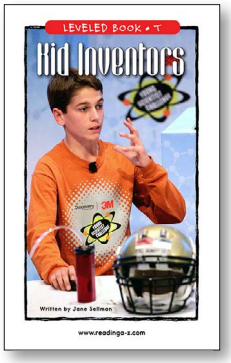
Kid Inventors



About the Book

Text Type: Nonfiction/Informational **Page Count:** 16 **Word Count:** 1,201

Book Summary

Did you know that children invented snowboards, trampolines, and Popsicles? Many inventions have been created by kids, and famous inventors often started their work at an early age. *Kid Inventors* describes the achievements of several forward-thinking children, and concludes with advice on how any child can become an inventor. Photographs focus on both the inventions and the inventors highlighted in the book. Fluent readers will be inspired by these accounts of children changing the world with their ideas.

About the Lesson

Targeted Reading Strategy

- Ask and answer questions

Objectives

- Ask and answer questions to understand text
- Determine cause-and-effect relationships
- Identify and use possessive nouns
- Place words in alphabetical order

Materials

Green text indicates resources are available on the website.

- Book—*Kid Inventors* (copy for each student)
- Chalkboard or dry-erase board
- Photographs of a computer and a bicycle
- Sheets of paper
- Index cards
- Cause and effect, possessive nouns, alphabetical order worksheets
- Discussion cards

Indicates an opportunity for students to mark in the book. (All activities may be demonstrated by projecting the book on an interactive whiteboard or completed with paper and pencil if the books are reused.)

Vocabulary

*Boldface vocabulary words also appear in a pre-made lesson for this title on VocabularyA–Z.com.

- **Content words:**
  Story critical: ***creativity*** *(n.),* ***demonstrated*** *(v.),* ***design*** *(n.),* ***device*** *(n.),* ***invented*** *(v.),* ***version*** *(n.)*
  Enrichment: ***model*** *(n.),* ***patent*** *(n.),* ***prototype*** *(n.)*

Before Reading

Build Background

- Place on the board photographs of a computer and a bicycle. Ask students to choose the invention they think is the best. Invite volunteers to share with the rest of the class which invention they prefer and why.

- Write the word *invention* on the board. Read it aloud with students. Discuss with students the meaning of the word *invention,* and have them write on a separate sheet of paper the names of as many inventions as they know. Invite volunteers to share their list with the rest of the class, and record a list of inventions on the board.
- Create a KWL chart on the board and write the word *Inventions* above it. Review or explain to students that the *K* stands for what students *know* about a topic, the *W* stands for what they *want* to learn, and the *L* stands for what they *learned* about a topic. Refer to the list of inventions on the board, and discuss with students everything they know about the topic. Fill in the *K* column of the chart with details about inventions that students share.
- Have students copy the KWL chart on a separate sheet of paper. Ask them to record at least three details in the *K* column of their KWL chart.

Preview the Book

Introduce the Book

- Give students their copy of the book. Guide them to the front and back covers and read the title. Have students discuss what they see on the covers. Encourage them to offer ideas as to what type of book it is (genre, text type, and so on) and what it might be about.
- Show students the title page. Discuss the information on the page (title of book, author's name).

Introduce the Reading Strategy: Ask and answer questions

- Review with students that effective readers help themselves to understand what they are reading by asking questions before and during reading. Discuss with students how asking and answering questions will help them understand and remember what they read.
- Remind students that they form questions on the basis of their prior knowledge and the information they read in the book.
- Model how to ask questions.
  Think-aloud: *I can use my prior knowledge about this topic and the table of contents to help me prepare some questions before I start reading. The title of the book is* Kid Inventors, *and the first question that comes to my mind is, what are some inventions kids have made? When I read on page 3 the section titled "Maine Winters Are Cold!" I think of another question: What invention is related to cold winters? As I read, I will look for answers to these questions. I will also record my questions, and any new ones that I have, in the* W *section of my KWL chart.*
- Remind students of the KWL chart they made earlier in the lesson. Record your questions in the *W* column of the chart.
- Have students work with a partner to read the table of contents on page 3 and preview the photographs in the book. Ask them to work with their partner to think of questions they have on the basis of this information. Have students write their questions in the *W* column of their KWL chart.
- Invite volunteers to share their questions with the rest of the class. Record shared questions in the *W* column of the class chart on the board. Remind students that they will be looking for the answers to these questions as they read.
- As students read, encourage them to use other reading strategies in addition to the targeted strategy presented in this section.

Introduce the Comprehension Skill: Cause and effect

- Remind or explain to students that readers often analyze the information in a book by looking at the cause-and-effect relationships described. Review with students that a cause is an event that makes something happen, and the effect is what happens because of, or as a result of, the event.
- Draw a T-chart on the board with the headings *Cause* and *Effect.* Write the following sentence on the board under the *Cause* heading: *I left the water running in my bathtub.*

- Model determining a series of cause-and-effect relationships.
  Think-aloud: *If I left the water running in my bathtub, what would happen? The water would overflow the tub and spill to the ground. The effect of leaving the water running is having water spill all over my floor. The cause of that effect is leaving the water running. After the water spills, though, I would have to clean it up. The effect of the water spilling on the floor is that I have to clean it. The cause of my cleaning is the water spilling on the floor. The effect from the first cause-and-effect relationship has now become the cause of a new event. Sometimes a cause and its effect cause other events to happen.*
- Write the following sentence under the *Effect* heading: *Water spills on the floor.* Write the same sentence beneath the *Cause* heading, and draw an arrow from the sentence in the *Effect* column to the sentence in the *Cause* column. Reinforce that an effect from one event can become the cause to another event.
- Write the following sentence under the *Effect* heading, beside the second cause in the T-chart: *I have to clean the floor.* Write the same sentence beneath the *Cause* heading, and draw an arrow between the two sentences. Discuss with students how cleaning the floor is both an effect and a cause.
- Have students work in groups to decide on a possible effect of cleaning the floor. Ask them questions to stimulate discussion. *What will I have to do so that I can clean the floor? What will happen because the floor is clean?* Invite volunteers to share their effects with the rest of the class. Record in the *Effect* column of the T-chart answers that accurately reflect a cause-and-effect relationship.

Introduce the Vocabulary

- Write on the board the story-critical vocabulary words listed in the vocabulary section of this lesson. Have students write each word at the top of an index card.
- Remind students of the strategies they can use to sound out words they don't know. For example, they can use what they know about letter and sound correspondence to figure out the word. They can look for words within words, and prefixes and suffixes. Have students work in groups to decode each word.
- Point out to students that these vocabulary words are in boldface print in their book. Have student groups find each word in the book. Invite volunteers to share the page number for each word with the class, and record it on the board. For each word, have students read the sentence using that word in the book, and then discuss the meaning of the word as a group, on the basis of the context of the sentence and their own prior knowledge. Have students write their own definition of the word on the appropriate index card.
- Turn to the glossary on page 16. Read the words and discuss their meanings aloud. Ask student groups to compare the glossary definition with the definition they formulated for each word. Have students write the glossary definition on the back of the appropriate index card.

Set the Purpose

- Have students read to find out more about kid inventors. Encourage students to ask and answer questions while reading.

During Reading

Student Reading

- **Guide the reading:** Have students read from page 4 to the end of page 7. Encourage those who finish early to go back and reread. Ask students to check the KWL chart on their separate sheet of paper and see if this part of the text answered their questions.
- Model asking and answering questions.
  Think-aloud: *I had a big question earlier: What are some inventions kids have made? So far, I have learned about a few of them. I found out that Benjamin Franklin invented swim fins when he was still a kid and that Chester Greenwood created earmuffs when he was fifteen. I discovered that the Popsicle was invented by Frank Epperson when he was only eleven years old, and I found out that*

George Nissen invented the trampoline when he was a teenager. I am sure the book will inform me about more inventions made by kids, so I will still look for the answer to this question. I did have one other question: What invention is related to cold winter? After reading the second section of the book, I learned that Chester Greenwood invented earmuffs, which are a piece of clothing to wear in the cold winter. The book answered my question. The book also prompted me to think of other questions. Did the kids make a lot of money with these inventions? How did making these inventions change their lives? I will continue to ask questions and seek for answers as I read.

- Record the new questions in the *W* column of the KWL chart on the board. Then, record the answers from the think-aloud in the *L* column, and remind students that this column stands for what readers learned from the book. Have students review the other questions in the KWL chart, and point to any that the book already answered. Invite students to share the answers they found, and record the information in the *L* column of the chart.
- Ask students to share with a partner new questions they formed while reading this part of the book. Have students record these questions on their own copy of the KWL chart. Then, have students discuss with a partner new information they learned about inventions and whether this information answered any of their questions. Have students record these details in the *L* column of their copy of the KWL chart. Invite students to share this information with the class, and record it in the class KWL chart on the board.
- Discuss with students other information they learned about kid inventions. Point out that they will learn more details than just what answers their questions, and they should note that information as well. Record on the board in the *L* column of the KWL chart several facts from the book that were not related to any questions.
- Erase the information from the cause-and-effect T-chart. Write the following sentence under the *Cause* heading: *The cold winter made Chester Greenwood's ears turn red and hurt.* Have students discuss with a partner the effect of this event, and invite volunteers to share the effect with the rest of the class. Record all applicable answers under the *Effect* heading.
- Have students work in groups to discuss the cause-and-effect relationships related to Frank Epperson or George Nissen. Call on each group to share one relationship with the rest of the class. Record information in the T-chart on the board.
- **Check for understanding:** Have students read pages 8 through 11. Have them write answers they found while reading in the *L* column of their KWL chart and record additional questions they raised in the *W* column. Remind them to continue asking questions as they read and seeking for answers. Invite students to share the information they learned and the questions they generated as they read this section, and record this information in the class KWL chart on the board.
- Have students work with a partner to find one cause-and-effect relationship from the earlier part of the book. Invite partners to share one cause they found, and record it in the T-chart on the board under the *Cause* heading. Call on a different student to share the effect of that cause, and record it in the T-chart under the *Effect* heading. Have students share with their partner how these two events are connected. Repeat until the class has discussed several cause-and-effect relationships.
- Have students read the remainder of the book. Remind them to look for answers, and record answers and new questions on their KWL chart.

 Have students make a question mark in their book beside any word they do not understand or cannot pronounce. Encourage them to use the strategies they have learned to read each word and figure out its meaning.

After Reading

- Ask students what words, if any, they marked in their book. Use this opportunity to model how they can read these words using decoding strategies and context clues.

Reflect on the Reading Strategy

- Have students record in their KWL chart any final questions they have. Have students work with a partner to review the questions they raised and discuss the answers they found in the book. Then, have students circle unanswered questions.
- **Think-aloud:** *By the end of the book, I had read about eleven kid inventors, including Ryan Patterson and his glove that translates sign language, and Blair Breazeale and her LockerLites. This information certainly answered my question about what inventions kids have made. I also asked about how much money the children made with their inventions, but the book never answered that question. I will have to research elsewhere to find out. One of my other questions, about how the inventions changed the lives of the inventors, had some indirect answers. I learned that Hart Main's candles were selling well and helping to feed hungry people. Hart's invention helped him start a company and help other people in need. I found out that Peyton Roberston won the America's Top Young Scientist award. His invention changed his life by earning him money. In each example that I read, making inventions changed the lives of the young inventors for the better. Because I was looking for answers to my questions, I paid close attention to everything I read and learned a lot about kid inventors.*
- Record new information in the class KWL chart on the board.
- Point out that not all questions may be answered in this text. Discuss with students other sources they might use to find additional information on the topic.
- Invite volunteers to share new details they learned about kid inventors with the rest of the class. Record this information in the *L* column of the class KWL chart. Remind students they will learn more than just the answers to their questions, but using questions is a good starting point for learning new information. Ask students to share with a partner how asking and answering questions helped them to better understand and remember the information in the book.

Reflect on the Comprehension Skill

- **Discussion:** Write the following sentence under the *Effect* heading in the T-chart on the board: *Hart Main donated canned soup to local soup kitchens and picked up the empty cans.* Have students work in groups to determine the cause of this effect. Invite volunteers to share and record acceptable answers on the board under the *Cause* heading. Discuss with students how Hart Main's donating cans of soup can also be a cause for further effects. Have students discuss in their groups what effects are caused by Hart donating soup to local soup kitchens. Invite volunteers to share, and record accurate cause-and-effect relationships in the T-chart on the board.
- **Independent practice:** Introduce, explain, and have students complete the cause-and-effect worksheet. If time allows, discuss their answers.
- **Enduring understanding:** In this book, you learned about kid inventors. Did their stories encourage you to try your hand at inventing? What problems do you have that could be solved by an invention?

Build Skills

Grammar and Mechanics: Possessive nouns

- Write the following sentence on the board: *Many of Chester's neighbors worked with him.* Read the sentence aloud and point to the word *neighbors.* Ask students to work with a partner to identify whose neighbors the sentence refers to *(Chester).*
- Explain to students the word *Chester's* is a possessive noun. Explain that *possessive nouns* are words showing *ownership, or possession.* Remind students a possessive noun is formed by adding an *'s* to the end of a word.
- Point out that objects can belong to people, animals, or things, in other words, nouns. The nouns have possession of objects, which is why we call these words *possessive nouns*.

- Have students read the first sentence of page 11 in the book. Have them point to the possessive word in the sentence *(Hart Main's).* Point out that when the noun is a person's full name, the *'s* comes at the end of the last name. Have students whisper to the front of the class what belongs to Hart Main *(a sister).*
- Write the following sentence from the book on the board: *With her parents' encouragement, she came up with LockerLites.* Have students point to the possessive noun in the sentence. Ask students to share with a partner how this possessive noun is different. Explain to students when a noun is plural and ends in the letter *s,* they add only an apostrophe to the end of the word, not an *'s.* Point out that this rule only works for plural nouns that end in the letter *s.*
- Remind students that a contraction using *'s* is different from a possessive noun. For example, *what's* is a contraction for *what is* and does not show ownership. Encourage students to use the context of the sentence to determine if a word with *'s* is a possessive noun or a contraction.
- **Check for understanding:** Write a list of nouns on the board, such as *father, cat, friends, school,* and *animals.* Have students work with a partner to write these words on a separate sheet of paper and make them possessive nouns by adding the appropriate ending, either an *'s* or an apostrophe. Remind students that plural nouns simply take an apostrophe at the end. Then, have partners think of an object that each possessive noun could own and write it after the possessive noun. Invite volunteers to share their phrases with the rest of the class.
- **Independent practice:** Introduce, explain, and have students complete the possessive nouns worksheet. If time allows, discuss their answers.

Word Work: Alphabetical order

- Review with students the process of putting a list of words in alphabetical order by using the first, second, and third letters of each word. Remind students to compare the letters of the word against the order of the alphabet and to always begin with the first letter in each word.
- Write the words *design* and *creativity* on the board. Have students discuss with a partner which word would appear first in alphabetical order and why (*creativity,* because *c* comes before *d* in the alphabet).
- Write the word *device* on the board. Have students work with a partner to compare all three words and determine which word comes first in alphabetical order *(creativity).* Have students call out the word. Point out to students this choice was easy, because *c* still comes before *d* in the alphabet. Ask students to discuss with their partner whether *design* or *device* comes first in alphabetical order.
- Invite a volunteer to explain which word comes first *(design).* Remind students that if both words begin with the same letter, they compare the second letter in each word. Explain to students if both words begin with the same two letters, they compare the third letter in each word. Point out that since *design* and *device* both begin with the letters *de,* students need to compare the third letters in these words, the *s* and the *v.*
- **Check for understanding:** Write the words *demonstrated, invented,* and *version* on the board. Ask students to compare these words to the three already written on the board. Have students work with a partner to arrange all of the words in alphabetical order. Have students write the list on a separate sheet of paper, and invite volunteers to read their list aloud. Have other students give a thumbs-up signal if they agree the words are in correct alphabetical order.
- **Independent practice:** Introduce, explain, and have students complete the alphabetical order worksheet. If time allows, discuss answers aloud after they are finished.

Build Fluency

Independent Reading

- Allow students to read their book independently. Additionally, partners can take turns reading parts of the book to each other.

Home Connection

- Give students their book to take home to read with parents, caregivers, siblings, or friends. Have students demonstrate how a reader asks questions then reflects on the answers while reading.

Extend the Reading

Informational Writing and Art Connection

Discuss with students the history of inventing. Give students a list of options and have students choose an invention that interests them from the list. Provide print and Internet resources for students to further research their inventions. Have students write a report on their chosen subject, including an introduction and a conclusion. Ask students to describe both the invention and the inventor. Have students write about the cause for this invention. Have students create a glossary for their report, and encourage them to add illustrations or photographs. Invite volunteers to share their report with the class.

Visit WritingA–Z.com for a lesson and leveled materials on informational writing.

Science Connection

Draw a diagram representing the scientific method on the board, and discuss with students how the different steps of inventing correspond to the steps of the scientific method. Ask students to think about problems in the world around them. Brainstorm to generate a list of issues that students would like to fix. Discuss with students which problems can be addressed scientifically. Guide them in formulating questions about ways to solve those problems. Then, have students work in groups to discuss possible invention ideas that could fix a problem. Have students draw a picture of their invention idea and then discuss their idea with their parents on ways to make it work. Ask students to make a hypothesis about how their invention would work. Have students share their picture and hypothesis with the class, and describe their invention and what problem it is meant to solve. Encourage students to build a prototype of their invention at home, and set aside an inventor's day for students to bring in their inventions and demonstrate them to the class.

Skill Review

Discussion cards covering comprehension skills and strategies not explicitly taught with the book are provided as an extension activity. The following is a list of some ways these cards can be used with students:

- Use as discussion starters for literature circles.
- Have students choose one or more cards and write a response, either as an essay or as a journal entry.
- Distribute before reading the book and have students use one of the questions as a purpose for reading.
- Cut apart and use the cards as game cards with a board game.
- Conduct a class discussion as a review before the book quiz.

Assessment

Monitor students to determine if they can:

- consistently use the strategy of asking and answering questions to comprehend the text during discussion
- accurately discriminate cause-and-effect relationships during discussion and on a worksheet
- correctly interpret and use possessive nouns during discussion and on a worksheet
- accurately place words in alphabetical order during discussion and on a worksheet

Comprehension Checks

- Book Quiz
- Retelling Rubric