

How does the project align to the Next Generation Science Standards?

NGSS

The Drawbot Project

4-PS3-4: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Students will build, modify, and optimize a robot crawler that uses electrical energy to walk. (Sections 1, 2, 3)

3-5-ETS1-1: Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Students will use the given materials to create a robot that can walk forward or backward for a period of time and be used for experimentation. (Section 1)

3-5-ETS1-2: Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

Students will adapt the robot crawler to walk as fast as possible by modifying the legs and cranks. (Section 2)

3-5-ETS1-3: Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Students will investigate multiple variables and improve their robot crawler's design to pull as many marbles as possible. (Section 3)