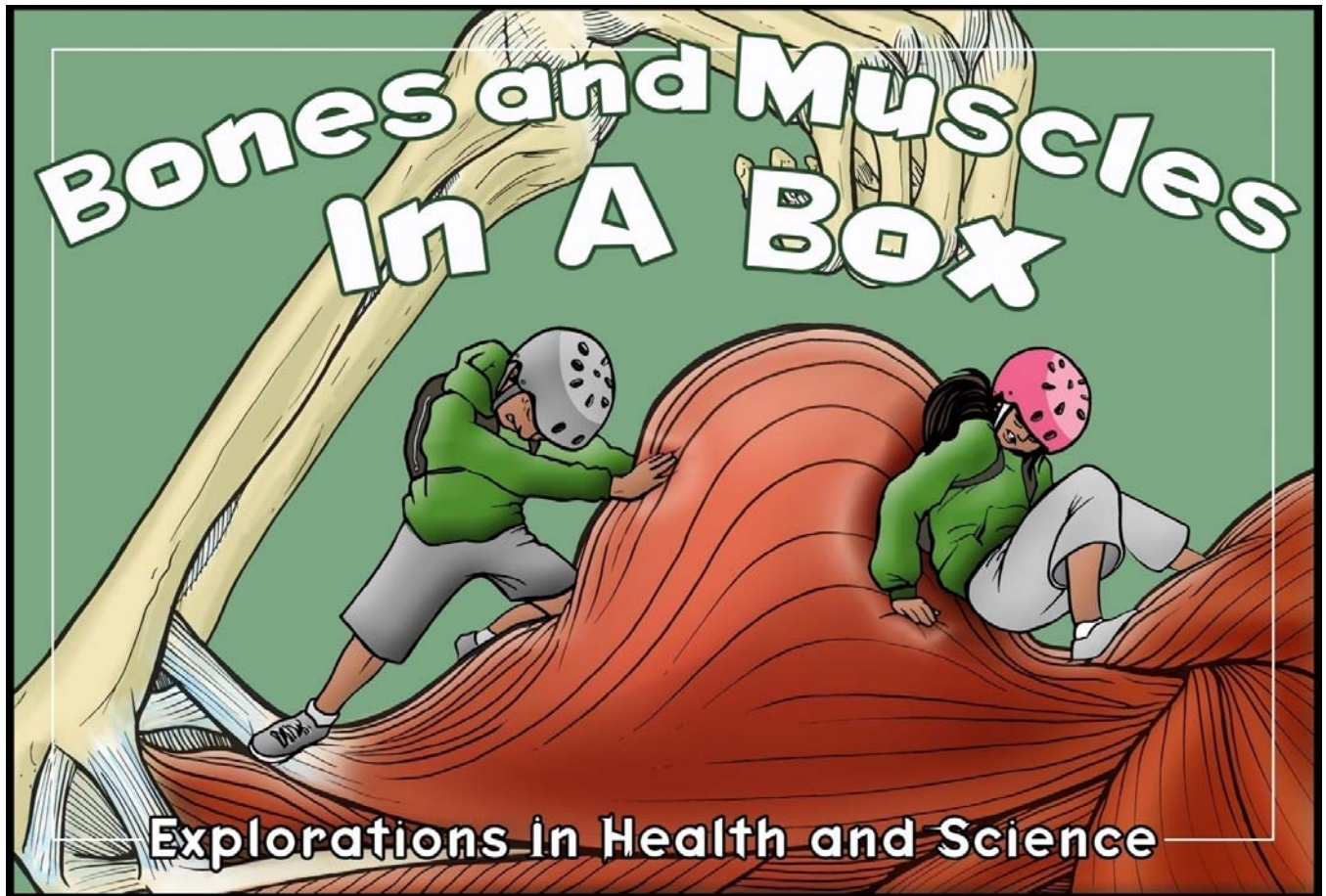


Ambassador Handbook



“School-age children constitute what may be the most important audience you’ll ever address. They are eager to learn more about you and your work as a representative of the scientific community. Moreover, teachers welcome the opportunity to have health professionals come into their classrooms to talk about medicine and the excitement of science and research.”

Communicating Science and Medicine to Children

American Medical Association

Thank you for agreeing to share your career choice with local students!

The goal of **In-A-Box** curricula is to encourage *Explorations in Science and Health* with rural students of Oregon. Oregon Health and Science University, Area Health Education Centers (AHEC), and the Howard Hughes Medical Institute have teamed up to create this program. You are a vital part of the inspiration.

This guide outlines:

1. Your role as ambassador
2. The stations students will use for their activities
3. The contents of the box which students will be able to look through

I. The format for you (the ambassador) is as follows:

- A. Connect with the teacher whose class you will be visiting to confirm schedules (which can vary with this lesson depending on the teacher’s day).
- B. If you do not arrive to the class with the box, you may want to review its contents by viewing the box contents below.
- C. Be sure to stop at the school office on your way into the building to get a visitor’s name badge.

When you arrive to the classroom:

II. Introduce yourself and what your career is called. Describe how you came to choose this career and what you really like about it. Mention who the team you work with, or depend on, is and how science is part of your job. Spend 10 minutes and ask if students have questions.

Emphasize wherever possible that "Science is about asking questions and solving problems"

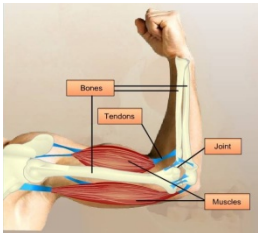

- A. The teacher will group students for five stations of activities about bones and muscles and the professionals who work with bone and muscle problems.
- B. If you can stay and participate, walk around and see what kinds of problem solving the students are doing on behalf of their activity goals.

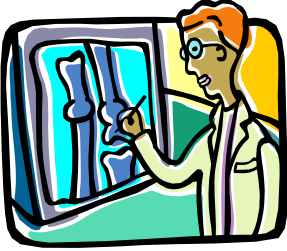

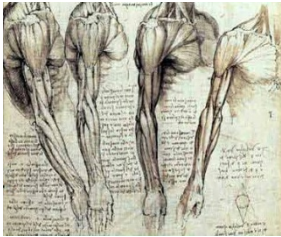
- C. If you are returning the box to the AHEC coordinator, wait for the student post survey and teacher feedback form so that those can be collected and stored in the box. It is common for the teacher to keep the box beyond your visit and AHEC staff will collect it at a later date.

This format is very flexible and should work with your unique job as well as the teacher's time frame and unique students.

Enjoy and thank you again!

The following is a preview to the station activities:

Station Content and Objectives			
Stations 1-5	Activity	Resources	Lesson Objective
<p>Bone & Muscle Anatomy</p> 	<p>Students examine the posters and draw their versions of muscle types and bone content</p>	<p>Blueprint Posters Blank paper Colored pencils Bone diagram Muscle diagram</p>	<p>To learn there are three types of muscles in the body (cardiac, smooth, and skeletal) and that bones are made up of marrow, spongy, and compact bone.</p>
<p>Strong Bones Healthy Bones</p> 	<p>Weight bearing activity</p> <p>Analyze activities which build bone density</p>	<p>Bone density x-rays Weights Sports study description & data sheet Gravity machine handout</p>	<p>Increased bone-mineral content is associated with stronger bones.</p> <p>Different sports produce weight loading on different bones leading to changes in bone mineral density.</p>

<p>Ouch! Sports Injuries</p> 	<p>Play the sports injury game show!</p>	<p>Question cards Noise maker Score cards</p>	<p>To learn how sports activities can lead to injuries to muscles and bones (as well as tendons and ligaments).</p>
<p>Bone/Muscle Disorder</p> 	<p>Memory game-matching disorder description to treatment card and professional card</p>	<p>Memory cards Osteoporosis model Orthosis brace</p>	<p>To better understand what some people experience and what happens in the body with the disorder.</p>
<p>Muscle Geography</p> 	<p>Observe and demonstrate the contracting and relaxing of muscles</p> <p>Map muscles on a partner and on a template</p>	<p>Muscle & Exercise Guide poster Muscle templates Sticky notes</p>	<p>Muscles produce movement by contracting and relaxing (working in pairs)</p>

Station 1 – Bone and Muscle Anatomy

The goal for students is to learn the three types of muscles as well as the three parts to bone.

Teacher Notes: Each student will need a blank piece of paper to draw on.

Station 2 – Growing bones/Strong bones

Teacher Notes: This activity is part of the NIH curriculum Lesson 5.2 and can be extended with the rest of Lesson 5. After students rank the activities on the “description of sports study” sheet, they can view the real results in the envelope. Each group will use one ranking sheet and the data sheet in the envelope should be repacked before group rotation. The student who

reads the anti-gravity/ space article may need some help from adults.

Station 3 – Ouch!

One student is the game host and reads the questions in order of their numbering. The game contestants use the noise maker if they have an answer to the question. There is a penalty for wrong answers so they should think carefully. The game host keeps score, and there is a score card for each group.

Teacher Notes:

The game questions include mention of tendons and ligaments so it may be helpful to point these out either before all activities begin (using the elbow model), or as each group begins this station.

Station 4 – Bone and Muscle Disorders

Students first examine the osteoporosis model and diagram, orthosis, and prosthesis picture. Then the cards are placed face down and the game (much like Memory) begins. There are three matches to try to make on each turn, disorder, treatment, and professional. If a student doesn't make the match, they turn the cards back face down. When a student makes the match (color coding shows correct matches), they take the set. The one with the most sets at the end either has the best memory or the most experience with bone and muscle disorders!

Teacher Notes: The orthosis brace is commonly used for treatment of disorders that affect muscle function such as stroke, spinal cord injury, muscular dystrophy, cerebral palsy, polio and multiple sclerosis. They control motion and position of the ankle, compensate for weakness, or correct deformities.

Station 5 – Muscle Geography

Students demonstrate moving muscles in their arms and legs to learn about contracting and relaxing muscle motion.

Teacher Notes: *In the NIH curriculum Lesson 3, there is a more in depth opportunity to study these principles. You may choose to use the NIH lesson for a longer, whole class, activity to extend understanding of the muscle attachment to bone, contraction and release, and muscle names.*

Box Contents

Please use your Contents Check Sheet as you repack the box for return. Some items are replenishable, and AHEC will do this. Please be sure all other materials are checked off and in the box.

Five station envelopes:

Station 1: Colored pencils, 2 diagrams, skeleton facts, (6) flashcards

Station 2: Bone density x-rays, sports study description & data sheets, gravity machine handout, and ranking sheet

Station 3: Question cards, noise maker, answer sheet, and score cards

Station 4: Memory cards, prosthesis picture, and osteoporosis diagram

Station 5: 30 muscle templates, 2 pads of sticky notes

Pre and post student surveys help us to evaluate the effects of In-A-Box curriculum and are to be placed in the box at completion.

Artifacts:

Bones and Muscles In-A-Box- poster is yours to keep for the classroom.

Bones and Muscles In-A-Box DVD- This is a 20 minute video of interviews with a sports medicine doctor and a massage therapist who work at Oregon Health & Science University.

Bill Nye *Bones and Muscles* DVD and curriculum

Emmanuel's Gift DVD- the true account of an African athlete who continued his amazing involvement in sports with a prosthetic leg while inspiring all of those who watched him.

Foot model – This is for use before, during, or after station activities

Clever Catch inflatable ball – see extensions on page 3

Orthosis brace - This is for use before, during, or after station activities

Muscled elbow model – Use this to present the difference between nerves (the yellow), tendons and ligaments (clear), muscle (red), and bone (white). The legend is on the bottom of the model.

Osteoporosis model – For use with station 4

Exercise and muscle poster- Poster is used for station 5.

X-ray set- Students can identify bones on the x-rays after learning some of the names in the station activities. Activity ideas are included at the end of the teacher guide. This makes a fun extension activity.

Blueprint for Health Muscles chart – These posters are used for station 1

Blueprint for Health Bones chart

Country Doctors video- This one hour long PBS video was made in rural Oregon about the need for local health care providers.

3 lb Weight – For use with station 2

Books:

- **Bones**
- **Muscles**
- **Understanding your Bones and Muscles**
- **Molly the Pony**

NIH Curriculum- *Looking Good, Feeling Good, from the Inside Out-* This seven lesson curriculum created by the National Institute of Health offers many extensions for lessons about bone health, muscle use, dietary needs, as well as lessons about skin health and anatomy.

Muscles and Bones – From Inner Space to Outer space - curriculum