Organisms and Environments TEKS for Activities and Presentation
Kindergarten: K.10 (B)
First Grade: 1.10 (A)
Second Grade: 2.10 (A)
Third Grade: 3.10 (A)
Fourth Grade: 4.10 (A)
Fifth Grade: 5.10 (A), 5.10 (B)

Program Vocabulary
Biceps, Bones, Contract, Endoskeleton, Exoskeleton, Humerus, Mammal, Model, Muscles, Phalanges, Radius, Replica, Skeletal muscles, Structure, Triceps, Vertebra, Vertebrate, Ulna, Warm-blooded

Pre-visit Activity: Bone Business

Students will:
• Understand that human beings have an endoskeleton and that this skeleton provides support
• Be able to identify some major bones of the human skeleton

Materials:
Overhead projector, copy of labeled human skeleton on transparency

Prep-work:
• Copy the labeled human skeleton on to a transparency

Procedure:
1. Ask students if they know what function the skeleton serves. It provides support, protection, and assists in movement. It has other functions, but these are the ones we will focus on today.
2. Tell students that human skeletons are found on the inside of the body and are called endoskeletons. Can they name any animals that have their skeletons on the outside? Skeletons that are on the outside are called exoskeletons. Insects are an example of animals that have an exoskeleton.
3. Project the labeled human skeleton on the wall. Encourage students to pronounce the names of the bones. Then, invite students to locate the major bones in their own bodies as you name them.
Post Visit Activity: Joint Challenge: Game

**Students will:**
- Explain the range of motion of some of the joints in the human body
- Identify different joints and bones used to accomplish everyday activities

**Materials:**
One set of activity strips, picture of shoulder joint, picture of elbow joint, hinge, pop-beads, paper, pencils, ball, and jump rope

**Prep-work:**
- Print and cut out one set of activity strips
- Print out a copy of the shoulder joint and the elbow joint

**Procedure:**
1. Engage students in sharing what kinds of movements the human body is able to make (running, jumping, squatting, etc.).
2. Tell the students that joints are places where bones meet. Ask students to name some of the places where their bones meet (knee, elbow, shoulder, etc.).
3. Tell them that they are going to learn how two specific joints work, a hinge joint, and a ball and socket joint.
4. Show the class the picture of the elbow. Explain that this is a hinge joint. Encourage students to move their elbows by flexing their arms. They will notice that they can only bend it one way. Hold up the hinge and show the class how it works by only moving in one direction.
5. Show the class the picture of the shoulder. Explain that this is a ball and socket joint. Encourage students to move their shoulders by rotating their arms at the shoulder. They will notice that they can move it in many directions. Hold up the pop-bead and show the class how it works and can move in many directions.
6. Ask for student volunteers to draw an activity strip and to act out what it says to the class.
7. Older students will record the following on a sheet of paper or in their journals for each activity: At least two bones used in performing the activity. At least two joints used in performing the activity. Younger students can do this as a class.
8. Continue this until all of the activity strips are exhausted.
9. Close by discussing the different types of bones and joints that are used for movement.

**Background:**
A joint is defined as a connection between two bones. Joints can be flexible, but not all are; we are interested in two joints for this activity; hinge joints and ball and socket joints. When the round end of one bone fits into the cup of another bone, it is considered a ball-in-socket joint.
These types of joints allow a large range of motion. Examples of ball-in-socket joints are the shoulder and the hip. Hinge joints can only move in one direction. This is referred to as one degree of freedom. Examples of hinge joints are the knee and elbow.

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<td>Do a Jumping Jack</td>
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<td>Skip in a Straight Line</td>
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Elbow – Hinge - https://creativecommons.org/licenses
Shoulder – Ball and Socket Joint - https://creativecommons.org/compatiblelicenses