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# TEACHER GUIDE

## HOW DO WE USE FOOD

## GRADES 3-5

## COMMON MISCONCEPTIONS

- **The food we eat is directly incorporated into our bodies.**
  Food is indirectly incorporated into body tissues. Once food is in the body, it is digested (broken down into microscopic building blocks like sugars, fats, and amino acids which are then used to grow and repair our bodies).

- **Food turns into energy.**
  Food does not automatically turn into energy. It is the source of energy, but the body must break down or digest food so that it can be converted into a useable form of energy.

- **Food is anything that is ingested (including vitamins, etc).**
  The scientific definition of food is things we eat that provide us energy AND building blocks to grow and repair. Things like vitamins don't classify by this strict definition becase vitamins only give us building blocks but not energy. Food (as defined in the video) does both (energy & building blocks).

## ENERGY FROM THE SUN

All food that we consume can be traced back to the sun. This is because the chemical energy of food ultimately comes from the sun. Energy transfer from light to chemical energy (food) happens because of the process of photosynthesis in plants. Plants are living things that require energy in order to perform daily functions. Other living things rely on plants as a food source, which explains why plants represent the foundation for the food webs of Earth. Plants use photosynthesis to convert energy from the sun to a useable food source (sugar). The chemical energy in sugars and other compounds that plants make can be transferred to people and animals that eat them. In the video, students explore how food sources are traced back to the sun by growing a windowsill garden. Although the detailed process of photosynthesis is too advanced at this level, we can use this hands-on activity to demonstrate that energy from the sun is required for plants to grow.

## DIFFERENT SOURCES OF FOOD

The food bought at a store originates from many different sources. Consider foods like chicken, beef, lamb, pork, and fish. These all come from an animal source. However, plant-based foods that we consume - such as rice, wheat, and fruit - most likely come from a farm. This is shown in the video as Dr. Jeff uses a hamburger and asks students where each part of it comes from. Outside of animals and plants, it is important to note that processed foods come from a combination of plant and animal sources. Examples of processed foods include breakfast cereals, chips, pastries, bread, and cheese.

## HOW LIVING THINGS USE ENERGY

All living things are made of cells. These cells are the building blocks for tissues and organs. They need energy to function and stay alive. When living things obtain energy from food sources it is used to power them as well as for growth and repair. Thus, all living things rely on energy for survival. Each living thing has a unique digestive system to obtain energy from food. This is demonstrated in the video - Zoe mentions how the flamingo's digestive system works. Also, Dr. Jeff demonstrates how the body breaks down food for energy. Knowing the makeup of a living thing from a cellular level is too advanced at this level, but students need to realize that the body needs energy to function. Also, all living things use specific mechanisms to process food for energy use.

## HUMAN DIGESTION

The digestive system is a body system that digests food. It is important to digest food because it provides the energy and nutrients necessary for the body to survive. Examples of these nutrients include vitamins and minerals. In order to get these essential substances, food must be broken down. Beginning with chewing, where food is broken down into digestible pieces, there are different stages that further break down food within the digestive system.