CUSTOM-BUILT LASER HARP

BACKGROUND:

The Laser Harp is a computer--controlled sound--emitting device that uses the position of the player's hand to determine which musical note to play and then play that until the player's hand changes position. The note technological working behind any given Laser Harp varies by design but can include using the reflection of ultrasonic waves or interruptions in an ultraviolet beam to determine the position of the player's hand. The visual aspects of any given Laser Harp also vary by design.

LASER HARP AS A TEACHING TOOL:

- Musical instruments are attractive to most children • Students can program the harp to do different functions, and then play with their creation
- Introduces student to code hierarchy/flow charts, programming languages, various technology





Technology with which Students will Interact

Ultrasonic Range Finders



Laser Pointers & Fog Machine



Arduino Microcontrollers



Purpose

Send out an ultrasonic pulse which echoes when it hits an object in its path. The length of time it takes for the echo to return can be used to calculate how far away the object is.

Laser pointers with a low wattage intensity can be used in place of stronger lasers, ensuring public safety. A fog machine creates particles for the laser beams to bounce off of, making them more visible. Programmable components that use the range finders to detect the player's hand, use the position of the player's hand to figure out which note the player was attempting to play, and then play that note. The microcontroller can also be used to add additional special features in the future.