Curriculum

The process of students actively building, exploring, investigating, inquiring and communicating together develops a vast range of benefits. Here is an overview:

Science
Investigating the collection, storage and transfer of energy; measuring force and speed, and exploring the effect of friction; investigating simple machines, developing scientific fair testing, pursuing purposeful inquiry, predicting and measuring, collecting data and drawing conclusions.

Technology
Designing, making (building), testing and evaluating model solutions to match real needs; choosing appropriate materials and processes; exploring systems and subsystems that transform and transfer energy; using two-dimensional instructions to develop technical understanding; identifying technical components to create three-dimensional working models and working collaboratively in a team.

Engineering
Engineering design, indentifying energy, and investigating and evaluating variables with science, technology, and mathematics are all part of the engineering process.

Mathematics
Using mathematics in the fields of science and technology; measuring distance, time and mass, calculating speed (velocity), and weight and efficiency; using graphical means to present predictions and measurements, tabulating and interpreting data, and informally calculating ratios.

Activity Pack for Renewable Energy Add-on Set Learning Grid

Objective Number	NGSS Grade 6-8 ● = Fully covered ◐ = Partially covered	Activities						Problem-Solving Activities			
		Hand Generator	Solar Station	Wind Turbine	Hydro Turbine	Solar Vehicle	Boat Pulley	Lawn Mower	Moving Sign	Motorized Fan	Court Lights
Disciplinary Core Ideas: Physical Science											
1	MS-PS2 Motion and Stability: Forces and Interactions	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
2	MS-PS3 Energy	●	●	●	●	●	●	●	●	●	●
Crosscutting Concepts											
1	Patterns	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
2	Cause and effect: Mechanism and explanation	●	●	●	●	●	●	●	●	●	●
3	Scale, proportion, and quantity	●	◐	●	●	●	●	◐	◐	◐	◐
4	Systems and system models	●	●	●	●	●	●	●	●	●	●
5	Energy and matter: Flows, cycles, and conservation	●	●	●	●	●	●	●	●	●	●
6	Structure and Function	●	●	●	●	●	●	●	●	●	●
7	Stability and change	●	●	●	●	●	●	●	●	●	●
Science and Engineering Practices											
1	Asking questions and Defining Problems	◐	●	◐	◐	◐	◐	●	●	●	●
2	Developing and using models	●	●	●	●	●	●	●	●	●	●
3	Planning and carrying out investigations	●	●	●	●	●	●	●	●	●	●
4	Analyzing and interpreting data	●	●	●	●	●	●	●	●	●	●
5	Using mathematics, Informational and Computer Technology, and computational thinking	◐	◐	◐	◐	●	●	●	●	●	●
6	Constructing explanations and designing solutions	●	●	●	●	●	●	●	●	●	●
7	Engaging in argument from evidence	◐	◐	◐	◐	◐	◐	●	●	●	●
8	Obtaining, evaluating, and communicating information	●	●	●	●	●	●	●	●	●	●

Objective Number	Common Core State Standards Grade 6-8 ● = Fully covered ◐ = Partially covered	Activities						Problem-Solving Activities			
		Hand Generator	Solar Station	Wind Turbine	Hydro Turbine	Solar Vehicle	Boat Pulley	Lawn Mower	Moving Sign	Motorized Fan	Court Lights
Mathematical Practice											
MP1	Make sense of problems and persevere in solving them	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
MP2	Reason abstractly and quantitatively	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
MP3	Construct viable arguments and critique the reasoning of others	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
MP4	Model with mathematics	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
MP5	Use appropriate tools strategically	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
MP6	Attend to precision	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
MP7	Look for and make use of structure	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
MP8	Look for and express regularity in repeated reasoning	◐	◐	◐	◐	◐	◐	◐	◐	◐	◐
Ratios & Proportional Relationships											
6.RP.A	Understand ratio concepts and use ratio reasoning to solve problems	◐			◐	◐	◐				
7.RP.A	Analyze proportional relationships and use them to solve real-world and mathematical problems	◐	◐	◐	◐	◐					
Expressions and Equations											
7.EE.B	Solve real-life and mathematical problems using numerical and algebraic expressions and equations					●	●				
8.EE.B	Understand the connections between proportional relationships, lines, and linear equations	◐	◐	◐	◐	◐	◐				
8.EE.C	Analyze and solve linear equations and pairs of simultaneous linear equations					●	●				
Function											
8.F.B	Use functions to model relationships between quantities	◐			◐	◐	◐				
Speaking and Listening											
SL 6-8.1	Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 6 topics, texts, and issues, building on others' ideas and expressing their own clearly	●	●	●	●	●	●	●	●	●	●
SL 6-8.4	Present claims and findings, sequencing ideas logically and using pertinent descriptions, facts, and details to accentuate main ideas or themes; use appropriate eye contact, adequate volume, and clear pronunciation	●	●	●	●	●	●	◐	◐	◐	◐
Reading Standards for Literacy in Science and Technical											
RST 6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks	●	●	●	●	●	●				
RST 6-8.4	Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6-8 texts and topics	●	●	●	●	●	●	●	●	●	●
RST 6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table)	●	●	●	●	●	●				
Writing Standards for Literacy in History/Social Studies, Science, & Technical Subjects											
WHST 6-8.1	Obtaining, evaluating, and communicating information	●	●	●	●	●	●	◐	◐	◐	◐
WHST. 6-8.2	Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes	●	●	●	●	●	●	◐	◐	◐	◐
WHST. 6-8.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience	●	●	●	●	●	●	◐	◐	◐	◐