



History

The seed for LiFE was planted in the 1970s when Joan Gussow, EdD, the Mary Swartz Rose Professor of Nutrition Education Emeritus, brought the perspective of food-system study to Teachers College. In 1996 Isobel Contento, faculty member in Nutrition Education, Angela Calabrese Barton, faculty member in Science Education, and Pamela Koch, then a doctoral student, decided to bring food-system study to upper elementary and middle school students. They collaborated and developed a science curriculum that educated children about food systems. Since then, the LiFE Program has grown and expanded to include the interplay of biology, personal behavior, and the present food system and technological environment which encourages over-consumption and sedentary behavior. LiFE has been funded by the National Institutes of Health (NIH), National Center for Research Resources (NCRR), Science Education Partnership Award (SEPA) since 1997. LiFE's current grant to develop and pilot test the fourth module in the LiFE program, *Choice, Control, and Change*, goes through 2009.

LiFE currently is comprised of four modules, with each module containing 20-30 lessons. The modules are: *Growing Food*, *Farm to Table & Beyond*, *Food & Health*, and *Choice Control & Change (C3)*

The first three modules initially were piloted during the 1997-98 school year (4 classes), with a formative evaluation in the 1998-99 school year (8 classes) and a summative evaluation that investigated effects on students conceptual understandings, attitudes, and behaviors in 1999-2001 (23 intervention classes and 19 comparison classes). This took place in East Harlem and Washington Heights in New York City. Results of the evaluation are available on request.

In 2001, LiFE began its dissemination phase. From 2001-2003, the LiFE project worked with three partners:

- ***University of St. Louis, Missouri***
The University worked with two school districts in the area surrounding St. Louis
- ***Lawrence Hall of Science (LHS)***
LHS worked with the Hayward Unified School District
- ***The Center for Ecoliteracy***
The Center worked with Berkeley Unified School District as well as select schools in Marin County

From 2002-2004, LiFE worked with:

- ***University of Texas at Austin***
The University worked with Austin schools
- ***The Food Trust in Philadelphia, Pennsylvania***
Food Trust worked with numerous schools in the Philadelphia area

Implementation also continued in New York City public schools during this dissemination phase. Each partner facilitated the implementation of LiFE in about 40 total classrooms, 20 during each school year.

The *Choice Control & Change (C3)* module is undergoing summative evaluation for student outcomes during the 2006-07 school year

What is LiFE?

It's a thought-provoking, action-changing, inquiry-based curriculum that supports student investigations of topics in life science using a familiar domain—food. As food scientists, students ask probing questions such as:

- Why are plants so special?
- How does nature work?
- Who grows our food?
- How does farming affect the environment?

LiFE's QuESTA Learning Cycle

Using QuESTA, students engage in learning science as a process. They

- **Question** what they already know and what they want to learn;
- **Experiment** through testing hypotheses, collecting data, and interpreting results;
- **Search** to learn answers to questions;
- **Theorize** to develop new knowledge constructs; and
- **Apply** what they have learned to their daily lives.

LiFE Teacher Guides include:

- Lesson plans with helpful background information, practical teaching tips, and tools for assessment
- Student activity sheets and readings
- A matrix that maps LiFE to the *National Science Education Standards* and *Benchmarks for Science Literacy*

LiFE Modules:

- *Growing Food* (grade 4, 5 or 6)
- *Farm to Table & Beyond* (grade 5 or 6)
- *Food & Health* (grades 5 or 6)
- *Choice, Control, and Change* (grade 6, 7, or 8)

Growing Food (grades 4, 5, or 6)

Overview

Students investigate and expand their understandings about how nature provides us with food through studying photosynthesis, structure and function of plant parts, interactions in nature, and the “designed world” of agricultural systems that produces the plants and animals humans desire for food. Then the students explore and analyze their foods choices in light of what they have learned about our food production system.

Table of Contents

Acknowledgements

Introduction

Making Science Real, Meaningful, and Successful

Getting Acquainted with LiFE

Materials

Science Standards Matrices

Unit 1: Becoming Food Scientists

Lesson 1: Corn Investigations

Lesson 2: Exploring Grapes

Lesson 3: Making Grape Juice

Lesson 4: Preassessment

Unit 2: Plants

Lesson 5: The Producers

Lesson 6: Celebrating Plant Parts

Lesson 7: Energy Transformation

Lesson 8: Linking Plants and Animals

Unit 3: Food Webs

Lesson 9: Nature’s Decomposers

Lesson 10: Classroom Composting

Lesson 11: Web of Interactions

Unit 4: Agriculture

Lesson 12: No Farmers, No Food

Lesson 13: Classroom Crops

Lesson 14: Investigating Soil

Lesson 15: Soil Texture

Lesson 16: Crops and Weather

Unit 5: Making Choices

Lesson 17: Regional Eating

Lesson 18: Comparing Farming Practices

Lesson 19: Farmer Frieda’s Design Project

Lesson 20: Bringing It All Together

Bibliography

Resources

Glossary

Driving Questions

Module: How does nature provide us with food?

Unit 1: What is a food scientist?

Unit 2: If there were no plants, would humans have food?

Unit 3: How do components in nature interact with each other?

Unit 4: How do we interact with nature to meet our food needs?

Unit 5: How can we use the science we learned to make food and agriculture choices?



LINKING FOOD AND THE ENVIRONMENT

AN INQUIRY-BASED SCIENCE AND NUTRITION PROGRAM

Farm to Table & Beyond (grades 5 or 6)

Overview

Students explore and deepen their understanding about food systems. They begin with investigating why we have a food system and how our current lifestyles depend on a food system. Students continue learning about how food is processed, investigating the waste and pollution that is created through our food system, and then exploring the environmental impacts of our food system. The module ends with students investigating their own food choices to decide if and what they want to change about how they eat. Students then discuss, debate and defend their choices.

Table of Contents

Acknowledgements

Introduction

Making Science Real, Meaningful, and Successful

Getting Acquainted with LiFE

Materials

Science Standards Matrices

Unit 1: Becoming Food Scientists

Lesson 1: Exploring Apples

Lesson 2: Making Applesauce

Lesson 3: Preassessment

Unit 2: Why Food Systems

Lesson 4: Industrial Food Systems

Lesson 5: Regional Food Systems

Lesson 6: Food Packaging

Lesson 7: Energy and Packaging

Lesson 8: Transporting Food

Unit 3: Food Processing

Lesson 9: How Fresh Food Changes

Lesson 10: Becoming Food Processors

Lesson 11: Making and Eating Pancakes

Lesson 12: Degrees of Processing

Lesson 13: How and Why Food Changes

Lesson 14: Food Preservation

Unit 4: Waste and Pollution

Lesson 15: Beyond the Trashcan

Lesson 16: Waste Inventory

Lesson 17: Analyzing Cafeteria Waste

Lesson 18: Taking Action

Lesson 19: Making Action work

Unit 5: Environmental Effects

Lesson 20: Fossil Fuels and Society

Lesson 21: The Carbon Cycle

Lesson 22: Fossil Fuels and Environment

Lesson 23: Sinks of Pollution

Lesson 24: Pollution and the Food System

Lesson 25: Food System Choices

Unit 6: Making Choices

Lesson 26: Changing Our Food Choices

Lesson 27: Food System Posters

Lesson 28: Bringing It All Together

Bibliography

Resources

Glossary

Driving Questions

Module: What is the system that gets food from farm to table and how does this system affect the environment?

Unit 1: What is a food scientist?

Unit 2: What is the system that gets food from farm to table?

Unit 3: What happens to food as it goes from farm to table?

Unit 4: How can we reduce the amount of food-related waste and pollution we produce?

Unit 5: What are the environmental effects of our farm-to-table system?

Unit 6: How can we use the science we learned to make ecologically sound food choices?



LINKING FOOD AND THE ENVIRONMENT
AN INQUIRY-BASED SCIENCE AND NUTRITION PROGRAM

Food & Health (grades 5 or 6)

Overview

Through studying the human body system students discover what food does in our body, how our body systems work and what we can do to keep our body healthy. Throughout the module, students have experiences in which they experiment with food and cook healthful recipes to eat with their peers. They also investigate their own food choices and decide on personal goals that will move them toward health.

Table of Contents

Acknowledgements	Lesson 9: Supporting & Moving Us
Introduction	Lesson 10: Bread Explorations
Making Science Real, Meaningful, and Successful	Unit 4: Staying Healthy
Getting Acquainted with LiFE	Lesson 11: Keeping It Pumping
Materials	Lesson 12: Keeping It Moving
Science Standards Matrices	Lesson 13: Keeping It Strong
Unit 1: Becoming Food Scientists	Lesson 14: Keeping It All Healthy
Lesson 1: Being Body Wise	Lesson 15: Plant Part Veggie Platter
Lesson 2: Celebrating Food	Unit 5: Making Choices
Lesson 3: Preassessment	Lesson 16: Focus on Eating
Unit 2: Food in the Body	Lesson 17: Analyzing Our Diets
Lesson 4: Food Makes Us Go	Lesson 18: Creating Recommendations
Lesson 5: Food Helps Us Grow & Glow	Lesson 19: Snack Explorations
Lesson 6: Bean & Veggie Wraps	Lesson 20: Pulling It All Together
Unit 3: Body Systems	Bibliography
Lesson 7: Gateway to the Body	Resources
Lesson 8: The Body's Superhighway	Glossary

Driving Questions

Module: How does food provide our body with what it needs?

Unit 1: What is a food scientist?

Unit 2: Why do we need food?

Unit 3: What does our body do with food?

Unit 4: How do food and exercise keep our body systems healthy?

Unit 5: How can we use the science we learned to make food choices that will keep our body healthy?



LINKING FOOD AND THE ENVIRONMENT

AN INQUIRY-BASED SCIENCE AND NUTRITION PROGRAM

Choice, Control & Change (C3) (grades 6, 7 or 8)

Overview

Students first study energy balance in the human body and collect food intake (energy input) and activity (energy output) data on themselves. Next, students learn about how food and activity choices relate to health and explore the reasons why obesity, diabetes and heart disease are increasing in our society. From here they analyze their own food and activity data and discuss, debate and defend any changes they would like to make to their own eating and activity. Next, students collect data on ways that our society presents challenges to maintaining healthful habits. The last unit of this module confirms student understandings of the science connecting food and activity to health. Wrapping up their studies, students confirm their personal health commitments.

Table of Contents

Acknowledgements

Introduction

Making Science Real, Meaningful, and Successful

Getting Acquainted with LiFE

Materials

Science Standards Matrices

Unit 1 Bodies in Motion

Lesson 1: Body Smart

Lesson 2: Making the Case

Lesson 3: Inside Calvin

Lesson 4: Burning Up

Lesson 5: Balancing Act

Lesson 6: My Body

Unit 2: Moving Toward Health

Lesson 7: Energy In

Lesson 8: Selecting Goals

Lesson 9: Energy Out

Lesson 10: Paving the Way

Lesson 11: Why Do It?

Unit 3: Body Science

Lesson 12: Keeping it Pumping

Lesson 13: Keeping the Flow

Lesson 14: Fighting Syndrome X

Lesson 15: For the Health of It

Unit 4: Navigating the Environment

Lesson 16: Taste

Lesson 17: Food Hunts Us

Lesson 18: Got Ya!

Lesson 19: Then and Now

Lesson 20: Creating Healthy Environments

Unit 5: Maintaining Competence

Lesson 21: Healthier Choices

Lesson 22: My Personal Pledge

Lesson 23: Bringing it All Together

Lesson 24: Sharing the Health

Bibliography

Resources

Glossary

Driving Questions

Module: How can we use scientific evidence to help us make healthful food and activity choices?

Unit 1: How can we make sure that we get the right amount of energy to help our bodies do what we want them to?

Unit 2: How can we use personal data to make healthful food and activity choices?

Unit 3: Why are healthful food and activity choices important for our bodies?

Unit 4: How does the food and activity environment impact food and activity choices?

Unit 5: How can I maintain my skills as a competent eater and mover?