Introduction

- We have always been fascinated with the mechanics of the speaker.

- We will construct a speaker from raw materials.

- We will be sharing with the community the science behind and skills for building a homemade speaker.

- We will try a balloon, paper cup, and other assemblies to create better sound.
Project Overview

- To work together in MacGyver-conducting a speaker out of raw materials.
- To learn about electromagnetism.
Project Goals

- Construct a speaker from raw materials.
- Explain how magnets and copper coil produce sound.
- Simplify the speaker into its essentials.
Community

- We will share with the community the science and skill of building homemade speakers.

- To enhance the learning for future Physical Science students.
Curriculum

- Electromagnetism
- Magnetic Induction
- Current
- Circuit
- Waves
- Frequencies
Technology

- Used Google search engine for research
- Microsoft Office: Office and PowerPoint
Materials

- 1 permanent magnet
- 2 feet of wire
- 1 pencil
- tape or glue
- 1 Styrofoam or paper cup
- 1 signal source (tape player)
- 1 plug with alligator clips for tape player
Skills Development

- Team Skills
- Technology Skills
- Construction Skills
- Communication Skills
- Speaker Skills
Methodology

- This project took us a week.
- 2 days to research & 2 days to gather materials.
- Only took us a day to construct a variety of speakers.
- Then we used trial and error on different speakers made.
Expected Outcome

- Post project to E.A.S.T. website
- Make a video
Basic Speaker

http://www.ghsteched.com/speaker-
How it Works?

- The electric signal passes thru the coil as an electric AC current.

- The current loop induces a magnetic field when electricity flows through it.  
  Lenz’s law:  
  http://www.youtube.com/watch?v=bkSsqTQOXVI

- The magnetic field induced by the current loop interacts with the magnetic field of a large permanent magnet. This interaction produces vibrations in the speaker medium.

- The vibration generates the sound that we hear.
References

- http://cse.ssl.berkeley.edu/lessons/indiv/regan/speakerlab.html
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- http://josepino.com/other_projects/?homemade-hifi-speaker.jpc
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Pictures
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SPEAKER DYNAMICS