Electric Cars Part 1

Segment Length: 4:44 minutes

Lesson Description:
Are electric cars the future we've been promised? Will they save us from climate chaos or are there "inconvenient truths" hidden beneath the surface? Join us as we delve into the world of electric cars, where high-energy sales pitches clash with hard-hitting realities. From the revelation that more electric cars won't significantly dent oil use to the environmental impact of battery production, this video uncovers five inconvenient facts that politicians and green activists may not want you to know. Buckle up as we challenge the status quo and explore the truths behind the electric car revolution.

Objectives:
Students will be able to:

- List three key statistics or facts regarding electric cars mentioned in the video
- Explain the relationship between electricity generation methods and the overall carbon footprint of electric vehicles
- Evaluate the feasibility of widespread adoption of electric cars based on the challenges highlighted in the video
- Compare the arguments presented by different stakeholders, including politicians, physicists, and environmental activists, regarding the benefits and limitations of electric cars,

Concepts & Key Terms:
Carbon Footprint: The total amount of greenhouse gases, primarily carbon dioxide, generated directly or indirectly by human activities, such as driving cars or manufacturing products, measured in units of carbon dioxide equivalents (CO2e).

Executive Order: A directive issued by a government official, generally the president or a governor, that carries the force of law and instructs government agencies or officials to take specific actions or implement particular policies *without requiring legislative approval.*

Fossil Fuels: Natural resources such as coal, oil, and natural gas, formed from the remains of ancient organisms.

Magical Thinking: The belief that you can influence real-world events with certain actions or rituals.

Sustainable: Capable of being maintained or continued over the long term without depleting natural resources or causing significant environmental damage.

Preview Activity:
Distribute copies of the K-W-L worksheet to the class. Have students fill in the K and W sections. After showing the video, have students complete the L section and answer the questions at the bottom of the worksheet.

Viewing Guide:

We recommend that teachers show the video segment twice: first to allow students to view the video and focus on the issues presented, and second to allow them time to complete the viewing guide. After they complete the viewing guide, allow students a few minutes to work in pairs to share and verify answers.

Answers to Viewing Guide

1. executive
2. hardly
3. electricity
4. enslaves
5. more

Electric Cars Part 1

Viewing Guide

Name _____ Date _____

Class _____ Teacher _____

Directions: As you watch the video, fill in the blanks with the correct words.

1. California's governor made that an _____ order.
2. More electric cars will _____dent oil use.
3. One reason is because _____ isn't all that green.
4. Key ingredients in batteries are mined in places that _____ people and use child labor.
5. They point out that the first 60,000 miles or so you're driving an electric vehicle, that electric vehicle will have emitted _____ carbon dioxide than if you just drove a conventional vehicle.

Now, take a few moments to reflect on the video and answer the questions below:

Why might electric cars not have as big of an impact on reducing oil consumption as initially believed? _____

_____

_____

Has this video changed how you think about electric vehicles? Why/why not?

_____

_____

_____

What do you think/how do you feel about learning that enslaved people and children provide much of the labor to mine materials for electric car batteries?

_____

_____

_____

Why are the minerals needed for batteries mined in other countries, not the U.S.?

_____

_____

_____

Discussion and Analysis

1. What are some basic facts about electric cars mentioned in the video?
2. Can you name one reason why some people think electric cars are good for the environment?
3. According to the video, how do electric cars impact the demand for oil?
4. Why do some experts say that electric cars won't solve all our environmental problems?
5. What do you think/how do you feel about learning that enslaved people and children provide much of the labor to mine materials for electric car batteries?
6. What are some challenges associated with sourcing materials for electric car batteries?
7. Why might transitioning to electric cars pose difficulties for certain countries or regions?
8. How do differing perspectives among stakeholders (consumers, car manufacturers, environmental activists, politicians, etc.) shape discussions about electric cars?
9. What role should the government play in promoting sustainable transportation options?
10. How effective do you think the current policies aimed at promoting electric car adoption are? Explain.
11. What are some potential long-term consequences of widespread electric car usage on the economy and environment?
12. How might advancements in battery technology impact the future of electric cars? What other advancements would have to be made to make electric cars more "green?"
13. Can you propose alternative solutions to reduce the environmental impact of transportation besides electric cars?
14. Should the government force individuals to change from conventional-engine cars to electric cars? Why/why not?
15. What ethical implications should be taken into account when considering the production and use of electric cars?

Discuss These Lines from the Video:

1. Gasoline cars are driving us towards climate chaos. We actually have to stop using fossil fuel vehicles.
2. Electric vehicles in general are better and more sustainable for the environment.
3. Electric cars are not all that "green".… One reason is because electricity isn't all that green.

4. They don’t know that most of America’s electricity comes from fossil fuels…natural gas and coal.
5. Most Americans proudly driving electric cars don’t know about this. They just don’t want mining done near them.
6. That electric vehicle will have emitted more carbon dioxide than if you just drove a conventional vehicle in the first place.
7. You have to own it a hundred thousand miles, and then the electric part wins by some so it doesn't get you a zero emissions vehicle.
8. Politicians make impossible assumptions about their batteries and the electric grid.
9. An army of children are at the heart of the mining production, wearing no shoes and in the most wretched conditions.

Quotes for Discussion:

Electric cars are coal-powered cars. Their carbon emissions can be worse than gasoline-powered cars. – Vinod Khosla

People say they are inventing electric cars. Well, where is the electricity coming from? Flowers? Maybe someday. But what is available now is oil and gas. – Christophe de Margerie

Porsche is the last bastion of cars for petrolheads. So when they start making electric cars, you realise the world really is changing. – Chris Harris

Electric cars are not going to take the market by storm, but it's going to be a gradual improvement. – Carlos Ghosn

It used to be — used to be that to buy an electric car, you had to make all sorts of compromises, but not now. – Joe Biden

I’m all for electric cars, but you have to have all the alternatives also. – Donald Trump

Electric cars are just fundamentally better, I think that's where the future is going to go, but it's only going to go there if the big car companies make risky decisions to do electric vehicles. – Elon Musk

Activities:

1. Have students complete the K-W-L chart in class or for homework.
2. Have students complete the political cartoon activity in class or for homework.
3. Have students complete the Venn Diagram activity in class or for homework.
4. Ask students to create a list of electric car pros and cons based on information presented in the video. Have them write a short paragraph explaining each

point, considering factors such as environmental impact, technological limitations, and economic implications.

5. Divide students into groups and assign each group a specific claim made in the video, such as the environmental impact of electric cars or the feasibility of transitioning to electric vehicles. Have groups research and fact-check their assigned claim using credible sources, then present their findings to the class.

6. Organize a debate in which students take on the roles of stakeholders in the electric car debate, such as environmental activists, automotive industry representatives, and government policymakers. Encourage students to research and prepare arguments supporting their assigned perspective, then engage in a structured debate discussing the benefits and drawbacks of electric cars compared to conventional vehicles.

7. Challenge students to write an opinion editorial expressing their viewpoint on the future of electric cars. Encourage them to incorporate evidence from the video as well as additional research to support their arguments. Discuss the importance of persuasive writing techniques and audience awareness in shaping public opinion.

8. Assign students to research and create presentations on the environmental impact of electric cars, focusing on specific aspects such as battery production, electricity generation, and lifecycle emissions. Have students analyze data and statistics to evaluate the environmental benefits and challenges associated with electric vehicles compared to conventional cars.

9. Students will weigh the pros and cons of government mandates versus letting consumers decide what type of car to purchase. Students should research arguments for and against each approach, prepare for a structured debate, present their arguments, and engage in a class discussion to reflect on ethical considerations and alternative approaches. After writing opinion pieces supporting their views, students will conclude with a class vote to gauge various perspectives on the issue.

10. Invite a guest speaker, such as an environmental scientist, automotive engineer, or policymaker, to discuss his or her expertise on electric cars. Encourage students to prepare questions in advance and actively engage in a Q&A session to deepen their understanding of the topic.

11. Have students create a map of electric car charging stations in your area. Assign different students to survey specific sections of the areas and join their data together to create the full map. Do the same for gas stations. Compare the data. Have a class discussion: Do the charging stations appear to be adequate for the community's needs if more people convert to electric vehicles? What will happen to gas stations as more people convert to electric vehicles? Who built the network of gas stations? Why? Who should be responsible for building a network of electric charging stations? Why? What are the drawbacks of electric charging stations?

Name _____ Date _____

Class _____ Period _____ Teacher _____

Electric Cars Part 1

K-W-L Chart

Directions: Complete the **K** and **W** sections prior to watching the video. After you have seen the video, complete the **L** section and answer the questions below the K-W-L chart.

K	W	L
What I know about electric cars and the environment...	What I want to know about electric cars and the environment...	What I've learned about electric cars and the environment...

Why might electric cars not have as big of an impact on reducing oil consumption as initially believed? _____

_____

_____

Why did John Stossel say that the government's vision of all cars being electric in the future is "magical thinking?" _____

_____

_____

_____

Name _____ Date _____

Class _____ Period _____ Teacher _____

Electric Cars Part 1
Venn Diagram

Directions: Complete the three sections below in the Venn Diagram. What are the similarities and differences between conventional vehicles and electric vehicles?

Conventional Vehicles	Both	Electric Vehicles

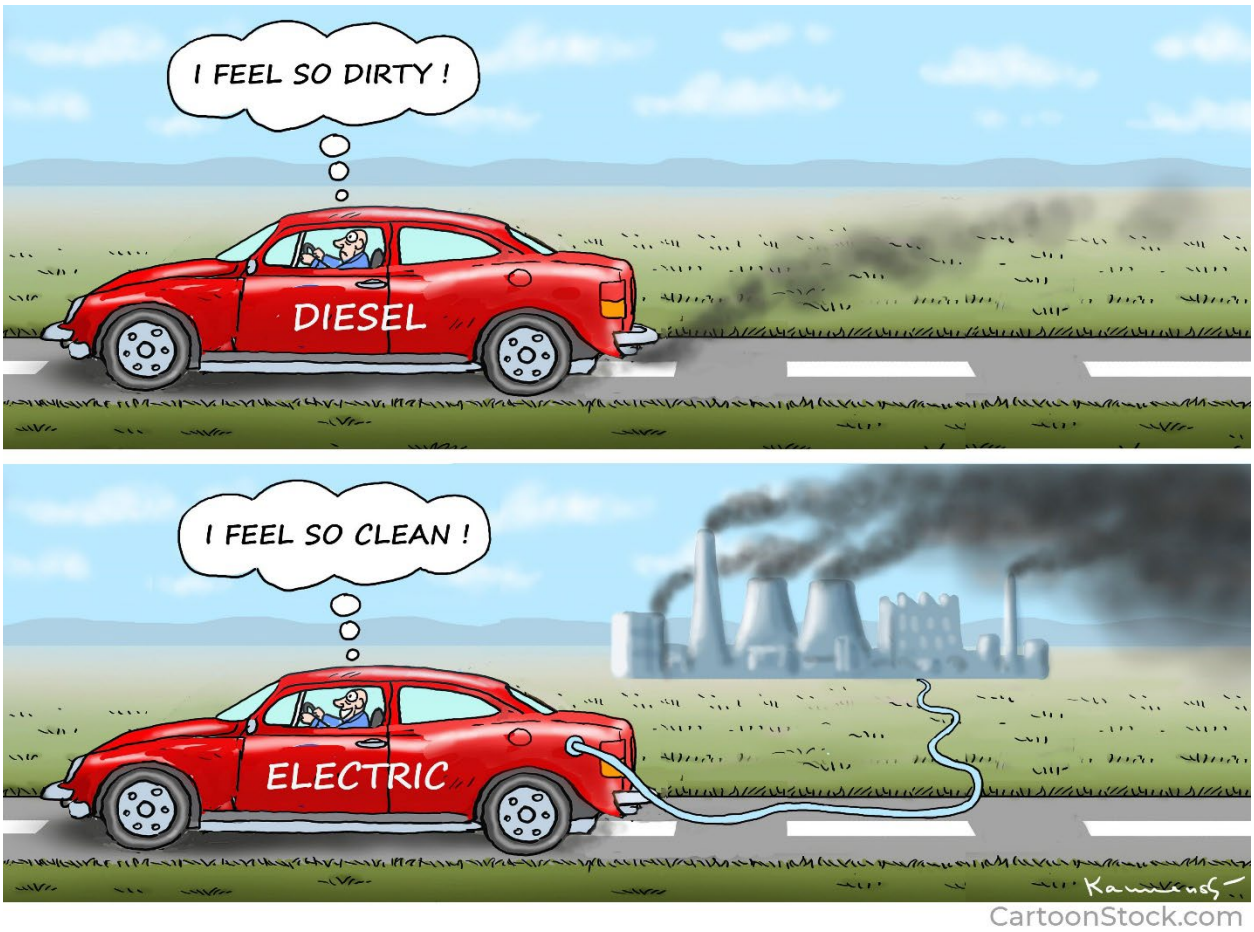
Name _____ Date _____

Class _____ Period ____ Teacher _____

Electric Cars Part 1

Political Cartoon Activity

Directions: Use the political cartoon to answer the questions below.



Briefly describe what is happening in the cartoon. _____

_____

_____

Is the electric car driver justified in feeling "clean?" Why/why not? _____

_____

_____

How does the cartoon relate to the video? _____

_____

Is either car better for the environment? If so, which? Why/why not? _____

_____

_____