WAKE COUNTY PUBLIC SCHOOL SYSTEM

Middle School Programs
Building Healthy Core Learning
8th Grade Science

Where does Energy Come From?

Unit Outcomes At the end of this unit, your student should be able to:	**Key Vocabulary** Terms to deepen the student's understanding
✓ Conclude that organisms obtain energy from food ✓ Explain how organisms convert food to energy ✓ Conclude that organisms need energy to survive and grow ✓ Determine the relationship between digestion and respiration ✓ Assess how lifestyle choices such as tobacco and drug use can negatively impact your health	✓ Organism ✓ Energy ✓ Nucleus ✓ Plasma Membrane ✓ Specialized cells ✓ Photosynthesis ✓ Cellular Respiration ✓ Transpiration ✓ Food chain ✓ Food web ✓ Producers ✓ Consumers ✓ Decomposers ✓ Nutrition ✓ Caloric intake ✓ Carbohydrates ✓ Proteins ✓ Lipids ✓ Nucleic Acids ✓ Homeostasis ✓ Active transport ✓ Eukaryotic cells ✓ Glucose ✓ Chlorophyll ✓ Mitochondria ✓ Nutrients ✓ Digestion ✓ Vitamins ✓ Minerals ✓ Caloric output
Key Standards Addressed Connections to Common Core/NC Essential Standards	**Where This Unit Fits** Connections to prior and future learning
8.L.5.1 Summarize how food provides the energy and the molecules required for building materials, growth and survival of all organisms (to include plants) 8.L.5.2 Explain the relationship among a healthy diet, exercise, and the general health of the body (emphasis on the relationship between respiration and digestion)	Coming into this unit, students should have a strong foundation in: ✓ Classifying substances as food or non-food items based on their ability to provide energy and materials for survival, growth and repair of the body ✓ Explaining the role of vitamins, minerals and exercise in maintaining a healthy body ✓ Explaining the significance of the processes of photosynthesis, respiration, and transpiration to the survival of green plants and other organisms ✓ Summarizing how energy derived from the sun is used by plants to produce sugars (photosynthesis) and is transferred within food chains and food webs (terrestrial and aquatic) from producers to consumers to decomposers ✓ Explaining the role of vitamins, mineral and exercise in maintaining a healthy body This unit builds to the following future skills and concepts: ✓ Comparing the structures and functions of the major biological molecules ✓ Analyzing photosynthesis and cellular respiration in terms of how energy is stored, released, and transferred within and between these processes in the cell ✓ Explaining ways that organisms use released energy for maintaining homeostasis (active transport)

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Additional Resources Materials to support understanding and enrichment	**"Learning Checks"** Questions Parents Can Use to Assess Understanding
✓ CK12.org textbook: Food and Nutrients ✓ Ck12.org textbook: Enzymes in the Digestive System ✓ Discovery Ed link: Cellular Respiration ✓ Discovery Ed lesson: Photosynthesis ✓ Discovery Ed lesson: Digestive System ✓ Discovery Ed lesson: Food, Energy and you ✓ Neok12: Educational videos, lessons and games for K-12 school kids http://www.neok12.com/Health-Nutrition.htm ✓ Scholastic.com: Food web activity http://teacher.scholastic.com/activities/explorer/ecosystems/be_an_explorer/map/foodweb_play.htm	✓ How do organisms obtain energy from food? ✓ How and where in the cell does cellular respiration occur? ✓ How do the processes of digestion and cellular respiration release stored energy? ✓ What can you do to improve your general health? ✓ What determines the amount of food energy that is required by a person? ✓ How can alcohol, tobacco and environmental factors affect your health? ✓ What is the connection between respiration and digestion?