

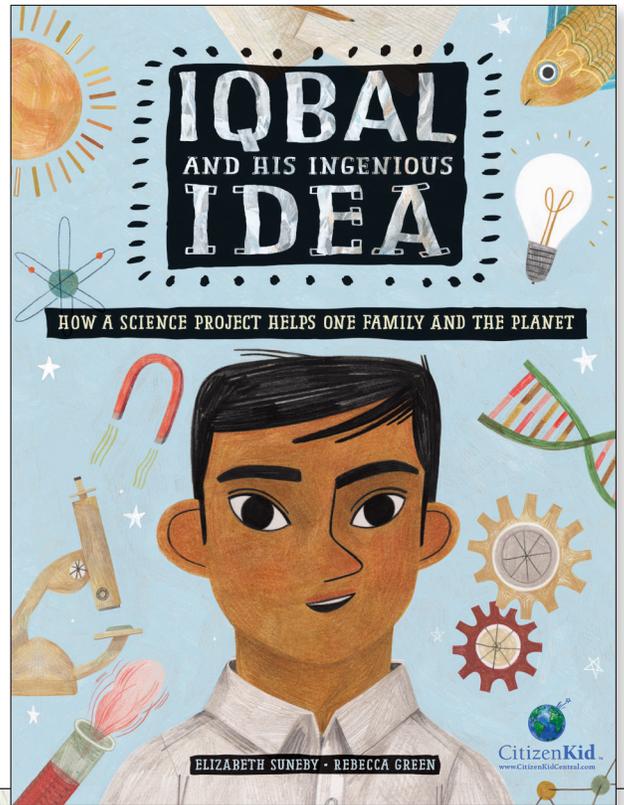
IQBAL AND HIS INGENIOUS IDEA — TEACHING GUIDE

About the Book

It's monsoon season in Bangladesh, which means Iqbal's mother must cook indoors over an open flame, even though the smoke is making her and the family sick. Iqbal wants to help, so he enters the district science fair, determined to win first prize — with the cash reward, he can buy a gas stove that doesn't produce harmful fumes.

The theme of the science fair is sustainability. After observing his mother working over their indoor cookstove, Iqbal is struck with an ingenious idea! For his project, he will build his own cookstove that is powered by the sun's energy and doesn't produce smoke. But the competition at the science fair is fierce — will Iqbal bring home the prize?

Iqbal and His Ingenious Idea is a celebration of innovation, creative STEM (science, technology, engineering, math), problem-solving and sustainable technology. This inspiring story shows how one child can champion the protection of the environment and raise awareness about a global health issue.



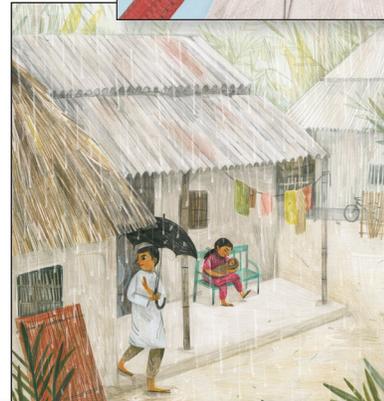
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About the Author

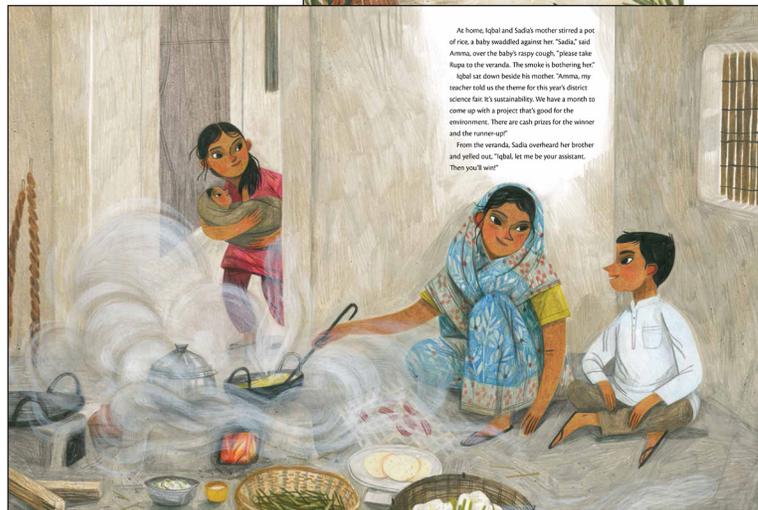
ELIZABETH SUNEBY has written several books for children and teens, including the multiple award-winning *Razia's Ray of Hope*. Through Iqbal's story, she hopes to encourage readers to help protect our planet and make the world a better place by flexing their own STEM problem-solving and creativity muscles. Elizabeth lives with her family outside Boston, Massachusetts.

About the Illustrator

REBECCA GREEN is an illustrator and painter whose work has appeared in children's books, magazines, galleries and many other places. She lives with her husband in Nashville, Tennessee, where she helps run the Warren, a studio space for illustrators and makers.



Amma chuckled as she shoed Iqbal out the door. It was the holy month of Ramadan, and he was meeting his father for evening prayers.
As Iqbal hurried off, Amma muffled a cough. Day after day of breathing smoke was making both her and the baby sick. But during monsoon rains, she had no choice but to cook indoors over an open fire.



At home, Iqbal and Sadiq's mother stirred a pot of rice, a baby waddled against her. "Sadiq," said Amma, over the baby's raspy cough, "please take Rupa to the veranda. The smoke is bothering her." Iqbal sat down beside his mother. "Amma, my teacher told us the theme for this year's district science fair is sustainability. We have a month to come up with a project that's good for the environment. There are cash prizes for the winner and the runner-up!"
From the veranda, Sadiq overheard her brother and yelled out, "Iqbal, let me be your assistant. Then you'll win!"

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Lesson Activities

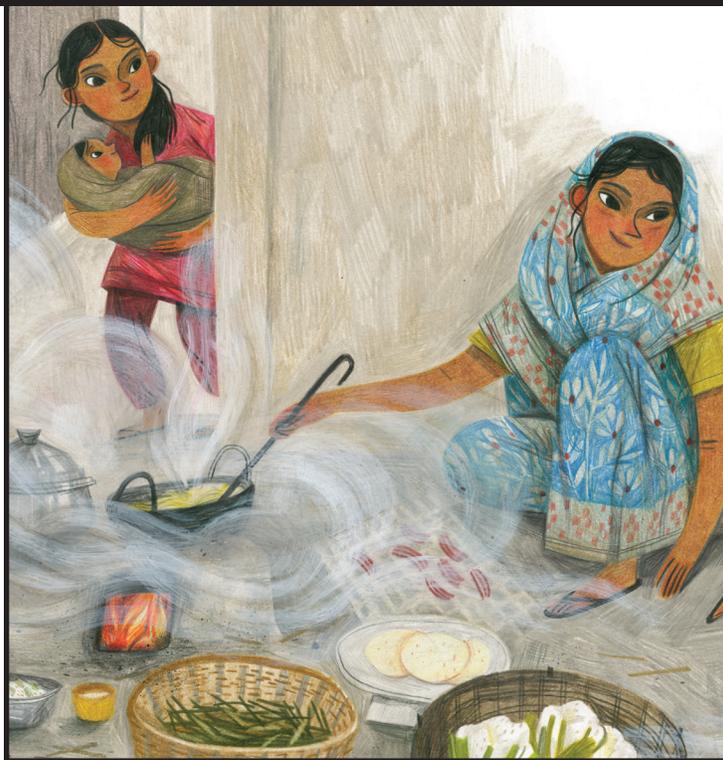
ACTIVITY 1: WHOLE GROUP

Discussion

After reading *Iqbal and His Ingenious Idea* aloud to the class, engage students in a discussion about the plot. Review each of the main points and discuss each of the central characters, as outlined below.

1. Show your students a map of the world and point to Bangladesh, just east of India. Explain that Bangladesh is famous for its lush landscapes, many rivers and, perhaps especially, for being home to the Bengal tiger. It is also known for its harsh climate — more than 80% of the annual rainfall occurs during monsoon season, and 20% of the country gets flooded during a typical monsoon season. Its capital city is called Dhaka, and roughly 163 million people live in the country. Most of those people practice the Muslim faith.
2. Define some of the words from the book, such as *monsoon* (heavy rains/a very rainy season), *bazaar* (open market where goods and food are sold), and *Ramadan* (holy month). NOTE: See page 32 for more definitions of the words used in this book.
3. Point out that at the beginning of *Iqbal and His Ingenious Idea*, it is monsoon season.
 - Ask students to explain why Iqbal's mother is cooking indoors, and why that's problematic. (*It's raining too hard to cook outside; they don't have the kind of indoor stoves many North Americans have, and so she's cooking on an open fire in the house.*)
 - After reading page 9, ask students to discuss what they have learned about Iqbal and his family from this page. (*Iqbal and his family are Muslim; Iqbal's mother and baby sister are getting sick from the smoke.*)
 - Explain that the propane stove Iqbal's father saw at the market is similar to small gas stoves some of your students might use if they go camping. Discuss why it is less harmful to people and the environment than cooking with fire, even though it uses the earth's resources. Refer to the book's end matter for a list of reasons why open-flame cooking is detrimental to people's health and the planet's health. Say: *Propane stoves have a tank filled with natural gas. When the gas is pumped to the stove's burner and lighted, the flame can be used to cook with, much like your stoves at home. This stove still uses natural resources, but it is safer than cooking over an open wood or coal fire.*
 - Ask students why Iqbal can't sleep that night. (*He's worried about his mother and baby sister.*)
 - After reading pages 12–13, point out that sometimes the things we worry about become our inspiration. Say: *Iqbal wouldn't have thought of his ingenious idea if he hadn't been worried about Amma and Rupa.*
 - After reading about all of the research Iqbal and his sister Sadia conduct, engage your students in a discussion about the siblings' relationship. Ask students to think about how Iqbal treats his sister, and if he's open to her help.
 - After reading pages 22–23, ask: *What would you have cooked to test the new stove when the sun came out?*
 - After reading about Iqbal winning first prize, engage students in a brief discussion of how they think Iqbal feels. Use the illustrations to help students identify the emotions of the characters, including Iqbal's classmates.
 - Turn to the last page of the story. Ask students how life has changed for Iqbal's family since monsoon season. (*They were able to buy a propane stove; they can cook on the umbrella stove now that the sun is out; it looks as though Amma and Rupa are healthy again.*)

To conclude your whole-group discussion, ask students to think about and comment on ways in which the environment affects people, and ways in which people affect the environment. Let this conversation go on for as long as you have time.



IQBAL AND HIS INGENUOUS IDEA — TEACHING GUIDE

ACTIVITY 2: SMALL GROUPS

Materials

Students will need to conduct research on a topic in sustainability. Provide them with access to the Internet, encyclopedias, and child-friendly magazines that cover such topics.

Write these definitions on the board:

sustainability (n.): avoiding the overuse of natural resources

renewable resource (n.): a resource that can be replaced by natural ecological cycles (such as wind, sun, thermal heat, etc.)

nonrenewable resource (n.): a resource that cannot be quickly replaced by natural means

Divide the class into three groups and assign each group one of the projects from Iqbal's classmates:

- reducing soil erosion
- wind turbines
- composting

Explain that each group will conduct research on a different topic in sustainability. Say: *Each group will need to define their topic, list some of the places this tool or process is used, and write a list of advantages and disadvantages for this type of sustainable activity.*

Questions for each group to consider:

- What problem does this sustainable technique help solve?
- Does this technique replace a nonrenewable resource? If so:
 - What are the positive effects of using less of that resource?
 - How effective is it as a replacement for that resource?
- Does this technique solve another kind of environmental problem? If so:
 - What is that problem?
 - How effective is this technique at solving it?

When each group has completed their research and written short reports about their findings, come together as a large group to talk about what they learned about sustainability.

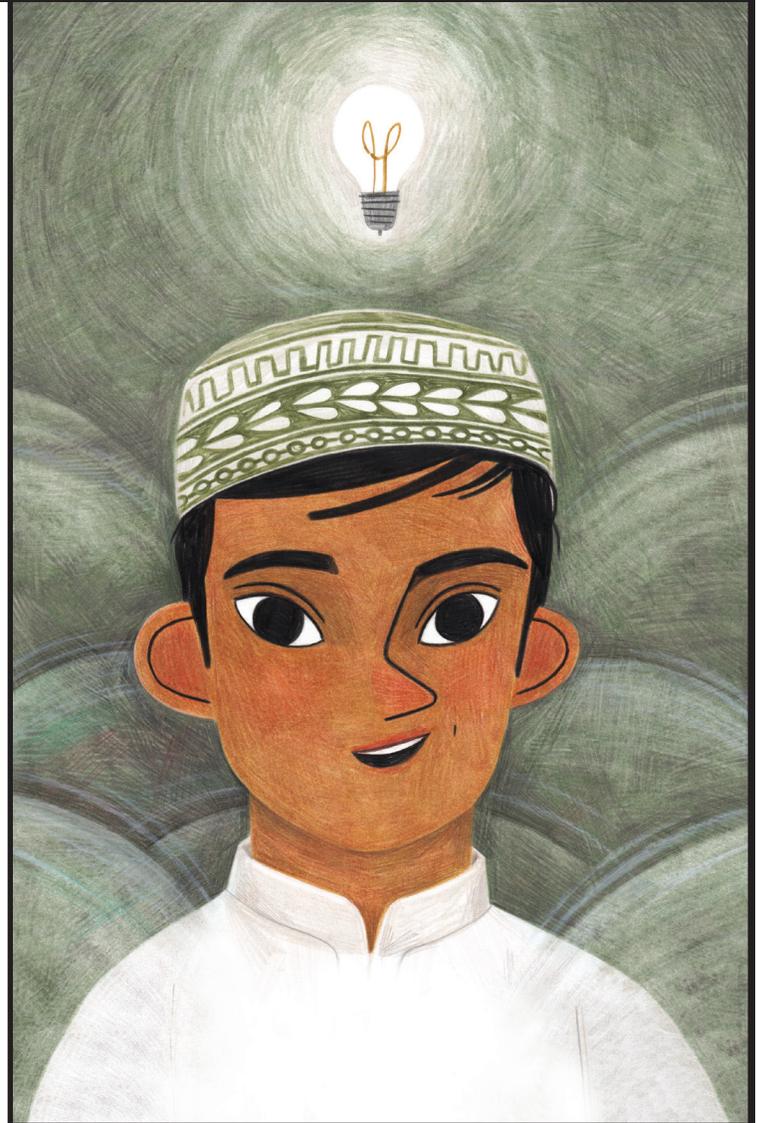
ACTIVITY 3: INDEPENDENT PROJECT

Point out to the whole group that Amma and Rupa were the characters who suffered the most from the indoor cook fires. Explain that in many developing countries, women often don't work outside of the home (for cultural reasons and because household tasks are very time-consuming without the aid of modern technology). This means that in some places, girls don't go to school so they can help their mothers with domestic work, such as gathering fuel, collecting water, cooking and cleaning.

Say: *We're each going to write about how other people's expectations can influence what we do.*

Point out that unequal treatment of boys and girls is not just something that happens in developing countries. As a large group, brainstorm ideas about how boys and girls are treated differently where you live. (Some possibilities if they need ideas: *boys are expected to not show emotions; girls are expected to look pretty; boys are expected to play sports and be strong; girls are expected to enjoy cooking and shopping.*)

Have each student choose one or two ideas from the brainstormed list. They should plan out and write a fictional story about how other people's expectations influenced the choices of their characters. Remind students that fiction can be based on real life, so they can use their own experiences in their story.

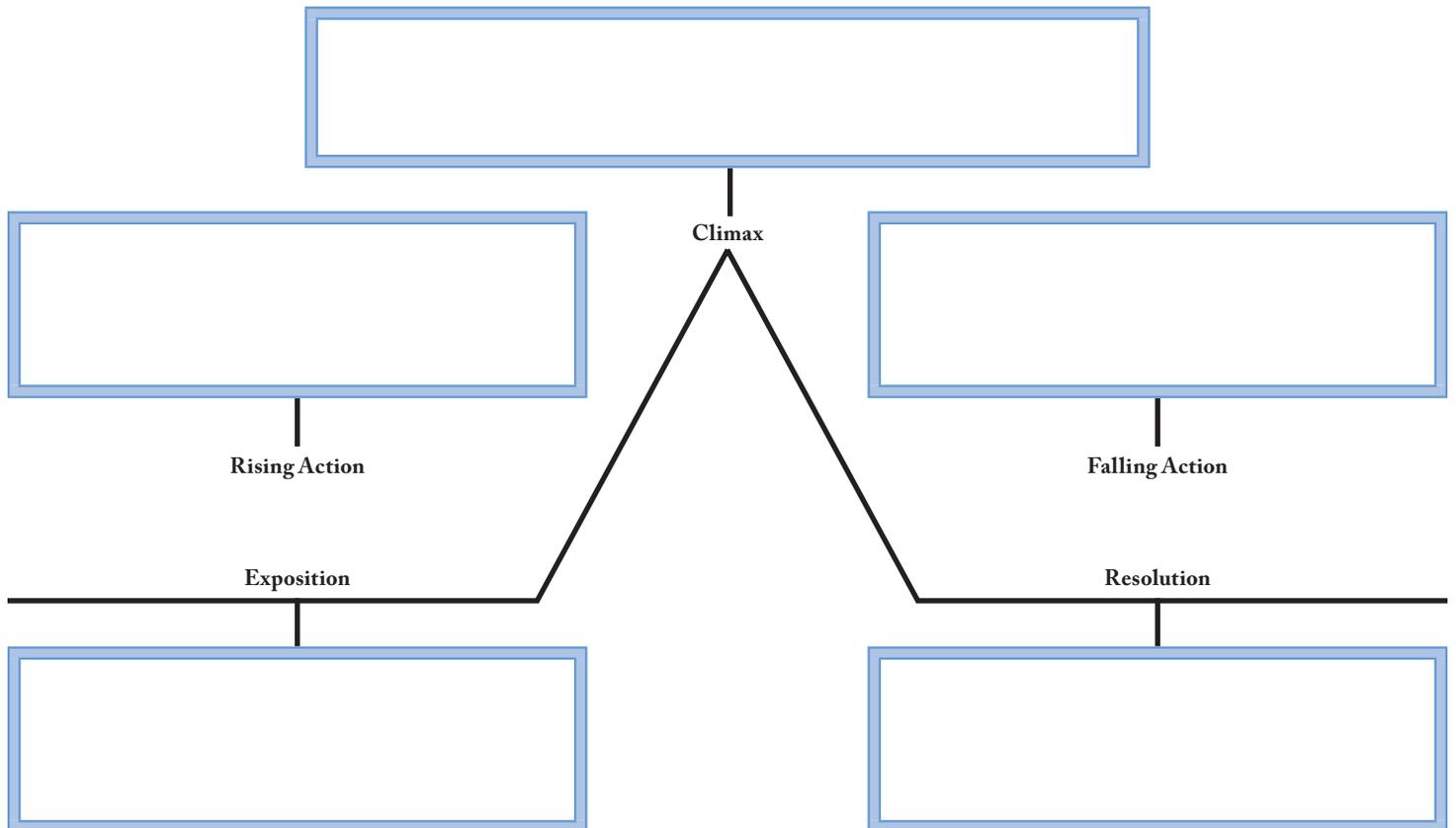


IQBAL AND HIS INGENUOUS IDEA — TEACHING GUIDE

Say: *Fiction is a wonderful way to learn about ourselves and about other people and places. We learned about Iqbal and his family through this story. We also learned about Bangladesh, a country some of us may not have known much about before. But we also learned something about our own lives from this book.* If you have time, engage students in a discussion about what they feel they learned about themselves from reading this book.

Now provide students with plot maps like the one below to help them plan their stories. Define each of the components, using *Iqbal and His Ingenious Idea* as an example.

Plot Map



This project can take place over the course of several days or weeks. When everyone has a draft, gather to share. Encourage students to read their stories to the group.

