RECYCLE SASKATCHEWAN

Composting

This activity is an ongoing process. You could carry it on for as long as you like. Keeping that in mind, it should continue for at least 5 weeks. The activity can be started and then be revisited at the end of the compost "season".

Objectives:

* Students will track various attributes of a miniature compost heap.
* Students will discover what kinds of materials are easily decomposed and which are not.

Day 1

Materials

Grass clippings or leaves (autumn would be best), maybe a bit of straw

Rich garden soil or potting soil for each group

Assorted student-brought compostables (from student-generated list)

Assorted other items (aluminum foil, glass, twigs, milk cartons, cardboard, etc.)

1 clear jar (1 for each group) with cloth coverings (fasten with elastic, keeps bugs at bay, and allows air flow)

Instructional Procedures

1) Show the short video from http://videos.howstuffworks.com/howstuffworks/348-how-composting-works-video.htm . Use this video as a springboard of discussion of what students know about composting.

2) Discuss with students the requirements of composting. A good compost mix needs both "brown" material (carbon-rich) and "green" material (nitrogen-rich). Brown materials include things like fallen leaves, straw, newspaper, sawdust or any other dead, dried plant material. Green materials include things like grass clippings, table scraps, coffee grounds, garden waste and other fresh plant materials. Compost also needs moisture.

3) Brainstorm a list of things that students can easily obtain to be included in a class compost. Ask students to bring items to be composted for next class. Encourage and allow students to use some non-conventional and non-food items – such as newsprint, paper towels, coffee grounds, etc.
   * Teacher Note * Students may ask about meat, dairy and animal waste. These items are compostable but are not encouraged for household composting as they may cause unpleasant odors and attract vermin.

4) Go over what will be happening in the next class by starting the teacher's compost, so the students will be familiar with the concept
   a) In a clear jar place a layer of rich soil.
   b) Add a layer of compostable material, such as grass clippings or leaves. The soil should be moist; if it isn't a small amount of water can be added. Label the outside of the jar with the contents.
   c) Add at least one more layer of soil. You could add additional layers of compost material if you wish.
   d) Make note of what the mixture looks and smells like.
   e) Cover and put the jar in an out-of-the-way place, so it can "stew". It should be kept inside so that it doesn't freeze.

Day 2

1) Bring out the "teacher compost". Look at the compost mixture and observe any changes in appearance or odor, also to be recorded. Discuss changes or lack thereof. Why? Check the moisture level; if it seems dry, add a bit more water. Cover and put away again.

2) Divide students into groups. The size of the groups does not really matter as long as the students can stay on task.

3) Have the students assemble their own compost jars, using the soil and whatever they brought to be composted. Layer the soil with compostable materials (must be small enough to fit into jar). Each layer of compostable material should be separated by a soil layer (for example a layer of soil, layer of banana peel, layer of soil, layer of apple core, layer of soil). Try to get the compost materials up against the side of the jar so they can be observed. A long stick would be useful in manipulating the mixture. They should also add some of the extra items (twigs, cloth, aluminum can, etc.). The jars need to be labeled with the contents and group name.

Teacher Note Extra compost items should be cut or torn into small pieces so that they will decompose more quickly. Students should be aware that this has implications in decomposition in landfills also.

4) Students should make their observations and record them on the chart given.

5) Cover the mini compost and put away until needed.

6) Students should predict which items they feel will decompose more quickly and more slowly. They should also categorize the material buried (recyclable/non-recyclable, biodegradable/non-biodegradable). Record all their predictions and categorization.

7) Lead a class discussion on the students' predictions.

Day 3 (one week later)

1) Have each group observe and record appearance and odors.

2) Students may want to change their predictions. Changes should be recorded.

3) Cover and put away.

4) Lead a class discussion in what the students are finding.
   What surprises them?
   What do they expect to observe in 4 weeks?

Day 4 (one month later)

1) Have each group observe and record appearance and odors.

2) Revisit predictions and note discrepancies.

3) You may choose to continue the experiment longer, but the base of it is complete. If you wish to put the compost material to good use, sort out large pieces of wood and paper, and also any metal, glass or plastic; then the material that is left can be given to someone who has a compost at home or the material could be buried in soil where the decomposition can continue. Remember to clean the jars for reuse or recycling.

4) Class discussion
   Have each group share their findings on what decomposed the quickest, the slowest and not at all.

Groups could also share their predictions and how they differed from their findings.
Discuss any surprising findings.

Additional Resources

http://www.wrwcanada.com/12_composters.htm - gives instructions for building a variety of composters including a vermicomposter bin

http://school.discoveryeducation.com/lessonplans/programs/recycling/ - an additional activity dealing with biodegradablility where students develop a biodegradable item

Video: How Stuff Works:
http://videos.howstuffworks.com/howstuffworks/348-how-composting-works-video.htm

Websites:

- National Waste Reduction Week: http://wrwcanada.com/build_a_composter
- Discovery Education Lesson Plans - Recycling
  http://www.discoveryeducation.com/teachers/free-lesson-plans/recycling.cfm

Compost Observation Recording Sheet

Day 1

Appearance

1) What items can you recognize in your compost?

2) How do you think your compost will change in 1 week?

3) Organize the compost materials in the order that you think they will decompose (quickest-slowest). Rationalize your prediction.

Odor

1) Is there an identifiable odor? If so, what do you smell? Is it an offensive odor?

2) Do you expect the odor to change? Why or why not?

Compost Observation Recording Sheet

One Week Later

Appearance

1) What items can you recognize in your compost?

2) How has your compost change from last week?

3) Look back on your prediction of decomposition speed. Modify your prediction if needed.

Odor

1) Has the odor changed from last week? If so, how has it changed?

2) Do you find the odor offensive? Why or why not?

Compost Observation Recording Sheet

One Month Later

Appearance

1) What items can you recognize in your compost?

2) How has your compost change from last time?

3) Look back on your prediction of decomposition speed. .

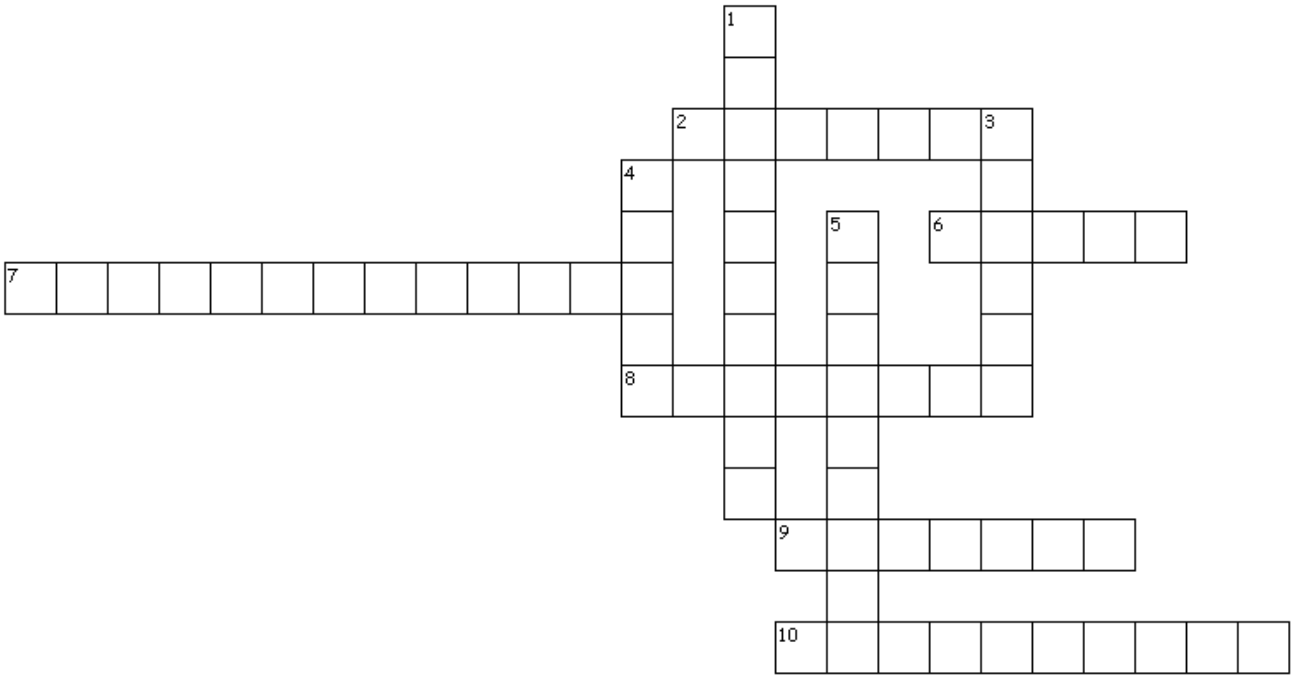
4) Did you expect a faster/ slower rate of decomposition? Explain your answer.

Odor

1) Has the odor changed from last time? If so, how has it changed?

2) Do you find the odor offensive? Why or why not?

Compost Crossword



Across

2. coming from living plants or animals
6. materials high in carbon
7. able to decay naturally
8. nutrient found in table scraps and other "green" composting materials
9. process or product of decaying organic materials used for soil enrichment
10. materials that are suitable for recycling

Down

1. a type of composter using worms
3. nutrient found in dried leaves and other "brown" composting materials
4. materials high in nitrogen
5. to be broken down by microbial means

Word Bank

compost	organic	biodegradable	nitrogen	brown
vermiposter	carbon	decompose	green	recyclable

Compost Wordfind

z r d q i a j b e p q n e a l f q i y o
l v e x u q r l a k f l m g b r a x m k
b p f c y n c j w q b i g n g e v y w u
r l m x y d b t s a s j w c q s p x s b
x d v o b c d u d d e j s r i u y w t g
q n u i c g l a n x m f o c b n c j t j
v h s l z b r a y g c j n p k s a u z v
s e b f g g x y b o j c c d x c j g n y
x z d i e u o a e l c h j u i p p i r s
d r d d z r a g q j e r n f m p t b b o
t s o p m o c s b t e d q q x r e g v m
i i l l c n i b x b p y l g o d v b w v
b w y o e d y b u a v u d g e e x o l v
n y o e w q m v u u h n e j n c c j q h
v e r m i p o s t e r n w t o o v b w d
t g f s t p w n k u h s t z b m x h b n
o b t p b r o w n x k t k b r p f s y t
u m g f n d a y i x j f r n a o u e o y
l v d z q s b k s o s l y b c s a g t j
b p l g q f t c e y z n u j d e z v p s

Word Bank

biodegradable
brown
carbon
compost
decompose
green
nitrogen
organic
recyclable
vermiposter

Compost Observation

Compost Contents

Categorize Compost Contents – check off one box in each of three areas

Item	Recyclable	Non-recyclable	Biodegradable	Non-biodegradable