

High School Project Ideas

Project Division	Project Idea	Overview	Possible Materials
Maker Division - Model	DNA Double Helix Model	Build a 3D model of DNA showing nucleotide pairs and the twisted-ladder structure.	Pipe cleaners, beads, wire, labels, cardboard base.
Maker Division – Model	Renewable Energy Systems	Design a functional model of a wind turbine, hydroelectric generator, or solar panel system to show how renewable energy can power a community.	Motors, wires, cardboard, plastic bottles, aluminum foil, mini solar cells
Maker Division – Model	Neural Network Simulation	Create a model (digital or physical) that demonstrates how artificial intelligence processes information through connected nodes.	LED lights, wiring, breadboard, poster labels, or digital simulation software
Maker Division – Model	Architecture of the Future	Develop a scale model of a futuristic building that integrates engineering design with sustainability principles.	Foam board, clear plastic sheets, LEDs, cardboard, paint
Maker Division – Model	Smart City Systems	Create a model of a “smart city” that integrates technology to improve transportation, energy efficiency, or communication. Include sensors or digital displays to simulate how systems connect.	Breadboard, LEDs, sensors (optional), cardboard, foam board, wiring, small motors, or digital modeling software
Maker Division – Model	Renewable Energy Model	Students build a model showing how wind or solar energy transforms into mechanical or electrical energy	Mini motor, fan blades, solar cell, wiring
Maker Division – Engineering/Invention	Renewable Power Charger	Design and build a small-scale portable charger powered by solar or wind energy. Test output and efficiency.	Mini solar panel, wires, small fan, motor, voltmeter, cardboard
Maker Division – Engineering/Invention	Solar Desalination System	Students design a device that converts saltwater into drinkable water using solar energy	Plastic wrap, foil, black paper, bowl, salt water

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Maker Division – Engineering/Invention	Biodiversity Saver Drone	Students invent a model or concept for a drone that monitors ecosystems and collects data	Cardboard, propellers, sensors (optional), poster board
Maker Division – Engineering/Invention	Disaster Relief Drone	Develop a prototype or digital model of a drone designed to deliver supplies during emergencies.	3D-printed parts (optional), foam board, propellers, motor, remote system or simulation software
Maker Division – Engineering/Invention	Wearable Health Monitor	Engineer a model wearable device that tracks heart rate, temperature, or steps, explaining its design and purpose.	Elastic band, LEDs, sensors (optional), wiring, cardboard, markers
Maker Division – Engineering/Invention	AI-Powered Sorting System	Create a model system that uses coded logic or sensors to identify and sort different objects automatically.	Microcontroller (optional), cardboard, colored sensors, wires, toy objects
Maker Division – Engineering/Invention	Clean Air Filter	Design a cost-effective air filtration system for homes or schools that can be built from recycled materials.	Plastic bottles, charcoal, mesh, paper filters, tape, fan
Maker Division – Engineering/Invention	“The Great Gatsby’s Green Light Energy Project” – <i>The Great Gatsby</i> by F. Scott Fitzgerald	Gatsby’s green light symbolizes hope and longing. Students reimagine it as a sustainable energy project—creating a solar-powered “light of hope” that represents renewable ambition.	Mini solar panels, LED lights, wires, plastic bottles, transparent film
Maker Division – Engineering/Invention	“The Fahrenheit 451 Knowledge Vault” – <i>Fahrenheit 451</i> by Ray Bradbury	In a world where books are banned, students design an invention to preserve, protect, or share knowledge in creative ways—like a hidden digital library or coded light system.	cardboard, aluminum foil, small lights, hidden compartments, QR codes
Maker Division – Engineering/Invention	“Odysseus’ Storm-Proof Ship” – <i>The Odyssey</i> by Homer	Odysseus faces constant shipwrecks during his journey home. Students design a vessel that can withstand waves, wind, and mythical creatures using engineering design principles.	Cardboard, plastic wrap, foam, string, fan for wind testing, marbles for balance

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Experiment	How Does Caffeine Affect Heart Rate?	Students measure resting and post-caffeine pulse rates to determine physiological effects.	Stopwatch, caffeinated drinks, volunteers, pulse monitor, consent forms
Experiment	Which Renewable Energy Source Produces the Most Power?	Students test small models of solar, wind, and hydro setups to compare energy output.	Mini turbines, solar panel, multimeter, water wheel, cardboard
Experiment	How Do Different Types of Insulation Affect Energy Efficiency?	Students build small model houses and test temperature changes with different insulation materials.	Foam board, fabric, foil, thermometer, light bulb (heat source).
Experiment	How Does Temperature Affect Enzyme Activity?	Students test enzyme reactions (like catalase in potatoes) at different temperatures.	Potatoes, hydrogen peroxide, thermometer, beakers
Experiment	Does Screen Time Before Bed Affect Sleep Quality?	Students track how much time participants spend on screens before bed and compare sleep quality.	Survey forms, spreadsheet, stopwatch, optional sleep tracker
Experiment	What Type of Filter Best Cleans Polluted Water?	Students design filters using natural and synthetic materials and test clarity of filtered water.	Sand, gravel, charcoal, bottles, water samples, filter paper
Experiment	Does Exercise Type Affect Heart Recovery Rate?	Students compare recovery times after aerobic versus anaerobic exercise.	Stopwatch, volunteers, pulse monitor, recording sheets
Experiment	Which Material is Best for Soundproofing?	Students test how well different materials block sound waves.	Cardboard boxes, foam, cotton, rubber, decibel meter app.
Experiment	Protect the Shoreline	Students test which materials best prevent erosion when waves hit the shore	Sand tray, water, rocks, mesh, timer, ruler