

Robots

Adventures in Reading:

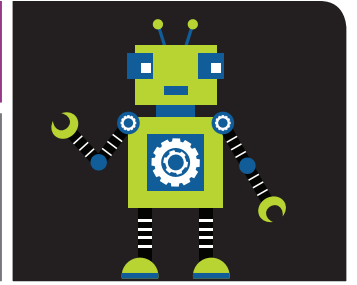
Reading Adventure Packs from Reading Rockets



Funded in part by the
Park Foundation, Inc.

Contents:

- Two books — one fiction, one nonfiction
- Parent information sheet
- Three activity sheets
- Bookmark
- Parent survey



For teachers and librarians

*This Reading Rockets reading adventure pack is designed to support reading activities at home. We've chosen a fiction and nonfiction book about **robots**, appropriate for a second and third grade listening level, and included related activities to encourage some hands-on fun and learning. Just assemble the packet and books in a two-gallon zip top bag, and send home with your students.*

When packing for this reading adventure about robots we suggest you include **Robot Dreams** by Sara Varon and **Robot** (Eyewitness Books) by Roger Bridgman. **Robot Dreams** is a simple, endearing story of friendship and loss told through a wordless graphic novel. **Robot** offers a detailed, full-color guide to the fascinating world of machines that sense, think and act, including the history of artificial intelligence and robots at work.

Reading Rockets carefully chose these titles because they are widely available in libraries and appealing to young readers. If they are not available, or you prefer other titles, substitute books related to the theme. You'll find more titles about robots included on the bookmark and at www.worldcat.org/profiles/ReadingRockets/lists.

The parent information sheet includes an introductory note that you can personalize instructions about how to use the packet, and tips for sharing fiction and nonfiction books with children

The activities are designed to encourage further exploration and learning at home:

- Creativity Activity: a hands-on craft project
- Imagination Activity: encourages imaginative play, writing or drawing
- Get Real Activity: focuses on real-world experiences for parent and child
- The bookmark lists both the featured titles and additional titles

Putting it all together

Print out copies of the parent information sheet, the activities, the survey, and a master for making bookmarks. Cut the bookmark page into strips. You may wish to print the activity pages and bookmark on card stock for durability.

Into a two-gallon zip top bag, place:

- Two books — one fiction and one nonfiction
- Parent information sheet
- Three themed activity pages
- Bookmark
- Survey for parents

Send the packet home with your student. Encourage parents to keep the parent information sheet, the activities and bookmark, and return the books and survey to you.

Let reading rockets know what you think of the family activity packets by e-mailing us through our website: www.readingrockets.org/sitecontact. Click on "Reading Adventure Packs."



START YOUR READING ADVENTURE!

Welcome

Dear _____

Exploring new ideas and enjoying books with you sends a powerful message to your child: Reading and learning are fun, and happen everywhere — not just at school. This Reading Rockets reading adventure pack about **robots** was created to help you and your child enjoy reading and learning together.

Start your learning adventure by reading some books with your child about this popular topic. Then explore the topic with three activities. Enclosed you'll find what you need:

- How to use your reading adventure pack
- Two books to share with your child
- Three related activities
- Bookmark with a list of other books to extend the fun, if you wish
- Short survey to tell me if you enjoyed using the packet

The “how to” sheet, bookmark, this parent information sheet, and the activities are yours to keep.

When you've finished with the materials, please return the books and the completed survey to school in your child's backpack. Please return the Reading Rockets activity packet by _____ .

I hope you'll enjoy reading and learning together!

Teacher signature

To learn more about children's books, reading with your child, and information about helping kids become confident readers, please visit www.ReadingRockets.org



Reading Adventure Packs: Hands-on fun & learning from Reading Rockets
Find more themes and activities at ReadingRockets.org/readingadventurepacks

How to use your Reading Adventure Pack

Getting ready

1. Before you read the books to your child, be sure to read them yourself.

One book is fiction — a “make-believe” story. The other book is nonfiction, or informational and true. Reading the books first will give you the “inside scoop” to the twists and turns of the story, the interesting information inside, and the parts of the books that will appeal most to your child.

2. Next, read the three activities to see which of them you think your child will enjoy most, and which one you have the time and materials on-hand to do right away. Chances are, after you read one (or both) of the books with your child, he or she may want to do an activity right away.

Start the fun

3. When you know you’ll have at least enough time to read and talk about one of the books, grab your child and a book, and dive right in. Start with the fiction selection. Talk about the cover of the book with your child — can he guess what it is about? Have they ever read a book by the same author or illustrator or about the same topic?

Read the book to your child. If you are using the fiction title, you will be sharing a make-believe story. Take time to ask and answer questions, explore the pictures, and wonder what will happen next. (If you are using the fiction selection **Robot Dreams** by Sara Varoon, you will be telling the story of this wordless book with your own words. See if your child wants to also “read” the story to you in his own way.) Read it again, if your child asks you to. Then, try the nonfiction book or one of the activities.

4. When you read the nonfiction book, take a moment to explain to your child the difference between the two types of books. The fiction book told a made-up, make-believe story, and a nonfiction book focuses on real people, places, and things. The information in nonfiction books can answer lots of questions and confirm facts. You don’t have to read a nonfiction book straight through -- you might want to focus on one section, such as “robots at work.”

5. Feel free to pick and choose from the activities, or change them to suit your child’s interests. Read the books again over the next few days and try different activities. Most important: have fun!

When you’re done...

6. Keep the bookmark, the activities and this page. Complete the survey and return it with the books to your child’s school.

Make the most of the excitement the books create, and try some hands-on learning or make-believe fun. Exploring new ideas alongside you lets your child see you learning — and reading — too, and gives your child personal

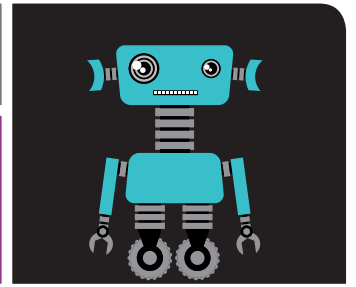
Tips for reading nonfiction books with kids:

- Wonder out loud. As you are reading, or after talk about facts you find interesting or questions you have.
- Show your child how to use the table of contents, section headings, index and word list (glossary) to find answers to specific questions.
- Don’t be afraid to jump around, reading pages that especially interest your child. You don’t have to read a nonfiction book straight through.

Tips for reading fiction books with kids:

- Take your time and talk about the story with your child. Ask your child questions.
- Explore the pictures with your child.
- Read with expression. Change your voice or how fast you read to create excitement. Ham it up!
- You don’t need to read every word. Keeping your child interested is the goal.



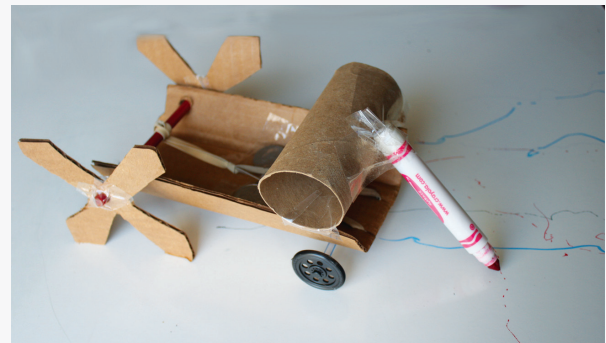


Random robot

Most robots are specifically designed to do a particular task, often one that would be tiresome or dangerous for humans. Creating art usually isn't tiresome or dangerous, but it is interesting to compare your child's own artwork to art created by a rubber band-powered contraption designed to move across paper and create abstract art! You'll need:

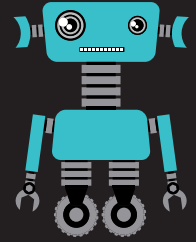
Supplies

- Corrugated cardboard
- Pencil and different colored markers
- Rubber bands
- Hard, white, mint candies with a hole in the middle (or other items that work as wheels)
- Other items to test: old compact discs, washers, sticky foam, skewers, LEGO blocks, etc.
- Blank paper and an abstract drawing created by your child
- Toilet paper tubes
- Ruler, scissors, tape
- Plastic drinking straws
- Coins (or other items to use as weights)



Directions

1. Fold a 6-inch square of cardboard into thirds so it looks like a trough. This is the body.
2. Cut two 4-inch squares of cardboard and on each, draw an "X" from corner to corner. Then measure and mark $\frac{1}{2}$ inch to the right and left of each line. Connect these marks so that your "X" is now 1 inch wide. Cut out the 4 smallest triangles created by your "X" and make a hole in the very center of each "X."
3. On the body, poke one hole close to the end of each folded side. Make sure the holes are directly across from each other and are big enough for a pencil axle to spin freely.
4. Put a pencil through the body and attach the "X" wheels on each end with tape.
5. On the other end of the body, tape the straw under the back end. Slip a candy onto each end of the straw and bend and tape the straw ends to stop the candies from coming off.
6. Loop two rubber bands together and then loop one end around the pencil axle. Cut two small slits into the back end of the body and slide the free end of the rubber bands into the notch.
7. Mount the toilet paper tube across the back end of the body, taping it to the sides.
8. Take the thin marker and attach it to the center of the toilet paper tube so that it drags behind the body like a tail. It needs to drag in order to draw. *(Continued on next page)*



Random robot

Directions *(continued from previous page)*

- Put a large sheet of paper on the floor and uncap the marker. With the device on the paper, wind the rubber band by turning the pencil axle. The more you wind, the more energy the rubber band stores and propels your bot. Let go and see what it draws! How does it compare to what your child has drawn?
- Change or add more markers, try other wheel types, use more or fewer rubber bands or experiment with other materials. If you have access to a small motor, you can also make a vibrobot that makes art: www.wired.com/geekdad/2012/05/ff_artbot



Other robots to make

5 Real Robots Made From Everyday Stuff

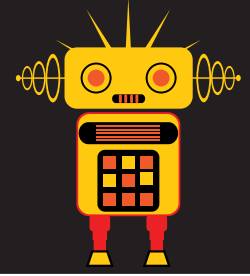
www.wired.com/geekdad/2012/08/robots-everyday-stuff

GoRobotics: How to Make a Robot

www.robotshop.com/blog/en/robots/gorobotics/tutorials/how-to-make-a-robot

American Society for Engineering Education: The BristleBot

<http://teachers.egfi-k12.org/activity-do-it-yourself-bristlebot>



Robot senses

A robot is a machine that can take in information, make decisions and then act on those decisions. Talk with your child about how he gathers information. How does he know to get an umbrella when it is raining? He sees the rain, he hears it, and he remembers what it feels like to be wet. He’s using his senses!

Senses are very important for robots too. A robot’s sensors provide signals it uses to understand and interpret its environment and keep out of danger. Try this experiment with your child to help him recognize and consider what it takes to get a robot to “think” and act. You’ll need:

Supplies

- A blindfold
- Items to create an obstacle course (chairs, pillows, cushions, boxes)
- A delicate item, such as a plastic egg, and a container to deposit the item
- A device that makes noise (cell phone, music player, electronic toy) [optional]
- A ball, toy or other item to collect [optional]

Getting started

Without your child’s help, set up an obstacle course in a safe place in your home or yard. Create simple, narrow paths for your child to navigate from one end of the course to the other.

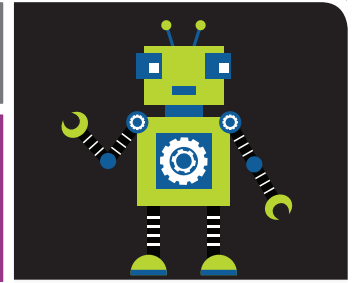
Blindfold your child and bring him to the obstacle course. Explain to him that he’s now a remote controlled robot and that you are the controller. For him to safely get a delicate item through the course, he has to use his sense of hearing to listen to the controller and his sense of touch to be aware of obstacles in his path. Give very specific instructions for your robot to follow — literally step by step.

After your child finishes the course, talk about what instructions were helpful and which were not. Discuss how having limited senses and no ability to make decisions effected the success of his mission as a robot.

Then let your child recreate the obstacle course and have you follow his commands. Talk and compare experiences as both robot and controller.

Try these variations too:

- Instead of a depositing the delicate item, the robot searches for an item or items in the course and collects them. Search for a noise-making device to extend use of hearing senses.
- Write out directions on how to navigate through the course to “program” your robot
- Let the robot act on its own, gathering information and collecting items with limited sensory input or mobility — wearing a blindfold, wriggling in a sleeping bag on the floor, wearing a box that doesn’t allow for bending, or having rulers or wooden spoons attached to your wrists



Robots at work

Robots are everywhere! The car or bus you ride in? A robot helped build it! That ice cream cone you enjoyed? A robot helped make it! At some point, robots have worked on almost everything we eat, wear or use. As you read and discuss books about robots, think and talk about the roles robots play in your own lives. Then get ready to look for evidence of robots around you.

Getting started

Ask your child to make a list of foods, toys or other things she uses every day. Then have her imagine how a robot was used in the creation of the items on her list. Talk about why she thinks that would be a good job for a robot to do or if she thinks a person could do it better. Have her note how she feels about having robots involved in making things that she uses.

To see how correct her ideas of how robots help make things are, take a look at video of factory robots in action at:

- <http://manufacturing.stanford.edu>
- www.robots.com/movies
- <http://science.discovery.com/tv-shows/how-its-made> (There is advertising on this site)
- <http://science.discovery.com/video-topics/engineering-construction/factory-made.htm> (There is advertising on this site)

Now that your child has had a chance to think about the kinds of tasks robots can do to make things in a factory, ask her what kinds things she would like a robot to do in your home. Get her thinking realistically by reminding her of the repetitive and precise jobs robots have. Ask her identify similar jobs at home — folding laundry, setting the table, etc. — and then have her create her own robots for specific tasks.

Have her create a description and illustration of each robot, including:

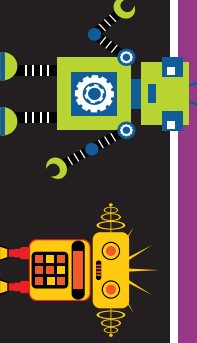
- A name for her invention
- What materials it is made of and details about its shape
- How it looks and how it moves
- What it can and can't do
- Any safety considerations
- What is required to keep it working well

As she brainstorms, remind her robots usually only have the parts they need to complete their task. Have her think about what parts of her body she uses to complete the task. What does her robot need to complete the task?

Extension:

When you're looking around the house at items worked on by a robot, take a look for things around that house that could also be useful in building a robot — motors, computer, etc.

ROBOTS



Featured Books

Fiction

Clink by Kelly DiPucchio

Marveltown by Bruce McCall

Oh No! (Or How My Science Project Destroyed The World) by Mac Barnett

Randy Riley's Really Big Hit by Chris Van Dusen

Robot Dreams by Sara Varon

Robot Zori! by Jon Scieszka

Nonfiction

The Nexi Robot by Toney Allman

Robot (Eyewitness Books) by Roger Bridgman

Robotics by Helena Domaine

Robotics: Discover the Science and Technology of the Future by Kathy Ceceri

Robots by Clive Gifford

Robots: From Everyday to Out of This World by the editors of *Yes Mag*

Reading Adventure Packs

from Reading Rockets



READING ADVENTURE PACKS

Parent Survey

Parents: Cut out the bookmark for your child to keep. Return the survey to your child's teacher, along with the book(s).

Tell us about your experience with the activities:

- Easy and fun to do
- The directions were difficult to understand
- My child enjoyed the activities

Did talking about what you were reading, and the activities help your child to learn? (on a scale of 1 to 5)

1 2 3 4 5

(did not learn much)

(learned a lot)

Would you like to try another "read and learn together" activity with your child?

- yes
- no

What kinds of things is your child interested in?

Your name (and your child's name)
