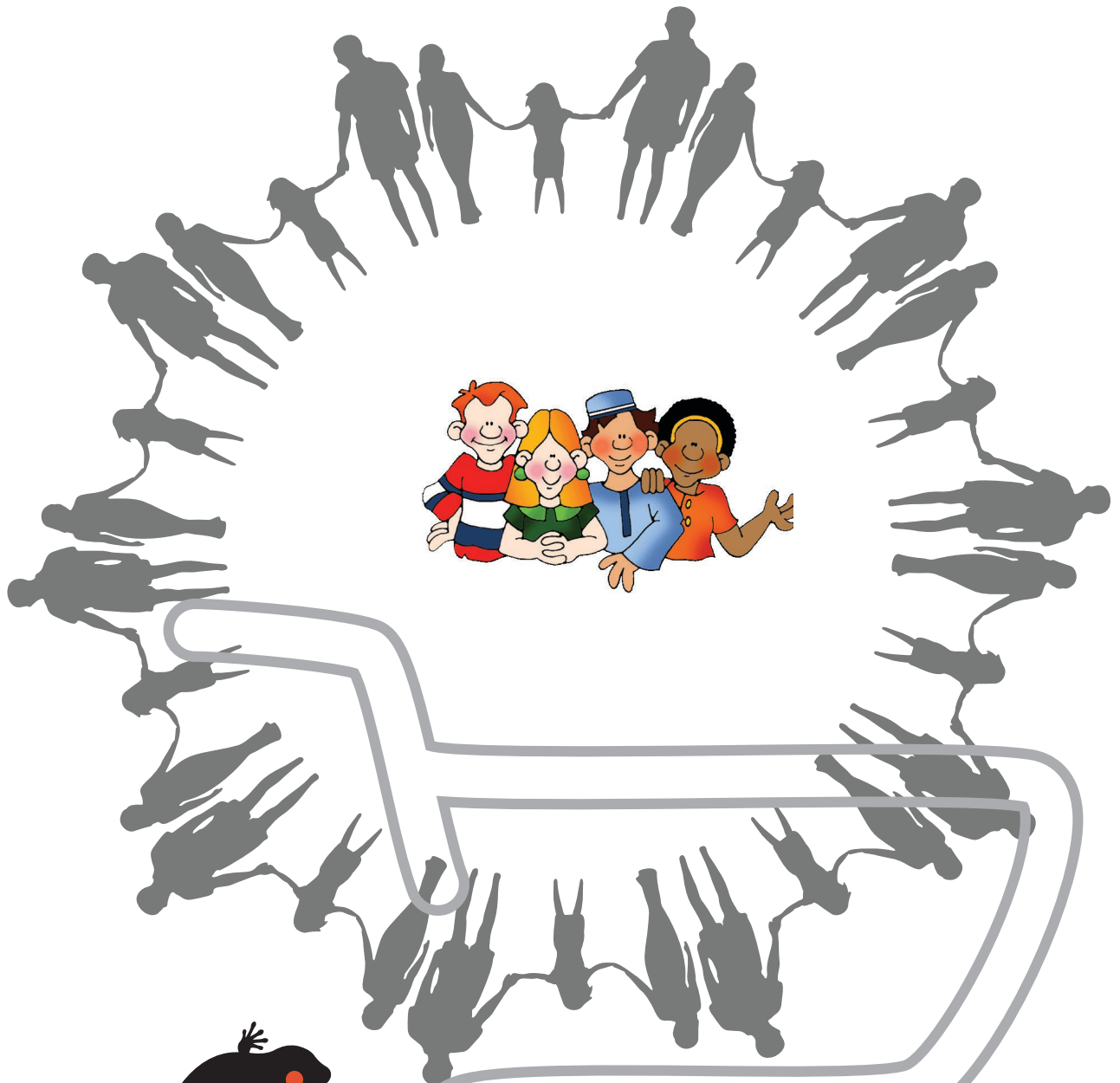


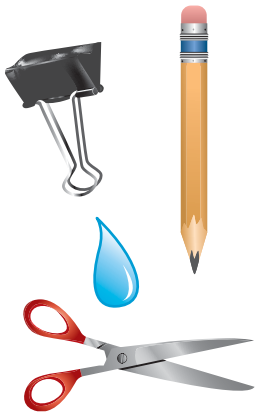
# PARENT HELPER GUIDE



*Supermarket*  
**SCIENCE**

## Introduction to Supermarket Science Materials

### What You Need:



### How to Use This Book

**S**upermarket 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 the Core Curriculum Standards 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. Animal Cards and Map 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.

On some pages, there are icons of animals. For example, an activity about elephants might have an elephant icon next to it. These icons can be used as keys to link information between all of the Supermarket Science Materials.

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: pencil, scissors, paper clip, potatoes, water.

There are many activities which can be done growing plants from seeds and looking for variations in glucose and starch. This set shows some possibilities. We encourage you to come up with others. Consider growing an avocado or an apple seed. Think of these activities as inspirational examples, jumping off points.



## Environment and Plant Growth



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

### Introduction

These activities and experiments introduce students to the importance of the environment on plants' growth. In other botany activity collections, the students learned that plants need sunlight, water, CO<sub>2</sub>, and nutrients to grow. But there are other environmental conditions that can affect the plant's ability to survive and thrive in an environment. For example, it might be too cold or too warm; too wet or too dry; too much light or too little.

Ask your children if they know a plant that died. Can they guess why? Different kids will talk about different plants under different circumstances. Since the plants in those stories are different, it will be difficult to say anything general about conditions under which plants fail to thrive. Cacti, for example, prefer less water, while tomatoes require more frequent watering. If we treated cacti like tomatoes or vice versa, both plants would die.

There are two main variables that have to be considered: the type of plant and the environment. To conduct an experiment about the importance of the environment on the plant's growth, the plant variable has to be kept constant. One way to do so is to choose seeds from the same kind of plant, but some seeds are better than others (e.g.: some plants of the same variety make it through drought and some don't). It would be best to use identical plants, with identical DNA and thus identical genetic potential.

While it sounds like it would be hard to find plant clones, potatoes offer just that. Potato plants can reproduce by seeds or through buds on their underground tubers. A single tuber has multiple buds, all with the same genetic material. By choosing potato buds for these experiments, we can keep the one variable constant while changing another.

We hope that this section will teach you something new and make this subject enjoyable to your kids as well. For more activities and suggestions by teachers and parents on how to explore this material with kids, visit the Supermarket Science web site at [www.SupermarketScience.com](http://www.SupermarketScience.com).

### Main Ideas

#### Nature versus Nurture Experiments

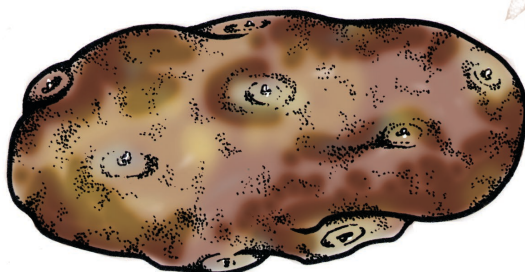
- keeping one variable constant while changing another
- potato biology

#### Environmental Variables

- sunlight, artificial light, absence of light
- external temperature

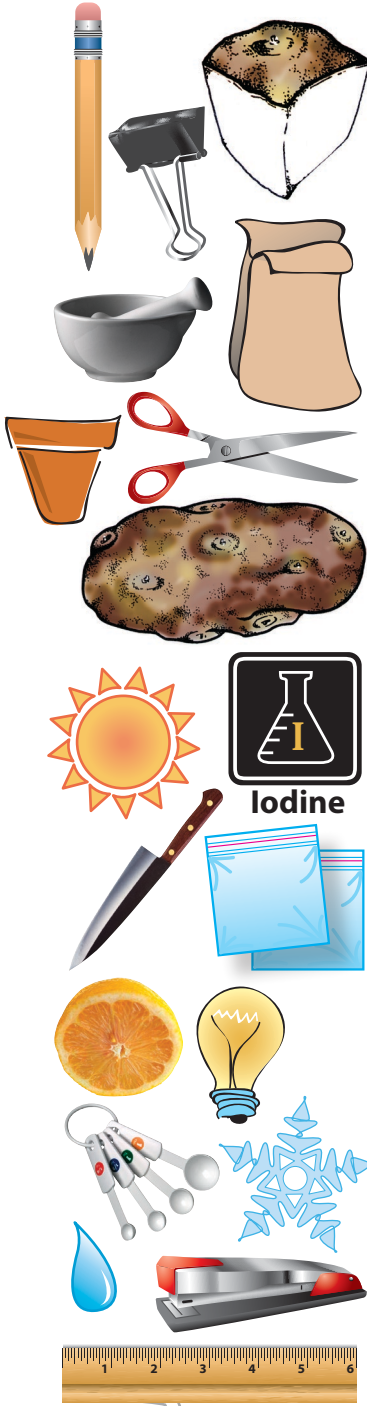
#### Experimentation and Observation

- data collection: color, size, health and vitality
- data presentation: flip books, graphs
- data comparison



These types of activities are perfect for science fairs.

## What You Need for This Experiment



### 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 students would benefit from having parents or teachers read the **LEARN** pages to them. Makes sure to have adequate time set aside for discussions. Even the youngest kids can grow a potato and observe how it develops.

The **DO** pages are appropriate for elementary school children as well as older students. In elementary school, these activities work well when performed in pairs with plenty of adult supervision. A parent can help students organize their materials and their thinking. In higher grades, such supervisory function can be taken up by the students themselves.

The materials you will need for each child or group of students:

- **LEARN** pages, **DO** pages, and **USE** pages
- Big roasting potatoes
- Paper clips
- Brown paper bags
- Small zip lock bags (2 per experiment)
- Water
- Lemons
- Iodine solution (from a pharmacy)
- Soil
- Pencils
- Small potting pots or plastic cups
- Stapler
- Scissors
- Pestle and mortar for grinding and mashing
- Measuring spoons: 1 tea spoon
- Space in a refrigerator
- Place in the sunlight
- A well-lit place away from the sunlight
- Parent Guide to help students with setting up, clean up, and organization



These experiments are set up for five groups of students or for five experiments performed by one group or child: *Sun Spuds*, *Spud Lights*, *Shady Spuds*, *Spicy Spuds*, and *Chilly Spuds*. If students are working in groups, make sure to share the results of their experiment with the whole class.

### Do More

There are many experiments that can be done with plants growing under different environmental conditions. Encourage your children to think of other variation to the experiments presented in here. For example, they can raise the temperature of the environment and do a *Hot Spud* experiment. Or they can add sugar or salt to water. These could be the *Sweet Spuds* and *Salty Spuds*. The *Salty Spuds* experiments can lead to the discussion of soil **salinity** and its **adverse** effects on **environment**. To test for sugar, you can use diabetes strips found in most pharmacies. Acid can be measure with Ph paper or Ph tests found in any pet fish supply store.

