Electric Guitar Kit

*Kit Description:*

This kit offers students the opportunity to design and build one of the most popular and common instruments in American culture. Each kit will focus on the system components that make up an electric guitar.

*Design Problem:*

The Wacky Crazy Awesome guitar factory needs a new guitar to be designed with a very unique sound to make it stand out from competitors' guitars.

*Design Variables:*

- Different strings
- Volume and tone adjustment with electrical components
- Relationship between changing the length of string to the pitch
- Tension of the string
- Pickup placement affects tone

*Testing Methods:*

- Human hearing (qualitatively describing tone, audibility)
- Use a decibel meter to measure the difference in volume
- Use electronic tuner to determine notes, and correct pitch

*After completing this activity students will be able to:*

- Explain what is sound and how sound waves travel.
- Explain what pitch, wavelength, and frequency are.
- Hear how pitch changes when you press down on the string or hold something to it.
- Understand how pitch relates to wavelength and frequency.
- Understand how the electric guitar works.