

## LESSON PLAN – Skeletal System

**Subject/Topic/Unit:** Science/Skeletal System/Healthy Living

**Grade Level:** Third Grade

### **I. Main Ideas/Conceptual Understanding/Goals**

Understanding the functions of the skeletal system and how to maintain strong bones

### **II. Specific Objectives**

After a lesson on the skeletal system, the student will create a poster that shows at least six functions of the skeletal system and provides illustrations indicating ways to maintain strong bones.

Life Science Curriculum Framework

3. Describe the characteristics, structures, life cycles, and environments of organisms.
- b. Identify and describe the purpose of the digestive, nervous, skeletal, and muscular systems of the body. (DOK 1)

### **III. Procedures**

#### **A. Introduction/Motivation**

Use the SMART board or computer to show the youtube video “Skeletal System Functions for Kids” at <https://www.youtube.com/watch?v=lzUNWelJerg> After the video ask the students to discuss what they learned from the video.

#### **B. Study/Learning**

Tell students that the skeleton provides the framework for the body. Bones provide the basic shape and structure for the body. Ask student what they think we would look like if we didn't have bones. Have them stand up and demonstrate this (jelly legs, etc.). Tell them that the bones are like the beams inside of a building, and all of our organs, muscles and skin are organized around the bones, just like the walls of a building. Show pictures of building structures (Skeletal 2 – Attachment 1).

Tell students that the skeleton protects organs in the body. Bones can cover and protect many of our major organs. They are like an armor that protects our insides. Show pictures of armor (Skeletal 2 – Attachment 2). Ask students to brainstorm examples of the bones that we learned about yesterday and what they may be protecting. Lead students to answers such as:

- 1. cranium: protects the brain
- 2. ribs/sternum: protects the lungs, heart and some digestive organs
- 3. pelvis: protects and supports the digestive and reproductive organs
- 4. spinal column: protects the spine

Have students stand up and point to each of these areas of the body.



Tell students that inside of the long bones in our bodies, there is a cavity that is filled with a substance called Bone Marrow. In this tissue, new blood cells are produced, and damaged blood cells are repaired. Show pictures of bone marrow (Skeletal 2 – Attachment 3).

Tell students that bones are the levers that help the body move in different directions and in different ways. Ask students if bones move by themselves when we walk, talk or move around, or are they controlled by something else. Ask students what makes these bones move. Tell them that muscles move bones by contracting, which pulls the bone, causing us to move around.

Tell students that a mineral is a substance that the body needs to carry out all of our bodily functions like thinking, breathing and moving around. One of the minerals that the body needs is calcium. Calcium is a major part of bone, and this is where the body stores its calcium. It is very important to make sure you eat enough calcium each day because if you don't get enough calcium, your body will take the calcium it needs from your bones. Ask if someone can tell us why this could be bad. The less calcium the bone has, the weaker it will become.

### **Guided Practice**

Generate a chart on the board that states the different functions of the skeletal system (Skeletal 2 – Attachment 4). Make sure students list the following:

- *Support:* Bones provide a framework for the attachment of muscles and other tissues.
- *Protection:* Bones such as the skull and rib cage protect internal organs from injury.
- *Movement:* Bones enable body movements by acting as levers and points of attachment for muscles.
- *Mineral storage:* Bones serve as a storage place for calcium and phosphorus, essential minerals for the body.
- *Blood cell production:* The production of blood cells occurs in the red marrow found within the cavities of certain bones.
- *Energy storage:* Lipids, such as fats, stored in the yellow marrow serve as an energy reservoir.

Tell students that we will use movement now in order to practice what we learned about the functions of the skeletal system. Pass out note cards to students with functions (one per card) listed on separate note cards and the explanation of that function is on a different note card (same as above Skeletal 2 – Attachment 4). Have students move around the room to find the person who has the card to match their function or explanation. When all have found their partners, mix up the cards and play the game several times for movement and for practice.

### **Independent Practice**

Divide students into 6 groups. Give each group one of the following functions: support, protection, movement, mineral storage, blood cell production, or energy storage. Have each

group create a physical movement to demonstrate their function. Then have the other groups try to guess the function (similar to Charades).

### **C. Culmination**

Remind students that one of the things we talked about in this lesson is that one important thing they can do for their bodies in order to remain healthy is to be sure that they get enough calcium each day to continue to have strong bones.

Tell students that we will conduct a rubber bones experiment to find out what happens to bones when they lose calcium.

Materials needed:

Large, clean chicken or turkey bones ("drumsticks" are best)

White vinegar

Clear glass container with a lid (like a mayonnaise jar)

Procedure:

Place a large chicken bone into the jar filled with vinegar. Keep another bone or two out as a "control." Have students all handle them if they wish to see how hard it is to bend. You can also break one of the larger bones open to observe the softer bone tissues inside. Explain to the students that vinegar is an acid which eats away at the calcium in bones. Tell students that we will leave the bones in the vinegar for 3 days and after 3 days we will take them out and see what has happened.

### **D. Follow-up**

Have students make a poster in which they list and describe the six functions of the skeletal system as well as provide illustrations showing ways to be healthy and maintain strong bones.