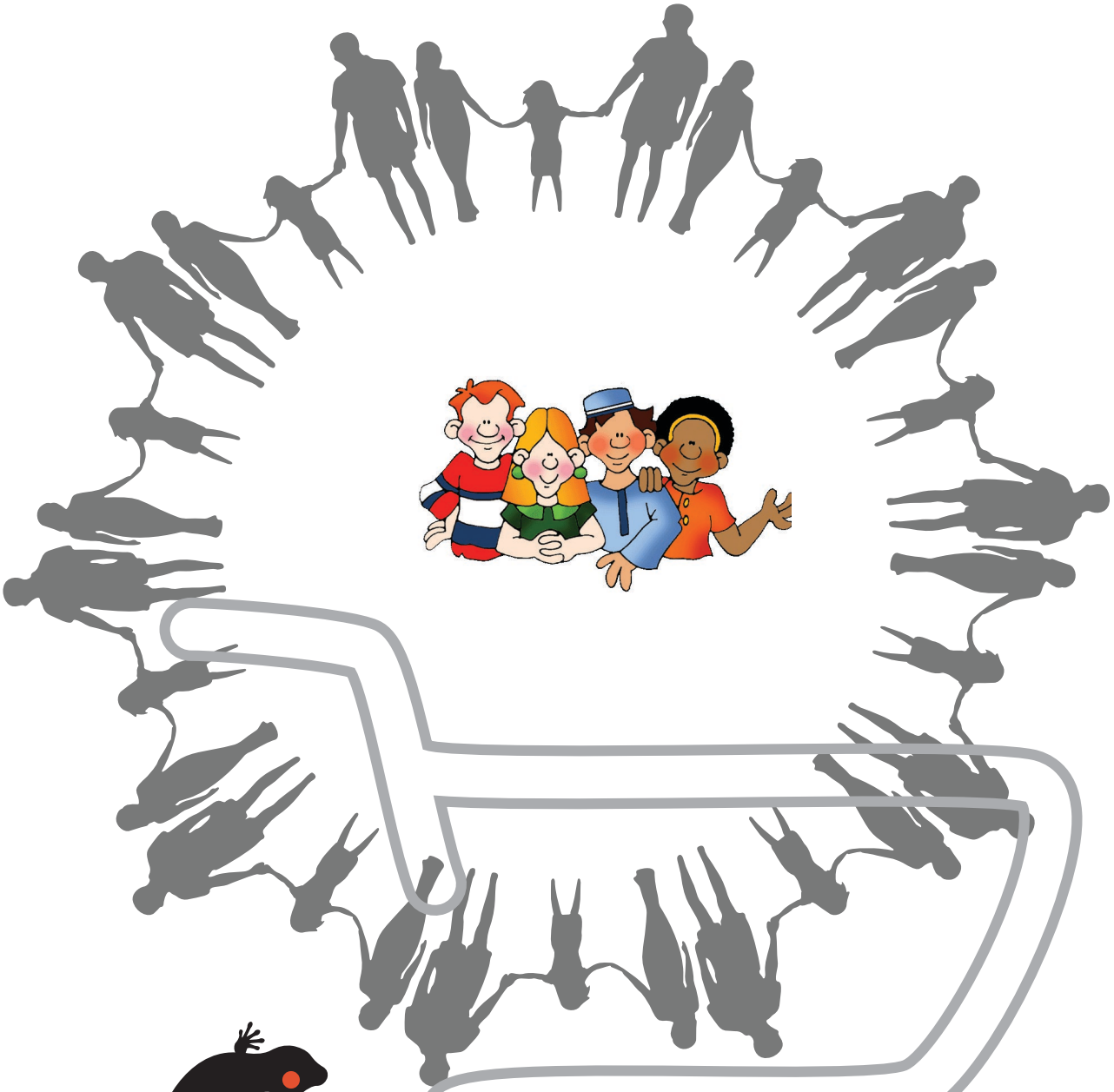
PARENT HELPER GUIDE



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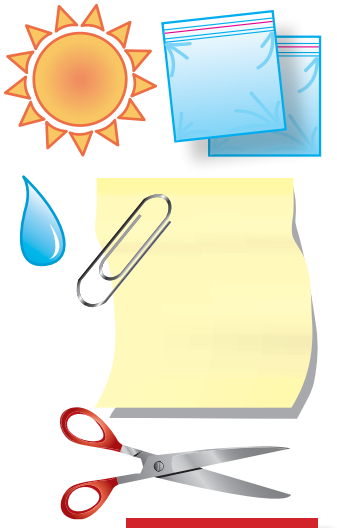
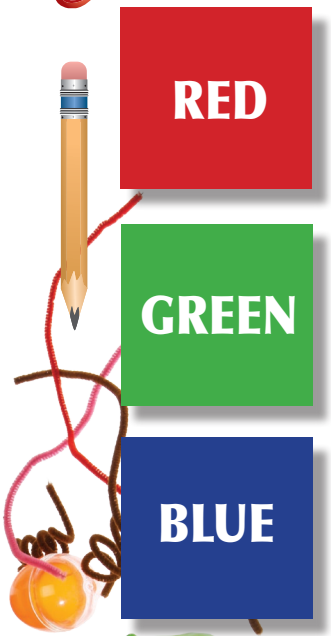
TEACH

Introduction to Supermarket Science Materials

What You Need:





How to Use This Book

Supermarket Science Materials are organized into thematically linked sets with experiments and activities as well as background information that makes them easier to do. There are also a bunch of simple, fun art and writing projects. All of the activities can be done alone or in conjunction with other project sets. Choose activities that are developmentally appropriate to your children.

All Supermarket Science Materials are primarily geared toward students in elementary and secondary schools, as well as their parents and teachers, but can be expanded to higher grades. The activities are designed to advance the understanding of concepts of biology, ecology, geology, and sociology based on local resources like a backyard or a local grocery store. All of the materials in this set and others link the Core Curriculum Standards. Use them to focus the activities to a particular grade level.

There are also LEARN, SHOW, USE, DO, and TEACH pages. LEARN pages are designed to be given to the students. They contain explanations, stories, or diagrams. SHOW pages usually present interesting photographs or illustrations that demonstrate specific concepts. USE pages are created as supplemental materials for the activities and experiments. Plant Cards are examples of USE pages. And finally, the DO pages contain the actual activities and experiments. Please use the back of these pages as scrap and add additional pages as needed.

Most DO pages have a What You Need list of items in the margin under the title of the activity. This is a quick reminder for what children should have while doing the activity. It might look something like a list on the right: Paper Clip, Pencil, Scissors, Balloons, etc. Some of the activities in this set use cards. Creating taxonomies is part of the scientific process. The card games and activities allow kids an opportunity to practice this skill.

There are many activities which can be done using information about plants and food. This set shows some possibilities. We encourage you to come up with others. Think of these activities as inspirational examples, jumping off points.

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Main Ideas

In these activities, children are asked to analyze data and to come up with a scientific conclusion through logical reasoning.

Research

- Research basic information using visual and written information provided in these pages (a given source), a library, or some online source. We recommend Wikipedia.org.

Precision

- Each label, name, or word has a specific meaning that all scientists in the same field understand to mean exactly the same thing.
- Descriptions of objects and events need to be precise enough to limit misunderstanding and misinterpretation by the readers as much as possible.
- "Fuzzy thinking" is not allowed!

Logical Thinking

- There are two pathways in science: deduction and induction.
- Deduction is a process which puts together bits of data and evidence to build a theory—it's bottom up reasoning.
- Induction is the process which starts with an idea and then looks for data and evidence to support it—it's top down reasoning.
- Logical reasoning is a formal way of thinking (usually deductive) where each successive thought is built upon the previous one. As long as each link is a chain of logical reasoning is true, the end conclusion is true.

Classification

- Objects can be grouped according to physical characteristics based on visual analysis, but there are many other ways of creating classifications (e.g. by eating habits).

Words in red are vocabulary words. They are used in a word puzzle DO pages.

Do More

Teaching writing, math, and reading is easier in a context rather than in isolation. Ask your children to write a short story about what they've learned or to draw an illustration or both. There are infinite number of ways of expanding these activities to meet the needs of different ids at different stage of their development. We hope teachers, parents, and students will make more activities using the materials found in these sets.

For example, if kids make their own connect the dots drawings, please share those creations with others. Such recognition would make those kids proud and encourage them to make more. Or they can grow various fruits from the seeds and tubers leftover from making dinner. If they take daily photos of their plant

Kids can share their work online. SupermarketScience.com will try to post kids stories, art, and projects. How are these different from each other?

A group of 5th grade students prepares a poster for a Supermarket Science Fair at their school.

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Explain what you know!

Show what you know!

Teach what you know!

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Language is not a barrier for this English language learner from Russia to explain parts of plants to her Science Buddies during a flower dissection activity.

Creating instructional posters requires these 5th graders to carefully research their topics, negotiate with fellow students, plan and schedule their time, empathize with their audience, and find the best way to communicate their knowledge to others.

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Introduction to Botanical Sciences

What You Need:

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Summary and Introduction

These Supermarket Science Activities and experiments introduce children to Botanical Sciences. Botany, the study of plants, is a very old science. Humans have been cultivating and examining plants for their beneficial properties for thousands of years. This set focuses on the history of this science and introduces the idea of classification. Below are the main ideas covered in this set of materials:

People and Plants

- people have been cultivating plants for thousands of years
- plant uses: food, medicine, goods, building materials, energy
- domestication

Classification of Plants

- define a plant
- models of plants, flowers, roots, leaves, fruits, and cells
- there are many different ways to classify plants: by use, by geographical region, by physical characteristics, by climatic regions, and so on
- instruments like microscopes, cameras, light-meters, pH meters, sugar testers, thermometers, calenders, and clocks can help our study of plants and their classifications
- plant parts and plant dissection
- photosynthesis

Biodiversity and Classification

- biodiversity is a total number of different living things that are found in a particular area
- classification of plants allows us to conduct biodiversity studies
- calculation of plant biodiversity index for a neighborhood or a backyard

What You Need

The concepts covered in this section are complex but the experiments are easy. Parents, teachers, and older students should read all of the LEARN pages. Younger children would benefit from having parents or teachers read the LEARN pages to them. Makes sure to have adequate time set aside for discussions, either in class or around the dinner table.

The DO pages are appropriate for elementary school children as well as for older students. Younger children should work with plenty of adult supervision. A parent can help their children organize their materials and their thinking. For older kids, such supervisory function can be taken up by the students themselves.

We encourage you to print as many copies of these pages as your children need.

The materials you will need:

- LEARN, DO, SHOW, and USE pages
- Zip lock bags
- Color filters
- Paper clips
- Water
- Pipe cleaners
- White and green balloons
- Plastic Easter eggs or other small plastic containers
- One pencil or a pen
- Paper (feel free to use the backs of LEARN and SHOW pages as scrap paper)
- Live plants
- Tape

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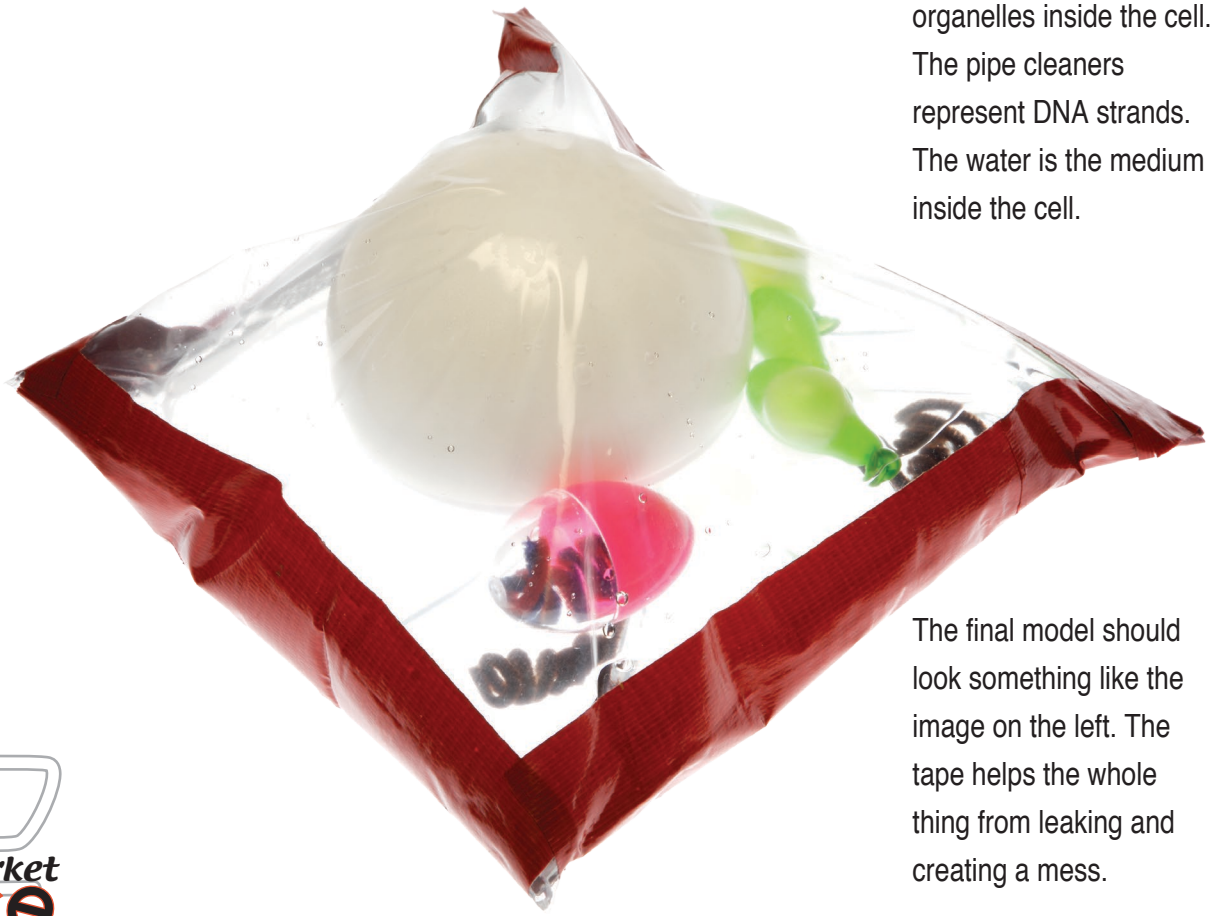
Building a Cell Model

You can build a model of a plant cell using materials found at home: Zip lock bags, tape, balloons, some small plastic container like an Easter egg, and pipe cleaners.

Zip lock bag becomes the walls of the plant cell. Balloons are the various organelles inside the cell. The pipe cleaners represent DNA strands. The water is the medium inside the cell.



The final model should look something like the image on the left. The tape helps the whole thing from leaking and creating a mess.

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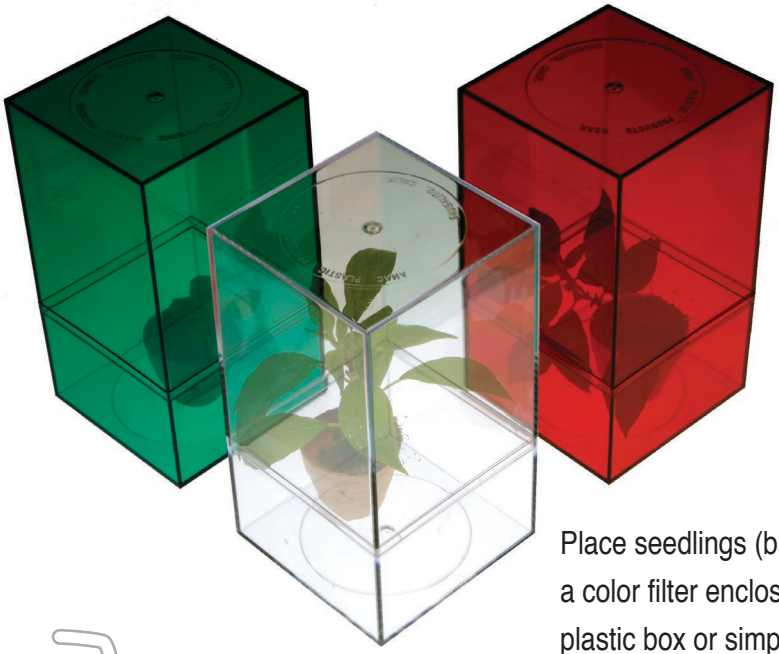
The Color of Light and Photosynthesis

The idea of this experiment is to learn which color of light is the most useful to a plant. You can use whatever materials you have at hand as long as they are one color and transparent: wrapping cellophane, CD covers, 3D glasses, other color filters. Anything would do, be creative.

Without ripping the leaf off a plant, cover portions of one leaf (or use several leaves for this experiment) with red, blue, and green light filter. Use paper clips to attach the little squares to the leaf. Use a sticky note or a regular, non-transparent piece of paper to prevent all light from reaching the surface of the leaf. Wait a few days to check what happened to the leaf underneath the various light filters and the paper.



Place seedlings (baby plants) inside a color filter enclosure. You can use a plastic box or simply wrap the plant into a cellophane cocoon. Make sure to use different colors, including no color. Wait a few days, document your findings. Repeat the experiment with a potato.

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