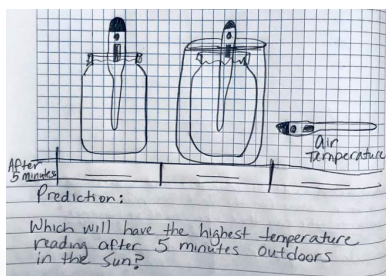
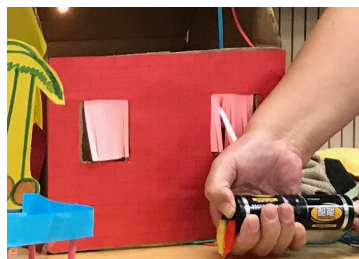
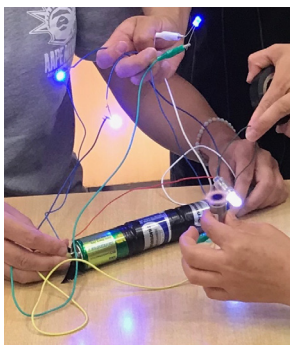


The Power of Solar: EbD TEEMS™ Grade 4 study of energy as a sustainable source of power

Technology and Engineering Laboratory Context

Students use conventional tools to design, construct, and test prototypes. By having access to these tools and instruments, students can **learn by doing** through authentic design challenges. This type of classroom environment fosters innovative and creative thinking through problem solving, communication, and collaboration.

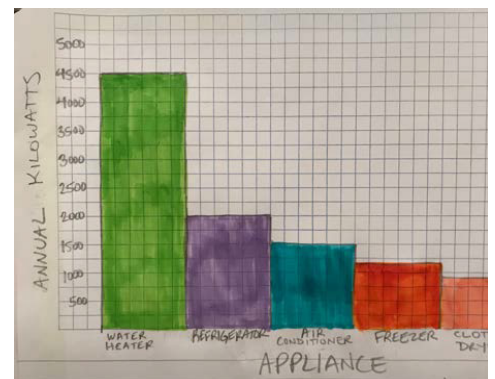
The sequence of lessons culminates in the final design challenge, “Off the Grid,” charging students with designing a treehouse or playhouse that uses solar energy to provide lighting and temperature regulation.



I-STEM Education in Practice

Mathematics and Science Concepts in a Hands-On, Constructivist Setting

The Power of Solar develops students’ understanding of energy systems and related technologies, temperature, electricity, and sustainable sources of energy. Within this course, scientific inquiry and technological design are purposefully used as learning approaches in order to develop students’ STEM literacy and higher-level thinking skills. Literacy strategies are integrated throughout lessons to support the development of reading, writing, and speaking skills. Core fourth grade math concepts and skills of decimals, perimeter, area, angles, points, lines, rays, and symmetry are reinforced through opportunities for application within meaningful STEM contexts.



How much electricity does the appliance use in one year? 91.25 Kilowatt-hours

What is the typical annual cost to use your appliance for one year? \$ 9.12

The International Technology and Engineering Educators Association’s STEM Center for Teaching and Learning™ has developed Engineering byDesign™, the only standards-based national model for Grades PK-12 delivering technological and engineering literacy through an Integrative STEM Education approach. The Engineering byDesign™ model was built using the following student learning standards and STEM initiatives:

- Next Generation Science Standards (K-12)
- Common Core State Standards (High School / Middle School)
- Standards for Technological Literacy (ITEEA)
- Principles and Standards for School Mathematics (NCTM)
- Project 2061
- Benchmarks for Science Literacy (AAAS)
- National Academy of Engineering’s Grand Challenges for Engineer-