

Strength, Structure, and Joints: Modeling the Skeletal System

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Art and Science Unit

Overview of the unit plan

Strength and Structure

- Activity to compare compression strength of differently-shaped columns

Types of Joints

- See hardware store models
- Make drinking straw models
- Find household examples of each of 4 types of joints.

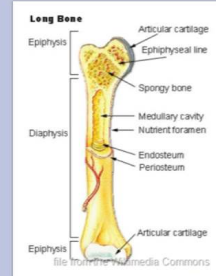
The Art of the Human Form

- Measure limbs and calculate average proportions of body.
- Use joint types and/or proportions to design and build a marionette.

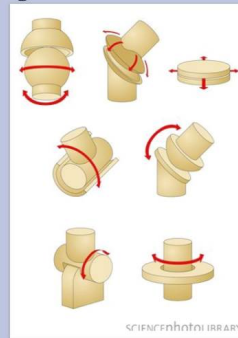
To realistically represent the human form, the artist must convey the proportions of limbs and the movement of joints. Likewise, the scientist who studies these characteristics is now able to draw or sculpt a human figure that is more true-to-life.

Materials Science

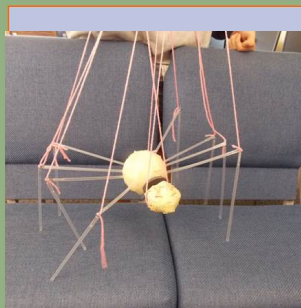
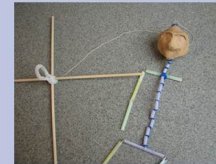
How the structure of bone contributes to its strength



How the type of joint affects both range of motion and stability



How the study of the human form makes for more realistic artwork



Funded by the NSF under grant number DMR-1121053

State Standards

7th & 8th GRADE ART:

- Design and create maquettes for three-dimensional sculptures.
- Identify and describe scale (proportion) as applied to three-dimensional works of art.

7th GRADE SCIENCE:

- Students know how bones and muscles work together to provide a structural framework for movement
- Students know how to compare joints in the body (wrist, shoulder, thigh) with structures used in machines and simple devices (hinge, ball-and-socket, and sliding joints)



Alice taught this unit twice in a 7th & 8th grade art class. Melanie taught this unit to 7th & 8th grade science students.

Other Related Activities:

- Each student receives a card that has a picture of an animal or an animal skeleton. They are to circulate around the room, to find the match to their pictures. This was used to make student groups for the day's activity.
- Before the proportion lesson, have students draw a person, doing some activity. After the lesson, have them draw the same person, doing the same activity, but using the proportions they learned.