lid, a stop watch or clock, and a bag of clean examples of recyclable materials your community collects for recycling

Vocabulary

commingle, ferrous metal, materials recovery facility (MRF), recyclable

Procedure

1. Background: Many communities transport collected recyclables to a materials recovery facility (MRF—more commonly referred to as a "murf"). A MRF is a facility for sorting, separating and processing trash and recyclables. A MRF may take commingled recyclables such as aluminum and steel cans, plastic jugs, glass bottles, and newspapers and separate them into containers or place them on a conveyor belt for mechanical or manual processing. Some MRFs process discarded waste, and extract and separate recyclables from trash that will be landfilled or incinerated.

Here's an example: Homeowners place their trash or recyclables in bags or bins at the curb. There,

a driver may sort the materials into different compartments of the truck, commingle the materials, or compact the materials with the collected materials from other homeowners. Then the driver will haul the discards to the MRF for further processing. At the MRF, material may be sorted using a combination of manual and mechanical systems. Often the material is placed on a conveyor belt where magnets pull out ferrous metal, vacuums or blowers pull out plastic, and electrical currents force out aluminum. Glass and paper is manually separated and sorted by color and type. Workers constantly ensure that materials are effectively sorted during the entire process. While this process is often labor intensive, machines make the sorting easier and increase output.

After sorting the recyclables according to the manufacturers' specifications, the materials are often baled and loaded onto trucks for transport. The materials are then shipped to businesses which perform the next step in the recycling process, manufacturing new products from the recycled content. The new products are then transported to stores for the final step in the recycling process—purchase by the consumer.

2. Ask students to take off their shoes and line them up in the front of the room.
3. Then have them return to their seats.
4. Tell them that when you say "Go," they are to walk, not run, in an orderly fashion, find their own shoes and return to their seats.



5. Time the procedure.
6. Repeat the activity, but this time commingle (mix) all of the shoes into one heap.
7. Time the procedure again.
8. Compare the times and discuss why there is a difference.
9. Relate this activity to sorting recyclables from trash and from other recyclables.
10. Discuss the fact that some communities have MRFs that separate recyclables from trash and from other recyclables.
11. Explain that most MRFs use people and machines to sort recyclables.
12. Have a bag of clean recyclable materials ready, including the examples listed in the Materials section of this lesson.

NOTE: The following simulations could be performed as a demonstration, cooperatively in small groups at stations, or individually by students.

13. Distribute to the students, copies of the student sheet, "MRF Notes," provided at the end of this lesson. Ask students to record predictions about which materials could be sorted at a MRF by conveyor belts, by wind, with water (float or sink), and with magnets.
14. Tell the students to then perform or watch the following simulations and record the actual results:

TRIAL 1: Conveyor Belt Simulation

Empty the clean recyclable materials from the bag in a heap onto the large box lid. Gently, shake the lid to show how some MRFs use conveyor belts to move the materials and to separate them. Record the results.

TRIAL 2: Blower Simulation

Turn on the fan. Drop each object in front of the blowing fan. What happens to each object? Record the results. The wind should blow the paper and plastic. Discuss how some MRFs use blowers to sort plastic and paper.

TRIAL 3: Flotation Simulation

Fill a dish pan with water. Drop each recyclable sample into the water, one at a time. Does the item float or sink? Record the results. Relate this to how MRFs may use flotation for sorting.

TRIAL 4: Magnetic Removal Simulation

Test each material for magnetic properties. Record the results. Relate this to how MRFs use magnets to sort ferrous metals. You may wish to heap the recyclables in one pile, and attempt to "puff out" the ferrous metals using only one magnet.

15. Have students compare their predictions with the actual results.
16. Discuss the advantages and disadvantages of each procedure used (conveyor belts, blowers, flotation systems, and magnets) at MRFs. Include in the discussion the use of manual processing systems and how the two (mechanical and manual) interact.

Assessment

Have students describe a materials recovery facility (MRF), and identify four sorting techniques used to separate recyclable materials for further processing.

Enrichment

Identify the materials collected in your community for recycling, and research how they are collected and sorted.

Visit a local MRF, if one is operating in or near your community.



MRF Notes

Trial 1: Conveyor Belt Simulation

Material: Prediction: Actual:
(Will or will not separate.)

- 1.
- 2.
- 3.
- 4.
- 5.

Trial 2: Blower Simulation

Material: Prediction: Actual:
(Will or will be blown.)

- 1.
- 2.
- 3.
- 4.
- 5.

Trial 3: Flotation Simulation

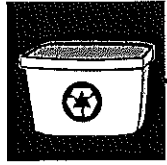
Material: Prediction: Actual:
(Floats or sinks.)

- 1.
- 2.
- 3.
- 4.
- 5.

Trial 4: Magnetic Removal Simulation

Material: Prediction: Actual:
(Will or will not be picked up by a magnet.)

- 1.
- 2.
- 3.
- 4.
- 5.



Waste In Place

Student Handout

Matching Match

Name: _____

