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Introduction

Hands-on science activities give students opportunities to explore the world around them and make connections with the things they experience. Because students are naturally curious they find science exciting to study. Teachers are facilitators, guiding students through the investigative process, showing them how to document their data and observations, and helping them interpret and apply what they have learned.

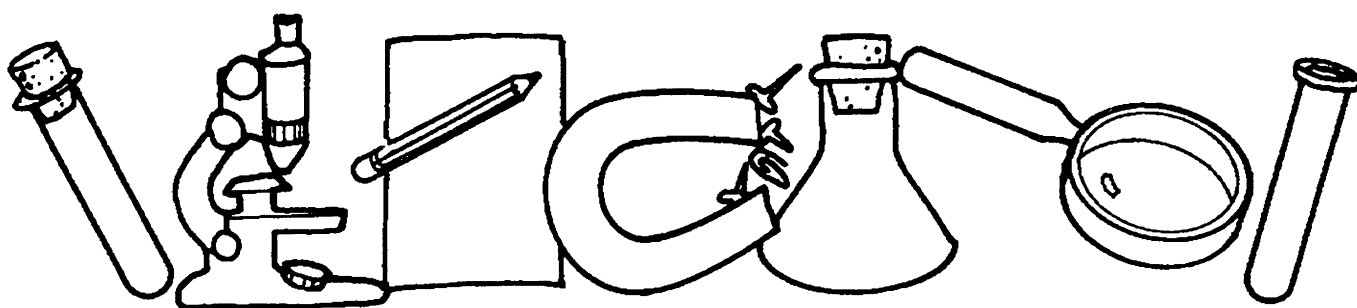
The use of science centres capitalises the benefits of both types of instruction. Textbooks can be used for whole class instruction while centres can provide students with opportunities to experience the excitement of hands-on investigations.

One concern teachers sometimes have about teaching hands-on science is that they feel they do not have sufficient training in this area. In reality, having a limited background is less likely to affect instruction that takes place using experiments. The reason for this is that students focus on learning from their observations, rather than accepting what are generally considered to be the "facts" of science. If students have questions about something they have observed, it is up to them, not the teacher, to use further experimentation as they attempt to understand and explain what happened.

Teachers often worry that something will go wrong during an experiment and not all students will achieve the expected results. This can and often does happen. However, you will find that students often learn more from their mistakes than they do from having "perfect" results. By discussing the differences among students' observations, your class will get a much deeper understanding of the principles involved. They should also realise conducting the same experiment does not guarantee the same results, making one answer just as good as another. Since there is less pressure on students to find the one and only correct answer, their enjoyment of science will increase and their ability as problem solvers will improve.

The experiments in *Learning Centre Activities: Science* are designed to teach many facets of science. Students develop a better understand basic scientific principles involved, increase their powers of observation, and become more aware of the world around them. Students also become familiar with the scientific process, learn to use various pieces of scientific equipment, and get acquainted with some techniques for collecting and analysing data.

Science experiments are truly cross-curricular activities. Many involve maths skills, such as measurement and problem solving. All involve reading and writing skills. As students conduct their experiments, they can learn a variety of social skills, such as cooperation, as well as work and study habits, such as self-discipline.



Managing a Science Centre

There are four phases to each of the 21 hands-on activities described in this book:

1. Preparing the Science Centre for the experiment.
2. Introducing the experiment to students.
3. Acting as a facilitator as students do the experiment.
4. Closing the activity by summarising students' results.

Preparation

Set out the materials for an experiment before students start taking turns in the Science Centre. Each student should go to the centre with a copy of the appropriate Experiment Worksheet and a pencil. Students should check off each material listed on the worksheet once they confirm that it is available in the centre. Likewise, they should check off each step of the procedure after they have completed it. They should be sure to clean up after themselves, leaving the centre in the same condition it was in when they arrived.

Introduction

The experiments are not intended to teach the basic scientific principles involved, rather to reinforce and extend them. Therefore, you will need to spend some time introducing your class to each subject prior to engaging students in an actual experiment. This can be done in a variety of ways such as reading a book, watching a movie or video tape, or discussing what students already know. The specific concepts that you need to address are described on the lesson page for each experiment. You might also want to talk about the branch of science and types of scientific careers that are associated with each experiment.

Read over the experiment with your class. This is an excellent opportunity for a discussion about what students already know, questions they might have, or specific procedures you want them to follow for getting supplies or cleaning up. If there are some specific procedures that are new or seem difficult, you should demonstrate them. Be sure you do not demonstrate the entire experiment since this will make it too easy for students to simply copy what they saw you do, rather than reading the directions and following the step-by-step procedure by themselves.

Experiment Worksheets (Level A and Level B) are provided for each experiment. Both levels start by asking students to think about a question. Since it is difficult and time consuming for the younger students to write, the questions on the Level A worksheets may be better addressed in a class discussion rather than having students write their answers. Level A worksheets can also be used by students with special needs. Students using Level B worksheets should write their hypotheses. You may choose to have them do this immediately following the class discussion or while waiting for their turns in the Science Centre.

Consider having two or three students work together. Exchanging ideas is an important part of the scientific process. If you do choose this team approach, encourage each member to actively participate in the experiment. Each student should be required to fill out his or her own copy of the Experiment Worksheet.

Weather Forecast

Background

At the junior primary level, children are beginning to notice the effects of weather on how they live their lives. Through observing and taking note of changes in the weather children can begin to try their hand at weather forecasting. They will begin to realise the fickle nature of the weather, particularly in southern Australia.

Objectives

- To develop students understanding of the concept of weather.
- To help students begin to predict the weather



Student Instruction

Before you begin, discuss with the students the weather words they know. Help them to develop a list which they can later use. Take a look out a window. Describe the weather today where you live. Is it still or windy? Is the sun shining? Is the sky clear or cloudy? Is it raining or fine?

Watch the weather for a week. Draw a picture of it in a calendar square for each day. On some days a number of things might need to be drawn.

Centre Preparation

Materials: A4 paper, with a large weekly outline drawn on it, coloured pencils, tracing paper



Follow up activities

- Ask students to think about living through four seasons and describe appropriate dress for each weather type. They could bring a favourite piece of their clothing and explain to the class when it would be worn and why it is suitable for that weather condition.
- Students could contribute to a large class collage which shows activities, words or objects related to the weather. Each child could bring a few articles to contribute.
- Leaf rubbings are a fun way to understand some of the changes which take place in nature while providing children with something to take home. Before making a leaf rubbing students should examine leaves and share their observations, discussing the differences between the underside and topside, examining veins, comparing them to human veins and comparing different leaves. To complete the rubbing, students place a thin piece of paper over a leaf and evenly colour the paper with a crayon or pencil.



Name: _____ Date: _____

Weather Forecast

Experimental Worksheet – Level A

Ask Yourself

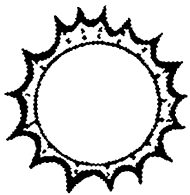
What might happen with the weather during this week?

What you need

-the weekly calendar

What you do

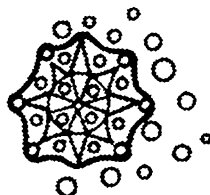
1. Look outside the window, at the sky and the trees.
2. Decide how you might describe the weather. Perhaps you could choose an illustration from one on this page.
3. Talk to a friend and tell them what you will draw
4. Draw your diagram in your calendar and label it.



Sunny



Rainy



Snowy



Cloudy



Partly Cloudy

Monday	Tuesday	Wednesday	Thursday	Friday

Weather Report

Today is _____ . It is _____ .
 The weather is _____ .
 Do you like the weather today _____ .
 why? _____ why not? _____ .