



Fabric Pacing Guide¹

Use the information below to assist you in determining the amount of time needed to complete the entire unit. These recommendations assume the **average science class period is 30 to 45 minutes in length**. We recommend teaching science a minimum of three sessions per week in order to maintain consistency and keep students engaged. Many teachers accomplish this by rotating a science unit with a social studies unit, enabling you to teach more science sessions in one week and finish the unit in fewer weeks. We highly recommend that all teachers participate in the Expository Writing and Science Notebooks Program in order to further develop students' science understandings, as well as their scientific thinking and writing skills. To implement the science-writing curriculum requires, for most lessons, a separate 20 to 30 minutes for a science-writing mini-lesson and independent writing time. Time for these mini-lessons is not included in this pacing guide.

Lesson and Common Assessments (see corresponding pages in the Instructional Guide for lesson planning)	Recommended Number of Periods	GLEs Addressed/Big Idea(s) of the Lesson	Considerations for Planning	Recommended Applications and Extensions
<p>Activity 1.1, part 1: Introduction to the Fabric Samples</p> <p>Students use their senses to observe the ten fabric samples.</p>	1	<p>GLE 1.1.1 Understand simple properties of common natural and manufactured materials.</p> <ul style="list-style-type: none"> • <i>Identify and describe the properties of an object [fabric].</i> <p>Big Idea: There are many types of fabric. Fabrics have properties that set them apart from each other.</p>	<ul style="list-style-type: none"> • Before beginning the unit, teach the students about the five senses. You might want to read <u>My Five Senses</u> by Alik. • This lesson has been broken into two sessions. They will gain more from the feely box activity if they have a chance to describe the properties of the fabrics first. 	<ul style="list-style-type: none"> • Begin a chart of student questions about fabric. • At the end of each lesson, review the focus question and write a summary statement about what was learned. At the end of the unit, these can be compiled into a class book.
<p>Activity 1.1, part 2: Feely Boxes</p> <p>Students use feely boxes to match the fabric samples.</p>	1	<p>GLE 1.1.1 Understand simple properties of common natural and manufactured materials.</p> <p>Big Idea: There are many types of fabric. Fabrics have properties that set them apart from each other.</p>	<ul style="list-style-type: none"> • If you don't have boxes (or room to store them) paper bags can be used for the activity. • Divide the fabric into two sets of five. Each group will work with only five of the fabrics. 	<p>The feely box activity can become an independent center activity after this lesson.</p>

¹ Pacing Guide for use with the *FABRIC* Teacher's Manual, The Regents of the University of California (1995)

<p>Activity 1.2: Fabric Hunt</p> <p>Students match fabrics that are “hidden” in the room based on their properties. They also compare two types of fabric.</p>	1	<p>GLE 1.1.1 Understand simple properties of common natural and manufactured materials.</p> <ul style="list-style-type: none"> • <i>Sort common materials using a single property [matching].</i> <p>Big Idea: There are many types of fabric. Fabrics have properties that set them apart from each other.</p>	Hide fabric in plain sight so that it’s easy for students to find.	<ul style="list-style-type: none"> • Use “This is made of fabric.” labels and label things in the room that are made of fabric. This can be done before or after the fabric hunt. • Give each student a few extra labels so that they can label things at home. • Create another box and t-chart to compare two more fabric samples.
<p>Activity 1.3: Fabric Collage</p> <p>Students make collages out of scraps of fabric.</p>	1	<p>GLE 1.1.1 Understand simple properties of common and manufactured materials.</p> <p>Big Idea: There are many types of fabric. Fabrics have properties that set them apart from each other.</p>	If students aren’t familiar with collages, consider reading <u>Lucy’s Picture</u> by Nicola Moon, which tells the story of a girl who makes a collage. Or read a story where the illustrations are collages.	Art Extension: Show work by an artist who uses collage, such as Romare Bearden or Matisse.
<p>Activity 1.4: Taking Fabric Apart</p> <p>Students take apart burlap and wool samples to see the over/under structure of fabric.</p>	1	<p>GLE 1.2.1 Understand that things are made of parts that go together.</p> <ul style="list-style-type: none"> • <i>Identify the parts of objects. [woof and warp of fabric]</i> <p>1.2.3 Know that common materials are made of smaller parts.</p> <ul style="list-style-type: none"> • <i>Understand that people use magnifiers to observe things they cannot see with their eyes.</i> <p>3.2.2 Know that people have invented tools for everyday life (magnifying glass/hand lens).</p> <p>Big Idea: Fabrics can be made and joined together in different ways to change their structure (e.g., weaving, sewing).</p>	<ul style="list-style-type: none"> • The students should not take apart the whole sample. Have some extra samples in case some students do. • Review with students how to use the hand lenses. 	Take one of the threads of burlap. Ask: How is this thread made? Students can take apart the fibers that make up the thread.
<p>Activity 1.5: Weaving</p> <p>Students make fabric by weaving yarn.</p>	1	<p>GLE 1.2.1 Understand that things are made of parts that go together.</p> <p>1.2.3 Know that common materials are made of smaller parts.</p> <p>Big Idea: Fabric can be made and joined together in different ways to change their structure (e.g., weaving, sewing).</p>	Many students will need a chance to practice weaving. It is helpful to pre-teach weaving skills before doing this activity.	<ul style="list-style-type: none"> • Show what would happen to a piece of fabric if you don’t use an over/under pattern. • Make a large weaving using jump ropes.

<p>Activity 1.6: Sewing (Optional)</p> <p>Students sew two pieces of fabric together.</p>	<p>1</p>	<p>GLE 1.2.1 Understand that things are made of parts that go together.</p> <p>3.2.2 Know that people have invented tools for everyday life.</p> <p>Big Idea: Fabric can be made and joined together in different ways to change their structure (e.g., weaving, sewing).</p>	<p>This lesson is optional since it doesn't introduce new science content. However, it is good for practicing fine motor skills and can be used as a concluding activity for the unit. Management of this lesson can be a challenge, so it's helpful to do this lesson when you have extra help in the room.</p>	<p>Cut an article of clothing apart at the seams and observe how the pieces were joined together to make clothes.</p>
<p>Activity 2.1: Water and Fabrics</p> <p>Students observe what happens to drops of water when you put them on pieces of fabric.</p>	<p>1</p>	<p>GLE 1.1.1 Understand simple properties of common natural and manufactured materials.</p> <p>2.2.1 Understand that observations are reported accurately even when they contradict expectations.</p> <p>2.2.2 Understand that observations are used by scientists to describe the world.</p> <ul style="list-style-type: none"> • <i>Raise questions and seek answers by making careful observations and trying things out.</i> <p>3.2.2 Know that people have invented tools for everyday life.</p> <p>Big Idea: Fabric can be brought into interaction with other things to change the fabric.</p>	<ul style="list-style-type: none"> • Modification: Have students practice using the pipette and have students observe what happens when they drop water on a paper towel and wax paper. If students have already done the Wood unit, you can skip this part. • The fabric samples must dry completely before putting them in the bags or they will mold. 	
<p>Activity 2.15: Spill Test</p> <p>Students plan and conduct a fair test to see which fabric will wipe up the water spill.</p>	<p>1-2</p>	<p>GLE 2.1.1 Understand how to ask a question about objects, organisms, and events in the environment.</p> <ul style="list-style-type: none"> • <i>Wonder and ask questions about objects and events based on observations.</i> <p>2.1.2 Understand how to plan and conduct simple investigations following all safety rules.</p> <p>2.1.3 Understand how to construct a reasonable explanation using evidence.</p> <p>2.1.5 Understand how to record and report investigations, results, and explanations.</p> <p>Big Idea: Fabric can be brought into interaction with other things to change the fabric (e.g., dyeing, using soap to remove stains).</p>	<ul style="list-style-type: none"> • This lesson has been added to give students another opportunity to design a fair test. If the idea of a fair test is new to your students, consider doing an activity to illustrate the meaning of fair before you do this lesson. • This lesson can be divided into two parts. A good stopping place is after Engage and Encounter. 	<p>Look at the students' <i>I Wonder</i> chart. Ask them:</p> <ul style="list-style-type: none"> • Where might we find the answers to some of these questions? • Can you think of a fair test we could do here in the classroom to find some answers to our questions?

<p>Activity 2.2: Soiling & Washing Fabric, part 1</p> <p>Students put two outdoor and five indoor stains on their pieces of fabric. They make predictions about which ones will stain the fabric.</p>	1	<p>GLE: 2.2.1 Understand that all scientific observations are reported accurately, even when the observations contradict expectations (predictions).</p> <ul style="list-style-type: none"> • <i>Record what was observed and explain how it was done accurately and honestly.</i> <p>2.2.2 Understand that observations are used by scientists to describe the world.</p> <p>Big Idea: Fabric can be brought into interaction with other things to change the fabric (e.g., dyeing, using soap to remove stains).</p>	<p>Modification: This lesson has been divided into two parts (staining and washing). If you choose to do it as one lesson, you'll need to devote a significant amount of time to it.</p>	<p>Let students know they will be testing their predictions during the next science session.</p>
<p>Activity 2.2: Soiling & Washing Fabric, part 2</p> <p>Students try to get their stains out by using water, brushes, and soap.</p>	1	<p>GLE2.2.1 Understand that all scientific observations are reported accurately, even when the observations contradict expectations (predictions).</p> <p>2.2.2 Understand that observations are used by scientists to describe the world.</p> <p>Big Idea: Fabric can be brought into interaction with other things to change the fabric (e.g., dyeing, using soap to remove stains).</p>	<ul style="list-style-type: none"> • Try doing the washing outdoors as the water will spill. • Keep the brushes and soap out of sight. Have students wash with their hands first, then introduce the other items. 	<ul style="list-style-type: none"> • Compare how stains were washed in the classroom to how their families clean clothes at home. • Continue investigating stains by having students come up with a list of things they think will stain and things that will wash out. Try out some of the students' ideas.
<p>Activity 2.3: Dyeing Fabric</p> <p>Students dye muslin yellow, red, and blue.</p>	1	<p>GLE 2.2.1 Understand that all scientific observations are reported accurately, even when the observations contradict expectations (predictions).</p> <p>2.2.2 Understand that observations are used by scientists to describe the world.</p> <p>Big Idea: Fabric can be brought into interaction with other things to change the fabric (e.g., dyeing, using soap to remove stains).</p>	<ul style="list-style-type: none"> • Tip: Warm water works better for making the dyes. • Consider making the dye with your students. This is an opportunity to model measuring and using measuring cups and spoons. The directions for making the dye are on page 10, step 2 in the manual. 	<ul style="list-style-type: none"> • Dye a second piece of muslin using the pipettes to put drops of dye on the fabric. • Try writing or drawing on the muslin with a white crayon, then dipping the fabric in the dye and observing what happens.
<p>Activity 2.4: Graphing Fabric Uses (Embedded Assessment)</p> <p>Students make a graph showing what type of fabric would be best for an article of clothing during a particular season.</p>	1	<p>GLE 1.1.1 Understand simple properties of common natural and manufactured materials and objects.</p> <p>2.1.5 Understand how to record and report investigations, results, and explanations.</p> <ul style="list-style-type: none"> • <i>Report observations of simple investigations using drawings and simple sentences.</i> <p>Math 1.4.3 Understand how data can be collected and organized.</p> <ul style="list-style-type: none"> • <i>Use physical objects or pictures to build bar graphs.</i> <p>Math 1.4.5 Understand how a display provides information.</p> <ul style="list-style-type: none"> • <i>Answer questions about graphs.</i> <p>Big Idea: Properties of different fabrics make them useful in different ways.</p>	<p>To add a math component to the lesson, create the graph with students instead of showing them a completed graph. Make the graph for a particular season or type of weather, so that students focus on the properties of the fabric rather than on which fabrics they prefer.</p>	<ul style="list-style-type: none"> • Make fabric graphs showing which fabrics are best for different seasons. • Assessment: Have students write about which fabric they would use for a raincoat and why (or which fabric they would wear in summer, or winter, and why). Look for students to use the properties of the different fabrics as evidence for their thinking.

