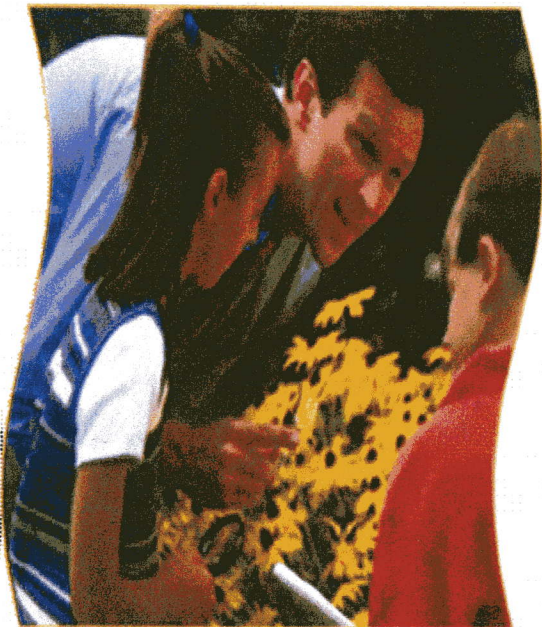
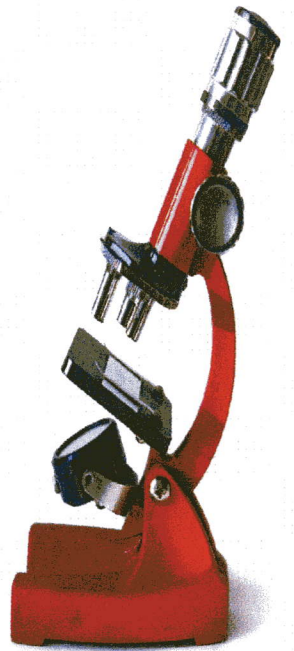




SCIENCE



RESOURCES

http://www.kpbs.org/kids_family/science

<http://www.k5geosource.org/resources/index.html>

<http://ksnn.larc.nasa.gov/squeakplayground.html>

<http://www.ncga.com/education/main/index.html>

<http://www.spartechsoftware.com/reeko/Experiments/ExpSpinelesPotatoes.htm>

<http://www.courseworkhelp.co.uk/GCSE/Science/17.htm>

<http://www.lifelabstore.org/curriculum.html>

Grappling with Data

Making Sense of Investigations

Whether your young scientists are conducting indoor plant experiments ("What conditions promote the best bean plant growth?") or outdoor habitat research ("Which plants do different types of butterflies prefer?"), they'll need to practice accurately gathering and organizing their data. By learning how to represent their data so patterns are revealed, students will be able to make better sense of their experiences. This article describes some plant-related challenges, and suggests strategies to help your students think and act like scientists as they grapple with data from their indoor and outdoor gardening experiences.

Data Gathering Challenges

What students choose to observe and measure will depend, in part, on the nature of their question, experimental setup, hypotheses, and so on.

Clarifying Terms

To help students decide what types of information to gather, you might first have to help them clarify the language in their question or hypothesis. For instance, with plant-related investigations, students often want to know which treatment will result in the "best" plant growth. Challenge them to define what they mean by "best" and imagine what type of data would support their predictions or hypotheses: the tallest plant? The greenest? The one with the most leaves? Once they've answered these questions, they can better clarify what they'll observe and measure. (Consider starting by brainstorming a list of the factors that students might look at: height, number of leaves, color of leaves, number of branches, root length and shape, stem width, leaf area, distance between nodes, and so on, then choose some that students believe may be the best indicators of plant health. Setting

Standards

A similar challenge with classroom data gathering is the need for "standards" of measurement. This is particularly important if you have a number of students or groups working on different aspects of one investigation. "We had several classes working together on an investigation of light tubes," says fourth grade Chicago, IL, teacher Paul Scott. "When students first started posting data, some noticed that there was no uniformity in the way people were taking plant height measurements. Some were measuring from the soil to the end of the longest branch, while others measured from the lowest branch to the end of the top leaf. Students quickly realized that we needed to establish a standard." You might choose to establish (and practice) measurement standards up front, or let students discover the need themselves (with your questions and guidance) as they conduct and review their investigations.

While some data are obviously quantifiable, such as measurements of height, length, mass, volume, or responses to a survey, other observations may be more qualitative,

