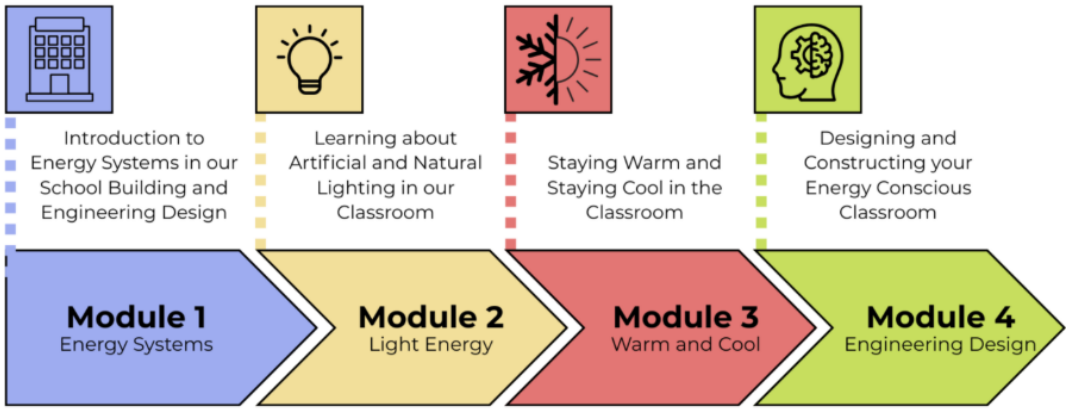
## Supplemental File S2: Curricular Materials

### *EYE: Energy and Your Environment (EYE) Overview*

The Energy and Your Environment (EYE) curriculum is a six-week unit designed to support energy education for formal middle school science classrooms by employing green building science. This standards-aligned unit fosters place-based education by using the school building to enhance students' systems thinking about energy consumption and energy flow between buildings and Earth systems.




## Links to Curricular Materials

- Open-access curricular materials located here
- Unit Outline with Links to Slides and Worksheets
- The Spanish translation of the EYE unit lessons can be found here.

## Unit Lessons with Content

Below is a table outlining the lessons within each module with relevant links to curricular materials.

| | # | 5E | Lesson |
|---|---|---|---|
| **Module 1: Energy Systems** | | | |
| | 1.1 | Engage | **Climate Change Overview:** Connecting students to the global problem of climate change |
| | 1.2 | Explore/Explain | **Buildings and Climate Change:** Introducing the relationship between climate change, CO2, and buildings |
| | 1.3 | Explore/Explain | **Energy Sources:** Renewable and non-renewable energy sources |
| | 1.4 | Explore/Explain | **Energy in My School:** Walk the school building exploring electrical energy in the school |
| | 1.5 | Extend/Evaluate | **Engineering Design:** Introducing the Engineering Design Problem to design an energy conscious one room schoolhouse |
| **Student Resources** | **Worksheets** | | |
| | **Slide Deck for Student Use** | | |
| **Module 2: Artificial & Natural Light** | | | |

| | | | |
|---|---|---|---|
| | 2.1 | Engage | **Light Energy in Buildings:** Introduction to how light energy works in buildings |
| | 2.2 | Explore/Explain | **Sunlight and Buildings:** Explore how the position of the building relates to the sun |
| | 2.3 | Explore/Explain | **Classroom Illumination:** Measure light illuminance to understand illuminance in the classroom |
| | 2.4 | Explore/Explain | **Light Bulbs:** Selecting and applying light bulbs for energy efficiency<br>[Engineering Design Related Activity] |
| | 2.5 | Extend/Evaluate | **Windows**: Apply understanding to think about window size, placement, and coverings.<br>[Engineering Design Related Activity] |
| **Student Resources** | Worksheets | | |
| | Slide Deck for Student Use | | |
| **Module 3: Staying Warm & Cool** | | | |
| | 3.1 | Engage/Explore/ Explain | **Thermal Energy Basics:** Thermal energy in and around my school building |
| | 3.2 | Engage/Explore/ Explain | **Sunlight & Thermal Energy:** Use a solar oven to explore thermal energy transfer (radiation)<br>[Engineering Design Related Activity] |
| | 3.3 | Engage/Explore/ Explain | **Airflow**: Sketch the flow of thermal energy in buildings to understand how air moves through buildings (convection) |
| | 3.4 | Explore/Explain/ Extend | **Insulation**: Use everyday objects to explore the idea of insulating materials and the way heat can transfer through materials (conduction) |
| | 3.5 | Explain/Extend/ Evaluate | **Engineering Design:** Apply thermal energy understanding to schoolhouse design |
| **Student Resources** | Worksheets | | |
| | Slide Deck for Student Use | | |
| **Teacher Resources** | Worksheets | | |
| **Module 4: Engineering Design** | | | |
| | 4.1, 4.2 | Define the Problem & Identify Criteria & Constraints | **Engineering Design Team Process Begins:** Students bring their individual concepts from their engineering design notebooks and begin the design process as a team. They collaboratively define the problem and identify their team goals. |
| | 4.3 | Select | **Site Selection & Building Design:** Teams make decisions about the building site, shape, and roof. Process ends with design sketches. |
| | 4.4, 4.5 | Prototype & Test | **Evaluate Design Decisions:** Teams use informational cards and the interactive spreadsheet to input and evaluate design decisions; Build cardboard prototype of final design |
| | 4.6 | Communicate | **Communicate Design:** Students do a final written report documenting their design; Option for oral class presentations |
| **Student Resources** | Worksheets | | |
| | Slide Deck for Student Use | | |
| **Teacher Resources** | Engineering Design Activity | | |