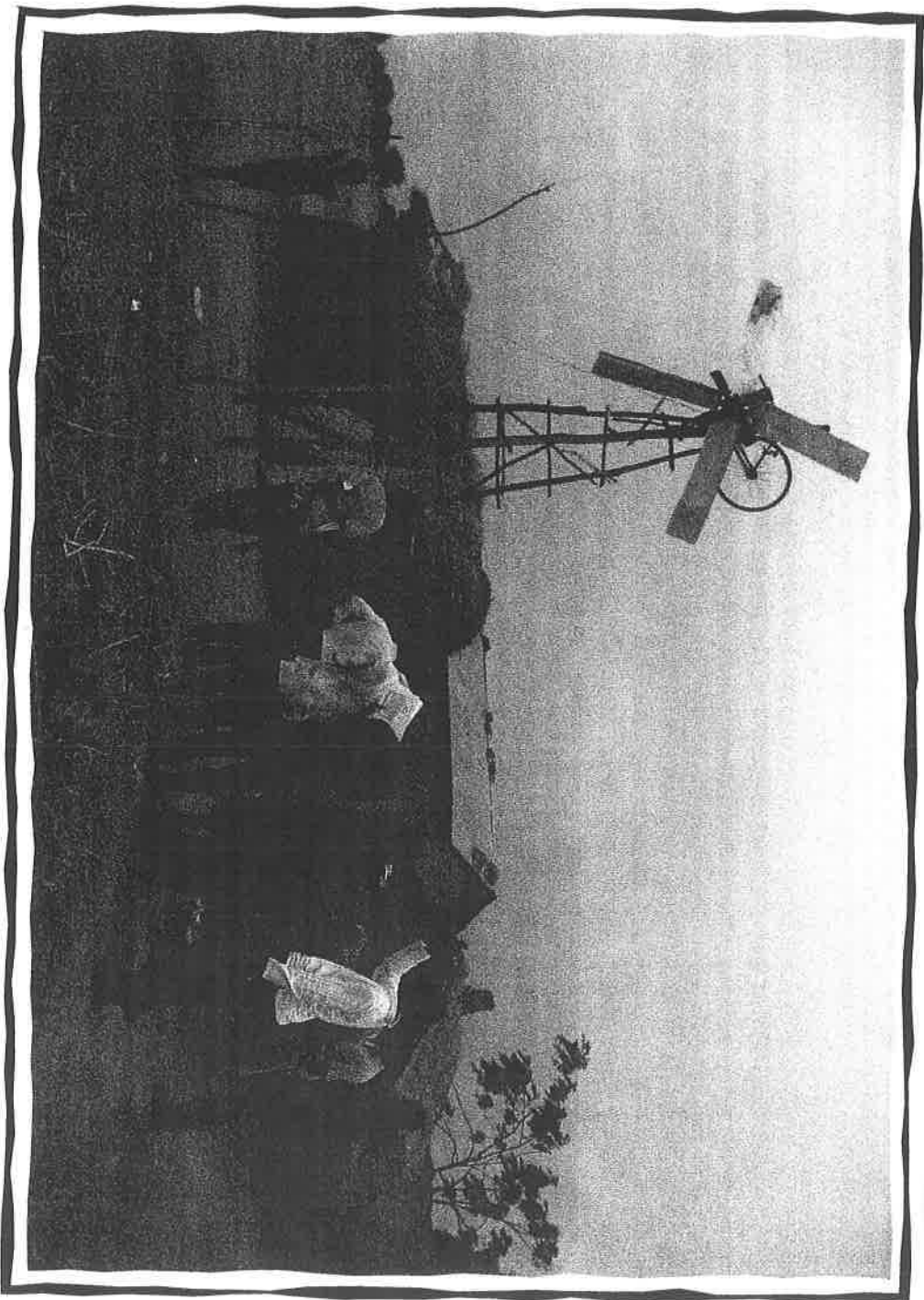


# The Boy Who Powered a Village



*William Kamkwamba built an electricity-producing windmill from trash.*

**F**or most of 2002, 14-year-old William Kamkwamba's life looked pretty bleak. He had not done well on his school tests. That meant he had no

chance of getting into one of the better high schools in his native country of Malawi in Africa. As a result, he had to attend the community high school in the town of Kasunga, a few miles from his rural village of Masitala. Worse than that, a severe drought had dried out the region, resulting in a famine that had killed thousands of Malawians. Kamkwamba's own family was barely surviving, teetering at times on the brink of starvation. Could things get worse?

<sup>2</sup> The answer is yes, they could. Later that year, Kamkwamba learned his family could not afford the \$80 annual tuition to send him to the community school. He would have to drop out. Kamkwamba didn't want to leave his classes, so he kept going to school. He dodged administrators for a few weeks until he was caught and sent home. Sick with hunger and terribly sad, Kamkwamba went out into the fields to help his family on their struggling maize and tobacco farm.

<sup>3</sup> With no hope that his family could pay the tuition money, Kamkwamba decided to educate himself as best he could. He started borrowing books from a small library at his old elementary school. These books had been donated by a U.S.-backed organization called the Malawian Teacher Training Activity (MTTA). One day Kamkwamba picked up a tattered 8th-grade American science textbook titled *Using Energy*. One

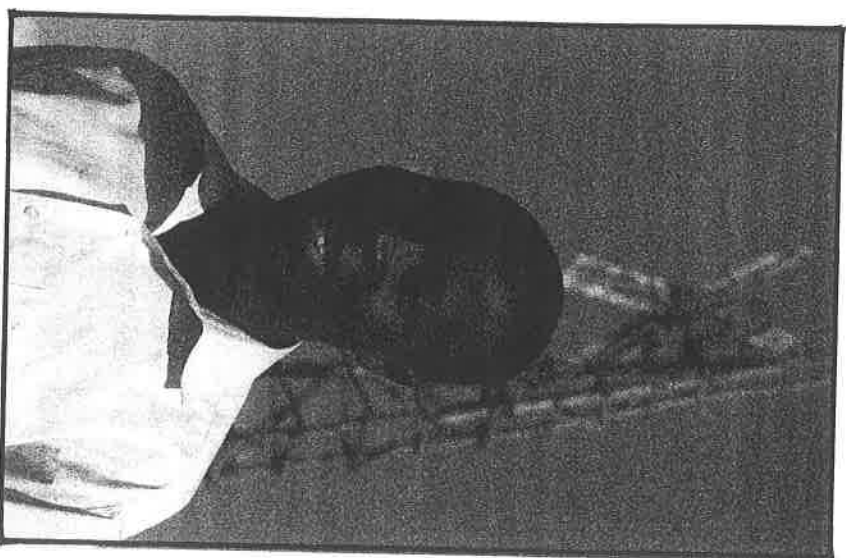
section described how windmills can be used to pump water from underground and to generate electricity.

<sup>4</sup> Kamkwamba began to dream of bringing electricity to his family's homestead, which consisted of a few brick buildings perched on a hill overlooking Masitala. At the time, only 2 percent of the people in Malawi had electricity in their homes. As he later said, "I was very interested when I saw the windmill could make electricity and pump water." A windmill that could produce electricity would mean that people could read at night after work. A windmill that could pump water would mean that people would not have to spend two hours a day hauling water. It might allow them to grow two crops a year instead of just one. Kamkwamba thought, "That could be a defense against hunger. Maybe I should build one for myself." When he was not working in the field, he kept busy building a windmill. Because there was no electricity in his home, he worked by the light of a kerosene lamp, which gave off only a smoky and flickering light.

<sup>5</sup> When word got around Masitala that young Kamkwamba wanted to build his own windmill, everyone, including his parents, thought he was out of his mind. "At first, we were laughing at him," said his mother. "We thought he was doing something useless." In part, this was because the two hundred or so villagers had never seen a windmill before, and they didn't understand what it might do. They were even more perplexed when Kamkwamba began to scour the rubbish

piles and trash cans looking for materials with which to build his windmill. "So I told them I was only making something for magic. Then they said: 'Ah, I see.'"

<sup>6</sup> Everyone in the village was absolutely astonished in 2002 when William Kamkwamba unveiled his windmill. He had lacked the necessary materials to make a water-pumping windmill, so he had



Kamkwamba now helps to run a project that builds primary schools in developing countries.

concentrated on building one that would provide electricity instead. He made his device out of possibly the oddest collection of materials ever assembled. The miscellany included slime-clogged PVC pipes, a broken bicycle, an old fan blade from a tractor, and a shock absorber. He could not afford to buy even a few nuts and bolts, and the only tools he had were a couple of wrenches. For a soldering iron, he used a piece of wire heated over a fire. Despite these limitations, Kamkwamba built a 16-foot frame from the wood of blue gum trees. On top of the frame was his dream machine, his windmill.

7 And the amazing thing was—it worked! One day in front of a crowd of unbelieving villagers, he hooked up a car light bulb to his turbine. As the blades began to whirl in the breeze, the bulb flickered to life and then glowed brightly. The astonished villagers broke into wild cheers.

8 With his new power source, Kamkwamba wired his house for four light bulbs and two radios. He installed his own on/off switches made from rubber sandals and bicycle spokes. He also rigged up a circuit breaker using nails and magnets off of an old stereo speaker. The breaker helped ensure that the thatched roof of his house did not catch fire. Over the next few years, Kamkwamba made some modifications to the windmill's design. For one thing, he

increased the number of blades from three to four to increase the output of power.

9 Kamkwamba and his windmill remained a local curiosity until 2006. That's when the deputy director of the MTTA, Dr. Hartford Mchazime, came to the village and saw it with his own eyes. As Mchazime listened to the story, he recognized right away what Kamkwamba had done. The story of the boy who brought electric power to his African village spread like hot gossip all around the world. Newspaper articles, blog posts, radio stories, and television appearances praised this new prodigy.

10 Kamkwamba was invited to Tanzania to give a presentation of his project at a science and culture conference called TED. He received a standing ovation from the guests there. The sophisticated setting was a real eye-opener for a young man from a remote village. It was the first time in his life he had seen a laptop computer, slept in a hotel on a real mattress, or felt the cool comfort of air conditioning.

11 Kamkwamba's modesty and winning personality won the high-tech audience. They willingly funded his efforts to build better windmills in his village. Over the next several years, Kamkwamba upgraded his original windmill. He anchored it in concrete after its wooden base was chewed away by termites, and he installed a solar-powered mechanical pump that brought

fresh water to the region around his village. He even built another windmill, which he called the Green Machine, to pump water that would irrigate his family's field. Meanwhile, well-wishers donated tuition money so that he could return to school. After being away from the classroom for more than five years, he enrolled in the highly ranked African Leadership Academy in Johannesburg, South Africa.

12 Kamkwamba took success in stride. He has upgraded his goal, and now wants to bring power to all of Malawi. "I want to help my country and apply the knowledge I've learned," he says. "I feel there's a lot of work to be done." \*

*If you have been timed while reading this article, enter your reading time below. Then turn to the Words-per-Minute Table on page 55 and look up your reading speed (words per minute). Enter your reading speed on the graph on page 56.*

### Reading Time: Lesson 1

Minutes

:

Seconds

## A Finding the Main Idea

One statement below expresses the main idea of the article. One statement is too general, or too broad. The other statement explains only part of the article; it is too narrow. Label the statements using the following key:

M—Main Idea      B—Too Broad      N—Too Narrow

1. With enough ability and determination, even a 14-year-old boy can make a difference in improving his community.
2. William Kamkwamba educated himself by reading books from a small library at his old school.
3. William Kamkwamba, a 14-year old boy in Malawi, Africa, built a windmill out of scrap materials to bring electricity to his family's home.

Score 15 points for a correct M answer.  
Score 5 points for each correct B or N answer.  
Total Score: Finding the Main Idea

## B Recalling Facts

How well do you remember the facts in the article? Put an X in the box next to the answer that correctly completes each statement about the article.

1. Kamkwamba's home was in the village of
  - ☐ a. Masitola.
  - ☐ b. Kasunga.
  - ☐ c. Tanzania.
2. The first item that Kamkwamba's windmill powered was a
  - ☐ a. radio.
  - ☐ b. water pump.
  - ☐ c. car light bulb.
3. At first, the only tools Kamkwamba had were
  - ☐ a. a few hammers.
  - ☐ b. a couple of wrenches.
  - ☐ c. two screwdrivers.
4. Kamkwamba built a windmill that he called the Green Machine to
  - ☐ a. bring water to the entire region around his village.
  - ☐ b. provide electricity to his whole village.
  - ☐ c. pump water to irrigate his family's field.
5. Kamkwamba entered the African Leadership Academy in
  - ☐ a. South Africa.
  - ☐ b. Tanzania.
  - ☐ c. Malawi.

Score 5 points for each correct answer.

Total Score: Recalling Facts

## C Making Inferences

When you combine your own experiences and information from a text to draw a conclusion that is not directly stated in that text, you are making an inference. Below are five statements that may or may not be inferences based on information in the article. Label the statements using the following key:

C—Correct Inference

F—Faulty Inference

1. There were no free public high schools near Kamkwamba's village.
2. Now that Kamkwamba has become famous, he has also become rich.
3. Today every village in Malawi has a windmill.
4. The villagers who lived near Kamkwamba were not highly educated.
5. The people in Kamkwamba's village were very poor.

Score 5 points for each correct answer.

\_\_\_\_\_ Total Score: Making Inferences

## D Using Words Precisely

Each numbered sentence below contains an underlined word or phrase from the article. Following the sentence are three definitions. One definition is closest to the meaning of the underlined word. One definition is opposite or nearly opposite. Label those two definitions using the following key. Do not label the remaining definition.

C—Closest

O—Opposite or Nearly Opposite

1. In 2002 William Kamkwamba's life looked bleak.
  - a. cheerful, pleasant
  - b. depressing, hopeless
  - c. busy, active
2. The villagers were perplexed when Kamkwamba began to scour the rubbish piles and trash cans.
  - a. supportive, helpful
  - b. understanding, comprehending
  - c. puzzled, bewildered
3. The miscellany included slime-clogged PVC pipes, a broken bicycle, an old fan blade from a tractor, and a shock absorber.
  - a. collection of same or similar things
  - b. mixture, assortment
  - c. material
4. Over the next few years, Kamkwamba made some modifications to the windmill's design.
  - a. extreme makeovers
  - b. responses
  - c. alterations, minor changes

5. Newspaper articles, blog posts, radio stories, and television appearances praised this new prodigy.

- \_\_\_\_\_ a. highly talented, intelligent young person
- \_\_\_\_\_ b. person who does not succeed
- \_\_\_\_\_ c. fashionable, fast-talking character

\_\_\_\_\_ Score 3 points for each correct C answer.

\_\_\_\_\_ Score 2 points for each correct O answer.

**\_\_\_\_\_ Total Score: Using Words Precisely**

Enter the four total scores in the spaces below, and add them together to find your Reading Comprehension Score. Then record your score on the graph on page 57.

Score	Question Type	Lesson 1
_____	Finding the Main Idea	
_____	Recalling Facts	
_____	Making Inferences	
_____	Using Words Precisely	
<b>Reading Comprehension Score</b>		

## Author's Approach

Put an X in the box next to the correct answer.

- 1. The main purpose of the first paragraph is to
  - ☐ a. introduce the reader to William Kamkwamba.
  - ☐ b. explain how drought affected Kamkwamba's country.
  - ☐ c. give some information about schools in Malawi.
- 2. The author probably wrote this article to
  - ☐ a. inform the reader about conditions in Malawi.
  - ☐ b. tell an inspiring story about a creative, intelligent boy.
  - ☐ c. encourage readers to study science.

- 3. Judging by statements from the article "The Boy Who Powered a Village," you can conclude that the author wants the reader to think that
  - ☐ a. Kamkwamba is more famous outside of Malawi than he is in his own country.
  - ☐ b. the people of Malawi are proud of Kamkwamba and his work.
  - ☐ c. Kamkwamba only built the windmill as a way to go to a better school and leave Malawi.

- 4. In this article, "Kamkwamba took success in stride" means
  - ☐ a. Kamkwamba responded to the praise he received by walking away purposefully.
  - ☐ b. Kamkwamba achieved success by following a steady pace.
  - ☐ c. Kamkwamba dealt with his success easily and without changing.

\_\_\_\_\_ Number of correct answers

Record your personal assessment of your work on the Critical Thinking Chart on page 58.

## Summarizing and Paraphrasing

Follow the directions provided for questions 1 and 3. Put an X in the box next to the correct answer for question 2.

- Complete the following one-sentence summary of the article using the lettered phrases from the phrase bank below. Write the letters on the lines.

### Phrase Bank:

- Kamkwamba making a windmill in his village
- Kamkwamba hoping to bring power to his whole country
- Kamkwamba not doing well on his school tests

The article, "The Boy Who Powered a Village" begins with \_\_\_\_\_, goes on to describe \_\_\_\_\_, and ends with \_\_\_\_\_.

- Read the statement from the article below. Then read the paraphrase of that statement. Choose the reason that best tells why the paraphrase does not say the same thing as the statement.

Statement: As the blades began to whirl in the breeze, the bulb flickered to life and then glowed brightly. The astonished villagers broke into wild cheers.

Paraphrase: The people of the village were surprised that the windmill actually worked.

- ☐ a. Paraphrase says too much.
- ☐ b. Paraphrase doesn't say enough.
- ☐ c. Paraphrase doesn't agree with the statement.

- Look for the important ideas and events in paragraphs 3 and 4. Summarize those paragraphs in one or two sentences.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

### Number of correct answers

Record your personal assessment of your work on the Critical Thinking Chart on page 58.

## Critical Thinking

Follow the directions provided for questions 1, 3, and 5. Put an X in the box next to the correct answer for the other questions.

- For each statement below, write O if it expresses an opinion or write F if it expresses a fact.
  - The introduction of electricity was the best improvement ever made in Kamkwamba's village.
  - William Kamkwamba finished his first windmill in 2002.
  - Kamkwamba's cleverest invention was the on/off switch made from rubber sandals and bicycle spokes.
- From what the article told about William Kamkwamba, you can predict that
  - he would prefer to build something else rather than go to school.
  - he will build only what pays him the most money.
  - he will look for projects that will benefit poor people.

## CRITICAL THINKING

3. Choose from the letters below to correctly complete the following statement. Write the letters on the lines.

According to the article, \_\_\_\_\_ caused the windmill to \_\_\_\_\_, and the effect was \_\_\_\_\_.

- a. the blades of the windmill turning in the breeze
- b. a lit light bulb
- c. generate electricity

4. From the information in paragraphs 6 and 8, you can conclude that

- ☐ a. Kamkwamba was surprised when his windmill worked.
- ☐ b. Kamkwamba did not have a very good idea of how to build a windmill.
- ☐ c. Kamkwamba was resourceful and able to see how to use common materials in an inventive way.

5. In which paragraph did you find your information or details to answer question 3?

\_\_\_\_\_

### Personal Response

What would you do if you were not able to attend school?

\_\_\_\_\_

\_\_\_\_\_

### Self-Assessment

From reading this article I have learned

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ Number of correct answers  
Record your personal assessment of your work on the Critical Thinking Chart on page 58.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_