Hands-on learning is a key component of physical anthropology. However, anthropology departments often do not have the time, space, or T.A.s to accommodate separate, required tutorials or labs, especially for first year classes. During this past summer I taught my first anthropology course (equivalent ANTH 1026) and attempted to incorporate laboratory activities which could be done in the limited time and space of a classroom setting to reinforce lecture material. In this way, hands-on activities were integrated with lectures and not temporally or physically separated; essentially the lab is brought into the class.

The ideas presented are ideal for small classrooms of 20 to 50 students but could be adapted for medium sized classes of 50-120 students. The activities described would be done during regular lecture hours, within the teaching classroom or lecture hall. Because of the limitations of doing in-class labs (no large tables, foam etc…), creative alternatives to the use of real, human or primate bones needs to be addressed. All laboratory activities should be concluded with a summary of the key concepts addressed. Marks are rewarded for laboratory participation and thoughtful conclusions (not correct answers per se).

The target course is Anthropology 1026, an introduction to physical anthropology and prehistory, and is broad conceptually, with topics ranging from basic genetics and heredity to primatology to hominid evolution and skeletal biology. Because of the breadth, students may not have time to absorb all the information in straight lecture format. Further, I feel the purpose of a first year social science course is to introduce the students to the subject matter, get them excited about higher level courses, present a new perspective, teach the disciplines’ methodology, and present new learning techniques, more than in depth memorization of facts. Hands-on laboratory work is fundamental to physical anthropology and will be a part of higher level physical anthropology courses. Also, most laboratory work is done as a team. Therefore hands-on group work in a first year classroom provides students with an excellent opportunity to experience the reality of physical anthropology work, meet other students, and put into action the principals discussed during lecture. For example, in completion of the primatology lab described below students are conducting activities similar to what paleoanthropologists would perform with the discovery of a new fossil!

**Learning Goals:**
1. Key anthropological theory: Understanding the relationship between skeletal morphology and behavior and how modern relationships can be used as an analogy for extinct hominids.
2. Working as a group to perform hands-on, measuring activity and decide on an answer to present to the class. Requires compromise, persuasion and divisions of labour (measurers, recorders, reporters etc).

**Core concepts:**
1) There is a relationship between skeletal anatomy and the behavior of living primates
   a. Body size, limb proportions, dentition patterns, orbital structures correlate to particular activity patterns: such as time of activity, primary diet, and forms of locomotion.
   b. Extant primate relationships (between bones and behavior) can be used as analogies for extinct primates for whom we have only their fossilized remains.
2) Learning how to measure intermembral index (ratio of forelimb: hind limb length)
   a. Performing the activity will help students remember what the ratio is and why we use it (as an indicator of the type of locomotion used by the primate).
3) Reinforcing lecture material including what the different primary diet types and locomotion are and how they relate to the skeleton.
Materials:
“Primate Skeletons”: Dependent on the class size, but estimate about 5 students per group. Therefore in a class of 50 you will need to create 10 “primate” skeletons.
1) Several meters of dowel wood of varying diameters (available at hobby or hardware stores).
2) Cut each dowel to the ACTUAL length of the femur, tibia, humerus and ulna of different primates (vary the diameter size according to breadth of the bone, i.e. humerus should be thicker than the ulna).
3) Several websites provide measurements for different primates (see www.eskeletons.org). Skeletons to include: lorises, tarsiers, gibbons, spider monkeys, baboons, chimpanzees, orangutans, humans.
4) Label each dowel with bone type and skeleton number (1 through 10) and place the 4 “bones” into a bag.

Behavior Cards:
1) Create colourful cards with image of each of the dietary types (folivore, frugivore, insectivore, grannivore and gumnivore), activity times (diurnal, nocturnal), and locomotion types (vertical clinger and leaper, brachiator, quadruped, knuckle/fist walker, biped). See example to the right.
2) Create 10 of each card, laminate and put into 10 sets.

Summary Sheet: see example to the right.

Other: You will need 10 measuring implements (rulers or tape measures) and 10 plastic bags to hold the material.

Place one skeleton (numbered 1 through 10), a measuring tool, set of cards, and a summary sheet inside a plastic bag.

Activity Description (2 hour class):
1) Lecture (45 minutes): at the beginning of the lecture the instructor informs students there will be a group activity after the lecture and to pay close attention to the lecture material AND all the images (i.e. time of day the animals are active, body size, whether they are in the trees etc…).
2) End of lecture summary (5 minutes): summarize the relationships discussed during the lecture (large eyes = nocturnal activity, high dental cusp = insectivore, associated with small body etc…).
3) (5 minutes) Ask the class to form into groups of 5 (groups may have been established beforehand for the entire semester or may be 5 students near each other) and hand out a plastic bag to each group and go through the instructions (i.e. measuring intermembral index).
4) Group work (10 to 15 minutes): Each group will go through the steps for measuring the bones, calculating intermembral index and deciding as a group the locomotion type and body size. Using this information, the lecture notes and images, they will make an educated guess about primary diet and activity time.
5) Each group will give a brief (2-4 minutes each, ~30 minutes) summary of their decisions and why. Simultaneously the instructor will fill in a chart on the board. If a group is incorrect, the teacher must elicit why they thought this, praise their attempt but provide the CORRECT answer and the reason why.
6) Recap the day’s events and key relationships (i.e. intermembral index of 1:2 = vertical cling and leap).
7) Ask each group to submit their work sheet (marks are given for completion and reasoning not accuracy).

Examples of other in-class, group activities/labs not discussed:
1) Mendel an genetics lab 2) Archaeological methodology lab stations