KIDS PROJECT IDEAS

89+ Science Project Ideas for Class 10 Working Model — Ready-to-Build Projects

November 1, 2025

Looking for reliable, exam-ready **science project ideas for class 10 working model**? This article gives you 100 practical, easy-to-build working model ideas arranged by subject so you can pick one that matches your interest, time, and resources.

Each idea includes a clear description, the basic materials you'll need, how the model works, the scientific principle it demonstrates, and a real-life example to help you explain its relevance during assessment.

These projects are written for Class 10 students: language is simple, steps are logical, and safety is emphasised. Before you start, consider three quick checks —

- Do you have the materials or can you source them affordably?
- Will the project be ready in the time available (some models like crystal growth or composting need days or weeks)?
- Do you need teacher or lab supervision (especially for chemical or biological experiments)?

Choose a project that excites you — judges notice enthusiasm — and document every step: aim, materials, method, observations, and conclusion. With careful planning and practice, any one of these **science project ideas for class 10 working model** can become a standout project.

Must Read: 20 Best Global Warming Projects For Class 7 Students (2026)

How to use this article

1. Read the introduction and tips below to decide which type of project suits you (budget, time, skill level).
2. Scroll to the categories you prefer (Physics, Chemistry, Biology, Environmental, Electronics & Robotics, Computer & Data, Engineering & Mechanics, Interdisciplinary).
3. Pick a project, gather materials, and follow the working model description to prepare your display and report.
4. Add diagrams, photographs of your build, and a short explanation of hypothesis, procedure, observations, and conclusion for the final submission.

Quick tips before you start

- **Choose based on interest and feasibility.** Consider available materials, safety, and the time you have.
- **Safety first.** Wear goggles and gloves for chemical or mechanical builds. Get adult supervision where needed.

- **Document every step.** Judges like clear hypothesis, method, observations, and conclusion.
- **Make it visual.** A small poster or chart explaining working principle helps.
- **Practice your demo.** Ensure your working model runs reliably during presentation.

Evaluation pointers (what teachers often look for)

- Clear scientific principle or concept demonstrated
- Correct and safe methodology
- Neat presentation and labeled model parts
- Observations recorded and reasoning explained
- Originality or small improvements over common models

89+ Science Project Ideas for Class 10 Working Model 2026

Physics & Mechanics

1. **Hydraulic Lift (Working Model)**
   - **Description:** Demonstrates Pascal's law using syringes and pipes.
   - **Materials:** Two large syringes, rigid tubing, water, base board.
   - **Working model:** Connect syringes with tubing, push small syringe to lift a weight on the larger one.
   - **Model type:** Mechanical / Fluid.
   - **Example application:** Vehicle hydraulic jacks.
2. **Simple Electric Motor (Working Model)**
   - **Description:** Build a basic DC motor with coil, magnet, and battery.
   - **Materials:** Copper wire, AA battery, small magnet, paper clips, tape.
   - **Working model:** Wind coil, mount on supports using paper clips, place magnet under coil; current spins coil.
   - **Model type:** Electrical / Electromagnetic.
   - **Example:** Fundamental rotor concept in fans and motors.
3. **Solar Tracker Model (Single Axis)**
   - **Description:** A model platform that rotates a small solar panel to follow light source using light sensors.
   - **Materials:** Small solar panel, two LDRs, servo motor, microcontroller or comparator circuit.
   - **Working model:** LDRs sense light difference; controller drives servo to align panel.

- **Model type:** Electrical / Renewable energy.
- **Example:** Solar installations with tracking for increased efficiency.

4. **Balloon-Powered Car (Working Model)**
   - **Description:** Car that moves by escaping air from a balloon to demonstrate Newton's third law.
   - **Materials:** Lightweight board, bottle caps (wheels), straws, balloon, glue.
   - **Working model:** Attach balloon to nozzle, inflate, release to propel car forward.
   - **Model type:** Mechanical / Physics.
   - **Example:** Demonstrates basic propulsion.
5. **Bridge Strength Test Rig**
   - **Description:** Build small truss bridges from popsicle sticks and test load-bearing capacity.
   - **Materials:** Popsicle sticks, glue, weights, test stand.
   - **Working model:** Construct bridges with different truss patterns; load until failure and record data.
   - **Model type:** Mechanical / Structural.
   - **Example:** Civil engineering and bridge design principles.
6. **Electromagnetic Crane**
   - **Description:** Crane that picks up metallic objects using an electromagnet.
   - **Materials:** Iron core, insulated copper wire, battery, switch, cardboard frame.
   - **Working model:** Coil wound on iron core creates magnet when current flows; lift small nails or washers.
   - **Model type:** Electromagnetic.
   - **Example:** Scrap yard cranes.
7. **Water Clock (Clepsydra) Working Model**
   - **Description:** Time measurement using water flow through a small hole.
   - **Materials:** Two bottles, tubing, stopwatch, stand.
   - **Working model:** Water flows from top container to bottom at constant rate; calibrate marks as time indicators.
   - **Model type:** Mechanical / Fluid.
   - **Example:** Ancient timekeeping devices.
8. **Gyroscope Demonstration Model**
   - **Description:** Show angular momentum and stability using spinning wheel.
   - **Materials:** Bicycle wheel or spinning top, bearings, axle mount.
   - **Working model:** Spin wheel and exhibit precession when torque applied.
   - **Model type:** Mechanical / Rotational physics.
   - **Example:** Stability in ships and aircraft instruments.
9. **Solar Oven (Parabolic or Box)**
   - **Description:** Concentrates sunlight to heat or cook small food items.
   - **Materials:** Cardboard, aluminum foil, black paint, glass sheet (for box type).

- **Working model:** Construct reflective surfaces to focus heat into cooking area; measure temperature rise.
- **Model type:** Thermal / Renewable energy.
- **Example:** Low-cost solar cooking solutions.

10. **Acoustic Resonance Model (Standing Waves in Tube)**
    - **Description:** Demonstrate standing waves using a resonance tube and tuning fork.
    - **Materials:** Tube with water column or open pipe, tuning forks.
    - **Working model:** Change effective length to find resonance; show frequency–length relation.
    - **Model type:** Wave physics / Acoustic.
    - **Example:** Musical instrument design.
11. **Wind Speed Anemometer (Cup Type)**
    - **Description:** Measure wind speed using rotating cups and count revolutions.
    - **Materials:** Paper cups, straws, axle, protractor, timer.
    - **Working model:** Assemble cups on arms; calibrate RPM to wind speed in a fan.
    - **Model type:** Mechanical / Meteorology.
    - **Example:** Weather stations.
12. **Water Wave Tank (Surface Wave Patterns)**
    - **Description:** Small tank to study reflection, refraction, and interference of water waves.
    - **Materials:** Transparent tray, wave paddle, barriers of various shapes.
    - **Working model:** Create waves; show reflection off walls and refraction through different depth regions.
    - **Model type:** Wave physics.
    - **Example:** Coastal engineering, harbor design.
13. **Telescope Model (Refracting)**
    - **Description:** Build a simple refracting telescope to observe magnified images.
    - **Materials:** Convex lenses (objective and eyepiece), tube, lens holders.
    - **Working model:** Mount lenses at correct focal distance to form magnified images.
    - **Model type:** Optics.
    - **Example:** Astronomy basics and optical instruments.
14. **Maglev Model (Magnetic Levitation)**
    - **Description:** Levitate a small object using repelling magnets and guide rails.
    - **Materials:** Strong magnets (neodymium), track, support stand.
    - **Working model:** Arrange like poles to repel and balance a small platform over track.
    - **Model type:** Magnetic / Mechanical.
    - **Example:** Maglev trains concept.
15. **Seismograph Model**

- **Description:** Simulate and record ground vibrations using a mass-spring pen on paper.
- **Materials:** Coil spring, mass, frame, pen, rotating drum with paper.
- **Working model:** Shake base and observe pen trace showing amplitude and frequency.
- **Model type:** Mechanical / Geophysics.
- **Example:** Earthquake detection basics.

16. **Heat Engine (Stirling Engine Model)**
    - **Description:** Small Stirling engine demonstrating thermodynamic cycles.
    - **Materials:** Cylinder, piston, displacer, flywheel, heat source.
    - **Working model:** Heat one side and cool other to move piston and turn flywheel.
    - **Model type:** Thermal / Mechanical.
    - **Example:** Principles of heat engines.
17. **Simple Pendulum Experiment (Length vs Period)**
    - **Description:** Build pendulum setup to test period's dependency on length.
    - **Materials:** String, weight, protractor, stopwatch, stand.
    - **Working model:** Measure period for different lengths and plot results.
    - **Model type:** Mechanics / Oscillations.
    - **Example:** Timekeeping and harmonic motion.
18. **Model of a Lock-and-Key Mechanism (Mechanical Gearbox Demo)**
    - **Description:** Demonstrate gear ratios and mechanical advantage using gears and shafts.
    - **Materials:** Assorted gears, shafts, base plate, bearings.
    - **Working model:** Arrange gear trains to show change in speed and torque.
    - **Model type:** Mechanical / Engineering.
    - **Example:** Gearboxes in bicycles and vehicles.
19. **Electrostatic Dust Collector Model**
    - **Description:** Show electrostatic attraction by charging plates to collect dust from air flow.
    - **Materials:** Metal plates, high-voltage source (Van de Graaff or static generator), fan, dust.
    - **Working model:** Charge plates, draw air through, observe dust deposition on plates.
    - **Model type:** Electrical / Environmental.
    - **Example:** Pollution control in industries.
20. **Model of Simple Harmonic Motion using Springs**
    - **Description:** Wrist-watch or mass-spring oscillator that demonstrates SHM and damping.
    - **Materials:** Springs, masses, damper (oil or friction pad), stopwatch.
    - **Working model:** Displace mass and record oscillations; analyze amplitude decay.
    - **Model type:** Mechanics / Oscillations.

- **Example:** Vehicle suspension systems.

Chemistry Projects

21. **Electroplating Model**
    - **Description:** Electroplate a small metal object to demonstrate redox and ionic migration.
    - **Materials:** Copper sulfate solution, copper anode, object (copper coin), DC power supply.
    - **Working model:** Use object as cathode; run current to deposit metal layer.
    - **Model type:** Chemical / Electrochemical.
    - **Example:** Jewelry and corrosion protection.
22. **Rust Prevention Methods Comparison**
    - **Description:** Test oils, paints, and galvanization for preventing rust on iron nails.
    - **Materials:** Iron nails, salt water, oil samples, paint, zinc-coated sample, containers.
    - **Working model:** Expose treated nails to salt spray; record corrosion rate.
    - **Model type:** Chemistry / Materials.
    - **Example:** Corrosion protection in construction.
23. **pH Indicator from Red Cabbage (Natural Indicator)**
    - **Description:** Extract pigment from cabbage to test acids and bases.
    - **Materials:** Red cabbage, blender, filter paper, vinegar, baking soda, test liquids.
    - **Working model:** Use extract to show color change for different pH values; calibrate with pH scale.
    - **Model type:** Chemical / Analytical.
    - **Example:** Natural indicators in classrooms.
24. **Solar Water Distillation Model**
    - **Description:** Distill and purify water using solar energy; measure purity change.
    - **Materials:** Transparent cover, basin, saline water, collection tube, thermometer.
    - **Working model:** Evaporation-condensation cycle collects distilled water in cooler region.
    - **Model type:** Chemical / Environmental.
    - **Example:** Portable desalination for remote areas.
25. **Homemade Bioplastic from Starch**
    - **Description:** Create biodegradable plastic from corn starch and test strength and decomposition.
    - **Materials:** Corn starch, glycerol, water, vinegar, heating plate, molds.
    - **Working model:** Mix and heat components to form film; test tensile properties and biodegradability.
    - **Model type:** Polymer chemistry / Materials.
    - **Example:** Alternatives to petroleum-based plastics.
26. **Exothermic vs Endothermic Reactions Demo**

- **Description:** Compare temperature changes in two reactions (e.g., dissolution of ammonium nitrate vs calcium chloride).
- **Materials:** Ammonium nitrate, calcium chloride, beakers, thermometer, scale.
- **Working model:** Record temperature changes and plot heat flow.
- **Model type:** Thermochemistry.
- **Example:** Cold packs and heat packs.

27. **Chemical Garden (Copper Sulfate Crystal Growth)**
    - **Description:** Grow colorful crystal structures to show precipitation and osmotic effects.
    - **Materials:** Sodium silicate solution, copper sulfate crystals, beaker.
    - **Working model:** Place crystals in solution and observe tube-like growths.
    - **Model type:** Inorganic chemistry / Crystallization.
    - **Example:** Crystal growth studies in materials science.
28. **Catalyst Effect on Hydrogen Peroxide Decomposition**
    - **Description:** Use manganese dioxide or yeast to rapidly decompose H_2O_2 and compare rates.
    - **Materials:** Hydrogen peroxide, catalysts (MnO_2, yeast), measuring cylinder, timer.
    - **Working model:** Measure oxygen gas evolution with each catalyst; compare reaction rate.
    - **Model type:** Chemical kinetics / Catalysis.
    - **Example:** Catalytic converters concept.
29. **Electrochemical Cell (Voltaic Cell Array)**
    - **Description:** Build cells with different metal electrodes (Cu-Zn, Cu-Al) and measure voltage.
    - **Materials:** Metal strips, salt bridge or electrolyte solution, voltmeter, beakers.
    - **Working model:** Connect electrodes, measure open-circuit voltage and current under load.
    - **Model type:** Electrochemistry.
    - **Example:** Batteries and power sources.
30. **Soap Making (Saponification Demonstration)**
    - **Description:** Make simple soap and explain saponification reaction.
    - **Materials:** Vegetable oil, sodium hydroxide (careful), water, molds, thermometer.
    - **Working model:** Heat oils, mix with lye solution, pour into molds, test lather and pH after curing.
    - **Model type:** Organic chemistry / Synthesis.
    - **Example:** Everyday soap production.
31. **Chromatography of Plant Pigments**
    - **Description:** Separate leaf pigments using paper chromatography.
    - **Materials:** Filter paper, solvent (hexane/acetone safe replacement), spinach or spinach extract, capillary tubes.

- **Working model:** Spot extract, place in solvent, allow pigments to separate and analyze Rf values.
- **Model type:** Analytical chemistry.
- **Example:** Identifying compounds in mixtures.

32. **Antacid Neutralization and Carbon Dioxide Production**
    - **Description:** Compare different antacid tablets' efficiency and CO_2 release on acid neutralization.
    - **Materials:** Different antacid brands, HCl solution (dilute), gas syringe, pH meter.
    - **Working model:** React tablets with acid, measure volume of CO_2 and pH change.
    - **Model type:** Chemical reaction / Stoichiometry.
    - **Example:** Pharmaceutical efficacy testing.
33. **Ferrofluid Demonstration**
    - **Description:** Prepare a small ferrofluid to show magnetic-responsive liquid behavior.
    - **Materials:** Iron oxide nanoparticles (or commercial ferrofluid), oil, magnets, transparent dish.
    - **Working model:** Place ferrofluid near magnets to observe spikes and motion.
    - **Model type:** Colloid chemistry / Magnetism.
    - **Example:** Seals and vibration control devices.
34. **Salt Crystal Geodes**
    - **Description:** Grow crystals inside hollow shells to simulate geodes using salt or alum.
    - **Materials:** Alunite or salt solution, eggshell or plaster mold, seed crystals.
    - **Working model:** Seed crystals grow inside cavity over days; open to reveal crystal lining.
    - **Model type:** Crystallography / Inorganic chemistry.
    - **Example:** Mineral formation demonstration.
35. **Electrolysis of Water (Hydrogen and Oxygen Collection)**
    - **Description:** Decompose water into H_2 and O_2 gases using DC electrical source and electrodes.
    - **Materials:** Water, small amount of electrolyte (sodium bicarbonate), electrodes, gas syringes.
    - **Working model:** Apply current and collect gases in inverted tubes; test with a flame (safety).
    - **Model type:** Electrochemistry.
    - **Example:** Hydrogen production concepts.
36. **Making an Indicator from Turmeric (Acid-Base Test)**
    - **Description:** Show color change of turmeric under base (turns red with NaOH) to demonstrate pH-dependent dyes.
    - **Materials:** Turmeric powder, ethanol or vegetable oil extraction, test liquids, NaOH.

- **Working model:** Extract dye, add to solutions of varying pH to show color shifts.
- **Model type:** Organic chemistry / Indicators.
- **Example:** Natural dye pH sensitivity.

37. **Effect of Temperature on Solubility**
    - **Description:** Quantify how solubility of salt or sugar changes with temperature.
    - **Materials:** Salt or sugar, water, heating source, beakers, balance, thermometer.
    - **Working model:** Dissolve substance at different temperatures and measure maximum solubility.
    - **Model type:** Physical chemistry.
    - **Example:** Industrial crystallization control.
38. **Making a Battery from Fruit (Lemon Battery)**
    - **Description:** Produce small voltage using two different metal electrodes inserted into fruit.
    - **Materials:** Lemons, copper and zinc strips, wires, multimeter, LED.
    - **Working model:** Connect several lemon cells in series to light a small LED.
    - **Model type:** Electrochemistry.
    - **Example:** Demonstrates basic galvanic cells.
39. **Water Hardness Testing and Softening Methods**
    - **Description:** Measure hardness using soap test or EDTA titration, then show softening methods like boiling or ion exchange resin.
    - **Materials:** Hard water samples, soap, EDTA (if available), ion exchange resin or boiled samples.
    - **Working model:** Compare lather formation and measure hardness before and after treatments.
    - **Model type:** Analytical / Environmental chemistry.
    - **Example:** Water treatment for domestic use.
40. **Catalytic Converter Model (CO_2 and NOx Reduction Demo)**
    - **Description:** Demonstrate catalytic oxidation or reduction using small catalyst beads and gas flow with safe gas substitutes.
    - **Materials:** Catalyst samples (e.g., copper oxide), glass tube, gas source (safe substitutes), gas sensor if available.
    - **Working model:** Pass gas through catalyst bed; observe changes in composition using sensors or chemical tests.
    - **Model type:** Catalysis / Environmental chemistry.
    - **Example:** Vehicle emission control.

Biology & Life Sciences

41. **Model of Human Heart with Working Pump**
    - **Description:** Simulate heart chambers and valves using balloons and pumps to show circulation.

- **Materials:** Balloons, plastic tubing, one-way valves, pump or manual syringes.
- **Working model:** Pump pushes fluid through chambers, check-valves mimic heart valves and flow direction.
- **Model type:** Biological / Physiological.
- **Example:** Blood circulation demonstration.

42. **DNA Extraction from Fruits (Strawberry/Onion)**
    - **Description:** Extract visible DNA using detergent and alcohol precipitation.
    - **Materials:** Strawberries or onions, saline solution, dish soap, ethanol, filter.
    - **Working model:** Mash fruit, add detergent, filter, add cold ethanol to precipitate DNA strands.
    - **Model type:** Molecular biology.
    - **Example:** Basic genetics lab technique.
43. **Osmosis Demonstration with Potato Cells**
    - **Description:** Show osmotic swelling or shrinking in potato pieces placed in different solute concentrations.
    - **Materials:** Potatoes, sugar/salt solutions of varying concentrations, scale, beakers.
    - **Working model:** Measure weight changes after soaking; relate to water potential.
    - **Model type:** Cellular biology.
    - **Example:** Food preservation principles.
44. **Germination and Effect of Light/Temperature**
    - **Description:** Compare seed germination rates under different light or temperature conditions.
    - **Materials:** Seeds, trays, soil, light sources, incubator or controlled area.
    - **Working model:** Record germination percent, rate, and seedling growth under each condition.
    - **Model type:** Plant biology.
    - **Example:** Agricultural seed treatment studies.
45. **Model of the Respiratory System (Bellows Lung Model)**
    - **Description:** Use bellows and balloons to simulate lungs and diaphragm movement.
    - **Materials:** Clear plastic bottle, balloons, rubber sheet, straws, clamps.
    - **Working model:** Pull rubber sheet to expand balloon lungs; demonstrate inhalation/exhalation.
    - **Model type:** Biological physiology.
    - **Example:** Human breathing mechanism.
46. **Biodegradation: Composting Rate Model**
    - **Description:** Compare decomposition rates of various organic wastes under controlled composting.
    - **Materials:** Compost bins, kitchen wastes (vegetable, fruit peels), thermometer, moisture meter.

- **Working model:** Monitor temperature, mass loss, and time to decompose different materials.
- **Model type:** Environmental biology.
- **Example:** Waste management and compost optimization.

47. **Antibiotic Effectiveness Test (Disk Diffusion Demo)**
    - **Description:** Show how antibiotics prevent bacterial growth using safe, non-pathogenic strains (with teacher oversight).
    - **Materials:** Agar plates, benign bacterial strain, antibiotic disks, incubator (school lab).
    - **Working model:** Measure zones of inhibition to compare antibiotic effects.
    - **Model type:** Microbiology (requires lab supervision).
    - **Example:** Clinical antibiotic sensitivity testing.
48. **Model of Neuron and Nerve Impulse (Relay Circuit)**
    - **Description:** Use an electrical circuit and LEDs to mimic nerve signal transmission and synapse delay.
    - **Materials:** Wires, LEDs, resistors, push-button switches, microcontroller optional.
    - **Working model:** Press button to show sequential activation along "neurons" and pauses at synapses.
    - **Model type:** Bio-inspired electrical.
    - **Example:** Neural signaling concept.
49. **Aquaponics Mini System**
    - **Description:** Small tank combining fish and plant growth showing nutrient cycling.
    - **Materials:** Aquarium, plants, fish, pump, grow media.
    - **Working model:** Fish waste provides nutrients for plants; plants clean water returned to fish.
    - **Model type:** Biological / Environmental engineering.
    - **Example:** Sustainable agriculture technique.
50. **Enzyme Activity Demonstration (Effect of pH/Temperature)**
    - **Description:** Test activity of catalase (from potato or liver) under different pH or temperature conditions.
    - **Materials:** Potato or liver extract, hydrogen peroxide, pH buffers, thermometer, gas syringe.
    - **Working model:** Measure oxygen produced as a function of conditions to evaluate enzyme kinetics.
    - **Model type:** Biochemistry.
    - **Example:** Enzyme behavior in food processing.
51. **Model of a Digestive System (Peristalsis Demonstration)**
    - **Description:** Demonstrate how peristalsis moves food using a flexible tube and rollers.

- **Materials:** Flexible rubber tube, rollers or squeezing mechanisms, food-simulating paste.
- **Working model:** Rollers push the paste through the tube to simulate gut movement.
- **Model type:** Biological physiology.
- **Example:** Digestive mechanics in vertebrates.

52. **Study of Microbial Fuel Cells (MFC)**
    - **Description:** Use bacteria to generate small amounts of electricity in a fuel cell setup.
    - **Materials:** Anaerobic chamber (jar), carbon electrodes, organic substrate, voltmeter.
    - **Working model:** Microbes oxidize organic matter creating electron flow; measure voltage/current.
    - **Model type:** Bioenergy / Environmental technology.
    - **Example:** Waste-to-energy research.
53. **Plant Transpiration Measurement Model**
    - **Description:** Measure water loss from leaves using potometers or plastic bag method.
    - **Materials:** Potted plant, potometer setup or plastic bags, scale, timer.
    - **Working model:** Quantify transpiration rate under varying light and humidity.
    - **Model type:** Plant physiology.
    - **Example:** Crop water management.
54. **Yeast Fermentation and CO_2 Production**
    - **Description:** Compare sugar types and temperatures on yeast fermentation and CO_2 yield.
    - **Materials:** Yeast, sugars (glucose, sucrose), water, bottles, balloon or gas syringe.
    - **Working model:** Measure gas produced, compare recipes and conditions.
    - **Model type:** Microbiology / Biochemistry.
    - **Example:** Brewing and baking fermentation basics.
55. **Model of Plant Cell Structure (3D Model with Osmosis Demo)**
    - **Description:** Build a 3D plant cell model with semi-permeable membrane demonstration.
    - **Materials:** Clay or foam for organelles, dialysis membrane or gel, water, sucrose solutions.
    - **Working model:** Show movement of water in and out of cell model to represent osmotic behavior.
    - **Model type:** Biological / Educational model.
    - **Example:** Cell biology teaching aid.

Environmental Science & Earth

56. **Rainwater Harvesting Model**

- **Description:** Demonstrate rooftop collection, filtering, and storage of rainwater on a small scale.
- **Materials:** Model roof (cardboard), gutters, filter layers (sand, gravel), storage bottle.
- **Working model:** Simulate rain with water source; show filtration and storage efficiency.
- **Model type:** Environmental engineering.
- **Example:** Urban water conservation systems.

57. **Air Pollution Monitoring Simple Model**
    - **Description:** Demonstrate particulate collection with adhesive slides and compare locations.
    - **Materials:** Glass slides with sticky tape, microscope or magnifier, sample sites.
    - **Working model:** Expose slides to air, analyze particles captured, compare indoor vs outdoor.
    - **Model type:** Environmental monitoring.
    - **Example:** Local air quality assessment.
58. **Green Roof Mini Model (Temperature Regulation)**
    - **Description:** Compare temperature of normal roof vs green roof under simulated sun.
    - **Materials:** Two small box models, soil, plants, heat lamp, thermometers.
    - **Working model:** Turn on lamp and record temperature differences over time.
    - **Model type:** Environmental / Energy efficiency.
    - **Example:** Urban building cooling strategies.
59. **Biogas Production Model**
    - **Description:** Create a small anaerobic digester producing methane from kitchen waste.
    - **Materials:** Airtight container, organic waste, inoculum (cow dung), gas collection bag.
    - **Working model:** Fill digester, allow anaerobic digestion, capture gas and demonstrate small flame (careful).
    - **Model type:** Renewable energy / Waste management.
    - **Example:** Rural energy solutions.
60. **Soil Erosion Demonstration (Rainfall Simulator)**
    - **Description:** Show effect of vegetation cover and slope on soil erosion using tilted trays and simulated rain.
    - **Materials:** Trays, soil, seeds or grass mats, water sprinkler or dropper.
    - **Working model:** Simulate rainfall; measure soil loss and runoff for different cover types.
    - **Model type:** Environmental science.
    - **Example:** Land management and conservation.
61. **Water Pollution Indicator via Bioassay (Duckweed Test)**

- **Description:** Use duckweed growth as indicator of toxicity in water samples.
- **Materials:** Duckweed culture, water samples, trays, light source.
- **Working model:** Expose duckweed to samples; measure growth inhibition over days.
- **Model type:** Ecotoxicology / Biology.
- **Example:** Assessing industrial effluent effects.

62. **Carbon Capture Model (Algae Photobioreactor)**
    - **Description:** Demonstrate CO_2 uptake by algae in small transparent tubes with light source.
    - **Materials:** Algae culture, test tubes or clear tubing, CO_2 source (breathe in), light.
    - **Working model:** Bubble CO_2-rich air through culture and measure oxygen production or pH change.
    - **Model type:** Environmental biotechnology.
    - **Example:** Carbon sequestration research.
63. **Ozone Layer Depletion Demonstration (UV Sensitivity Test)**
    - **Description:** Compare UV exposure effect on materials with/without UV-blocking film.
    - **Materials:** UV lamp, UV-sensitive beads or sunscreen films, test samples.
    - **Working model:** Expose both samples to UV; observe degradation or color change.
    - **Model type:** Environmental / Atmospheric.
    - **Example:** Importance of UV protection and emissions control.
64. **Model of Water Table and Aquifer Recharge**
    - **Description:** Show groundwater levels, recharge, and contamination flow using layered sand and dye.
    - **Materials:** Transparent tank, sand, gravel, water, colored dye, pump.
    - **Working model:** Add water/dye at recharge point; observe percolation and contaminant spread.
    - **Model type:** Hydrogeology.
    - **Example:** Groundwater management and pollution spread.
65. **Urban Heat Island Model (Comparative Temperature Study)**
    - **Description:** Compare temperature of urban-like surfaces (concrete) vs green surfaces under heating.
    - **Materials:** Two boxes with different surface materials, heat lamp, thermometers.
    - **Working model:** Record temperatures; show effect of surface type on heat retention.
    - **Model type:** Environmental / Climate.
    - **Example:** City planning and green spaces.

Electronics & Robotics

66. **Line Following Robot (Basic)**

- **Description:** Small robot that follows a black line using IR sensors and motor drivers.
- **Materials:** Chassis, DC motors, IR sensors, microcontroller (Arduino), battery, wheels.
- **Working model:** Sensors detect contrast and microcontroller adjusts motor speeds to stay on track.
- **Model type:** Robotics / Electronics.
- **Example:** Industrial AGVs (automated guided vehicles).

67. **Automatic Street Light Using LDR**
    - **Description:** Lights a lamp when ambient light drops using LDR and transistor or microcontroller.
    - **Materials:** LDR, relay or MOSFET, bulb or LED array, resistors, power supply.
    - **Working model:** LDR senses darkness and switches the lamp on automatically.
    - **Model type:** Electronics / Automation.
    - **Example:** Smart street lighting.
68. **Temperature-Controlled Fan (Thermostat Model)**
    - **Description:** Fan turns on when temperature exceeds set value using sensor and relay.
    - **Materials:** Thermistor or temperature sensor, microcontroller or comparator, fan, power supply.
    - **Working model:** Read temperature; switch fan via relay when threshold reached.
    - **Model type:** Electronics / Control systems.
    - **Example:** Home thermostat systems.
69. **Wireless Door Alarm (RF Module)**
    - **Description:** Sensor on door sends wireless alert to receiver when door opens.
    - **Materials:** Reed switch, magnet, simple RF transmitter-receiver modules, buzzer.
    - **Working model:** Break in magnetic contact triggers transmitter; receiver sounds alarm.
    - **Model type:** Electronics / Security.
    - **Example:** Basic intrusion alarm systems.
70. **Smart Plant Watering System (Moisture Sensor Based)**
    - **Description:** Automatically waters plant when soil moisture drops below threshold.
    - **Materials:** Soil moisture sensor, water pump, microcontroller, tubing, small reservoir.
    - **Working model:** Sensor reads moisture; microcontroller activates pump as needed.
    - **Model type:** IoT / Agricultural electronics.
    - **Example:** Automated irrigation systems.
71. **Gesture-Controlled Toy Car (IR or Ultrasonic Hand Gesture)**
    - **Description:** Control a small car with hand gestures using sensors or accelerometer.

- **Materials:** Toy car chassis, ultrasonic sensor or accelerometer, microcontroller, motors.
- **Working model:** Sensor interprets gestures to change direction/speed of car.
- **Model type:** Robotics / Human–machine interface.
- **Example:** Wheelchair gesture controls research.

72. **Bluetooth Controlled Home Appliances Model**
    - **Description:** Control an LED lamp or fan via Bluetooth app and microcontroller.
    - **Materials:** Bluetooth module (HC-05), microcontroller, relay, lamp, smartphone app.
    - **Working model:** App sends commands to module; microcontroller toggles appliance via relay.
    - **Model type:** IoT / Home automation.
    - **Example:** Smart home control.
73. **Sound-Activated Light Show**
    - **Description:** Lights change pattern with input from microphone and signal processing.
    - **Materials:** Microphone module, microcontroller, LEDs (addressable preferred), power supply.
    - **Working model:** Audio amplitude/frequency analyses control LED patterns synchronized to sound.
    - **Model type:** Electronics / Signal processing.
    - **Example:** Stage lighting and audio visualization.
74. **Automatic Soap Dispenser (IR Sensor)**
    - **Description:** Dispense soap without touch using infrared proximity sensor and pump.
    - **Materials:** IR proximity sensor, small peristaltic pump or servo, soap container, microcontroller.
    - **Working model:** Sensor detects hand and activates pump for a fixed amount of soap.
    - **Model type:** Electronics / Hygiene automation.
    - **Example:** Public restrooms for touchless hygiene.
75. **Traffic Light Control with Pedestrian Button (Simulator)**
    - **Description:** Demonstrate traffic signal sequencing and pedestrian request handling using LEDs.
    - **Materials:** LEDs (red/yellow/green), push button, microcontroller or 555 timer circuit.
    - **Working model:** Program sequence includes pedestrian crossing phase triggered by button.
    - **Model type:** Control systems / Electronics.
    - **Example:** Urban traffic signal systems.
76. **Ultrasonic Distance Meter (Working Model)**

- **Description:** Measure distance using ultrasonic sensor and display on LCD.
- **Materials:** Ultrasonic sensor (HC-SR04), microcontroller, LCD display, power supply.
- **Working model:** Transmit pulse, measure echo time, compute and display distance.
- **Model type:** Electronics / Measurement.
- **Example:** Parking sensors.

77. **Smart Helmet with Proximity Alert**
    - **Description:** Helmet-mounted proximity sensor warns biker of close objects.
    - **Materials:** Ultrasonic sensor, buzzer or vibration motor, small microcontroller, helmet mount.
    - **Working model:** Sensor detects close objects; buzzer/vibration warns user.
    - **Model type:** Safety electronics.
    - **Example:** Rider safety enhancements.
78. **Solar-Powered USB Charger**
    - **Description:** Small solar panel charges a battery and provides regulated USB output.
    - **Materials:** Solar panel, charge controller module, battery, step-up/step-down regulator, USB port.
    - **Working model:** Panel charges battery via controller; regulator gives stable 5V output.
    - **Model type:** Renewable energy electronics.
    - **Example:** Portable phone chargers.
79. **Obstacle Avoiding Robot**
    - **Description:** Robot navigates around objects using ultrasonic or IR sensors with motor control.
    - **Materials:** Motors, wheels, chassis, sensors, microcontroller, battery.
    - **Working model:** Detect obstacles, change direction using programmed routine.
    - **Model type:** Robotics / Autonomous navigation.
    - **Example:** Basic vacuum cleaners and robots.
80. **Pulse Rate Monitor with LED or Buzzer Output**
    - **Description:** Measure pulse using IR sensor or fingertip sensor and display beats per minute.
    - **Materials:** Pulse sensor module, microcontroller, display or buzzer.
    - **Working model:** Signal processing extracts pulse peaks to calculate BPM displayed or signaled.
    - **Model type:** Biomedical electronics.
    - **Example:** Fitness trackers and medical monitors.

Computer Science & Data Projects

81. **Simple Weather Station with Data Logging**

- **Description:** Collect temperature, humidity, and pressure using sensors and log data for analysis.
- **Materials:** DHT22 or BME280 sensor, microcontroller with SD card or Wi-Fi, power supply.
- **Working model:** Periodically log sensor readings and plot trends on graph.
- **Model type:** Data acquisition / IoT.
- **Example:** Local weather monitoring.

82. **Basic Image Recognition Demo (Offline)**
    - **Description:** Train a simple model to recognize objects (e.g., digits) and run demo on PC or microcontroller with camera.
    - **Materials:** Laptop, Python with libraries (TensorFlow/Keras or simpler), camera, dataset.
    - **Working model:** Train classifier on small dataset and demo live classification results.
    - **Model type:** Computer vision / Machine learning.
    - **Example:** Digit recognition for postal sorting.
83. **Data Encryption and Decryption Demonstration**
    - **Description:** Show basic encryption algorithm (Caesar cipher or RSA concept) to secure messages.
    - **Materials:** Computer, programming environment, sample text messages.
    - **Working model:** Implement encryption and decryption; show how keys protect data.
    - **Model type:** Computer science / Cryptography.
    - **Example:** Secure communication basics.
84. **Traffic Pattern Analysis Using Simulated Data**
    - **Description:** Create small dataset of vehicle counts and analyze peak times and averages using spreadsheets.
    - **Materials:** Spreadsheet software, sample dataset (or collect manually), charts.
    - **Working model:** Use graphs and statistics to propose traffic management suggestions.
    - **Model type:** Data analysis.
    - **Example:** Urban traffic planning.
85. **Smart Attendance System Using RFID**
    - **Description:** Demonstrate automated attendance logging using RFID tags and reader with microcontroller.
    - **Materials:** RFID tags/cards, RFID reader module, microcontroller, database or SD card.
    - **Working model:** Scan tags; microcontroller records timestamp and ID for each student.
    - **Model type:** Embedded systems / Automation.

- **Example:** Attendance systems in schools and offices.

Engineering & Applied Physics

86. **Bridge Truss Optimization (Comparative Models)**
    - **Description:** Build multiple truss patterns and compare strength-to-weight ratios.
    - **Materials:** Popsicle sticks, glue, weights, scale.
    - **Working model:** Test identical span bridges with different designs and record load until collapse.
    - **Model type:** Structural engineering.
    - **Example:** Optimizing bridge designs.
87. **Model of a Water Wheel and Power Output**
    - **Description:** Demonstrate conversion of flowing water into mechanical rotational energy and calculate power.
    - **Materials:** Paddle wheel, small water flow source, generator or dynamo, measuring instruments.
    - **Working model:** Flow drives wheel; measure RPM and electrical output from generator.
    - **Model type:** Mechanical / Renewable energy.
    - **Example:** Micro-hydropower plants.
88. **Mechanical Gearbox Prototype (Variable Speeds)**
    - **Description:** Show speed/torque tradeoff using multiple gear sets and shafts.
    - **Materials:** Set of gears, shafts, bearings, base.
    - **Working model:** Assemble gear ratios and measure output speed and torque under load.
    - **Model type:** Mechanical engineering.
    - **Example:** Automotive gearboxes.
89. **Model Water Supply Network (Flow and Pressure)**
    - **Description:** Simulate city water network with pumps, valves, and reservoirs to show pressure drop and flow.
    - **Materials:** Tubing, water pumps, valves, tanks, flow meters.
    - **Working model:** Adjust valves to simulate demand and observe pressure/flow changes.
    - **Model type:** Civil engineering / Fluid mechanics.
    - **Example:** Municipal water distribution systems.
90. **Heat Transfer Through Different Materials (Comparative Rods)**
    - **Description:** Compare thermal conductivity of materials by heating one end of rods and measuring other end.
    - **Materials:** Rods of copper, aluminum, wood, temperature sensors, heat source.
    - **Working model:** Apply uniform heat and record temperature gradient along each rod.

- **Model type:** Thermal engineering.
- **Example:** Material selection for heat exchangers.

91. **Airplane Wing Lift Model (Wind Tunnel Demo)**
    - **Description:** Small wind tunnel to measure lift on different wing profiles.
    - **Materials:** Fan, small transparent tunnel, wing models, force sensor or weight scale.
    - **Working model:** Place wing in airflow; measure lift force variation with angle of attack.
    - **Model type:** Aeronautical engineering.
    - **Example:** Aircraft wing design basics.
92. **Automated Bottle Sorting Using Color Sensor**
    - **Description:** Conveyor system that sorts colored bottles using color sensors and actuators.
    - **Materials:** Small conveyor belt, color sensor, actuator (servo), microcontroller.
    - **Working model:** Sensor detects bottle color; microcontroller triggers actuator to sort into bins.
    - **Model type:** Industrial automation / Robotics.
    - **Example:** Recycling plant sorting.
93. **Turbulence and Reynolds Number Demonstration**
    - **Description:** Show laminar vs turbulent flow using dye injection in a transparent pipe with adjustable flow.
    - **Materials:** Transparent pipe, pump, dye injector, flow meter.
    - **Working model:** Change flow rate and observe transition from laminar to turbulent flow.
    - **Model type:** Fluid dynamics.
    - **Example:** Pipeline design and fluid transport.
94. **Model of a Satellite Launch Trajectory (Physics Simulation)**
    - **Description:** Demonstrate the principles of orbital insertion and gravity using computer simulation or mechanical model.
    - **Materials:** Computer with simulation software or rotating platform with projectile launcher.
    - **Working model:** Show energy requirements and effect of horizontal velocity for orbit vs suborbital path.
    - **Model type:** Aerospace physics / Simulation.
    - **Example:** Rocket launch basics.
95. **Solar-Powered Water Pumping System**
    - **Description:** Small pump powered by a solar panel to move water up a pipe and measure head achieved.
    - **Materials:** Solar panel, DC pump, tubing, water reservoir.
    - **Working model:** Run pump under sunlight; measure flow rate and lift height.
    - **Model type:** Renewable energy / Mechanical.

- **Example:** Solar irrigation systems.

Interdisciplinary & Miscellaneous

96. **Smart Recycling Bin (Automatic Sorting by Weight/Shape)**
    - **Description:** Detect material by weight/shape and sort into appropriate bins using sensors and actuators.
    - **Materials:** Load cells, microcontroller, conveyor or gates, bins.
    - **Working model:** Weigh or sense object and route via gates to correct bin.
    - **Model type:** Environmental automation.
    - **Example:** Smart waste management solutions.
97. **Model of Economical Water Filter (Activated Carbon + Sand)**
    - **Description:** Build layered filter and test for turbidity and odour removal.
    - **Materials:** Sand, gravel, activated carbon, bottles, contaminated water samples.
    - **Working model:** Filter contaminated water; measure clarity and smell reduction.
    - **Model type:** Environmental engineering / Chemistry.
    - **Example:** Low-cost household filters.
98. **Simple Prosthetic Hand Model (Cable-Driven)**
    - **Description:** A small prosthetic hand actuated by cables and simple joints to demonstrate biomechanics.
    - **Materials:** Cardboard or 3D printed fingers, strings, finger joints, base plate.
    - **Working model:** Pull cables to flex fingers showing mechanical advantage and control.
    - **Model type:** Biomedical engineering.
    - **Example:** Prosthetic design basics.
99. **Renewable Energy Mix Dashboard (Data Visualization Model)**
    - **Description:** Create a dashboard showing energy contribution from solar, wind, hydro using sample data and charts.
    - **Materials:** Computer, spreadsheet or visualization tool, sample time-series data.
    - **Working model:** Show interactive graphs and simulate scenario changes (e.g., cloud cover).
    - **Model type:** Data analysis / Renewable energy.
    - **Example:** Energy policy planning tools.
100. **Model Demonstrating Principle of Conservation of Energy (Pendulum and Spring Combo)**

    - **Description:** Combine pendulum and spring to show energy transfer and conservation in mechanical systems.
    - **Materials:** Pendulum bob, spring-mass setup, motion sensors or stopwatch, base.
    - **Working model:** Release system and measure kinetic and potential energy changes over cycles; show total energy stability (minus damping losses).

- **Model type:** Mechanics / Energy physics.
- **Example:** Energy conservation in mechanical systems and engineering analysis.

How to prepare your project report and presentation

1. **Title page:** Project title, your name, class, school, guide/teacher name, date.
2. **Abstract (50–80 words):** Brief summary of objective, method, and result.
3. **Introduction:** Scientific principle and why it is important.
4. **Aim/Hypothesis:** What you intend to show or measure.
5. **Materials and Methods:** List materials and step-by-step building and testing procedure.
6. **Observations and Data:** Tables, graphs, photos of the model in action.
7. **Results and Discussion:** Explain what happened and why scientifically.
8. **Conclusion:** Summarize findings and possible improvements.
9. **Precautions and Safety:** Mention all safety steps taken.
10. **References and Acknowledgements:** Acknowledge help and sources.

Must Read: 139+ Decoration Kids Project Ideas — Fun & Easy Crafts

Final advice and choosing the right model

- Pick a topic you feel excited about; enthusiasm shows in your presentation.
- Start early: many models (crystallization, biogas, composting) take days or weeks.
- Keep spare parts and test runs ready before the demonstration day.
- Where electrical or biological hazards exist, arrange teacher supervision and follow school lab rules.
- Consider adding a short video loop of your model working if live demo could fail due to time constraints.

Conclusion

You now have 100 well-explained **science project ideas for class 10 working model**, spanning physics, chemistry, biology, environmental science, electronics, engineering, and data projects.

Each idea is designed to be practical, educational, and demonstrable in a school setting. The best project is one that you understand deeply and can explain clearly — not necessarily the most complicated.

Build a working model, record your observations carefully, show the scientific principle in action, and be ready to answer simple “why” and “how” questions from examiners.

If you’d like, I can turn any single idea from the list into a complete project pack: a step-by-step build guide, materials list with estimated cost, troubleshooting tips, labelled diagrams, a short poster layout, and a concise report template you can submit.

Tell me the project number or title you have in mind, and I’ll prepare the full guide so you can start building confidently.

Project Ideas

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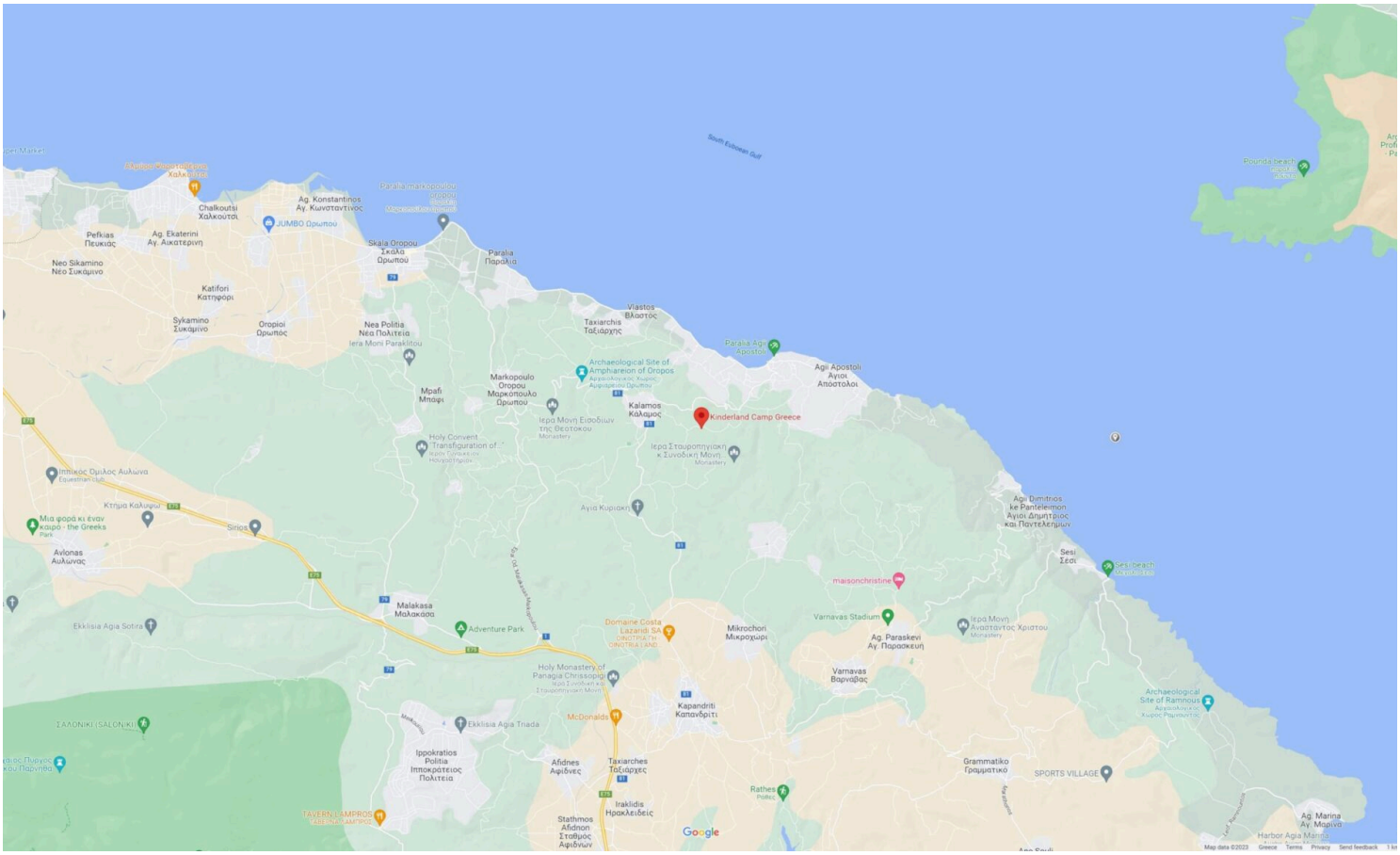

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KIDS PROJECT IDEAS

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