Didgeridata

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Contents


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Introduction

This activity guides groups of students through a brief study of the history and construction of either a didgeridoo, the world's oldest wind instrument, or a paixiao, a chinese pan flute. Students will work with polyvinyl chloride (PVC) pipe and PVC-cutting tools to design and create a playable musical instrument which will be used by students to compose a custom song related to climate data such as atmospheric CO_2 concentration or global temperature anomalies. In this way, the sonification of climate data will be accomplished with a student musical chorus. The activity will conclude with a group jam session with participants invited to provide percussion for the wind section. An attempt will be made to have expert musicians join the program via teleconference as a guest speaker to provide instruction and background information.

Chapter 1

Learning Goals and Success

The learning goals for this activity are for students to:

- Develop an awareness of the science and history of the didgeridoo and the paixiao
- Practice hands-on construction methods to create custom, playable PVC musical instruments
- Develop an awareness of long-term trends in climate data
- Create a collaborative musical piece inspired by climate data
- Perform the custom musical piece using the didgeridoo and/or the paixiao

Success will be determined by:

- Creation of playable PVC musical instruments
- Creation and performance of a musical piece inspired directly by trends in global climate data

Figure 1.1: Didgeridoo.

Chapter 2

Didgeridoo Construction

2.1 Overview

TODO

2.2 Construction

The didgeridoo will be constructed from three PVC components seen in Figure 2.1: a reducing coupling (A), a pipe (B) , and a trap adapter (C and D). The length (L) of the pipe is variable and determines the key of the instrument. The mouthpiece is in two pieces. Part D will need to be threaded onto Part C. All other fittings should be pressed on until secure. No adhesives are used in this construction.

To begin, join the reducing coupling (A) to the pipe (B).

Next, join the pipe (B) to the trap adapter base (C).

Finally, join the trap adapter base (C) to the trap adapter nut (D) by carefully threading the nut onto the base.

Your PVC didgeridoo should now be fully assembled. Wipe down the trap adapter with an alcohol pad before attempting to play!

2.3 Standard Form

The didgeridoo can be created in many forms. The standard form, which is the focus of this activity, results in a simple straight form.

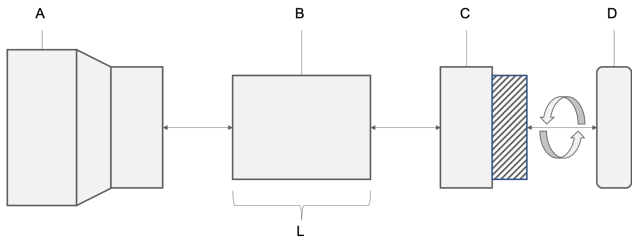

Figure 2.1: PVC didgeridoo construction

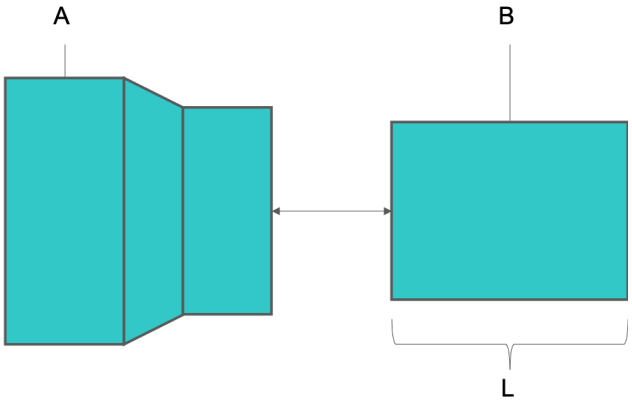

Figure 2.2: PVC didgeridoo construction, part A

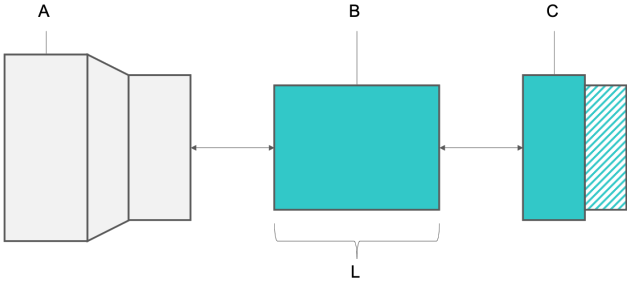

Figure 2.3: PVC didgeridoo construction, part B

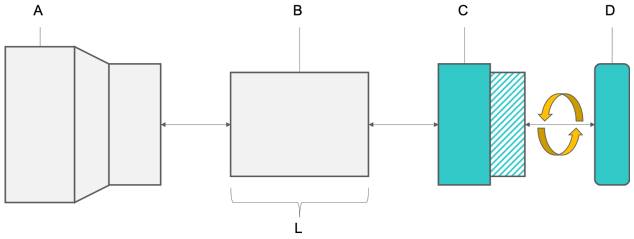

Figure 2.4: PVC didgeridoo construction, part C

Figure 2.5: PVC didgeridoo; standard form

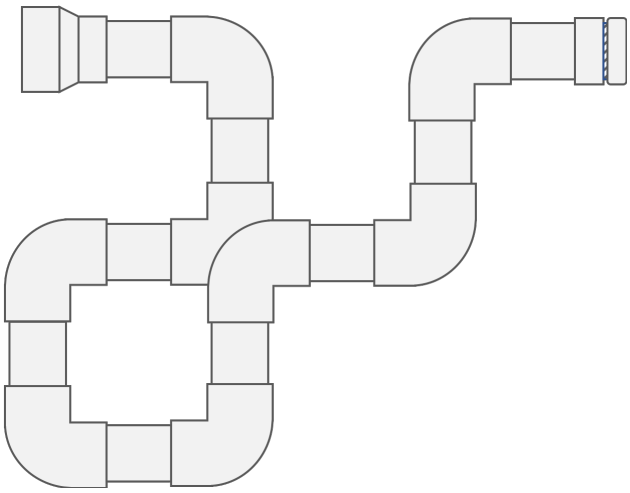

Figure 2.6: PVC didgeridoo; standard form

2.4 Alternative Forms

Alternative forms can result in more compact, twisted variations. These forms require extensive cutting and the use of angled fittings. One example is presented here for inspiration. With these forms, students can create longer didgeridoos and deeper, more resonant notes while occupying minimal space.

2.5 Tuning

TODO

Chapter 3

Materials and Tools List

This section describes the materials and tools needed to construct a basic PVC didgeridoo and a basic PVC paixiao.

3.1 PVC Didgeridoo

3.2 PVC Paixiao

Table 3.1: Materials for constructing a PVC Didgeridoo.

Materials	Specifications (Imperial)	Quantity or Length (Imperial)
PVC pipe	1.5", Schedule 40	10’
PVC trap adapter	1.5", Schedule 40	1
PVC Reducing Coupling	3.0"x1.5", Schedule 40	1
Sandpaper Medium Grit	Medium Grit	as needed
Sandpaper Coarse Grit	Coarse Grit	as needed
Alcohol Prep Pads	-	as needed

Table 3.2: Tools for constructing a PVC Didgeridoo.

Name	Specifications (Imperial)	Quantity (Imperial)
PVC Reamer	> 1.5"	1
Hacksaw	small	1
Digital Tuner	multi-instrument, clip-on or phone app	1
Permanent markers, multicolor	any color	any
Safety glasses	polycarbonate, ANSI Z87.1-2015 or similar	1 pair per student