

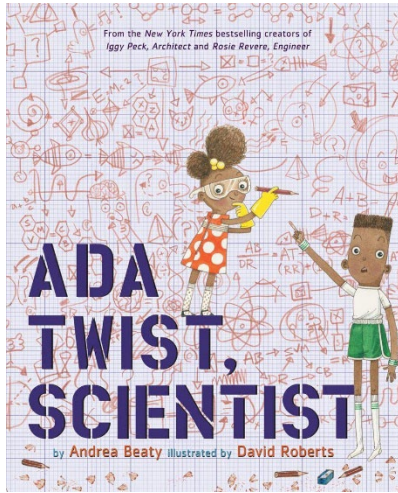


The Book Planter



Ag in the Classroom

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September 2022: *Ada Twist, Scientist*

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This is a story about the power of curiosity in the hands of a child who is on a mission to use science to understand her world. Ada has a boundless imagination and has always been hopelessly curious. Why are there pointy things stuck to a rose? Why are there hairs growing inside your nose? When her house fills with a horrible smell, Ada knows it's up to her to find the source. Not afraid of failure, she embarks on a fact-finding mission and conducts scientific experiments, all in the name of discovery.

Vocabulary

Chaos

Conked

Frazzled

Quivered

Dazed

Havoc

Traits

Stench

Pungent

Aroma

Hypothesis

Flop

Gawk

Fiction

Discussion Questions¹

1. Ada has labeled the animals all with different numbers. What do these numbers represent? Are any wrong? Why did Ada get it wrong?
2. Similar to Ada Twist, Albert Einstein didn't talk until he was four years old, and wreaked some havoc at school. What does this tell you about these two thinkers? Does behavior at school always equal intelligence? Why might they have caused problems at school? How did the book pay homage to Albert Einstein?
3. When Ada is holding the turtle, what is similar between the turtle and the eggs all around Ada? Why should the turtle be scared? What question is Ada trying to answer?
 - a. Extension: Have students answer Ada's question: Why do turtles have an outside shell? What's on the inside of a turtle's shell?
4. What are some ways the author and illustrator showed that time was passing throughout the book? It never says that Ada grew to age 7 or 8, as indicated by the final pages; however, there were clues showing that time was passing.
5. How did Ada follow the Scientific Method to determine the mystery smell? What was her question? Her research? Her hypothesis? Her experiments? Did she draw a conclusion?
6. "[Ada Twist] had all the traits of a great scientist." What character traits does she possess that makes her a perfect scientist?
7. Ada's parents send her to the thinking chair for experimenting on the cat. How could Ada have kept from getting in trouble? What could Ada's parents have done instead of automatically sending her away?

8. On the final pages in the book, there are three students who have something the other students don't. What do they have?

Activity 1: Understanding Characters, Setting and Plot²

1. Ask students if they know any famous scientists.
2. Model for students how to pull observations and predictions from the images, using the first couple spreads (spread: the opening of two pages of a book displayed together) of the book.
3. Do a picture prediction gallery of the book, asking students what they notice about each picture and how it relates to science and scientists. Ask them to predict what they think the story might be about, how it might unfold, who the characters might be, etc. Students could record their answers on a poster paper that is included with the photo or on a separate sheet of paper.
4. Lead a discussion about the photos and what students notice, focusing on the who, what, where aspects of their observations. Tell them to keep all this in mind to see if their predictions were correct.
5. Read the first spread out loud to the class to allow them to hear the rhythm and rhyme of the story.
6. Read the second spread with the class.
7. Pair students up and have them take turns reading the remainder of the story.
8. If you would like to focus on science and what it means to be a scientist, you could create an anchor chart that you would use throughout the lesson to compare Ada with other scientists. (Parts could include 1) Famous scientist list, 2) How Ada is a scientist, 3) Traits of a scientist, 4) How to conduct an experiment.)

Activity 2: Who, What, Where, When, Why, and How²

1. Introduce question words (who/what/where/when/why/how). You can compare asking these questions about a book to the same questions Ada asked.
2. Discuss the differences between who/what/where/when/why/how and how they relate to the story (i.e., who = characters, what = problem, where = setting(s), when = sequencing, how = solution, why = personal questions. For even richer discussions, questions can be related to science/inquiry if you are using the book for both subjects.
3. Using the [Story Elements Organizer](#), students will create questions using these words. Some student questions might not be able to be answered from the text, such as, "What is Ada's favorite food?" Talk with students about how the information we know comes only from the story and therefore we might not be able to answer every question that we have.
4. In pairs or as a class, have students answer these words by sorting the who/what/where/how elements of the story.

Activity 3: Sequencing with Book Bits²

1. Begin introducing the three pieces of a story map and what is meant by sequencing.
 - a. Beginning
 - b. Middle
 - c. End
2. Have students either re-read or skim the story again.

3. Students will then work in pairs or table groups to complete the [Book Bits Activity](#). Once students sort their bits in what they believe to be the correct order, they can 'check' their work by flipping them over in place and seeing the image that is created.

Activity 4: The Rotten Truth³

In this activity, students observe and explain the decomposition process and identify the methods and ingredients for making compost.

Materials:

- 1-quart Ziploc bags, 1 or 2 per student pair
- Masking tape
- Decay Buffet: fruit and vegetable peelings, leaves, small twigs, plastic bag, paper bags, hay, straw, grass, plastic utensils, paper cups, drinking straws, paper napkins, etc. (Caution: no meat or dairy)
- Scissors
- Soil, 1/2 to 1 cup per student pair
- Spray bottles or bowls of water
- Gloves (food handler's gloves will work)

Procedure:

1. Review the scientific method with students.
 - Ask a question
 - Do background research
 - Make a hypothesis
 - Test hypothesis with an experiment
 - Draw a conclusion
 - Share your results
2. Highlight how Ada firsts asks a question, then she does research about it, she makes a guess, experiments, draws a conclusion, and finally communicates her results with her peers.
3. Tell students that they will be scientists today by conducting an experiment and learn how food waste can be turned into compost that can be used in the garden.
4. Divide the class into pairs. Give each pair a quart-sized Ziploc. Ask them to write their names on a piece of masking tape and stick it on the bag.
5. Set up a "Decay Buffet" of items like those noted in the list of materials.
6. Instruct students to place one small piece of each item from the Decay Buffet into their bags. If necessary, have them cut or break the items into small pieces that will fit into the bags. Stress that they not add any meat or dairy to their bags because potentially harmful bacteria could grow.

7. Ask one student to place the items in the bag and the other student to record the exact contents. The recorder should also note predictions (hypotheses) about what will happen to each item over time. Will the item rot? Smell yucky? Remain the same? You may want to have students switch roles and create a second compost bag with a list of contents and predictions.
8. Next, ask students to add about 1/2 cup of soil to their bags and to lightly mist the contents with a plant mister (adding a teaspoon of water and mixing the contents will work the same way).
9. Have the students blow into the bags to inflate them slightly and carefully seal them. Once the bags are sealed, leave them for 2–8 weeks. You may decide to keep the bags together or place them in various locations with differing conditions (light, temperature, etc.).
 - Note: If students choose their compost bag's location, ask everyone to register their locations on a master list, or you may be unpleasantly surprised when a missing bag finally makes its presence known.
10. Have students create compost bag journals. Ask them to observe their bags periodically and record what they see happening inside. Remind students that they are not to open the bags until the designated date. Ask students, "Is it important for scientists to document their experiments? Why?" Recall some of the predictions/hypotheses students gave about what would happen to the compost bags.
11. On the designated date, have the students take their bags outside. Distribute plastic gloves to the students to wear while sorting through the contents of their bags with their partners. Caution: Students with known allergies to fungus and fungal spores should not participate.
12. Record any items still identifiable and in their present state. Provide spray bottles or water bowls so items can be cleaned off for closer observation and identification. Have students compare their findings to the original list of items and note anything that is missing.
13. How did the results compare with the predictions/hypotheses? Did location of the bags make a difference? Tell students to draw their conclusions, and share their results with the other groups. Define and discuss the process of decomposition.
14. Extension: Use the [Make Your Own Worm Bin](#) instructions to create a classroom vermicomposting bin out of a recycled Styrofoam cooler. Prepare the cooler ahead of time, and then have students add the bedding, worms, and vegetable scraps. Vermicomposting in your classroom is an effective way to engage students with a wide variety of science concepts. For more information about using the worm bin to investigate ecosystems, life and nutrient cycles, and decomposition, see the lesson [Vermicomposting \(Grades 3-5\)](#).

Activity 5: Blowing up a Balloon with Gas⁴

In the book, Miss Lila Greer has her hands full when Ada Twist has some messy fun creating colorful geysers out of soda bottles. Here is a less messy soda bottle science experiment that you can do yourself to make a vinegar and baking soda balloon. *****Adult supervision required*****

Materials:

- An empty 2-litre soda bottle
- $\frac{3}{4}$ cup vinegar
- 1 tablespoon baking soda

- Funnel
- 2 balloons

Procedure:

1. Take the cap off the empty soda bottle.
2. Practice placing the balloon's mouth on top of the open bottle top (do this a few times until you feel comfortable doing it).
3. Pour the $\frac{3}{4}$ cup of vinegar into the bottle.
4. Position the funnel on top of the bottle.
5. Pour the tablespoon of baking soda into the funnel.
6. Quickly take off the funnel and place the balloon mouth over the bottle opening. (Hopefully the practice in step #2 paid off!)
7. Make sure the balloon is centered and the mouth is pulled evenly down on top of the bottle.
8. Very gently shake the baking soda and vinegar mixture.
9. What happens? The balloon should partially fill with gas.
10. Remove and tie the balloon shortly after the fizzing stops.
11. This isn't your average balloon—instead of blowing it up with your own breath or a fancy helium machine, you have inflated a balloon with only a soda bottle, baking soda, and vinegar!

Links

- *Story Elements Organizer*
<https://drive.google.com/file/d/15B99I8wDNNztBb3fh9OWIRyF7ZHIgWOX/view?usp=sharing>
- *Book Bits Activity*
<https://drive.google.com/file/d/1mYmbFINI9mkt7oc5rjPwLB78eHF4E4bE/view?usp=sharing>
- Make Your Own Worm Bin
https://cdn.agclassroom.org/media/uploads/2018/04/19/worm_bin_1_2.pdf
- Vermicomposting Lesson Plan (Grades 3-5)
<https://northcarolinamatrix.agclassroom.org/matrix/lesson/510/>

Sources

1. <https://www.unleashingreaders.com/11264>
2. <http://illinoisreads.org/images/2017IRGuideBeaty1.pdf>
3. <https://northcarolinamatrix.agclassroom.org/matrix/lesson/370/>
4. <https://www.scribd.com/document/320536831/Ada-Twist-Activity-Sheets>

K-5 Subject Areas

Reading, Speaking and Listening, and Science

NC Standard Course of Study

Reading

- **RL.K.1** With prompting and support, ask and answer questions about key details in a text.
- **RL.K.3** With prompting and support, identify characters, settings, and major events in a story.
- **RL.K.9** With prompting and support, compare and contrast the adventures and experiences of characters in familiar stories.
- **RL.1.1** Ask and answer questions about key details in a text.
- **RL.1.2** Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- **RL.1.3** Describe characters, settings, and major events in a story, using key details.
- **RL.1.9** Compare and contrast the adventures and experiences of characters in stories.
- **RL.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- **RI.K.1** With prompting and support, ask and answer questions about key details in a text.
- **RI.K.2** With prompting and support, identify the main topic and retell key details of a text.
- **RI.1.1** Ask and answer questions about key details in a text.
- **RI.1.2** Identify the main topic and retell key details of a text.

Speaking and Listening

- **SL.K.1** Participate in collaborative conversations with diverse partners about kindergarten topics and texts with peers and adults in small and larger groups.

- **SL.K.2** Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.
- **SL.K.3.** Ask and answer questions in order to seek help, get information, or clarify something that is not understood.
- **SL.K.4.** Speak audibly and express thoughts, feelings, and ideas clearly.
- **SL.K.5** Add drawings or other visual displays to descriptions as desired to provide additional detail.
- **SL.1.1** Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.
- **SL.1.2** Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
- **SL.1.5** Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
- **SL.2.1** Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
- **SL.2.2** Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
- **SL.2.4** Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent and complete sentences.
- **SL.3.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly.
- **SL.3.2** Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.
- **SL.3.3** Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.
- **SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly in complete sentences at an understandable pace
- **SL.4.1** Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- **SL.4.4** Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; adjust speech as appropriate to formal and informal discourse.
- **SL.5.2** Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

Science

- **K.P.2.1** Classify objects by observable physical properties (including size, color, shape, texture, weight, and flexibility).
- **K.E.1.1** Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses.
- **1.P.1.2** Explain how some forces (pushes and pulls) can be used to make things move without touching them.
- **1.L.1.2** Give examples of how the needs of different plants and animals can be met by their environments in North Carolina or different places throughout the world.
- **3.P.2.2** Compare solids, liquids, and gases based on their basic properties.
- **3.P.2.3** Summarize changes that occur to the observable properties of materials when different degrees of heat are applied to them, such as melting ice or ice cream, boiling water or an egg, or freezing water.
- **3.L.2.2** Explain how environmental conditions determine how well plants survive and grow.
- **4.L.1.1** Give examples of changes in an organism's environment that are beneficial to it and some that are harmful.

Name: _____

Story Elements Organizer

Story:	
Setting:	Characters:
Problem:	Solution:



Ag in the Classroom

Book Bits Activity

Teacher: Print this page and the following page back-to-back. Then, cut along all dotted lines and scramble the book bits for the students to sort. Once they have sorted the bits in sequential order, they can flip over their strips and see if the image comes out. If so, they sequenced correctly; if not, they should flip them back over and try again.

Ada climbs a grandfather clock.

Ada says her first word, "Why?"

Ada test the cabbage stew.

Ada tries to wash the cat.

Ada smells something pungent.

Ada is sent to the thinking chair.

Ada's family helps her experiment.

Ada shares her experiments with her class.

Book Bits Activity

