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Introduction

Inventions contains a captivating whole language, thematic unit. Its pages are filled with a wide variety of lesson ideas and activities. At its core are three high-quality children's literature selections, *Steven Caney's Invention Book*, *Ben and Me*, and *Mistakes That Worked*. For each of these books, activities are included which set the stage for reading, encourage the enjoyment of the book, and extend the concepts gained. In addition, the theme is connected to the curriculum with activities in language arts (including daily writing suggestions), maths, science, social studies, music, and life skills. Many of these activities encourage co-operative learning. Highlighted in this very complete teacher resource is a culminating activity which allows students to synthesize their knowledge in order to create inventions that can be shared both at school and beyond the classroom.

This thematic unit includes:

- literature selections**—summaries of three children's books with related lessons (complete with reproducible pages) that cross the curriculum
- language experience, poetry, and writing ideas**—suggestions as well as activities across the curriculum
- bulletin board ideas**—suggestions for student-created and/or interactive bulletin boards and displays
- curriculum connections**—in language arts, maths, science, social studies, life skills, and music
- group projects**—to foster co-operative learning
- a culminating activity**—which requires students to synthesize their learning to produce a product or engage in an activity that can be shared with others
- a bibliography**—suggesting additional books on the theme



Steven Caney's Invention Book

by Steven Caney

Summary

Who invented water skis? How did the zipper get its catchy name? What inspired the design of Velcro® tabs? Find out the answers to these and many other questions in Steven Caney's Invention Book. In addition, Caney takes the reader through all the necessary processes involved in marketing and selling an invention. Throughout the book are directions for a variety of homemade projects. Perhaps the most fascinating pages of Steven Caney's Invention Book are those which relate the stories behind many familiar products, including Band-Aids®, Kleenex®, and Life Savers®.

The outline below is a suggested plan for using the various activities that are presented in this unit. You should adapt these ideas to fit your own classroom situation.

Sample Plan

Day 1

- Prepare centre and do introductory activities. (page 6, Setting the Stage)
- Read "Getting Started" section of the book. Discuss ideas for new inventions.
- Discuss the invention of the wheel. Make poetry wheels. (pages 48-49)
- Learn how to write clear directions. (pages 45-46)
- Do the "Why Didn't I Think of That?" activity. (pages 17-18)

Day 2

- Read the "Planning" section of the book. Make toothpaste and calculate manufacturing costs. (page 7, #3)
- Create Rube Goldberg style designs and share them in class. (pages 12-13)
- Make a crystal radio. (pages 58-59)

Day 3

- Read and discuss the "Breadboard, Model, and Prototype" section of the book. (page 8, #9)
- Make a class book of famous inventors. (page 8, #1)
- Introduce the Culminating Activity. (pages 66-78)

Day 4

- Read the "Naming Your Invention" and "Patents" sections of the book.
- Role play "Ask the Inventor." (page 9, #5)
- Make a fact pyramid. (page 47)
- Learn about knots and invent a new knot. (page 60)
- Continue Culminating Activity. (pages 66-78)

Day 5

- Read the "Marketing Your Invention" section of the book.
- Practise using an abacus. (page 9, #8)
- Create a new ice-cream. (page 64)
- Introduce and practise advertising techniques. (page 8, #10)
- Continue Culminating Activity. (pages 66-78)

Day 6

- Read some or all of the "Great Invention Stories" section of the book.
- Invent with straws. (page 9, #7)
- Read about the invention of roller skates. Experiment with bearings. (page 10)
- Continue Culminating Activity. (pages 66-78)

Spinning Your Wheels

Did you ever wonder why roller skates or skateboards seem to glide so smoothly along the ground?

Roller bearings placed inside the wheels help to create this gliding motion. A bearing is a machine part that helps reduce friction between sliding or rotating parts. The machine parts can then move more smoothly. In a way, you could think of the bearing as an invention within an invention!

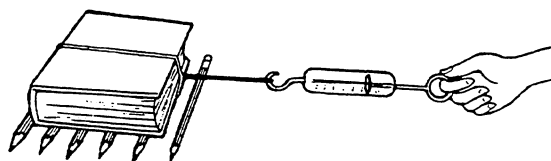
After reading about the invention of roller skates in *Steven Caney's Invention Book*, experiment with two kinds of bearings—roller bearings and ball bearings—to see how they help to make the roller skate and other inventions work.

Roller Bearings

The roller bearing reduces friction by changing the sliding motion between parts into a rolling motion. Roller bearings use cylinder-shaped rollers.

To show how a roller bearing works to reduce friction between moving parts, try this experiment.

- Wrap string around a large book as shown in the illustration. Attach the end of the string to a spring balance. Place the book on a table or desk and pull the book and the scale towards you. Note the reading on the scale.
- Now place several round pencils underneath and beside the book. Pull the book along the table or desk again. Read the scale this time and note the difference between the reading before and after the use of the pencils (rollers). Was it easier to pull the book with the rollers or without them? What effect does the use of the rollers have on friction?

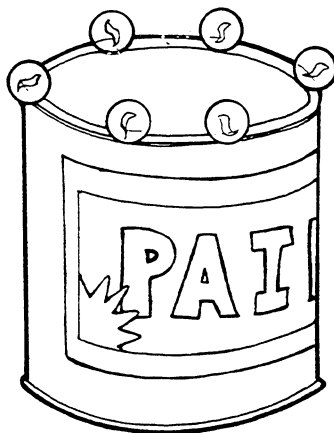


Ball Bearings

Ball bearings are found in bicycle wheels and many fast-moving machines. Instead of a roller, this kind of bearing uses a ball-shaped part to help reduce friction and increase the speed of the moving parts.

To discover how ball bearings work, try the following experiment.

You will need about six marbles, a book, and an empty tin that has a rim. (A paint tin works well.)



- First, place the book on top of the tin. Try spinning the book. What happens?
- Now, place the marbles in the groove along the rim of the tin. (The marbles serve as ball bearings.) Next, put the book on top of the marbles and gently spin the book around. Is it easier to spin the book with or without the marbles beneath it? Why?