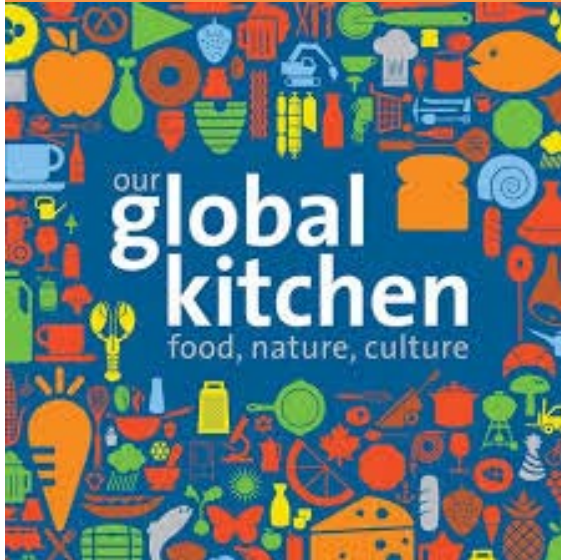


FOOD, NATURE, and CULTURE: INVESTIGATE OUR GLOBAL KITCHEN



**CLEVELAND MUSEUM
OF NATURAL HISTORY**

**BACKGROUND
INFORMATION**

Essential Questions

How does food reflect and influence culture and identity?

What's the role of human ingenuity in shaping food: past, present, future?

How does what we eat affect the planet?

Why is the diversity of food important?

What's the role of food in human health?

How does our sense of taste affect our food choices?

Our Global Kitchen Exhibit



GROW

Over time, humans have created countless varieties of crops and livestock, and invented machines and numerous methods to grow food, adapted to local landform and climate conditions, including soil quality and water availability.

TRADE

Food moves along complex trade networks to get from where it is grown to where it will be bought and eaten. In sacks and boxes, cans and cartons, traveling in planes, trains, trucks, and cars, food gets to markets, grocery stores, restaurants, and homes.

Our Global Kitchen Exhibit



COOK

Over time and across cultures, cooking has progressed to include an amazing diversity of tools, techniques, and cuisines. Children can explore similarities and differences between other cultures and how their family prepares and preserves food.

TASTE

The flavor of food depends on appearance, smell, and familiarity. Children can investigate how their taste buds work, how appealing food looks to them, how food smells, and why they prefer one food over another.

Our Global Kitchen Exhibit



EAT

Meals reveal our family history, social and economic status, where we live, and our personal and societal priorities. Diets vary based on food abundance or scarcity, levels of exercise, allergies, traditions, and attitudes about eating.

CELEBRATE

Food does more than provide us with the energy to live. Food is at the center of many family customs, religious rituals, and cultural heritage. Children can examine food related objects to consider how food is part of world wide celebrations and ceremonies.

Growing Food

Plants and animals we raise for food barely resemble their wild ancestors. For example, corn was bred thousands of years ago from a wild grass.

Through selective breeding, humans have changed flavors, made food bigger, easier to store, more resistant to pests and disease, and resilient in extreme weather conditions. They've increased yield by speeding up growth, planting multiple times per year, and minimizing growing space.

Humans have developed numerous ways of growing food, including subsistence farming, urban agriculture, aquaculture, hydroponics, large commercial farming, vertical gardens, and window farms.

Conserving Food Diversity

Thousands of edible plant and animal species exist but only a small number are used for food. It is important to guard against the extinction of edible species of plants and animals.

1) Support native habitats and traditional growing methods in isolated farming communities.

2) Support Regional Seedbanks plus the Global Seed Vault located in underground chambers built into the permafrost on a remote Norwegian island. Here 4.5 million unique seed samples from food crops and their related wild species are stored as a backup supply in case politics, war, climate change or other disaster cut off farmers' access to seeds.

3) Support the “seedbank” for animals. Newport, Rhode Island veterinarians are creating a library of frozen semen and embryos from endangered breeds. A breed could be revived by transferring embryos to living animals, which would act as surrogate “mothers.”

Trading and Transporting Food

Humans have been exchanging food for thousands of years, directly among farmers and gardeners and with non-growers in markets and grocery stores.

Humans have been inventive in coming up with ways to trade and transport food as the movement of food becomes increasingly complex.

Huge ships transport raw food and processed food between continents. Networks of trains and trucks move food within countries.

Trade policies on imports and exports, economics, and culture all collide to determine who eats what in places around the world.

Currently, there is a movement to trade locally as much as possible to support growers, eat fresher food and reduce transport time, cost, and gas emissions.

Nearly 30% of food is wasted in transport, wasting all the labor, resources, and greenhouse gas emissions involved in growing food in the first place.

Cooking is a dynamic expression of human creativity. Transform ingredients using recipes, tools, techniques, scents, flavors, and cuisines to create an endless variety of meals. **Recipes** were traditionally passed along by word of mouth, from mother to daughter, from cook to cook. **Cookbooks** began in the 1800's when more people could read.

Why Cook Food? Cooking makes some foods taste better, chemical changes from heat make food easier to chew and digest, and heat kills microbes – germs, bacteria, fungus, mold, and yeast. **Keep Food Fresh?** Cold temperatures slow the growth of microbes that spoil food and cause disease. Keep food cool by refrigerating or freezing it.

Cooking Food

Preserve food to eat later?

Drying removes water and preserves food because bacteria, yeast and mold cannot grow without water. Smoking, salting and sugaring processes keep microbes from growing by drawing water out of cells. Dry food using sunlight, fire, hot sand, and exposure to cold temps with low humidity.

Preserve food to eat later?

Canning process – Heat to sterilize container, kill microbes, and prevent new ones from entering the sealed container once the food has cooled. Pickling process – Soak food in acid like vinegar, which prevents harmful microbes from growing.

All five senses and most of the brain work together to create the perception of flavor. Taste combines with how food looks, smells, feels (texture), and sounds as you chew to affect how we perceive flavor.

Taste cells located inside taste buds inside bumps (papillae) on the tongue detect sweet, sour, bitter, salty, and umami (savory as in meat).

Tasting Food

We are born with some taste preferences, but also learn to like foods by eating them, imitating parents and other family members, and absorbing advertising. Mothers can transmit flavor preferences through the umbilical cord during pregnancy and in breast milk afterwards.

Food preferences can change as people experiment and learn. The evolution of taste, distinguishing between foods that help or harm us, is a beneficial trait in the course of human history.

Eating Food

Malnourishment and starvation are societal problems as are the health consequences of obesity

Meals combine food with culture and health concerns

How to make food choices – Omnivore or Herbivore? Vegetarian or Vegan? Why?

Meals are similar and different across cultures and over time

Unequal access for all people to fresh, nutritious, and local food is a societal problem

Dining traditions are similar and different across cultures and over time

Food Celebrations

Harvest festivals celebrate the food bounty after months of hard work planting and caring for crops

Examples: Thanksgiving, China's Autumn Moon Festival

Express gratitude for food by preparing, sharing, and displaying traditional foods

Special occasions mean special food – birthdays, weddings, religious holidays, death

People have food memories and share food stories

Future of Food

- By 2050 there will be 9 billion people to feed
- Earth is under stress – agriculture threatens rivers, lakes, and coastal habitats while 40% of cropland is dealing with soil erosion, reduced fertility, or overgrazing.
- Climate change is likely to affect how we grow food
- The demand will require more efficient farms to produce increased yields, changes in diets, and better use of water and fertilizer
- Scientists in laboratories are studying test tube meat using animal cells in an effort to reduce animal suffering, waste, and pollution. Livestock uses 75% of farmland for grazing and growing animal feed and it produces 18% of all greenhouse gas emissions
- One idea to relieve pressure on wild fish stocks is to build closed system fish farms that recycle water, nutrients, and waste in giant tanks
- Farmers could breed crops with deep, perennial roots that stabilize and build healthy soil, instead of annual crops with shallow roots like wheat, rice, and corn that deplete soil

Future of Food

- Ideas for the future include urban farms in yards and on rooftops and balconies, and vertical farm “skyscrapers”
- 2,500 plant species have been domesticated for food but are neglected in favor of wheat, corn, and rice
 - Algae, seaweed is highly nutritious
 - Insects are high in protein
 - Quinoa is a high protein grain
 - Emmer wheat requires less fertilizer and fewer pesticides than currently used wheat breeds
 - Millet is an alternative cereal grain
 - Peach palm fruit
 - Giant swamp taro is rich in vitamins and minerals
 - Sea buckthorn berries use nitrogen from the air as fertilizer due to specialized bacteria in the roots. Dense roots also prevent soil erosion
- **FOODS OF TOMORROW DON'T YET EXIST. RESEARCHERS STUDY PLANTS AND ANIMALS TO FIND NEW IDEAS**