TABLE 1: The responsibility for each role and the applicable evidence to be used during the mock trial case and activity.

Role	Responsibility	Relevant facts/evidence from data and documents
Solar engineering expert (every student)	Offer professional opinions on solar energy concepts and applications during the court trial	1) The Sun's path: a. daily change of solar angles b. seasonal change of solar angles c. seasonal changes of daytime d. the Sun's path in different parts of the world
Plaintiff's team: plaintiff (1)*, plaintiff's attorneys (2), expert (1), secretary (1)	Provide evidence-based claims that the defendant violates the law	• Solar Shade Control Act (AB 2321) • Proof that the defendant did not obtain a permit to plant the trees • Prior proposal to pay the defendant for her tree removal fees • A list of all the advantages brought by renewable energy • Simulation data and energy output
Defendant's team: defendant (1), defense attorneys (2), defendant experts (1), secretary (1)	Collect evidence to defend against the plaintiff's charge	• Planted the trees in 1998 without any warning • The trees were planted on her own property and some of them were planted before solar panel installation • A list of all the advantages brought by the trees • Simulation data and energy output
Jury: foreperson (1), members (3–4), clerk (1)	Carry out evidence-based reasoning based on the data and documents shared by the plaintiff's and defendant's teams	• The facts presented by both plaintiff's and defendant's teams
Judge	Conduct court proceedings, interpret the law, show compassion and understanding for both plaintiff's and defendant's sides of the case, announce the verdict, and determine whether the defendant is guilty	• The facts presented by both plaintiff's and defendant's teams • The summary and decision presented

*The number in the parenthesis indicates the approximate number of students to play the designated role.

TABLE 2: A sample of student's work that showcases how one keeps track of the changes in energy output through iterative experimentations.

	Annual energy output (kWh)
Remove all trees (ideal condition to yield maximum energy output)	7,743
Keep all trees (worst condition for solar panels' performance)	5,936
Reduction from max energy output (%)	(7,743–5,936)/7,743 = 23.3*
The impact of removing **only ONE** tree of your choice on the solar panels' annual output:	
Cut Tree #__	**Annual energy output after cutting a tree**
Cut Tree #1	6,659
Reduction from max energy output	14.0%
Cut Tree #2	6,008
Reduction from max energy output	22.4%
Cut Tree #3	5,970
Reduction from max energy output	22.9%
Cut Tree #4	5,945
Reduction from max energy output	23.2%
Cut Tree #5	5,958
Reduction from max energy output	23.1%
The impact of removing **a combination of trees** on the solar panels' annual output:	
Cut Trees #__	**Annual energy output after cutting a combination of trees**
Cut Tree #1 and #2	7,159
Reduction from max energy output	7.5%
Cut Tree #1, #2 & #3	7,433
Reduction from max energy output	4.0%

*Students record the value of annual energy output and the Google sheet automatically calculates the percentage reduced from the max energy output. The formula adopted for calculation is the discrepancy between the maximum and the reduced output in each experiment over the maximum output.

TABLE 3: Student science performance rubric for use with science discussions, science notebooks, and science nonfiction writing.

	Science core ideas	Engaging in argument from evidence	Planning and carrying out investigations	Analyzing and interpreting data
4	Explanations illustrate an accurate and thorough understanding of scientific core ideas (concepts) being investigated.	Student clearly makes a claim about what was learned and uses strong evidence to support reasoning.	Student independently conducts investigations and designs and carries out his or her own investigations.	Comprehensive data is collected and thorough observations are made. Diagrams, charts, tables, and graphs are clear, neat, and used appropriately.
3	Explanations illustrate accurate understanding of most scientific core ideas (concepts) being investigated.	Student makes a claim about what was learned and uses some evidence to support reasoning.	Student follows procedures accurately to conduct given investigations, begins to design his or her own investigations.	Necessary data is collected. Observations are recorded. Diagrams, charts, tables, and graphs are clear and used appropriately most of the time.
2	Explanations illustrate a limited understanding of scientific core ideas (concepts) being investigated.	Student makes a claim about what was learned but is missing evidence to support reasoning.	Student does not completely carry out an investigation.	Some data is collected. Student may lean more heavily on observations. Diagrams, charts, tables, and graphs may be used inappropriately or have some missing information.
1	Explanations illustrate an inaccurate understanding of scientific core ideas (concepts) being investigated.	Student makes no claim about what was learned.	Student needs significant support to carry out an investigation.	Data and/or observations are missing or inaccurate.

Note: Rubric is adapted from National Energy Education Development (NEED) Project's Elementary Science of Energy Science Notebook and Student Worksheet Rubric (*https://bit.ly/3NqgjT4*). The science core ideas and representative scientific and engineering practices are detailed in the standard alignment table, which could be found in the supplement.