

7.1.4b e5 Homopolar Motors Narrative

Time: 45 minutes	Anchor Phenomena: Wrecking Yard Electromagnets can be turned on and off as needed, allowing a huge amount of metal items to be transferred with little time and energy used.
Big Idea: Students see evidence that electromagnetic fields exist and can produce motion.	
CCCs Cause and Effect	Practices Planning and Carrying Out Investigations

EPISODE SNAPSHOT

Students create a working homopolar motor.

GATHERING

Students watch the Homopolar Motor video and write observations about how it works. This should include how the magnet and battery are set up.

REASONING

Students create a simple design for their homopolar motor and at least attempt to build it. **Teacher note: it is helpful to make a small divot on the top of the battery, so the wire is better able to stay in place. This can be done by placing a nail where you want the divot, and gently tapping it with the hammer. It takes very little force to accomplish this. There are other resources available to you (linked under materials) to help you with this process.**

COMMUNICATE

After students explore building homopolar motors, the class discusses what they found. What are the possible applications of this? **Teacher note: lead students to understand that this is a simple motor. While this particular type of motor doesn't have a lot of applications, it is a model for other types of more complex motors.**

Assessment: It isn't important that students make a working homopolar motor. They should however be able to make observations about what characteristics a working homopolar motor has.	Materials, resources, handouts, etc. • Homopolar Motor video: https://www.youtube.com/watch?v=voHz6sxxwQ2Q • A piece of paper to write observations and design their motors. • AA Batteries • Thin copper wire • Wire cutters • Pliers (optional) • Hammer & nail (optional) • Neodymium Magnets • Teacher resources to help students: • https://www.wikihow.com/Make-a-Homopolar-Motor • https://www.youtube.com/watch?v=LcyqJWvZioM
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