

Lesson Plan

Assessment	AOL - rubric
Cross-curricular	Arts

Big Ideas

- Vibrations create sound. (Overall expectations 2 and 3)
- Light is required to see. (Overall expectation 3)
- Technological innovations involving light and sound have an impact on the environment. (Overall expectation 1)

Learning Goals

- To bring all knowledge on how to create light and sound effects together into a fun show.
- To become aware of the importance and limit of ear and eye protection.

Specific Expectations

- 1.1** assess the impacts on personal safety of devices that apply the properties of light and/or sound, and propose ways of using these devices to make our daily activities safer
- 2.1** follow established safety procedures for protecting eyes and ears
- 2.2** investigate the basic properties of light
- 2.3** investigate the basic properties of sound
- 3.8** identify devices that make use of the properties of light and sound

Description

This lesson is a follow-up on the previous ones in this unit. It assumes that the students will have built an amplifier for an instrument/device and elements of a light show. This is **lesson 5** of the series on light and sound.

Materials

- A variety of ear plugs to try. Types to consider: foam, silicone, putty, etc.
- Ear muffs
- Cotton
- If available, noise cancelling headphones
- Sunglasses of various kinds.

Safety Notes

See the Consolidation section.

Introduction

- Today is performance time! This lesson contains optional material to be covered on safety devices, but the intended focus of the five lessons is really this culminating performance, so that should be the most important part of today!
- Since this class is all about a performance with light effects it is important that the room can be darkened enough for the effects to appear clearly!
- To start students will need to discuss what to do for their show. Our suggestions are:
 - Students who did a light effect perform throughout the show. The more light effects – presumably – the more wowing the show will be!
 - Students who did a sound project take turns performing or discuss whom they will play together with and then take a turn as a (small) group. This way everyone has an opportunity to have the spotlight on him or her if they wish to.
- Instructions to students for their show planning:
 - You do NOT have to be an expert playing your instrument. The idea is to have fun and to showcase the work you put into your amplifier. So have fun!
 - You have to decide if you want to play your instrument by yourself or work together with others. If you want to perform with someone else you guys should talk about what you want to do and practice your parts.
 - A class could decide to ALL work together. Then they should all brainstorm together on how it will work. E.g. “drum starts with a beat, then the xylophone joins in, etc.”
 - Practice what you want to do if you are working by yourself.
 - If you are sharing an instrument with someone else because you built it together you can each take a turn playing the instrument, depending on the instrument (such as a xylophone or drum) you may be able to play it at the same time together, (optional: or you may choose one person to be the performer)
 - Give them an idea of how long each performance should be. We would recommend 30 seconds to 1 minute, but it depends on class size and how eager the students are to play.

Action

The Show

- Students perform their show as discussed.
- Evaluate using the attached rubric ‘Assessment of Learning Rubric’

Consolidation/Extension

Being safe at a concert

- Now that we've put together a great show is good time to discuss safety!
- Music at a concert can be extremely loud. How can you protect yourself?
- Let's try some ear protection and see what works best!
- Let students choose an ear protection and put it in (safely!).
 - Include: just hands over ears and no protection at all.
 - Choose someone to play their instrument, starting really quietly and gradually getting louder.
 - All students raise their hands. Put them down when you can clearly hear the music. The last person to have their hands up has the best ear protection!
- Discussion:
 - Did the protection help? Would you put in protection to work with loud machines or at a concert?

Light safety: Sunglasses

- Light can also damage us if it is too strong. Can you give some examples? [sunburn, cancer, snow blindness, arc eye, welder's flash]
- It's very important to wear sunscreen to protect our skin!
- Today we'll test sunglasses to see though how well they work and how they may protect us from certain colours a lot more than others.
- Activity:
 - Have students put on their sunglasses. Those who didn't bring any can take turns with a partner.
 - Look at all the coloured lights. What colours do the glasses stop the best? The least?
 - Look at reflected light (e.g. off a mirror ball)
 - Which glasses work best? (For example welder's goggles would be extremely strong to block that strong light).
- Discussion:
 - When you are in a bright environment (e.g. beach or in the snow) wearing sunglasses can be very important.
 - Not all sunglasses are created equal. Some may mainly look cool and not block much light!
 - Polarized glasses block reflected light especially well! They are great options when you are driving in a car, out on the water, or on the ski slopes.

That wraps up this unit. Hopefully we all learned that you can have a ton of fun with light and sound, and that you can do it safely!