

Econ Essentials

Seeker Series: Educator's Guide

INTRODUCTION

Welcome to Econ Essentials' Seeker Series. This program offers educators three compelling and thought-provoking videos and engaging activities that reinforce fundamental economic concepts in real-world contexts – agriculture and food, energy and fuel, and finance. Each 5-minute video features the story of an individual who is confronting challenging issues. The videos are appropriate for students in grades 6 - 12.

This educator guide provides background information about the topics covered in each video and guidance on how to use the videos in a variety of academic contexts including economics, social studies, science, and writing. A correlation of the videos to the Council for Economic Education's Voluntary National Content Standards in Economics (2nd edition) is included at the end of this guide.

These videos and the accompanying educator's guide are provided by CME Group and Discovery Education through a partnership aimed at improving student understanding about how people around the world are solving problems and overcoming challenges in the areas of agriculture, energy, and finance.

VIDEO OVERVIEWS

FOCUS

VIDEO TITLE AND OVERVIEW

Agriculture & Food

Why the U.S. Needs a New Generation of Farmers

In this video, students are introduced to Leanna Mulvihill, owner of Four Legs Farm. A young college graduate, Leanna traded a desk job in engineering for a career in agriculture. While owning and operating her own farm fulfills her desire to responsibly provide meat for members of her community, it doesn't come without a cost. Challenges associated with food production including the fact that so few young people are choosing to farm are presented. (Duration 05:11)

Energy & Fuel

How Algae Could Change the Fossil Fuel Industry

In this video, students meet Dave Hazlebeck, CEO of Global Algae Innovations. His company is developing new techniques to convert algae into energy. The challenges associated with bringing new and innovative technologies to market and reaching a sufficient scale to make the solutions viable are presented. (Duration 05:07)

Why the U.S. Needs a New Generation of Farmers

ABOUT

In this video, students are introduced to Leanna Mulvihill, owner of Four Legs Farm. A young college graduate, Leanna traded a desk job in engineering for a career in agriculture. While owning and operating her own farm fulfills her desire to responsibly provide meat for members of her community, it doesn't come without a cost. Challenges associated with food production including the fact that so few young people are choosing to farm are presented. (Duration 05:11)



DISCUSS

Before Viewing

1. Have you ever visited a working farm, lived on a farm, or had family members who work on/own farms? (Have students raise hands and keep them held until all three groups have self-identified to determine how many students are (or are not) familiar with farming.)
2. Where does your family buy food? Do you ever think about the source of your food when selecting it?
3. Do you know any of the farmers who produce your food? Do you produce any of your own food? What kind?
4. Given the choice of buying less-expensive food from far away and more expensive food that is grown locally, which would you choose? Why?
5. Would you consider a career in farming? Why or why not?

After Viewing

1. When Leanna introduces her 6-month old pigs, she says, “They are getting close to being bacon.” (0:27). Does seeing the young pigs and associating them with bacon bother you in any way? When eating meat, do you think about the source or how it was raised? How does the method in which your food is produced matter?
2. The movement for people to “buy local” is gaining momentum. What do you think it means to “buy local?” Why do you think more people are embracing this concept? Would you be willing to spend more for products that are produced locally?
3. The video presents a compelling argument for young people to consider farming, but it also documents the challenges of becoming a farmer. Are you interested in farming as a career after watching it?

CONNECT to Economics/Social Studies

- When people make choices about the foods they purchase, there are both present and future consequences. Identify some of these choices and discuss their implications for both the short- and long-term.
- Food security is the state of having reliable access to a sufficient quantity of affordable, nutritious food. As fewer young people have pursued careers in agriculture, America's food security has decreased. Discuss whether or not Americans need to be concerned with food security and the national implications of not having a secure, domestic source of food.
- Laws in the United States have an impact on food production, including the wages paid to workers, conditions in which people work, and the manner in which food can be produced and stored. Countries from which the U.S. imports food have different laws. Discuss the impact these laws have on the price of American food and the human welfare of those who produce it.
- Food production, like the production of other goods, is often influenced by comparative advantage. Florida, for example, is known for its production of citrus because the soil, terrain, and climate make it an ideal location to grow these products. Describe how the United States could develop a sufficient comparative advantage to drive the world's food supply.
- Leanna operates her business by selling meat shares. This is a form of Community Supported Agriculture or CSA in which people pay a predetermined amount in advance and then receive the food when it becomes available. The exact type and amount of food can vary. Discuss the costs and benefits of CSAs both for consumers and producers.
- The video discusses a loan forgiveness program that allowed Leanna to pay down her student debt and open her business. Government programs such as these and others (crop insurance, tax incentives, etc.) help farmers start and maintain their businesses. Compare the marginal benefits and marginal costs of providing a little more or a little less of these programs.
- Some people are willing to pay more for locally produced food, especially when the production practices meet their ethical standards. Discuss how supply and demand for this food impact the price. Explain how increases in price encourage consumers to look for substitutes and producers to supply more.
- There are a variety of programs for the agriculture industry including tax incentives, food policies for schools, grants, loans, and technical assistance. Research these programs and examine how they help, hurt, or hinder the farming industry.

CONNECT to Finance, Entrepreneurship, and Career Exploration

- The video identifies several financial challenges people face when pursuing farming: access to capital, credit, and student loan debt. Discuss how each factor impacts a young person's decisions and what can be done about each. Identify the steps one might take to become a farmer.
- Leanna qualified for a loan forgiveness program that helped reduce her student loan debt and allowed her to start her business. Conduct research to find out who can benefit from loan forgiveness programs both those related to agriculture and others. Discuss how loan forgiveness

Econ Essentials

programs might influence people's education and career choices.

- Entrepreneurship, by its very nature, involves risks. Discuss the risks Leanna faced in making the choice to become a farmer and business owner and those she may face going forward.
- Leanna describes her 12-hour days, inability to take vacation, and the need to have another job in order to support her choice to farm. Nonetheless, she loves what she is doing and is rewarded by knowing that she is providing a service in her community. Discuss the choices young people make when deciding upon a career including the type of work, salary and benefit, work location, social impact, etc.

CONNECT to Science, Agriculture, and Health

- There are different approaches to farming. Compare and contrast the practices used in factory farming and sustainable farming. Discuss the impact of these practices on land, animals, and people's health.
- Farming involves making many decisions including those related to land use, animal conditions, slaughtering methods, use of herbicides/ pesticides, etc. Discuss the ethical and environmental implications of these choices.
- Leanna, like many farmers, takes great pride in providing her communities with healthy sources of protein. Discuss the role of protein in people's diets and the impact a lack of healthy protein can have on one's health over a long period of time.
- Making connections with local providers of food is an important first step in trying "buy local." Identify or map areas within the community where one can "buy local." Discuss access and potential barriers to locally grown foods. Create a video or presentation urging individuals to consider the source of their food.

EXPLORE

New Farmers

<https://newfarmers.usda.gov/>

Find out what it takes to get started in farming with this resource from the United States Department of Agriculture.

The Facts About Food

<http://www.econessentialsinschool.com>

Ever wonder why your favorite sandwich costs what it does? Take a journey from farm to wallet and investigate what causes the prices of certain foods to increase and decrease with an interactive module from CME Group and Discovery Education.

How Algae Could Change the Fossil Fuel Industry

ABOUT

In this video, students meet Dave Hazlebeck, CEO of Global Algae Innovations. His company is developing new techniques to convert algae into energy. The challenges associated with bringing new and innovative technologies to market and reaching a sufficient scale to make the solutions viable are presented. (Duration 05:07)



DISCUSS

Before Viewing

1. In what ways are you and your family consumers of energy (electricity, fuel, etc.)?
2. Have you ever tried to reduce your consumption of energy? If so, how?
3. Do you know where the energy you consume comes from? Is it produced in a way that helps or hurts the environment?
4. Would you rather consume energy produced in our country or from a foreign country? Does relying on other countries for energy matter?

After Viewing

1. What are some of the environmental benefits that could occur if the United States increased production of algae biofuels?
2. Why should young people be concerned about the source of their energy? Are you more or less concerned about this after watching the video?
3. Driving a hybrid vehicle or geothermally heating and cooling one's home can be friendlier for the environment but frequently have higher costs to get started. Would you be willing to pay more in order to help protect the environment?
4. The video presents a compelling argument for biofuels, but it also documents the challenges of scaling their production. Do you think the benefits outweigh the costs?

CONNECT to Economics/Social Studies

© Copyright 2016 Discovery Education, Inc. All rights reserved. Discovery Education Inc. is a subsidiary of Discovery Communications, LLC.

Econ Essentials

- The United States is the world’s largest consumer of petroleum but not the largest producer¹. This causes the U.S. to rely on foreign countries for oil. Research and explore the impacts of this reliance on other nations for oil.
- As liquids, biofuels function in much the same fashion as gasoline and diesel. Explain how this could make them a better substitute for vehicles than electricity.
- Government can provide incentives that spur the production of more sustainable fuel sources as well as more efficient vehicles to use them. Explain the role of incentives for both producers and consumers.
- Entrepreneurial innovation is an important source of economic growth; however, Dave Hazlebeck explains that one reason algae biofuel has not reached scale is that the “costs are too high throughout the entire process” (2:38). Discuss what can be done to lower these costs and spur growth.
- The choices made by individuals, companies, and government agencies can have unintended consequences. Identify and discuss potential unintended consequences of increased biofuel production.

CONNECT to Finance, Entrepreneurship, and Career Exploration

- Entrepreneurship, by its very nature, involves risks. Discuss the risks Dave Hazlebeck faced in making the choice to start his business and those he may face going forward.
- Entrepreneurs come from many backgrounds. Dave Hazlebeck is a scientist with a PhD in chemical engineering². Explore how various interests and career choices hold the possibility for entrepreneurial endeavors.
- One of the reasons Global Algae Innovations has continued to stay in business, unlike some of its competitors, is that it has looked for way to innovate at every step in the production process. Compare and contrast this form innovation to those of other entrepreneurs.
- Many individuals consider a company’s environmental impact when investing. Such investors consider how companies obtain their raw goods, the waste they produce, how goods are transported, and more. Discuss whether you think environmental factors would influence your personal investing decisions.
- New technologies often require significant investments before seeing any success or sales. Explain why an investor should (or should not) consider investing in Global Algae Innovations.

CONNECT to Science, Agriculture, and Health

¹ http://www.eia.gov/energy_in_brief/article/foreign_oil_dependence.cfm

<http://www.globalgae.com/team/>

² <http://www.globalgae.com/team/>

Econ Essentials

- Each gallon of biofuel produced from algae creates ten pounds of animal feed. Dave Hazlebeck claims that replacing a large percentage of animal feed in this manner could “solve global warming to a great extent” (0:43). Discuss how feed for animals impacts global warming.
- Unlike other energy production methods, fuel from algae does not result in contaminated water. Identify the problems associated with water contamination and discuss why this is an important benefit of producing fuel from algae.
- The video points out that food production is the leading cause of deforestation and that planting 1,000 acres of algae can reduce the number of acres of crops planted by 40,000 acres. Research the amount of crops produced in order to feed animals and discuss the potential impacts that algae fuel production could have.
- Locating the biofuel production facility next to a power plant allows for the capture of carbon dioxide (CO₂), the primary greenhouse gas pollutant. Explore the impacts of CO₂ emissions and explain how decreasing these can have an impact on our environment.
- Biofuels are those that are derived from living matter. In addition to algae, research other forms of biofuels and innovations being explored to expand their use.

EXPLORE

Fueling the Future

<http://www.econessentialsinschool.com>

The price of fuel is often a factor that must be considered when a business sets prices for products and services. But how are fuel prices set? In this simulation from CME Group and Discovery Education, students must predict future gas prices to help an imaginary business turn a profit. But first they must learn how and why gas prices fluctuate and the impact of those changing gas prices.

Foundations of Finance

<http://www.econessentialsinschool.com>

Understanding interest rates is an important skill for students to understand and appreciate – especially as it relates to the impact rates of have those who borrow money. In this interactive module from CME Group and Discovery Education, students learn the impact of interest rates and participate in a Game of Life simulation to apply what they have learned.

EDUCATIONAL STANDARDS

Each video aligns with the Voluntary National Content Standards in Economics (2nd edition), developed by the Council for Economic Education. Specific standards and benchmarks covered by these videos for grades 8 and 12 include:

Standard	Agriculture & Food	Energy & Fuel
1: Scarcity: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.		
Grade 8 Benchmarks	1, 2, 3, 4	3, 4
Grade 12 Benchmarks	1, 2	1, 2
2: Decision Making: Effective decision making requires comparing the additional costs of alternatives with the additional benefits. Many choices involve doing a little more or a little less of something; few choices are “all or nothing” decisions.		
Grade 8 Benchmarks	2, 3	—
Grade 12 Benchmarks	2, 6	6
3: Allocation: Different methods can be used to allocate goods and services. People acting individually or collectively must choose which methods to use to allocate different kinds of goods and services.		
Grade 8 Benchmarks	2, 4, 5	—
Grade 12 Benchmarks	—	—
4: Incentives: People usually respond predictably to positive and negative incentives.		
Grade 8 Benchmarks	1, 2, 3	2, 3
Grade 12 Benchmarks	1, 3	1
5: Trade: Voluntary exchange occurs only when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and among individuals or organizations in different nations.		

Econ Essentials

Grade 8 Benchmarks	1, 4, 5	4, 5
Grade 12 Benchmarks	—	—
6: Specialization: When individuals, regions, and nations specialize in what they can produce at the lowest cost and then trade with others, both production and consumption increase.		
Grade 8 Benchmarks	—	2
Grade 12 Benchmarks	—	2, 4
7: Markets and Prices: A market exists when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.		
Grade 8 Benchmarks	1	—
Grade 12 Benchmarks	1, 4	—
8: Role of Prices: Prices send signals and provide incentives to buyers and sellers. When supply or demand changes, market prices adjust, affecting incentives.		
Grade 8 Benchmarks	1, 2, 3, 4	2, 3, 4
Grade 12 Benchmarks	1, 2, 3, 4	1, 2
9: Competition and Market Structure: Competition among sellers usually lowers costs and prices, and encourages producers to produce what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.		
Grade 8 Benchmarks	—	—
Grade 12 Benchmarks	—	2, 5
13: Income: Income for most people is determined by the market value of the productive resources they sell. What workers earn primarily depends on the market value of what they produce.		
Grade 8 Benchmarks	1, 2, 5	2
Grade 12 Benchmarks	1, 5	4
14: Entrepreneurship: Entrepreneurs take on the calculated risk of starting new businesses, either by embarking on new		

Econ Essentials

ventures similar to existing ones or by introducing new innovations. Entrepreneurial innovation is an important source of economic growth.		
Grade 8 Benchmarks	1, 2, 3, 4, 5	1, 2, 3, 4, 5
Grade 12 Benchmarks	1, 2	1, 2, 3
15: Economic Growth: Investment in factories, machinery, new technology, and in the health, education, and training of people stimulates economic growth and can raise future standards of living.		
Grade 8 Benchmarks	—	3, 4
Grade 12 Benchmarks	—	1, 3, 5
16: Role of Government and Market Failure: There is an economic role for government in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide for national defense, address environmental concerns, define and protect property rights, and attempt to make markets more competitive. Most government policies also have direct or indirect effects on peoples' incomes.		
Grade 8 Benchmarks	4	—
Grade 12 Benchmarks	5, 8, 10	5
17: Government Failure: Costs of government policies sometimes exceed benefits. This may occur because of incentives facing voters, government officials, and government employees, because of actions by special interest groups that can impose costs on the general public, or because social goals other than economic efficiency are being pursued.		
Grade 8 Benchmarks	—	—
Grade 12 Benchmarks	—	—
17: Economic Fluctuations: Fluctuations in a nation's overall levels of income, employment, and prices are determined by the interaction of spending and production decisions made by all households, firms, government agencies, and others in the economy. Recessions occur when overall levels of income and employment decline.		
Grade 8 Benchmarks	—	—

Econ Essentials

Grade 12 Benchmarks	—	—