

The Pros and Cons of Hybrid Vehicles

Students examine the benefits and drawbacks of hybrid vehicles. For grades 7-12; DOK-3.

INTRODUCTION

Culminating Activity:

You are an advisor to a politician tasked with reducing emissions. One solution is to increase the use of hybrid vehicles. To implement this solution, the politician wants to subsidize all hybrid vehicles sold in the states to increase sales of these cars. You will create a section of a report titled “Benefits/ Drawbacks” in which you compare and contrast the advantages and disadvantages of this plan.

Checking for Understanding & Engagement

- What role will you be placed in for this lesson?
- What problem or situation does the culminating scenario activity center on?
- What aspect of this activity interests you the most?

Objectives (Students Will Be Able To...)

- Students will compare and contrast the advantages and disadvantages of subsidizing hybrid vehicles.

ACTIVITIES IN THIS LESSON

Vocabulary Development

Lecture

Activity

Using rehearsal and elaboration cognitive strategies (based on a Frayer Model), the instructor develops vocabulary for the following terms:

- *emission/emit*
- *hybrid/hybridization*
- *subsidy/subsidize*

Checking for Understanding & Engagement

- Explain what each of the above vocabulary word means and use it in a sentence.
- Do you use any of these words already?
- Which word do you think you will use the most often?

Reading

Research/Annotate

In this phase of the lesson, the instructor hands out two supplied articles for students to read and gain an understanding of the subject matter.

- *A retail and lifecycle cost analysis of hybrid electric vehicles* by Timothy Lipman ([here](#))
- *What is a hybrid car, and how does it work? We've got answers* ([here](#))

Checking for Understanding & Engagement

- What is a hybrid vehicle?
- What is the main point of the first article?
- What is the conclusion of the first article?
- In your own words, describe two statements in the first article that you found particularly relevant to the culminating activity.
- What is the main point of the second article?
- What is the conclusion of the second article?
- In your own words, describe two statements in the second article that you found particularly relevant to the culminating activity

Analysis of Hybrid Vehicle Benefits

Guided Practice

In this phase of the lesson, the teacher presents known pros and cons of hybrid vehicles, using elaboration techniques (examples, nonexamples, pictures, analogies) to reinforce understanding.

Checking for Understanding & Engagement

- In your own words, describe one pro and one con of hybrid vehicles.
- Is there a pro or con that I didn't mention?

Writing Development

Guided Practice

This activity employs the I Do, We Do, You Do instructional method. The teacher begins filling out a portion of the pros and cons Venn diagram, then students help the teacher, then students work independently.

Checking for Understanding & Engagement

- What did I look for when I filled in the graphic organizer?
- Where did I struggle when filling in the graphic organizer?
- How did I decide whether a feature was a benefit or a drawback?
- Would you want to buy a hybrid vehicle? Why or why not?
- What do you think is the biggest drawback of owning a hybrid vehicle?
- What do you think is the biggest benefit of owning a hybrid vehicle?

Independent Writing

Independent Practice

Students find a picture of a hybrid vehicle and traditional vehicle on the web and insert them into an online Google doc or Word document.

Then, using their completed graphic organizer, students write figure captions for the two pictures. In the figure captions, they write the most important benefit and drawback of owning the pictured vehicle.

In the main body of the document, they write one paragraph describing the pros and cons of owning a hybrid vehicle and pros/cons of owning a traditional vehicle.

SUMMATIVE ASSESSMENT

Assessment Type: Writing Samples

Teacher scores the writing samples according to content and organization. Figure captions are scored on whether the captions adhere to online guidelines. Low-level grammar and spelling do not form a part

of this lesson and should be graded only lightly at best.

NOTE: Throughout the lesson students will log their confidence and concerns using a Metacog Log, as described on page 112 of The Art and Science of Lesson Design by John Walkup and Stephon Squire.

Lesson Times

Vocabulary Development: 10 minutes

Research Analysis: 30 minutes

Independent Writing: 10 minutes

Industries / Subjects / Grades

Industries / Pathways

- Transportation

K-12 Subjects

- English-Language Arts

Grade Levels

- 7, 8, 9, 10, 11, 12

Standards and Objectives

Standards

California's 2013 CTE Standards

- **CTE.T.C.3.4** Describe the applications of alternative power sources

Author: Ammar Hanna

First Authored: December 18, 2019

Last Revised: December 18, 2019