SPH3U Electricity and Magnetism Build Project

**Goal:** In this activity you will be applying your knowledge of electricity and magnetism to build a simple motor and communicating your learning through notes and a short video.

**Overview of the EM** unit project: To build and optimize a homopolar motor OR a paper clip coil motor.

* Create project notes
* Identify variables/factors that impact motor performance
* Document how you adjusted factors as you optimize the design
* Create a personal video (3 minutes max) explaining how the device works

**Step 1: Go the links provided on Google Classroom websites and pick ONE device to build.**

**A Homopolar Motor:**

<https://www.youtube.com/watch?v=xbCN3EnYfWU>

<https://www.youtube.com/watch?v=LcyqJWvZioM>

<https://www.wikihow.com/Make-a-Homopolar-Motor>​

**Paperclip Coil Motor:**

<https://www.youtube.com/watch?v=syKJg-vj3I8>

<https://www.youtube.com/watch?v=wgsP209MJp8>

<https://www.youtube.com/watch?v=oRSU4FnUSrA>

<https://www.youtube.com/watch?v=0qaXv1zT1JA&t=14s>

**Evaluation:**

**Level**

**Application: Device construction and operation: 4 3 2 1**

**Project notes completed fully: 4 3 2 1**

**Notes and explanation indicate**

**comprehensive understanding of EM 4 3 2 1**

**principles:**

**Communication: Video explanation 4 3 2 1**

**(Clear and well organized, refers to device, conversational tone, EM principles included)**

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**Electromagnetism Project Notes**: Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Project Goal: Motor Choice:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Initial Diagram of your system including key electromagnetic factors (current direction, magnetic field, etc):**

**Materials:**

**Factors or variables that affect performance:**

**Produce a short INDIVIDUAL video (max: 3 minutes) in which you show your device in operation and explain how the device works.**

**Key elements: -**conversational (not reading from script)

-show the device working and refers to device in explanation

- refers to key EM terms (battery terminals (+/-),current direction, magnetic

poles, RHR rules, repulsion, attraction, motion direction, etc)

-brief explanation of challenges overcome to get device working

**Explanation of how your device works:**

**Changes made to optimize performance or to get your device working!:**