

Project Outline

The aim of this project is to design and create instruments from household objects. These will be recorded into my songs, demonstrating how they work and to video record them in use. I chose this project to gain a deeper understanding of how instruments work and how to make them.

Aims and Objectives

Aim 1: Understand how different musical instruments work.

Objectives:

1. Research how different types of instruments are made.
2. Research how certain instruments produce sound.

Aim 2: To design and create musical and percussive instruments.

Objectives:

1. Research materials to use.
2. Gather items to use.
3. Test ideas using previous research.

Aim 3: Demonstrate how instruments produce sound.

Objectives:

1. Record the instruments in the context of a musical piece.
2. Record video demonstrations of the instruments.

Research and Context

Tin Can Cimbalom

The tin can cimbalom is different from the Hungarian cimbalom which was first made in 1874. A modern concert cimbalom is made of a large box with strings stretched across the top. The treble strings are in groups of four and the bass strings are arranged in groups of three, with each group tuned in unison. It is played with two striking beaters against each group of strings (Moore, 2005).

The Tin Can cimbalom was made by Nicolas Bras, a French instrument maker who creates instruments from household objects. Different versions of his cimbalom have been made and shared alongside other musical ideas on his website (Bras, 2018).

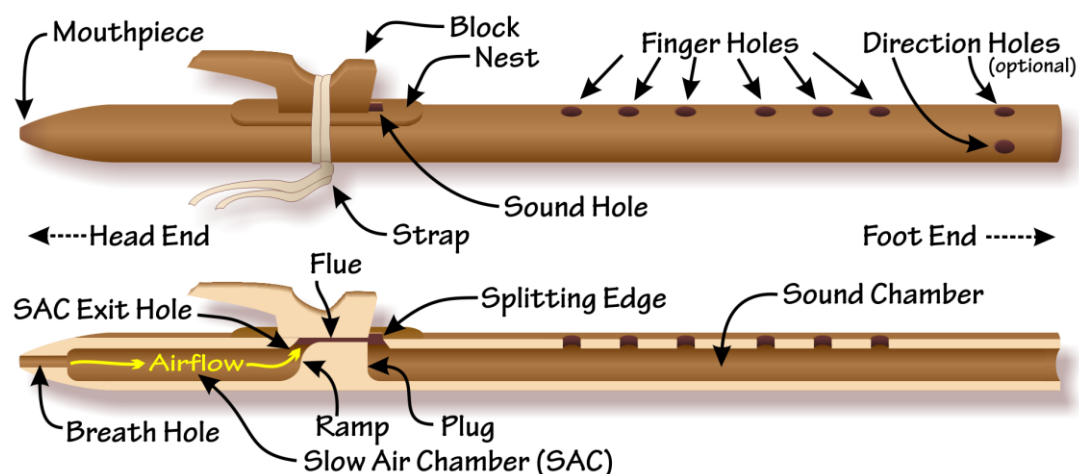
Plastic Bottle Xylophone

The xylophone is made from plastic bottles and car tyre valves. A hole is drilled into the cap of a bottle and the valve inserted into the hole. One YouTuber, Kaboom Percussion, went to the University of Western Australia to speak with a student that had made the instrument in order to learn how to make it (Kaboom Percussion, 2019).

Carrot Flute

Linsey Pollak first brought the carrot flute to popularity in his solo performed show “The Art of Food” from 1999 – 2002. In 2003 he wrote an article describing how to make a carrot flute (Pollak, 2003). Since Pollak’s Ted Talk in 2014 it popularised the carrot flute worldwide resulting in many videos and articles showing how to make it.

Native American Flute



The Native American flute is comprised of two chambers, the slow air chamber (SAC) and the sound chamber (SC). The block and the ramp that separate the chambers directs the air flow from the SAC to the splitting edge. When air reaches the splitting edge, it vibrates the SC. The finger holes make the distance of the airflow shorter and in doing so makes the instrument produce a higher note (Flutopedia, 2002).

It isn't known how the design of the Native American flute was developed. The earliest one known is called the Breckenridge Flute, dating from 900 to 1000 years old. The Breckenridge Flute also has two chambers and is built in a similar way to modern Native American Flutes (Archeology, 2015).

Project Development

18th February

I'm currently in the process of planning what instruments I want to make. So far, I've decided I'm going to make a cigar box guitar. I've ordered a guitar pickup set and I've got a wooden box to use as the body. I plan to construct it during the Easter Holidays when I go home and have the tools to make it.

27th February

I've recently found a YouTube channel that makes musical instruments out of household objects and I would like to make the Cimbalom. Aside from it being simple to make I also have all the tools needed but will need to purchase some threaded bolts and wood.

1st March

The threaded bolts I've bought are too small, but I have decided to keep using them because I am able to bend the note easily. I am going to buy bigger ones because it will hold the can in place better. With the smaller bolts I need to tune it often because of the can bending. I have found another instrument that is made of bottles, tyre valves and air pressure. It sounds like a xylophone. There isn't much information on how it works but I'd guess when there's more pressure, the bottle will have less movement and will be able to produce a higher pitch; the pressure can be controlled using the tyre valves.

2nd March

I've started making a pan flute out of plastic straws. I used pliers to pinch one end of the straw whilst leaving about 3mm of the straw out. I then used a lighter to heat the straw to seal it. It is difficult to play and there is little information online teaching the technique. I have also ordered eight car tyre valves for the plastic bottle xylophone and they should be coming by next week.

16th March

I've made another part of the cimbalom, this time using different cans. The last part of the instrument I used normal sized bean cans, this time I used shorter wider cans. The sound coming from the smaller cans seems to be a lot clearer than the longer cans. I'm going to use small tuna cans for the last two strings to see how the sound changes. I have also made a few drums from buckets I made a snare by sticking coins at the bottom of the bucket and cello taping it to the bucket.

1st April

I've finished making the cimbalom. I've made a leaning frame for it using left over wood which will give me easier access to each string. I have also given up on the pan flute made of straws as I've found it too difficult to play. Due to the lockdown measures, it's unlikely I'll be going home for Easter, so I've decided not to make the guitar.

6th April

I've been looking at making a Native American flute. I've started to research how they are made, and there are plenty of resources online. Most of the resources are for flutes made from wood or PVC pipes. I don't have these materials and currently don't have a way of getting any, so I plan to use the cardboard from a tube of tin roll.

7th April

I've been looking for something around the house that I can use for the ramp of the flute, I've tried cutting plastic lids but there are airflow problems. I've also been making more bottles ready for the xylophone. Apart from the first bottle I made, all the rest are having problems with not being airtight. I keep trying to replicate what I did with the first bottle but it's not working. I'm going to continue working on it.

8th April

I've made the flute plug from gluing toilet roll cardboard together. I did this by rolling it while adding glue in the gaps to keep it tight. After I got to the size I wanted, I then cut it from an angle for the ramp part of the plug and glued the end of the plug to stop air. I've cut holes in the tube and I've put it together, but it isn't working. I'm going to go back to my research to see where I went wrong. I've been trying to record my cimbalom, but I'm struggling with keeping time. Because of this I've decided to sample the notes I want to play for each song.

9th April

I'm still unable to get the flute working. I've decided to leave that idea for the time being as I'm spending too much time on it. I'm doing the same for the xylophone because I'm struggling to get it to work like the first bottle. While I was researching the flute, I came across a website that had instructions to make an ocarina out of toilet roll. I found it on a flute makers website (BlueBearFlutes, 2020).

10th April

I haven't been able to make the ocarina. After stopping with the ocarina, I found online tutorials on making a carrot recorder. I've made it and it does produce a sound. But I'm only been able to get a C note out of it. I drilled a few holes into it as shown online but I couldn't get a clear note apart from the C. I've decided to sample it and use it in songs.

16th April

After fiddling around, the flute is working. The problem was the ramp, I started filing it down to direct the airflow more to the sound hole. The more I was filing it the more of a note was coming instead of air. Another problem was the placement of the block on the sound hole. The block wasn't in the right place to split the airflow. After some adjustments I found the right place and it was working. I used an online flute calculator to determine where the holes should be. After measuring out my flute, the measurements I got for the holes seem to be wrong. I'm not sure if this is because it's made from cardboard and not wood or if I put the wrong numbers in. I've decided to start again and try to find another way to measure the holes.

17th April

The new flute sounds better than the last. I found a website with general instructions of placing holes (Shepard, 2002). Although the flute is windy it's a lot better than the last. The xylophone is now working too. I drilled holes into new bottle caps and then heated the plastic up and pushed the valve through then leaving it to cool down again. Most of the air leaking problem has gone but with some of the bottles if I slightly move the valve air comes out.

19th April

I've sampled and recorded the instruments into songs and I've also filmed the instruments to demonstrate how they work.

Personal Development

After completing this project, I've found that I still have skills that need developing, such as time management. At the start of the project I took things slowly by going one instrument at a time. Near the end of the project I was working on multiple things at once and I was learning more. If I was struggling with one instrument, I'd work on another instead of spending lots of time on one. Although my time management skills have improved, there's still a lot to work on and I need to apply it more in the future.

Near the end of the project I was struggling to get the flutes and other instruments to work. I decided to stop working on it for a few days because I was getting frustrated. After a few days I started working on the flute as something to do whilst watching TV. As a result, I got it to work, which then pushed me to be more persistent with the other instruments. Usually if something isn't working, I give up quickly and move on but after getting the flute to work I realised that I need to follow through on projects more often and be more persistent in my work.

Throughout this project I've learned a lot about musical instruments and have developed new skills that I can use in future. After this project I plan to make instruments and improve on others like the cimbalom, as a hobby. Although I've enjoyed this project, it has been challenging for me in many ways. Despite a lack of tools and experience I'm happy with what I have learnt and accomplished.

Project Summary

Before starting this project, I always wanted to learn about instrument making as a hobby, but I never did as I thought I didn't have the resources to make them. Choosing this as a project has shown me that I enjoy making instruments, and that I don't need a lot to make something.

Considering my aims and objectives for this project I believe it was a success. Without research I would have struggled more than I did and I think this shows most with the Native American flute. When I went back to research after being unable to get a sound out of the first flute I noticed in diagrams and pictures the space between the plug and the block was much bigger than mine was. Although I didn't act on it when I first noticed, it was the reason why I got it working again. Trial and error has been an important process when making some of these instruments and particularly evident with the xylophone which required many different ideas to keep the air in the bottles.

If I could do this project again, I would dedicate more time in the week for working on the project outside of class. During the beginning I would only work on it when I remembered. As instrument making is new to me, I should have dedicated more time earlier for research and planning.

Aside from the problems, I believe this project was a success. It has been a good introduction for instrument making and it has helped develop my creativity and problem-solving skills.

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