



TEACHER'S GUIDE

BROKEN LIMBS:

APPLES, AGRICULTURE, AND
THE NEW AMERICAN FARMER

Overview

This Teacher's Guide includes three units that will help you to integrate information from **Broken Limbs: Apples, Agriculture and the New American Farmer** into your classroom.

These activities fit into a variety of curricula including family science/home economics; ecology and biodiversity; and consumer and media literacy. Each freestanding project stresses the use of open-ended questions to support student learning. Teachers can pick and choose elements to suit their existing curricula and classroom needs.

1. Screening and discussion uses Broken Limbs as a springboard for classroom discussion. Rather than viewing the entire documentary at once, you will be breaking the movie into two sections and reviewing specific content with your students. This viewing unit will stand alone as an introduction to the documentary or you can follow up with one or both of the hands-on projects below.

2. Buy Local Challenge asks students to examine their roles as consumers. Where do the foods that they buy come from?

3. Dissecting an Apple Pie asks students to trace the origin of ingredients in a pie and to think about how the ingredients got to the store.



Target Grades

Grades 9 through 12, and college-level, though units may be modified for use with younger students.

Ordering Information

Home Use Only

\$35 online at www.brokenlimbs.org or check or money order to:
Broken Limbs • 3407 Marilane Drive • Wenatchee, WA 98801

Group Screenings

\$85.00 rental or \$250.00 purchase
Bullfrog Films • P.O. Box 149 • Oley, PA 19547 • Tel: 610/779-8226;

www.bullfrogfilms.com/catalog/broke.html



VIEWING ACTIVITIES

Viewing Objectives

Students will actively view **Broken Limbs** to find information about farming, the global market, sustainable agriculture, and to look at their roles as consumers.

Subject Areas

Economics, Ecology, Agriculture, Geography, Consumer Literacy, Media Literacy.

Length

This unit takes approximately two 45- to 60-minute class periods to complete.

Materials

- Video or DVD copy of Broken Limbs
(ordering information on page 1)
- TV and VCR or DVD player
- "Viewing Broken Limbs" Worksheet (page 6)
- An apple or apples



Day 1 Pre-viewing Activities

Before class: Review the unit and projects. Make copies of the student worksheet.

In class: SHOW an apple or apples to class. ASK students if they can guess where the apples came from.

Depending on the time of year, the apple could have been grown locally or anywhere from New Zealand to China.

ASK students which country they think is the world's largest producer of apples. Which state is the largest producer in the U.S.?

China overtook the U.S. as the world's largest producer of apples in the early 1990s. Washington produces 50 percent of the U.S. apple crop on average.

Finally, ASK students what they think the word "sustainable" might mean. What then might "sustainable agriculture" mean?

The goal here is only to introduce the meaning of the word, not the full theory of sustainability. Webster's definitions of "sustain" include "to keep up or keep going" and "to supply with the necessities of life."

PASS OUT the worksheets. TELL students that this is a two-day activity and that you will be stopping the tape or DVD halfway through for review, discussion, and for them to answer questions on their worksheets.

START the program.

VIEWING ACTIVITIES

Day 1 Post-viewing Activities

STOP after you hear the narrator say, "We've always done business with our eye on the bottom line. But Dr. Ikerd was talking about something more - a triple bottom line - one that factored in not just dollars, but also our impact on the environment and the people around us."

(Time code: approximately 28:00)

ASK students: One of the problems we saw these farmers having in the movie was that they were having a hard time competing with farmers from other countries. Why do you think we buy fruit and vegetables from growers in the Southern Hemisphere?

(Possible answers: Cost is lower. Seasons are reversed, so fresh produce is available in the winter. Local growers can't always farm year-round.)

ASK students: How might shipping long distances affect the quality of the produce? How do perishables endure such long journeys?

Possible answers: To avoid mushy or overripe produce, it is sometimes picked green and ripened artificially in the warehouse. Storage chemicals have been developed that slow ripening. Varieties we see in the store have been selected because they weather shipping better than other, more delicate varieties.

ASK students or student groups to answer question #1 on their worksheet. (See below.)



Worksheet Question 1

Consumers today have come to expect fresh produce in the market year-round. In 1900, before global shipping and even refrigerators, what did people do to obtain fresh fruit and vegetables in winter?

Possible responses: canning, drying, storage in the "root cellar," cold frame gardening, greenhouse.

ASK students: Some apple growers have been able to succeed in a global market. Why couldn't every grower succeed in those same big markets? What are possible alternatives for farmers?

Possible answers: No right or wrong answers, gathering ideas for the next day's discussion.

ASK students: What was the idea that Dr. Ikerd was talking about? Write the answer on your worksheet under Question #2.

Sustainable Agriculture.



VIEWING ACTIVITIES

ASK students: Dr. Ikerd talked about something called a "triple bottom line." He was referring to the three pillars of sustainable agriculture. What are those three "pillars" or main ideas of sustainable agriculture? Write the ideas on your worksheet under question #2. Discuss the meaning of each briefly.

Ecologically sound. Economically viable. Socially responsible.



Worksheet Question 2

What is the theory that Dr. Ikerd supports?

Sustainable Agriculture

What are the three "pillars" of the theory?

Ecologically sound. Economically viable. Socially responsible.

ASK: What do you think the ultimate goal of sustainable agriculture is?

Possible answers: To farm in a way that allows future generations to farm successfully. To provide higher quality, safer food. To improve the social fabric of the communities in which we all live.

Day 2 Pre-viewing Activities

REVIEW notes from day one to prepare for viewing of the second half of **Broken Limbs**.

BEGIN with worksheet question #3. ASK students to write down the three pillars of sustainable agriculture in the left-hand column on worksheet question #3.



Worksheet Question 3 Table

	Jerzy Boyz	Grant Gibbs	CSA
Pillar 1 <i>Ecologically Sound</i>			
Pillar 2 <i>Economically Viable</i>			
Pillar 3 <i>Socially Responsible</i>			

TELL students that they will be looking at three examples of how Washington State farmers have managed to stay in business. They are looking for examples of how each farmer is practicing sustainable agriculture and they will want to make notes as they watch the documentary.



START tape and STOP when the credits roll.

VIEWING ACTIVITIES

Day 2 Post-viewing Activities

Teachers have the choice of utilizing class discussion to help students answer questions, having students or student groups work independently to find answers, or both. Be prepared to rewind and/or re-show portions of the documentary so students can find pertinent information.

ASK students how Jerzy Boyz Farm is using the principles of sustainable agriculture. Fill in answers on the worksheet.

(Possible responses: Ecologically - they farm organically and pay very close attention to the needs of their five acres; Economically - they save their money and operate without a lot of debt; Socially - they are willing to cooperate with other farmers and share knowledge to help them succeed.)

ASK students how Grant Gibbs is using the principles of sustainable agriculture. Fill in answers on the worksheet.

(Possible responses: Ecologically - he plants according to the natural capacities of his land and recycles everything he can; Economically - he figures out how much he needs for his produce to make a living and holds firm on that price; Socially - he makes direct connections with his customers and with the produce managers who buy his fruit.)

ASK students how EarthSong Farm and Community Supported Agriculture (CSA) are using the principles of sustainable agriculture. Fill in answers on the worksheet.

(Possible responses: Ecologically - Because they supply local food to local customers, none of the food they deliver has had to travel long distances, burning unnecessary amounts of fuel; Economically - by paying farmers in advance for a season subscription, they give farmers the money they need to get their crops started; Socially - CSA customers find they enjoy the relationships that develop between them and their farmers.)

TELL students that the next exercise will be to examine their own consumer habits.

ASK: What FOOD products do they buy or like to eat? Put student answers on the board. As you elicit answers, remind students that the idea is not to suddenly change what they eat or how they buy, only to start thinking about where the food they eat comes from and how that affects farmers or their own community. Are they "New American Consumers?"

After students have given a number of responses, sort answers into two categories:

Locally Grown or Produced	Multiple/mass producers, Global market

ASK: What are the advantages and disadvantages of eating locally produced foods?

(Possible pros: better taste/fresher product, better quality, more variety, money stays in the community, supports local farmer, better access to information about the food. Possible cons: less convenient, what you want might not always be available, more expensive.)



ASK students to answer question #4 on their worksheets.



Worksheet Question 4

What's your favorite food or foods?

Can you find a way to buy the food, or the ingredients in the food, locally? How? *(Students may use the back of their worksheet to answer.)*

ASK: Is there a bad guy in this story?

(If there is any bad guy in the story, it is the model we use in the United States to do business. In the mind of the filmmakers it was important to recognize that none of the people they interviewed for the movie were out to do harm. On the contrary, they were good people doing the best they could with the tools they had been given. Many business people have been trained that unending growth and ever-increasing efficiency are the only ways to succeed in business. Sustainable agriculture seeks to provide a new set of tools.)



Day 2 – Film Review

REVIEW the main points in Broken Limbs.

- The global market, for better or worse, is best served by large factory farms. Today, only 2 percent of people in the United States make their living farming.
- The global market asks for fruit that is uniform in color, taste and size.
- Consumers have come to expect fresh fruit year-round, which means that fruit is coming from the Southern Hemisphere in the winter months.
- Some companies, like Stemilt, have figured out how to compete in the global market.
- Other farmers are looking for other ways to stay in business and have changed their thinking about how to use their land.
- Many small farmers have started practicing sustainable agriculture, a practice that strives to be ecologically sound, economically viable and socially responsible all at once.
- Many small farmers look to local markets to support their farms. Local farmers are looking for local consumers.



VIEWING WORKSHEET

NAME and/or GROUP _____

CLASS PERIOD _____

DATE _____

(1) Consumers today have come to expect fresh fruit in the market year-round. In 1900, before global shipping and even refrigerators, what do you think people did to obtain (fresh) fruit and vegetables through winter?

(2) What is the theory that Dr. Ikerd supports?

What are the three “pillars” of Dr. Ikerd’s theory?

(3)



“Three Pillars” Table

	Jerzy Boyz	Grant Gibbs	CSA
Pillar 1			
Pillar 2			
Pillar 3			

(4) What's your favorite food or foods? Can you find a way to buy the food, or the ingredients in the food, locally? How? (Use back of page to answer.)





BUY LOCAL CHALLENGE

Objectives

This unit will help increase student awareness of where the foods they eat come from. Students will investigate their role as consumers and the availability of local food products.

Subject Areas

Reading, writing, research, consumer literacy, math, family science/home economics.

Length

This unit takes approximately three 45-minute or two 60-minute class periods to complete. A speaker or field trip can be added on an additional day.

Materials

- Computers with web access (or library research)



Prepare

Before Class: Determine how students will do research: Library? Online? Both? Reserve computers or library time as appropriate.

Determine if your students will be able to make a field trip to a local grocery store or farmer's market. Contact the store manager before the field trip and let them know that you will be looking for locally produced products and that students will want to know more about how stores decide what products to stock on their shelves or carry in the market. If a field trip is not possible, students may also write to store or farmer's market managers with questions; or invite store or market managers to speak to your students.

Day 1 Activities

REVIEW the three "pillars" of sustainable agriculture: ecologically sound, economically viable, and socially responsible.

ASK: How could buying a local food item instead of an item shipped from far away be considered more sustainable?

Discussion point: The key point here is to consider how much of the food dollar goes to the farmer. The more direct the line to the farmer, the more of the food dollar goes to that farmer. The more middlemen and shipping costs in between the farmer and the consumer, the less the farmer gets.

BUY LOCAL CHALLENGE

ASK students if they can think of any locally produced food products.

SPLIT students into groups and ask them to use library resources (don't forget the phone book!) or do online research to find locally produced food products. For this exercise, you can choose to define "locally produced" as items from a 50-, 100- or 200-mile radius of the school; or products produced within the state or region.

Though students are looking for locally produced food products, they may find other items as well. They may also make a list of any non-food products produced locally that they find.

ASK each group to find at least THREE different locally produced food products. The list of local food "producers" can include folks who garden or freeze, can or otherwise preserve local produce or meats, and hunters and fishermen who preserve their catches. Where do the local butcher shops get the meats they sell? Do local commercial fishermen sell their catches on the dock?

If, by chance, your school is near a commercial food manufacturing plant, how many ingredients in the food produced are local? How many are not? (See Dissecting an Apple Pie for related activities.)

After students have had time to do research, call the groups back together and compare notes. How many locally produced food products were the groups able to find? How many non-food items?

PASS OUT the "Buy Local Challenge" worksheets and go over the challenge objectives for the week to come.

Day 2: Optional FIELD TRIP or EXTENSION ACTIVITY

TELL the students that they will be contacting (writing, emailing or visiting) one or several of the farmers, businesspeople, etc. that they found in their research. The goal will be to learn what differences there are between local and non-local products from a business or a producer perspective.

REVIEW notes from DAY 1 and write letters and emails to businesses and individuals.

If a field trip or speaker are not practical for your classroom, ask students to write store or farmer's market managers. Make sure that students identify themselves by name and school. See the table on the following page for some sample questions.

BUY LOCAL CHALLENGE



Sample questions for local businesspeople.

Are any of the products you sell produced locally, or created from local materials?

Is it easier or harder to buy local products for your business? What do you prefer? Why?

Do local products cost more than national brands?

If we wanted to market a local product to you, what would the manager ask us to do?

Sample questions for farmers, gardeners, canners, hunters, etc.

When and why did you start (canning, hunting, fishing)?

Do you buy these products in the store, too?

Do you prefer homemade or store-bought? Why?

What work is involved in getting the food from the field to the table?

Day 2 POST-FIELD TRIP DISCUSSION

ASK students if they can see any advantages or disadvantages to buying locally produced food versus buying food shipped over long distances.

HOW might those differences impact the three pillars of sustainability?

- Ecological soundness
- Economic viability
- Social responsibility





The Buy Local Challenge

Over the course of the normal family shopping during the week to come, or in the course of your own food buying, see if you can replace three non-local items you would have purchased with three locally produced items. Bring back a list of the three items you found, along with a short paragraph about how the locally produced item differed from the non-locally produced item. Comment on the following:

- **TASTE:** Did the local product taste different, better or worse, than the non-local product you would normally buy? Why do you think that is?
- **PRICE:** Note the price and compare to other similar products in the store. How many other similar products are there? Is the local product more or less expensive?
- **READ THE LABEL:** What ingredients do the local products contain? Are they all local? How does the ingredient list compare to other similar products in the store?
- **PACKAGING:** Note the size and shape of the container. Is it unique? Bigger or smaller than similar products? What does the label look like? Is there an address, phone, or e-mail on the label so you can contact the producer? Has anything been done to make the product stand out on the shelf?
- **PRODUCT PLACEMENT:** Note where the products are on the shelf: Are they at eye-level where you can easily see them? In a special area of the store? Hidden away?





DISSECTING AN APPLE PIE

Objectives

Students will "dissect" the origin of the ingredients in an apple pie to become aware of the complexity of the modern food chain. Where were the ingredients grown? How were they grown? How were they transported?

Subject Areas

Reading, research, writing, geography, consumer literacy, family science/home economics.

Length

Two 45-minute class periods or one 60-minute class period.

Extension activities include making an apple pie or asking students to "dissect" the ingredients in their favorite foods.

Materials

Computers with Web access or library research time
 "Dissecting an Apple Pie" worksheet (page 12)
 Maps of the world and the United States



Prepare

Before Class: Determine how students will do research: Library? Online? Both? Make copies of the "Dissecting an Apple Pie" worksheet.

Day 1 Activities

REVIEW the three "pillars" of sustainable agriculture: ecologically sound, economically viable, and socially responsible.

ASK: What roles can students and their families play in supporting sustainable agriculture?

Point out to students that they don't have to completely change what they eat. They can make informed decisions and be aware of where the food they eat comes from.

ASK students what their favorite fruits or vegetables are. Write responses on the board.

ASK students where these foods OR the ingredients in their favorite foods might come from.

For instance, the potatoes for French fries might come from Idaho or Argentina, the oil for cooking from Kansas or China and the salt from Utah or Africa. The point is, they often won't know.

DISSECTING AN APPLE PIE

TELL students that they will look at one product – an apple pie – and try to determine where the ingredients in the pie come from.

Students will split into six groups and each group will investigate the possible origins of one ingredient and if there are any options for sourcing the ingredient locally.



GROUP	INGREDIENT
1	Apples
2	Sugar
3	Butter
4	Cinnamon
5	Flour
6	Salt

Example: An apple might come from the United States, Chile, or New Zealand. It might have been transported via truck, rail or air.

After each group has had time to do research, call the groups back together and INVITE students to compare their findings.

Use pins on the maps to show where the pie ingredients might come from.

Compare notes on making a pie from all local ingredients. Can all the ingredients be found locally?

Day 2: Optional EXTENSION ACTIVITY

- Make an apple pie!
- Make two pies, one from local ingredients, one from non-local.
- Find locally made pies for sale. Find out where the bakers obtained the ingredients.
- Students can dissect the ingredients in their favorite foods.



DISSECTING AN APPLE PIE WORKSHEET

NAME and/or GROUP**CLASS PERIOD****DATE****INGREDIENT:**

(1) Where did the ingredient come from? Give at least three options.

Bonus Question: Is there an alternative to this ingredient?

(2) How was the ingredient transported? Give at least three options.

Bonus question: How much do you think the cost of transportation adds to the cost of the finished product?

(3) How and/or where could you find a LOCAL version of this ingredient?

Bonus question: Can you find an ORGANIC version of this ingredient?





ADDITIONAL RESOURCES

"Don't search for the answers, which could not be given to you now, because you would not be able to live them. ... Live the questions now. Perhaps then, someday far in the future, you will gradually, without even noticing it, live your way into the answer."

- Rainer Maria Rilke

BOOKS

Gary Paul Nabhan, *Coming Home to Eat*, W.W. Norton, 2002

Michael Pollan, *Botany of Desire*, Random House, 2001

Eric Schlosser, *Fast Food Nation*, HarperCollins, 2002

Joan Dye Gussow, *This Organic Life*, Chelsea Green, 2001

Wendell Berry, *The Unsettling of America*, Sierra Club Books, 1997

Vandana Shiva, *Stolen Harvest*, South End Press, 2000



WEBSITES

The works of Dr. John Ikerd – www.ssu.missouri.edu/faculty/jikerd
The writings that provided the original inspiration for Broken Limbs.

Local Harvest – www.localharvest.org

A national directory of small farms seeking to attract and connect to their local supporters.

Slow Food – www.slowfood.com

An international organization dedicated to protecting the pleasures of the table by preserving agricultural traditions. Start a "convivium" in your area.

MORE MOVIES

Sweet Soil – www.berkshirecoop.org/sweetsoil

The stories of four family farms, a natural foods store committed to supporting them, and a community's passion for fresh, local food in the Berkshires at harvest time.

Home Grow'n – www.pointofviewfilms.com

Examines the impact of suburban sprawl on agricultural lands.

The Future of Food – www.thefutureoffood.com

An overview of genetically modified foods, how they work and how they impact our lives.

For more educational resources, visit the Educators section at:

www.brokenlimbs.org