

Learning Experience

8

String "Guitars" (Embedded Assessment)

Overview

In this learning experience, students use their knowledge of pitch, size, and tension to make stringed instruments. The session begins with the class listening to and describing guitar music. Then, after a teacher demonstration of how to assemble the materials, students in pairs are challenged to work with their partners to create a "guitar" of their own that has four strings, each with a different pitch. The partners are provided with a variety of possible strings and are encouraged to be creative in their use of materials and design. At the end of the session, the student pairs each demonstrate their guitars and compare theirs with those of the other pairs. In addition, students continue their discussion of the quality, or timbre, of sounds by comparing the sounds made with the various strings.

This learning experience can be used as an embedded assessment to evaluate students' problem-solving and group skills, as well as their knowledge about sound.

An embedded assessment is part of the sequence of learning experiences. As far as students are concerned, Learning Experience 8 seems no different from the other lessons. For the teacher, however, there is a role shift. After giving the initial instructions, you become an observer—circulating among the pairs, carefully observing to assess which concepts and skills students have mastered and which ones they still need to work on. Encourage, help, and support the pairs if they need such assistance. Use the Class Record to record your observations, noting the goals and expectations listed in the chart below. Add information from this embedded assessment to the Student Profiles.

Goals	Expectations	Evidence
<p>Science concepts—Students will understand that</p> <ul style="list-style-type: none">• Strings can be vibrated to produce different pitches• Pitch can change depending on the size and/or tension of the vibrating object	<p>Students meeting the standards of learning will</p> <ul style="list-style-type: none">• Demonstrate as they make their guitars that produce tension, size, or type of string used changes the pitch produced	<p>Find evidence of student learning in</p> <ul style="list-style-type: none">• Science notebooks• Science Notebook Page• Home-School Worksheet• Class discussions
<p>Inquiry—Students will develop their abilities to</p> <ul style="list-style-type: none">• Apply and connect• Design and conduct investigations	<ul style="list-style-type: none">• Apply previous knowledge to produce a four pitch guitar• Work collaboratively with others to plan and carry out the project	<ul style="list-style-type: none">• Teacher observations• Science notebooks