

**MIDDLE SCHOOL**

**Green Chemistry**

**Lesson Six: Presenting a Sustainable Solution**

**Background:** The way a product is marketed has an enormous impact on how it is perceived by consumers. A product’s packaging, the messaging around the it and its slogan all influence whether or not a consumer will purchase it. This lesson challenges students to consider the information they have gathered about the cost, safety and performance of their case and communicate the details of their final product in a presentation.

**Objectives:** Students will…

* Communicate the engineering design process and optimal cell phone case design

**Key Terms:** product comparison

**Materials:**

* Examples of packaged products (e.g., personal care items, cleaning products, snack foods) 2 of the same product per group
* Hot glue gun
* Packing/Scotch™ tape
* Scissors
* Rulers
* Mycelium cell phone cases

**Time Required:** 45–60 minute class period

**Standards Met:**

**MS-ETS1-1.** Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.

**MS-ETS1-2.** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

**MS-ETS1-3.** Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.

**MS-ETS1-4.** Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

**Green Chemistry Principles Addressed:**

* Safer Solvents & Auxiliaries
* Design for Degradation

**Keys to Success:**

* The product comparison can be done as a class rather than with partners or groups.
* Personal care products and household cleaners work well for the product comparison, as students are familiar with these. There are also many examples of products that use their packaging design and messaging to portray themselves as “green,” whether or not they actually are made according to green chemistry standards. For example, students can be given two different shampoos or dish soaps and they can decide which they would choose, based on green chemistry criteria.
* If available, empty containers/boxes can be used for the product comparison.

**Additional Resources:**

*30 of the Best Advertising Slogans*

<https://www.superdream.com/news-blog/best-advertising-slogans>

**Procedure:**

**5 E Procedure:**

*Engage:*Students consider the influence of product packaging and marketing on consumers by comparing the designs of two different brands of similar products.

* Divide the class into teams provide each team with two of the same product by different brands (e.g., 2 brands of shampoo or 2 brands of dish soap).
* Ask teams to write down some observations about what each product is trying to say.
* As a class, debrief the teams’ observations by capturing themes on the board. Reflect on what the biggest motivators were for students’ choices and the types of messaging different products used to encourage buyers.
* Reflect together if any of the products used cost, safety, or performance in their product claims and messaging.

*Explore:*Student groups determine what makes their case unique.

* Have students gather in their groups from previous lessons and explain that they will be asked to “market” one of their cell phone cases to the class through a short presentation. This presentation will attempt to persuade the class that their case is the best option for someone looking to buy a new cell phone case.
* Have students start thinking about the marketing of their case by asking groups to brainstorm what makes *their* case “the best.” Students should focus on the case they recommended in their Lesson 5 conclusions, and make a bulleted list of features that make their case stand out.

*Explain:* Groups create a product slogan that summarizes why someone should choose their case.

* Ask the class to share some of their favorite product slogans.
* Reflect together that slogans are used in a variety of ways. Like the design of packaging, some slogans are directly informative, and others are indirectly informative. For example, M&M’S® candies’ slogan is “Melts in your mouth, not in your hand,” which tells you information about the candies themselves. In contrast, Nike’s “Just Do It” slogan tells consumers more about the mindset the brand promotes and encourages the buyer to feel something.
* Challenge groups to come up with a slogan for their product that summarizes the reasons their product stands out.

*Extend/Elaborate:*Student groups work to create a presentation for their cell phone case.

* Students work in their groups to create a 5-minute presentation for their case; they can use the provided rubric to guide their work.
* Groups can be creative in their presentation (short sketch, video, PowerPoint, etc.) and each group member must have a role.
* If presenting live, groups should dedicate time to rehearsing their presentations.

*Evaluate:*Groups give their presentations to the class.

* Brainstorm a short list of People’s Choice Awards with the class.
* Have each group present. While the groups present, the class should be considering the winners for each People’s Choice Award.
* Evaluate each presentation. A sample rubric is provided in this lesson.
* After all presentations are complete, ask the class to anonymously vote for each People’s Choice Award. Tally the votes and announce the winners.

**Lesson Six: Presenating a Sustainable Solution Rubric**

Presentation Rubric

|  |  |  |
| --- | --- | --- |
| **Project component** | Points possible | Points earned |
| **Visual aid**  Describes features/benefits of case – 5  Environmental benefits – 5  Creativity in design – 5  Professional/organized – 5 | 20 |  |
| **Presentation**  Introduction of company – 5  Volume/eye contact – 5  Content is efficient, relevant, and rehearsed - 5  Meets time allotted (+/- 1 min) – 5 | 20 |  |

**Teacher Comments:**

*Note: Additional rubrics are available on Buck Institute for Education Presentation Rubric (bei.org)*