# Equipment List:

## Container

The project revolves around using gestures to manipulate a ping pong ball. Using a container will keep the ping pong ball in an environment where it can be manipulated by servos, and so that the ping pong ball won’t leave the workable space.

### Container requirements:

* **Square or rectangular shaped plastic tank** – A square or rectangular shaped plastic tank will allow for easier manipulation over the ping pong ball when it is being pushed in a single direction. A circular or round plastic tank has more space for the ping pong ball to move around, that can bounce around towards the edges making it more difficult to control with servos.
* **Plastic tank size** – The plastic tank must have enough room to fit in equipment such as the paddles and actuators along with the ping pong ball itself. There also must be enough room for the paddle to swing the ping pong ball to either side.
* **Plastic tank with an open top –** An open top plastic tank will enable equipment such as paddles and actuators to be fitted inside the plastic tank.
* **The plastic container will be custom made** – By creating a new container from scratch, the container can be shaped into the ideal size needed to carry out the concept. The container will be laser cut from a sheet of transparent acrylic from a workshop located at the University of Greenwich, Stockwell Street Library.

### Dimensions

The Acrylic used has a thickness of 3 mm.

* Height: 180 mm (Doesn’t take the motors into account)
* Width: 56 mm
* Length: 380 mm

## Arduino

The Arduino is another essential component for the artefact to function. The Arduino is a cheaper alternative to the raspberry pi, with another advantage being a larger source of innate power available to be used for external hardware. The Arduino will be used to control the servos.

## Actuators

An angular servo will be used to swing a paddle, which will hit the ping pong ball and make it roll to meet another paddle on the other side of the tank that is attached to a servo.

## Sensors

Xbox One Kinect Camera Sensor – This sensor will be used to track the user’s hands and will be able output a number based on the horizontal distance of the hands. This will be the ideal user experience and is the first choice for input.

Xbox One Kinect Camera Sensor PC Adapter - The Kinect sensors that were available for students to borrow and use for their projects, had a cable connection that could only connect to the Xbox One games console. Therefore, a console to PC cable adapter is needed to connect the Kinect to a computer so that the computer can interact with the Kinect.

## Paddle

A paddle is used to push the ping pong ball to either side of the plastic container. The paddle will be made from the same sheet of transparent acrylic that was use for the plastic container, because the paddle will become more durable, it would match the plastic container aesthetically, and it was because there was enough material to create the paddles.

Other alternatives would have been card or cardboard because they are relatively cheap to acquire and they are very malleable, which can give more options to attach the paddle to the servo.

## Ping Pong Ball

The ping pong ball is the object of interaction and so it is needed for the art installation to work.

## Construction Materials

Using construction materials, they will be used to assemble the plastic container from the components cut out from a laser cutter. The construction materials that will be used are:

* Duck-tape
* Blue tac
* Plastic Weld
* Pop-sickle sticks

The plastic weld will be used to weld the plastic components together to form the container that will hold the servos, paddle, and the ping pong ball. The duck-tape, blue tac and the pop sickle sticks will be used to support and attach the servos to the plastic container. The duck-tape will also be used to mark out the lines where the user should stand during the demonstration.

## A computer

A computer is needed to run the processing program and the kinetic sensor. It will also be used to program the source code for the artefact.