Physics Musical Instrument Project (50 points)

**Objectives:**

1. To design and build a musical instrument.
2. To construct a poster OR powerpoint presentation which explains how the instrument works.
3. Explain the physics behind the operation of your instrument and demonstrate how to play it (instrument should play at least 6 notes). Demonstrate your instrument in front of the class. Prerecorded video is ok.
4. Presentation must contain:
5. An explanation of the principles used in their instrument. How it works, source of vibrations, mediums, resonance, and variables used to change pitch
6. A list of materials used and why they are appropriate,
7. A labeled diagram of the instrument

**Time:**

~2 weeks-

* Design plan due March 2. (5 points)
* Construction due March 12 (10 points)
* Presentation/Demonstration Due March 12 (20 points)
* Poster/powerpoint Due March 12 (15 points)

**Examples of instruments:**

Flute, xylophone, banjo, electric guitar, trumpet

**Examples of Materials to use:**

PVC pipe, plywood, Plexiglas, wire, glue, nails, screws

**Group size:**

Up to 2 students per group

**Demonstration Rubric (10 points)**

|  |  |
| --- | --- |
| Plays sound | 2 points |
| Plays one note | 4 points |
| Plays 2 or 3 notes | 6 points |
| Plays 4 –6 notes | 8 points |
| Plays more than 6 notes | 9 points |
| Plays more than 6 notes with clarity | 10 points |
| Plays a recognizable tune | 12 points |

**Resources:**

Textbook chapter 16

<http://www.squidoo.com/kids-musical-instruments>

<http://www.ehow.com/videos-on_5019_make-musical-instruments-kids.html>

<http://www.mrfizzix.com/instruments/>

youtube: how to build a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

<http://www.physicsclassroom.com/class/sound>

http://www.lawrencehallofscience.org/shockwave/jar.html