

the Gov

“Electric Car: American Industry and
Innovation”
Language Arts Lesson Plan

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the News

**A daily news broadcast for High School and Middle School students
now under development by MacNeil/Lehrer Productions**



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“Electric Car: American Industry and Innovation” Language Arts Lesson Plan

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Winter, 2009

Dear Educator,

the.News online video reports for *the.Gov* provide middle and high school students with a valuable exercise in science, social studies and language arts. This video report on the “Electric Car: American Industry and Innovation” at www.pbs.org/newshour/thenews/thegov explores how this new technology is driving development of the electric car and public policy. Lesson plans for social studies, science and language arts are available in the “For Educators” section of the website. All videos and curricula have been informed by *the.News* instructional design that can be found on the website www.pbs.org/newshour/thenews. *the.Gov* is open-captioned. The curriculum includes content-based standards, discussion questions, student activities, vocabulary and primary reference sources. A complete transcript of each video report includes time codes to assist in isolating specific segments of the video. This material is presented as options to fit teachers’ instructional needs.

We have also added, starting with this video segment, references to Larry Bell’s “The 12 Powerful Words.” Relevant “powerful words” are highlighted in **bold** in the lesson plans and in the transcript (to denote where they are used in the video segment).

We welcome our new partners at the Omaha Public Schools who have joined *the.News* in a special pilot project during the 09-10 school year. We are also launching a new authoring tool for students called *YOU.edit*, to launch in early 2010. It will give students an online tool to remix the content of *the.Globe* reports (as well as all the other *the.News* videos), so they can create their own multimedia presentations. This editing tool will reside on our website so that it will be available to all students with an internet connection. It will be password protected so that it can serve as a viable educational asset that allows classroom teachers to assign multimedia projects within the security and content safety of *the.News* website.

For the first time we are now providing answers to our student “thought starter” questions found on the home page (and on the Educators Page) underneath the video.

- #1 Denise Gray is in charge of battery development for GM. The fuel for electric vehicles is electricity stored in a battery. It provides power to one or more electric motors.**
- #2 Detroit Edison’s research shows that generating the power to run one electric vehicle creates less pollution than running a gas engine.**
- #3 There is no standard for the plug or box used to charge an electric vehicle’s batteries.**

For more information and questions about this material contact me at kjaffe@newshour.org

Sincerely,

Karen W. Jaffe
Manager, Education Projects, *the.News*
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“Electric Car: American Industry and Innovation”

This lesson was designed to support *the.News* video “Electric Car: American Industry and Innovation” The video can be found online at <http://www.pbs.org/newshour/thenews/thegov>



Grade Level: Grades 7-12

Content Areas Language Arts

Key Concept(s):

Students will analyze and assess the viability of electronic automobiles and construct a marketing plan to persuade the American car-buying public to support alternative fuel source vehicles.

Key Objectives: The Student Will:

- Understand the technical advances and challenges of manufacturing and support of alternative fuel source vehicles.
- Compose and **evaluate** arguments for and against the viability of electric-powered automobiles.
- **Analyze** the characteristics and relationships of the American car-buying public and
- **Formulate** a marketing strategy to convince a skeptical audience to purchase electric automobiles

Omaha Public Schools Language Arts Standards

<http://www.ops.org/district/CENTRALOFFICES/CurriculumandLearning/ContentStandardsfor20072008/tabid/912/Default.aspx>

Grade 7

Writing: Students will write for a variety of purposes and audiences in multiple genres.

Multiple Literacies: Students will research, summarize, and communicate information in a variety of media and formats (textual, visual, and digital)

Speaking and Listening: Students will develop and apply speaking skills to communicate key ideas in a variety of situations.

Grade 9-12

Writing: Students will write for a variety of purposes and audiences in multiple genres.

Speaking and Listening: Students will develop, apply, and refine speaking skills to communicate key ideas in a variety of situations.

Multiple Literacies: Students will research, synthesize, and communicate information in a variety of media and information (e.g., print, subscription databases, web resources) formats (textual, visual, and digital).



Key Vocabulary:

Counterargument: a fact or opinion that challenges the reasoning behind somebody's proposal and shows that there are grounds for taking an opposite view.

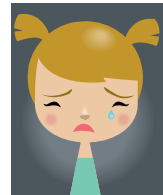
Counterevidence: facts, statistics, examples, and other kinds of evidence that rebut opposing arguments.

Ethos: the fundamental and distinctive character of a group, social context, or period of time, typically expressed in attitudes, habits, and beliefs.

Hybrid vehicles: automotive **using two fuels:** a vehicle with an engine that runs on electricity and gasoline, which it can alternate between

Logos: appeals to the reason or logic of the person(s) being persuaded.

Pathos: quality that arouses pity: the quality in something that makes people feel pity or sadness



Plug-in Hybrid Electric Vehicle (PHEV): battery-powered automobile with a backup gasoline-powered engine; is plugged in to an external power source to recharge.

Rebuttal: to deny the truth of something, especially by presenting arguments that disprove it

Tone: the general quality or character of something as an indicator of the attitude or view of the person who produced it

Source: Encarta Dictionary, New Oxford American Dictionary



McRel Standards

<http://www.mcrel.org/compendium/SubjectTopics.asp?SubjectID=7>

Level III (Grades 6-8)

Uses content, style, and structure (e.g., formal or informal language, genre, organization) appropriate for specific audiences (e.g., public, private) and purposes (e.g., to entertain, to influence, to inform)

Understands the different purposes of various media (e.g., to provide entertainment or information, to persuade, to transmit culture, to focus attention on an issue)

Uses descriptive language that clarifies and enhances ideas (e.g., establishes tone and mood, uses figurative language, uses sensory images and comparisons, uses a thesaurus to choose effective wording)

Knows characteristics of a wide range of media (e.g., television news favors messages that are immediate and visual, news photographs favor messages with an emotional component)

Understands various elements that recur across media (e.g., common features found in print and broadcast advertising; the layout of magazines and newspapers, including headlines, photographs, regular columns, feature articles, and editorials)

Understands aspects of media production and distribution (e.g., different steps and choices involved in planning and producing various media; various professionals who produce media, such as news writers, photographers, camera operators, film directors, graphic artists, political cartoonists)

Materials:

Segment of *the.News* “Electric Car: American Industry and Innovation”

<http://www.pbs.org/newshour/thenews/thegov>

Pens and highlighters

Scratch paper Optional: markers, poster board, computers

Timeframe: 2-4 class periods





McRel Standards <http://www.mcrel.org/compendium/SubjectTopics.asp?SubjectID=7>
Level IV (Grades 9-12)

Uses strategies to address writing to different audiences (e.g., includes explanations and definitions according to the audience's background, age, or knowledge of the topic, adjusts formality of style, considers interests of potential readers) 6. Uses strategies to adapt writing for different purposes (e.g., to explain, inform, analyze, entertain, reflect, persuade)

Uses the stylistic and rhetorical aspects of writing

Uses precise and descriptive language that clarifies and enhances ideas and supports different purposes (e.g., to stimulate the imagination of the reader, to translate concepts into simpler or more easily understood terms, to achieve a specific tone, to explain concepts in literature)

Understands that media messages have economic, political, social, and aesthetic purposes (e.g., to make money, to gain power or authority over others, to present ideas about how people should think or behave, to experiment with different kinds of symbolic forms or ideas)

Understands how different media (e.g., documentaries, current affairs programs, web pages) are structured to present a particular subject or point of view

Understands aspects of the construction of media messages and products (e.g., the significance of all parts of a visual text, such as how a title might tie in with main characters or themes)

Understands production elements that contribute to the effectiveness of a specific medium (e.g., the way black-and-white footage implies documented truth; the way set design suggests aspects of a character's socio-cultural context; effectiveness of packaging for similar products and their appeal to purchasers)

Understands the extent to which audience influences media production (e.g., selection of audiences on the basis of their importance to advertisers or media institutions; production of programs with high audience ratings and low production costs, such as game shows; how media producers determine or predict the nature of audiences)

Background:

The picture of the American automobile industry at the end of the first decade of the 21st century is of two contrasting images: one is of a crumbling Detroit, a once-proud symbol of American industrial might now abandoned and rusting, its factories at a standstill; the other is of the Chevrolet Volt, a viable alternative fuel source that, its creators hope, will spawn a rebirth of the city and of American innovation and industry.





Neither of the images were imagined or intended by American car manufacturers just ten years ago. Prior to the economic recession of 2008-2009, General Motors, Ford, and Chrysler

Partnership for 21st Century Skills

http://www.21stcenturyskills.org/documents/p21_framework_definitions_052909.pdf

CREATIVITY AND INNOVATION

Use a wide range of idea creation techniques (such as brainstorming)

Create new and worthwhile ideas (both incremental and radical concepts)

Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts

Develop, implement and communicate new ideas to others effectively

Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work

Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas

Media Literacy

Understanding how media messages are constructed, for what purposes and using which tools, characteristics and conventions.

Examine how individuals interpret messages differently, how values and

concentrated on producing big, burly trucks and sport utility vehicles (SUV) that offered little fuel efficiency but generated big profits. While foreign competitors, namely Japanese manufacturers like Toyota and Honda, concentrated on building smaller, more efficient compacts and sedans, Detroit's "Big Three" planned for an endless and profitable future focused on ever-bigger vehicles. When in 2000 Toyota launched the Prius, the first commercial vehicle that ran on a "hybrid" of gasoline and electric battery power, American automobile executives quickly dismissed the commercial future of alternatively-powered vehicles.

Indeed, when the Prius was first introduced, it was a niche vehicle thought to appeal only to environmentalists. But with several improvements to its design, its popularity among

celebrities, and the economic turbulence of the decade, hybrid vehicles have gone mainstream: not only have millions of these cars been sold, the hybrid has become an accepted and well-received symbol of conscientious behavior; hybrids, somewhat singlehandedly, increased mainstream interest in more environmental-friendly practices and products. In turn, the success of hybrids made apparent the yawning gap between foreign and domestic car manufacturers: not only had the Americans ignored the practices and products of their competitors, they had no contingency plans in place to adopt these concepts if the market were to shift. When fuel prices rose and the economy declined, the losses were staggering: the Big Three were each losing billions of dollars on a monthly basis in 2008 and 2009. In 2009, General Motors, one of the largest companies in the world, filed for bankruptcy; it is now in the trust of the federal government.

Partnership for 21st Century Skills

http://www.21stcenturyskills.org/documents/p21_framework_definitions_052909.pdf

Critical Thinking and Problem Solving

Framing, analyzing and synthesizing information in order to solve problems and answer questions. Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation

Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems

Effectively analyze and evaluate evidence, arguments, claims and beliefs

Analyze and evaluate major alternative points of view

Synthesize and make connections between information and arguments

Interpret information and draw conclusions based on the best analysis

Solve different kinds of non-familiar problems in both conventional and innovative ways

Identify and ask significant questions that clarify various points of view and lead to better solutions.



As part of its reorganization, and with the support of President Obama’s plans to encourage the development of new automotive technologies, the “new” GM intends to focus on both smaller, more fuel-efficient sedans and alternative-fuel vehicles. GM, having waited too long to challenge the Prius, instead will focus on so-called “plug-in” hybrids (PHEV): electric-powered cars that will be charged by plugging the vehicle into common electric outlets. Unlike the Prius, which is essentially a gasoline-powered car that is only powered by electricity at low speeds and during braking, PHEVs run exclusively on electric power for the first 40-70 miles; when the battery power is depleted, the engine switches to gasoline to repower the battery; once the battery is recharged, the car once again is exclusively electric. The benefits? A significant reduction in emissions and fuel costs when compared to traditional gasoline-powered vehicles.



GM is nearing production of its first PHEV, a sedan called the Volt; it is expected to be on the market in the fall of 2010. Its price, when coupled with a federal tax credit, is estimated between \$32-40,000, which will be at least ten thousand dollars more than the typical American car buyer spends on a vehicle—and ten thousand more than most current hybrid sedans. Though the company will not manufacture enough Volts to compete with the most popular cars in the marketplace, strong support and sales for the initial launch will surely improve the carmaker’s image and put GM in a strong position to be the leader of PHEVs as they become easier and cheaper to manufacture.

Communication and Collaboration

Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts

Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions

Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)

Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact

That said, plug-in hybrids come with a number of unknowns and questions, for PHEVs have never been commercially available prior to the launch of the Volt.

What effects will PHEV on the cost and availability of electricity, and will



increased demands for electricity also

lead to an increase in the use of electricity sources that cause air pollution? Will additional infrastructure, such as charging stations, and technical support be needed before PHEVs can be successful? Can and will Americans support a new technology that is significantly more expensive than what is currently available?

The answer to these questions may determine the future of the American automobile industry.



Lesson Plan Opening Activity

1. Explain to students that they will be watching a short video segment this class period. Implement a think-pair-share by having students identify at least three things they know about electric cars, and then have them share their ideas with the person sitting next to them.
2. Have students formulate a “word splash” in small groups of three: each group will predict the terms and concepts related to “electric car” they expect the video to address.
3. As the groups wrap up their discussion, instruct them to take 1-2 minutes to **predict** the *tone* of the video: ask, “What attitude or perspective do you think the video will have towards the production of electric cars?”
4. As a whole class, have each group **summarize** their word splashes and predictions about the video’s tone.
5. Discuss any patterns apparent in the groups’ thinking, **analyzing** where such understanding and attitudes might have derived.

Main Activity, Part I

1. Explain that the video features several segments on different stakeholders involved in the development of a mass-produced electric car.
2. Show the video “Electric Car: American Industry and Innovation”
3. When the video has finished, prompt students to write for 3-5 minutes on the following question: “Based on the video and the evidence on which you focused, do you expect to be driving an electronic automobile in five years?”
4. Have students partner with a peer who shares the same or similar perspective as their own. Give the groups 2-3 minutes to share their perspectives and identify evidence from the video that **support** their position; assign each group to **explain** counterarguments that the opposing perspective is likely to offer against the pair’s position.
5. Form quads by pairing one pair of supporters with another group of skeptics. Give the students 5-7 minutes to allow each pair to present their arguments in support of their position; the dissenting pair will listen and take notes on the opposing points of view.
6. Form two groups: one of all the supporters, the other of all the skeptics. Have these groups **compare** the opposing arguments and evidence presented and identify rebuttals to these points.
7. Have each group **summarize** the arguments of the opposing perspective and **describe** the rebuttals to these concerns.
8. Based on the evidence and counterevidence provided by each side, discuss as a whole class what challenges American automobile manufacturers face in successfully launching



electric cars.

Main Activity, Part II

In this activity, students will work in teams to develop a marketing/advertising plan to help sell the American car buying audience on the viability and affordability of electric cars. After analyzing the persuasive situation, the students will need to devise a strategy and produce some sort of visual media—commercial, advertisement, etc.—that appeals to the audience.

1. Review the main arguments and challenges discussed in the previous lesson.
2. Introduce the project; explain the importance of analyzing the context before attempting to propose solutions.
3. Divide students into groups of three; distribute the student handout, “Developing a Marketing Strategy for the Electric Car” and review with students.
4. Provide 7-10 minutes for the trios to review and complete Part I.
5. Explain to students that persuasive messages attempt to appeal to a person’s reason (logos), emotion (pathos), and/or his/her trust (ethos); most messages typically include more than one kind of appeal, but, given the brevity of a media message, usually one appeal predominates. Ask students to volunteer examples of ways in which American car companies have traditionally utilized these appeals to sell automobiles.
6. Provide students 5-7 minutes to review and complete Part II.
7. Direct students to Parts III and IV and explain to students that each will take a specific role in devising the marketing strategy: the *Producer* will coordinate the group’s efforts; the *Copywriter* will compose the text; and the *Designer* will be responsible for the development of visual images.
8. Provide students 7-10 minutes to determine which method of presentation they will develop and to begin to brainstorm the components of their presentation.
9. Once students have finished the planning worksheet, provide 3-5 minutes for the groups to determine the responsibilities for each member and to plan how class time will be used to complete the project. Work with students over the course of 1-2 additional class periods to assist their production of the project.
10. Have students unveil their strategy in the form of a short “press conference” of 1-2 minutes in which each group presents its results and explains the techniques it used to achieve its objective.



Extension Activities

- Electricity is but one way car manufacturers are considering replacing the traditional gasoline-powered automobile; ethanol, biodiesel, hydrogen fuel cell, and/or natural gas are also being considered as viable alternatives. Assign students to research one or more of these fuel sources and compose a letter to the Senator or Representative of the students' community encouraging the federal government to support development of this fuel. In their letter, students should explain the socioeconomic, environmental, and technological evidence that supports their position.
- The 2006 documentary *Who Killed the Electric Car?* provides background and insight into earlier efforts to develop a commercial electric vehicle. Of particular interest is the concluding portion of the film, which attempts to identify the factors that influenced GM's decision not to produce an electric vehicle back in the 1990s. After showing all or portions of the documentary, have students **analyze** these criteria and **evaluate** whether these same criteria will again impede the ability to successfully launch an electric car.

Assessment

Evaluate students on both their efforts and ability to **analyze** their audience, apply ideas from the video to the construction of their own media, and articulate their thinking and rhetorical “moves.” It might be helpful to assign students to write a brief process/reflective response in which they **trace** the steps by which they took to complete the project and **describe** the thinking/rationale behind major decisions made by the group; they can also **evaluate** the efforts of their fellow group members.

Resources

Project Get Ready <http://projectgetready.com/>

Fuel Our Future Now <http://fuelourfuturenow.com/>

Get Media Smart <http://pbskids.org/dontbuyit/>

The Advertising Century <http://adage.com/century/>

The Merchants of Cool <http://www.pbs.org/wgbh/pages/frontline/shows/cool/>

Advertising Archive: <http://www.adflip.com/>

Guide to Rhetorical Analysis:

<http://www.ic.arizona.edu/ic/snsmith/rhetanal/AristotleQuestionForm.pdf>

Who Killed the Electric Car (film, 2006; Sony Picture Classics)—This 90-minute documentary is widely available for purchase on Amazon.com and other web retailers; it is also available for rent at Netflix.com and may also be available at your local library.



Activity Designer:

Brad Cawn is an educational consultant and instructional coach for pre-service teacher candidates at Northwestern University.

Producer: _____ Copywriter: _____ Designer: _____

Developing a Marketing Strategy for the Electric Car

Scenario: Your team is in charge of marketing at a large American automobile company that plans to launch hybrid and fully electric vehicles in 2010. As the rollout date nears, the leaders of the company have charged your team with developing a media message that will encourage car buyers to overcome concerns about the legitimacy of an electric car and embrace an alternative fuel vehicle. What will you do?

Part I: Know Your Audience

Analyze: *What are the current attitudes of the general public towards the American automobile industry? Towards alternative fuel vehicles like the electric car?*

Define: *Who is the likely audience for an electric car? What characteristics or values define this audience?*

Predict: *What challenges or doubts are likely to arise in trying to persuade this audience to purchase electric vehicles?*

Formulate: *What might persuade audiences skeptical to the idea of purchasing an electric car?*

Part II: The Power of the Appeal

Describe feelings, reasons, and values to which you could appeal in order to sell buyers on the electric car.

Emotion (pathos):

Logic (logos):

Credibility/character (ethos):

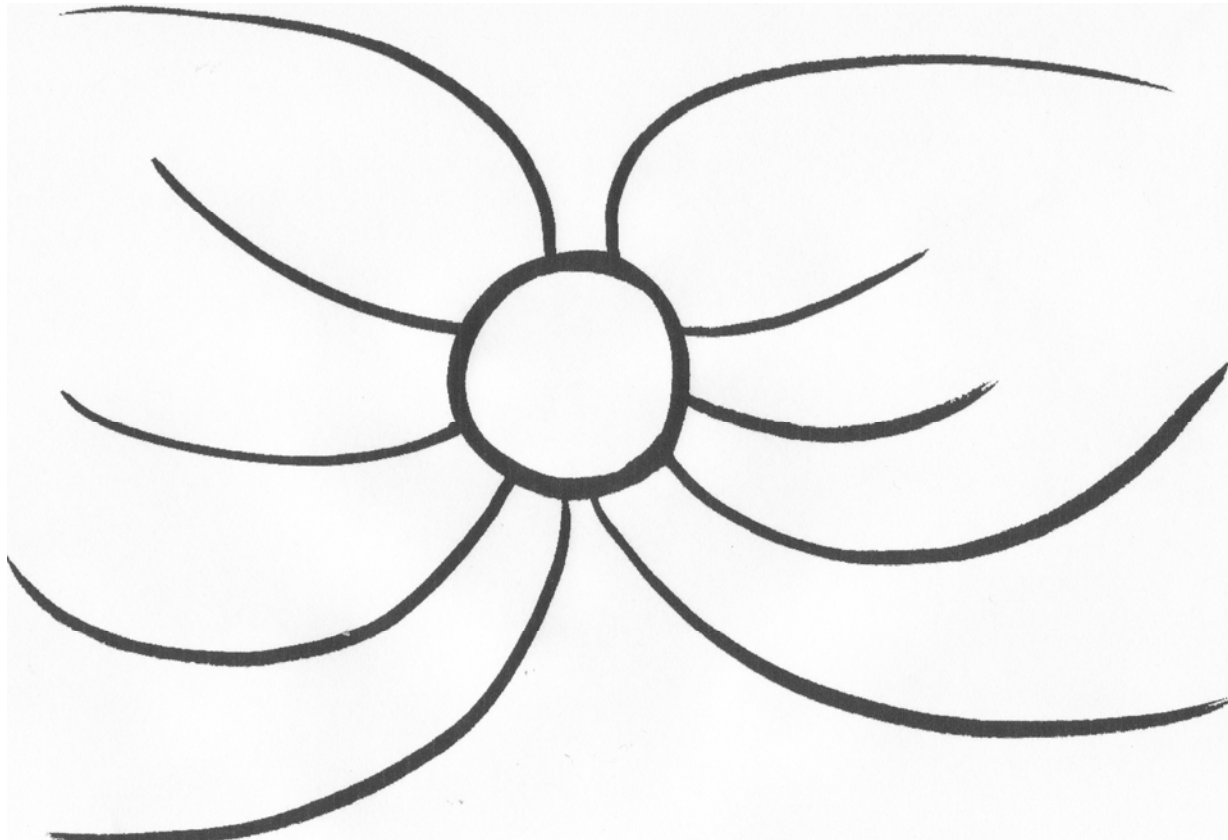


Based on your description of the audience, **explain** which one of the appeals the group believes would be most effective to market the electric car? What reasoning **supports** this conclusion?

Part III: The Medium is the Message

What is the best form with which to reach the audience you established earlier? Common formats used by marketers create include advertisements, videos, PowerPoint presentations, editorials, pamphlets, etc. **Explain** why you have chosen this format.

What images and/or language can be used in this format? When business strategists **formulate** ideas to market their products, they often use a mind map like the one printed below to. To complete the mind map for your group, begin by placing your target audience, appeal, and format in the center circle, and then use the branches to **identify** powerful words and images associated with electric cars, your intended appeal, and format.





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Part IV: The Vision ‘Thing’

Sketch or outline your concept in the space below.

Compose a slogan or catchphrase that represents and reflects your intended appeal.