

# EDUCATOR GUIDE

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2019 Book of the Year



## **Who is Indiana Agriculture in the Classroom?**

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### **Our Mission**

*To increase agricultural literacy through K-12 education.*

### **Our Vision:**

*Agriculture is valued by all.*

Agriculture in the Classroom is a grassroots agricultural outreach program for school children in grades Pre-K through 12, facilitated by Indiana Farm Bureau and coordinated nationwide by the United States Department of Agriculture. This program helps kids understand where the food they eat is grown and how important farmers are to their daily lives.

Registered volunteers from across the state visit classrooms to teach more than 60,000 students about agriculture each year. They utilize in-class lessons, hands-on activities, educational events, on-farm experiences and field trips.

Indiana Ag in the Classroom offers standards-based lessons and materials; many free of charge, to schools, community groups, and other non-profit organizations that wish to integrate agriculture into their curriculum.

### **We believe:**

- Increased understanding of agriculture allows individuals to make informed choices about nutrition and health for themselves and family.
- Informed citizens will be able to participate in establishing the policies that will support a competitive agricultural industry in this country and abroad. (agday.org)
- Beginning in pre-kindergarten and continuing through 12th grade, all students should receive some standards-based education about farming and agriculture outside of agricultural education courses.
- Agricultural literacy includes an understanding of agriculture's history and current economic, social and environmental significance to all Americans. This understanding includes some knowledge of food and fiber production, processing and domestic and international marketing.
- An agriculturally literate person is defined as "one who understands and can communicate the source and value of agriculture as it affects our quality of life." (NAITC)

## Book of the Year Agriculture Literacy Program

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### Program Purpose:

To increase understanding, build awareness and develop a positive public perception of Indiana agriculture through education.

### Student Goals:

- Understand how food, fiber and renewable resource products are produced and by whom.
- Realize that science plays an important role in our food supply and that the scientific advancements in food production are safe, proven and necessary.
- Acknowledge and consider career opportunities in the agriculture, food, fiber and renewable resource industries. (agday.org)

### What is Agricultural Literacy?

*A person who understands and can communicate the source and value of agriculture as it affects our quality of life. (National Agricultural Literacy Logic Model, 2013)*

### The Importance of Agriculture Literacy

- An increased knowledge of agriculture and nutrition allows individuals to make informed personal choices about diet and health.
- Informed citizens will be able to participate in establishing the policies that will support a competitive agricultural industry in this country and abroad.
- Agriculture is too important a topic to be taught only to the small percentage of students considering careers in agriculture and pursuing vocational agricultural studies.
- Agricultural literacy includes an understanding of historical and current economic, social and environmental issues that affect all Americans. This understanding includes being knowledgeable about food and fiber production, processing and domestic and international marketing. Employment opportunities abound in agriculture. Career choices include:
  - farm production
  - agribusiness management and marketing
  - agricultural research and engineering
  - food science
  - processing and retailing
  - banking
  - education
  - landscape architecture
  - urban planning
  - energy
  - and other fields.

## Indiana Academic Standards Met Through Related Activities

Kindergarten	1 <sup>st</sup> grade	2 <sup>nd</sup> Grade
<p><b>K.ESS.4</b> Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p> <p><b>K.LS.1</b> Describe and compare the growth and development of common living plants and animals.</p> <p><b>K-2.E.1</b> Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.</p> <p><b>Environment &amp; Society</b> <b>K.3.7</b> Recommend ways that people can improve their environment at home, in school and in the neighborhood.</p>	<p><b>1.ESS.2</b> Observe and compare properties of sand, clay, silt, and organic matter. Look for evidence of sand, clay, silt and organic matter as components of soil samples.</p> <p><b>1.ESS.3</b> Observe a variety of soil samples and describe in words and pictures the soil properties in terms of color, particle size and shape, texture, and recognizable living and nonliving items.</p> <p><b>1.ESS.4</b> Develop solutions that could be implemented to reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p> <p><b>Physical Systems</b> <b>1.3.6</b> Explain the effect of seasonal change on plants, animals and people.</p> <p><b>Environment and Society</b> <b>1.3.9</b> Give examples of natural resources found locally and describe how people in the school and community use these resources.</p>	<p><b>2.PS.1</b> Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.</p> <p><b>2.PS.4</b> Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.</p> <p><b>K-2.E.1</b> Pose questions, make observations, and obtain information about a situation people want to change. Use this data to define a simple problem that can be solved through the construction of a new or improved object or tool.</p> <p><b>Economics -Standard 4</b> Students describe how people in a community use productive resources, create a variety of businesses and industries, specialize in different types of jobs, and depend on each other to supply goods and services.</p>

## **About the author – Mary McKenna Siddals**

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*Compost Stew: An A to Z Recipe for the Earth*

**Mary McKenna Siddals** is the author of a variety of picture books, including the perennial favorite, [Millions of Snowflakes](#), the groundbreaking [Compost Stew: An A to Z Recipe for the Earth](#), and the simply SPOOKtacular [Shivery Shades of Halloween](#). A former teacher, she lives in British Columbia, Canada, where she enjoys being close to nature and spending time with her family, as well as tending to her own batch of Compost Stew.



Visit [www.siddals.com](http://www.siddals.com) for more information.

For additional resources created by educators related to *Compost Stew: An A to Z Recipe for the Earth* check out: [www.siddals.com/compost-stew](http://www.siddals.com/compost-stew)

## ***Agriculture in the Classroom Volunteer Notes***

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As farmers and individuals involved in agribusiness you may realize that soil health and nutrition is of the utmost importance to those who rely on the earth's resources to provide for their family. *Compost Stew: An A to Z Recipe for the Earth* uses the alphabet and rhyme to introduce to the reading audience how organic material can be returned to the soil through composting and compost practices.

“Composting is the practice of collecting and managing the decomposition of organic material – that is matter derived from living things. The final product, compost, is rich in essential plant nutrients and is often added to gardens.” (Books in Bloom – National Gardening Association)

As the land is used to grow crops if the nutrients in the soil are not replaced, the soil will become deficient in key elements such as iron, nitrogen and phosphorus and the crops will fail to grow well.

In addition to the practice of using compost in gardens at home and at school, farmers and gardeners alike can use fertilizers. Row crop farmers (ex. corn, soybeans, wheat) may use a common farming practice known as no-till farming which does not remove plant stalks from their fields allowing the nutrients found in those stalks to return to the soil. Farmers also rotate crops from year to year in their fields so that as one crop may use a specific nutrient from the soil, another may return it.

### **Sample Talking Points:**

1. Discuss with the class what farmers in their community do to make sure the soil stays healthy and can successfully grow a crop for human and animal food.
2. Farmers use the term “good stewards of the land” when referring to themselves. Explain to the class why that is important to you as a farmer.
3. Share some of the people that farmers work with (careers) to make sure that the health of the soil in their fields is well-maintained and even improved from year to year.
4. Not all plants and foods are good for composting. Share how some plants (weeds) can actually make the soil unhealthy and farmers and gardeners need to be careful to avoid adding things (seeds) to the soil that could cause long-term damage.
  - a. Ex. an invasive vine or plant (mint, pigweed) that takes over the entire garden or field and takes a lot of work to remove.

## Related Lessons and Activities

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Search the National Agriculture in the Classroom Curriculum Matrix for these great resources! [www.agclassroom.org/teacher/matrix/](http://www.agclassroom.org/teacher/matrix/) or click on the title of each if viewing online.

Visit each of these lesson and activity plans found on the National Agriculture in the Classroom Curriculum Matrix for additional ideas on teaching about *Compost Stew: An A to Z Recipe for the Earth*.

Each lesson plan includes essential files and links, vocabulary, agricultural facts, background agricultural connections, interest approach, procedures for included activities, enriching activities and suggested companion resources:

- [The Case of the Missing Pumpkin](#) Grades K-2  
Students will investigate the life cycle and decomposition of pumpkins. Includes three activities and time-lapse video of a pumpkin's life.
- [People and Plants Need Nutrients](#) Grades K-2  
In this lesson, students will learn that although plants and people obtain nutrients differently, they both need proper amounts of nutrients to grow and be healthy.
- [Vermicomposting](#) Grades K-2  
The class will create a worm bin, which will serve as a basis for investigations about ecosystems, life and nutrient cycles, and decomposition. Includes two activities and *Worms at Work*, a 20-day time-lapse video of the inside of a vermicomposting bin.
- [Terrariums: A Look at the Living and Nonliving World](#) Grades 3-5  
Students will observe the interactions between living plants and other living and nonliving things in a small terrarium environment. They also will learn about farms and discuss similarities between the terrarium environment and the farm environment.
- [The Rotten Truth](#) Grades 3-5  
Students will observe and explain the decomposition process and learn the methods and ingredients for making compost.

## Companion Resources

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The following resources are available for free download to use as supplemental non-fiction reading to coordinate with the themes in *Compost Stew: An A to Z Recipe for the Earth*.

### PreK – 2<sup>nd</sup> grade

- [Farm to Cart](#) from American Farm Bureau Foundation for Agriculture is a printable board game that introduces PreK-Elementary players to the general process for the production of various agricultural products. Players will become aware that farmers use land in different ways to grow crops.

- [My American Farm](#) A series of more than 20 online games with coordinating lesson and hands-on activity plans, along with ready-to-print worksheets and puzzles. The games were built for educators, learners and their families and are aligned to national learning standards. The series also offers agricultural-themed e-comics, trivia and polls as well as interesting videos about agriculture. There is no cost or log-in. App version available as well as the full desktop version.
- [Under Your Feet Reader](#) from the Nutrients for Life Foundation. This activity reader introduces soil and its role in producing food. Written for grades 1 & 2.

### 3<sup>rd</sup> grade +

- [Soil Reader \(Terra Nova\)](#) from Illinois Agriculture in the Classroom. Developed to examine agriculture as it relates to Math, Science, Social Studies, Language and Writing. A total of 15 commodity readers are available along with coordinating sample student questions are available for teachers to print and implement to aid in test preparation and are a way to expose students to more non-fiction based texts. Written at a fourth grade reading level.
- [Ag Today student readers](#) *Ag Today* is a great reading supplement for upper elementary students to learn about agriculture. The six issues correlate with the themes of the National Agricultural Literacy Outcomes and can be integrated into science, social studies, and language arts curriculum. Each reader provides real-world connections to STEM and makes learning relevant for students in becoming agriculturally literate. [Educator guides available for each issue.](#)

### Other:

- *Dig Deeper: Soil Science Society of America* [www.soils4kids.org](http://www.soils4kids.org) Play fun soil games, experiment with soil and explore careers. Materials available for grades K-12.
- Check out the [Soils Overview](#) for a printable version of basic soils information. [Major role of soils](#) tells about the major roles that soils play in our lives. There are many soil properties that help us describe and manage soils. Some of the important physical properties are described on the [Physical Properties of Soils](#). Soils can have many different layers. For a description on what soil layers exist, visit the [Soil Horizons](#) page.
- *Nutrients for Life*: [www.nutrientsforlife.org](http://www.nutrientsforlife.org) Find curriculum, lesson plans and teaching resources about soil health and sustainable agriculture practices. Includes lesson and activity plans, videos, games and much more.
- *CropLife Ambassador Network* Crop Life's mission is to provide scientifically based, accurate information to the public regarding the safety and value of American agricultural food production. The site contains lesson and activity plans, coloring pages and web quests. <https://ambassador.maca.org/teachers/lesson-units/>
- Recycling & Waste Reduction [Lessons & Activities](#) from Wake County, NC
  - See [Teacher Background Handout](#)
  - See: [Composting Elementary Version \(7 lessons\)](#)

## **Suggested Reading**

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### ***Backyard Composting*** by John Roulac

This book provides an easy, step-by-step guide to successful composting. Learn how easy it is to start composting, maintain an active, healthy compost, and use the compost you produce.

### ***Farmer Will Allen and the Growing Table*** by Jacqueline Briggs Martin

Will Allen is no ordinary farmer. A former basketball star, he's as tall as a truck, and he can hold a cabbage—or a basketball—in one hand. But what is most special about Farmer Will is that he can see what others can't. When he looked at an abandoned city lot in Milwaukee, he saw a huge table, big enough to feed the whole world. No space? No problem. Poor soil? There's a solution. Need help? Found it. Farmer Will is a genius in solving problems. Jacqueline Briggs Martin tells the inspiring story of an innovator, educator, and community leader.

### ***The Amazing Life Cycle of Plants*** by Kay Barnham

How do plants grow? Explore the journey from seed to sapling and beyond. Children have lots of questions about the world around them, and this book helps them discover many amazing and wonderful scientific facts about nature. The charming collage-effect illustrations are inspired by farms and scenery that the illustrator sees around her home in New Hampshire. Lively texts engage children and make this book a favorite to return to again and again. There also are Notes to Parents and Teachers at the end to encourage further exploration and learning.

### ***Leaf Litter Critters*** by Leslie Bulion

Have fun on this poetic tour through the leaf litter layer and dig into the fascinating facts about the tiny critters who live there. Nineteen poems in a variety of verse forms with accompanying science notes take readers on a decomposer safari through the "brown food web," from bacteria through tardigrades and on to rove beetle predators with other busy recyclers in-between. Glossary, hands-on investigations, and resources are included.

### ***Pumpkin Jack*** by Will Hubbell

Join Jack in his voyage of discovery as he experiences death, decomposition and rebirth as his jack-o-lantern fades, rots and new plants grow from a seed left inside the pumpkin shell. That seed sprouts and the growth leads to a new crop of pumpkins.

Want to create your own A to Z worksheet or activity using the terms from the book? Copy and paste the list below from the online version of the educator guide found online at [infarmbureau.org](http://infarmbureau.org)

Apple cores  
Bananas  
Coffee grounds  
Dirt  
Eggshells  
Fruit  
Grass  
Hair  
Insects  
Jack-O-Lanterns  
Scraps  
Lint  
Mulch

Nutshells  
Oatmeal  
Paper  
Quarry dust  
Rye bread  
Seaweed  
Teabags  
Underbrush  
Vegetables  
Worms  
Xmas trees  
Yellow pine  
Zinnias

## A to Z Compost Matching

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Directions: Collect a sample of each of the items identified in *Compost Stew: An A to Z Recipe for the Earth*, or items that represent each of the items listed (see suggestions). Place each item in a separate clear container, with or without the lid, for students to identify. Ask students to use the cards found on the following page to identify each of the items by placing the label card in front of the item that can be composted.

Please be mindful that any food item could pose a concern for students with food allergies such as eggshells and nutshells. Other items may irritate outdoor allergies such as grass, mulch and pine.

A to Z Ingredient	Alternative 1
Apple cores	
Banana peel	
Coffee grounds	
Dirt	Crushed chocolate cookies
Eggshells	Plastic eggs
Fruit	
Grass	Artificial grass/turf (can be found at many home improvement stores)
Hair	Clean hairbrush or comb. Synthetic hair extension or accessory (can be found at many Big Box retailers)
Insects	Plastic insects
Jack-O-Lanterns	Plastic pumpkin
Scraps (food)	
Lint	Lint roller OR cotton balls
Mulch	Sharpened pencil shavings
Nutshells	Artificial acorn (potpourri)
Oatmeal	Instant oatmeal
Paper	
Quarry dust	Pea gravel
Rye bread	Salad croutons
Seaweed	Shredded spinach or dark lettuce
Teabags	
Underbrush	Floral moss
Vegetables	
Worms	Gummy worms
Xmas trees	Miniature Christmas trees for winter village scenes.
Yellow pine	Pine tree shaped car air freshener
Zinnias	Artificial flower or Zinnia seed packet

<b>A to Z Compost Matching</b>	Apple cores	Banana peel
Coffee grounds	Dirt	Eggshells
Fruit	Grass	Hair
Insects	Jack-O-Lanterns	Scraps (food)
Lint	Mulch	Nutshells
Oatmeal	Paper	Quarry dust
Rye bread	Seaweed	Teabags
Underbrush	Vegetables	Worms
Xmas trees	Yellow pine	Zinnias

## A Recipe for the Earth Word Find

### Teacher's key

K O F U H O I H Q Z K G G J H L W D C X S G Q G T J D Y S H  
 N Y D W S E O C E H U C C E A N P A Y G C P L E Q V I K X F  
 A R O C O F F E E G R O U N D S Q Q P W K V X F W J J R G I  
 Q B Y F R U I T H U I Q T Z P K X C N P U C S N N C J J I Z  
 Q K T E A B A G S G S Y K S A H B L S E L I S H Y Q R L H Y  
 U T B V D A D O K Y F T C M Z H Z E D D G E F F G X I R D C  
 A O J T A R N R L I E W M X W W V U Z I H G C Q U X W K I F  
 R K X A M T N D R W U L M R B X L Y W O K A S O E E U R R Y  
 R M N C C I C P U K Y P L E L A I W X P I O M H R P O S T A  
 Y T F E O K X E F X M X P O J G Z D L V I W L G E E Z N Y E  
 D E W C O M O G R A S S D F W C G F V T Z T P K T L S P H A  
 U A P Y E Q F L V M K B Z M P P R Y E B R E A D L S L O T M  
 S Q V V G A F W A E O Z A H Q G I Z C S C O O Z G E E S T A  
 T Y O O V I O P G N G I U C Q I H N N L S C O Q W A L O G V  
 H Z V V Z S A Z S G T E G W F Y D Z E E Z G X T I W Q A F Y  
 N C W N C O A F F G S E T U Q J Y B V Q I Q T M W E Z T B U  
 A C X G G L A L D O U B R A E E V L O C N P M L Z E R M S Q  
 Q Z D N U T S H E L L S O N B K Z D H Q N A D Q C D V E G A  
 K I A V I Y P G X Z V J L G S L V Z Z C I P H Z P P U A B E  
 N N Y W S C R A P S Q H R M N J E O Y I A E D P K G F L C J  
 G S A C G K X Z T M X W R X T L V S E F S R O M A S Y W K R  
 J E A D H I Y J M W Q M S U N D E R B R U S H H D H P O L R  
 B C X M A S T R E E S R U C G L J F V Q C H B D H P B R F K  
 N T U Q L I N T H P E O N L F U X B S O G O A O N E Q M X O  
 K S J K O N J R R M Z O D Z C T X Q R F G G U I Z J K S S M  
 S S O B P B A N A N A S D M G H N X X L B X H Y R P T I P Y  
 G Y H R Q Q Q A I B I T A H O H K K C Y W P M N V E N O N B  
 D B Z X I U M U Y Z K E A Z K C W B Z T X H V W J T U Q U K  
 O T L D T N K I Y D L P Y U L P Y P A A U I T D V G S S I E  
 U T J G C M G U G U K V L Q C E P L E K L H F P A Z T X W M

Apple cores

Bananas

Coffee grounds

Dirt

Eggshells

Fruit

Grass

Hair

Insects

Jack O Lanterns

Scraps

Lint

Mulch

Nutshells

Oatmeal

Paper

Quarry dust

Rye bread

Seaweed

Teabags

Underbrush

Vegetables

Worms

Xmas trees

Yellow pine

Zinnias

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## A Recipe for the Earth Word Find

K O F U H O I H Q Z K G G J H L W D C X S G Q G T J D Y S H  
N Y D W S E O C E H U C C E A N P A Y G C P L E Q V I K X F  
A R O C O F F E E G R O U N D S Q Q P W K V X F W J J R G I  
Q B Y F R U I T H U I Q T Z P K X C N P U C S N N C J J I Z  
Q K T E A B A G S G S Y K S A H B L S E L I S H Y Q R L H Y  
U T B V D A D O K Y F T C M Z H Z E D D G E F F G X I R D C  
A O J T A R N R L I E W M X W W V U Z I H G C Q U X W K I F  
R K X A M T N D R W U L M R B X L Y W O K A S O E E U R R Y  
R M N C C I C P U K Y P L E L A I W X P I O M H R P O S T A  
Y T F E O K X E F X M X P O J G Z D L V I W L G E E Z N Y E  
D E W C O M O G R A S S D F W C G F V T Z T P K T L S P H A  
U A P Y E Q F L V M K B Z M P P R Y E B R E A D L S L O T M  
S Q V V G A F W A E O Z A H Q G I Z C S C O O Z G E E S T A  
T Y O O V I O P G N G I U C Q I H N N L S C O Q W A L O G V  
H Z V V Z S A Z S G T E G W F Y D Z E E Z G X T I W Q A F Y  
N C W N C O A F F G S E T U Q J Y B V Q I Q T M W E Z T B U  
A C X G G L A L D O U B R A E E V L O C N P M L Z E R M S Q  
Q Z D N U T S H E L L S O N B K Z D H Q N A D Q C D V E G A  
K I A V I Y P G X Z V J L G S L V Z Z C I P H Z P P U A B E  
N N Y W S C R A P S Q H R M N J E O Y I A E D P K G F L C J  
G S A C G K X Z T M X W R X T L V S E F S R O M A S Y W K R  
J E A D H I Y J M W Q M S U N D E R B R U S H H D H P O L R  
B C X M A S T R E E S R U C G L J F V Q C H B D H P B R F K  
N T U Q L I N T H P E O N L F U X B S O G O A O N E Q M X O  
K S J K O N J R R M Z O D Z C T X Q R F G G U I Z J K S S M  
S S O B P B A N A N A S D M G H N X X L B X H Y R P T I P Y  
G Y H R Q Q Q A I B I T A H O H K K C Y W P M N V E N O N B  
D B Z X I U M U Y Z K E A Z K C W B Z T X H V W J T U Q U K  
O T L D T N K I Y D L P Y U L P Y P A A U I T D V G S S I E  
U T J G C M G U G U K V L Q C E P L E K L H F P A Z T X W M

Apple cores

Bananas

Coffee grounds

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Eggshells

Fruit

Grass

Hair

Insects

Jack O Lanterns

Scraps

Lint

Mulch

Nutshells

Oatmeal

Paper

Quarry dust

Rye bread

Seaweed

Teabags

Underbrush

Vegetables

Worms

Xmas trees

Yellow pine

Zinnias

## Garbage Helps Our Garden Grow

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Adapted from Illinois AITC Scoop on Soil – Originally created by [Wake County Environmental Services](#), Solid Waste Management Division.

### Suggested Reading Materials:

*Garbage Helps Our Garden Grow: A Compost Story* by Linda Glaser  
ISBN-13: 9780761349112

### Materials Needed:

- One empty and clean water bottle for mini composter
- Soil (can be dug from school grounds or potting soil)
- A handful of food scraps such as orange peels or lettuce leaves chopped into small pieces
- Ruler
- Scissors
- Masking tape

### Directions:

1. Explain to the students that they will be able to view composting in the classroom on a small scale. Show students the materials collected.
2. Using scissors and following the diagram, cut off the top two inches (below the mouth) of the bottle. Save this portion for later.
3. Place 1" of soil in the bottom of the bottle. Do not compact the soil.
4. Place food scraps on top of the soil and cover with another 1" of soil.
5. Using scissors carefully poke 5-7 air holes in the top (cut off) portion of the bottle.
6. Use masking tape to secure the two sections of the bottle, being careful not to cover the air holes with tape.
7. Place the bottle in a sunny place that is not too hot or too cold.
8. Over the next 1-2 weeks, shake the bottle once daily to mix the soil and food scraps, being careful not to spill. This represents the turning that would ordinarily occur in a backyard compost pile and allows air and moisture to circulate through the soil and scraps.
9. Discuss with the students what they observe each week. Is the food decomposing? Why or why not?
  - What would happen if the bottle were not shaken?
  - What would happen if there were no air holes in the bottle?
  - Why was the soil added?



## **Create A Compostable Canvas**

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Using a wide variety of recyclable materials available have students create their own “compostable” artwork similar to what is seen in Ashley Wolff’s illustrations in *Compost Stew*.

### **Suggested materials:**

- Multi-colored tissue paper and other packaging materials (recycled from birthday and Christmas gifts)
- Silk floral petals
- Scrap paper from other in-class art projects
- Newspapers
- Cardboard food boxes and packages (ex. cereal boxes)
- Yarn
- Scrap fabric (ex. Cut socks and other clothing items that have holes in them and can no longer be worn into different sized and shaped pieces)
- Pillow stuffing, cotton, etc.

Optional – Provide a theme for the student’s artwork

- Our school garden – students create a piece of art that resembles the school or classroom garden
- Create an image of the world from outer space
- Nature park
- Recreate one of the illustrations in the book