

PRIMATE CLASSIFICATION 2006

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SYNOPSIS:

Students transfer examples (names) of primates from their location in an outline hierarchy of primate groups into a set of nested boxes reflecting that same hierarchy. A cladogram can then be drawn illustrating how these groups are related in an evolutionary way.

CONCEPTS:

1. The groups-within-groups hierarchical pattern of Linnaean classification is a result of both extinction and branching from common descent.
2. The outline-hierarchy reflects a basic boxes-within-boxes structure for the classification of organisms.
3. Classification of organisms is based on evolutionary relationships.
4. How primates are categorized, and how they are related.

MATERIALS:

Directions, Worksheet and Results

(for Results, contact webmaster using school email address)

STUDENT HANDOUTS:

Primate Classification Directions 2006 (with outline of classification)

Worksheet: "Primate Classification 2006"

TEACHING STRATEGY:

1. This can be used as part of a unit on classification especially in a human-oriented biology course. In this context, this lesson helps to illustrate the nature of a hierarchy, as used in classification.
2. This could also be used at any time primate relationships, primate classification (and the human placement in this context) becomes a matter of interest, and needs clarification.
3. Follow the directions, listing specific primates in their appropriate boxes on the separate worksheet (see the "Results" if further clarification is needed). To see the Results, send request with your school email address to the WEBMASTER. You can show slides of various primates, taken at zoos, and/or photocopied from pictures in books. You can also show videos or films which present at least two or three different primates, preferably a large sampling of primates from different groups. Students could also be asked to search the web or library books for other examples, pictures, etc., and share with the class.
4. Use the "boxes-within-boxes" array as a starting point to draw an evolutionary "tree" backwards in time (on an overhead transparency of the completed boxes works best). See key. This is an excellent way to show students how classification relates to evolution and evolutionary "trees". Likewise, the concept of "common ancestors" occupying the points of divergence can be easily explained.
5. You might also find it interesting to your students to point out a few of the shared characteristics of some of the groups. For example, all **primates** typically have finger nails, and grasping hands/feet, while other mammals typically do not; also, primates are unique among mammals in that they can see all colors; **monkeys** typically have tails, hominoids (apes and people) do not; **new-world monkeys** (in Central and South America) tend to have long grasping ("prehensile") tails, **old-world monkey** tails are generally shorter and not prehensile. An alternative to this would be to ask your students to search the web and/or library to find and share the distinguishing features of primates and their sub-categories.

6. You might want to develop a series of questions to see if your students truly understand what the diagram tells us. This could be done as part of the worksheet, or as a quiz for assessment. For example, you could ask: -
--- a) Which level(s) contain the greatest number of species. (answer: primates...or mammals, if they look at the outline format);
---- b) Which level(s) contain the least number of species (answer: could be any of the levels not further divided: prosimians, ceboidea, cercopithecoidea, hylobatids, pongids, gorillins, panins or hominins; no way to tell which of these from information given);
---- c) Which three groups are most closely related, or biologically most alike? (answer: gorillins, panins and hominins, the only three shown as subfamilies, the lowest group level shown here, all in the same family: hominidae).

7. If your students seem to need further work on this concept, provide them with an outline list of amphibian taxa and examples of each (or use another group for which you have access to their classification taxa). Ask them to make a "boxes-within-boxes" diagram, similar to what was done with the primates, and then (possibly), answer some probing questions (similar to the ones above).

8. **NEW TAXONOMY:** This classification of primates is based on accumulated studies in genetics and molecular biology all pointing to the need to revise the previous classification scheme (formerly used for this lesson). Students may encounter resources(textbooks, internet, etc.) that still use the earlier classification scheme (where all the apes are placed in a category separate from humans). References to "formerly..." reflect that older taxonomy. Students should be made aware of the older system, but encouraged to use the most recent system (detailed in this lesson). **CLICK HERE FOR DETAILED DISCUSSION.**

ATTRIBUTIONS:

1. Original Source: Larry Flammer, 7/95
2. Reviewed / Edited by: Martin Nickels, Craig Nelson, Jean Beard: 12/15/97
3. Edited / Revised for website by L. Flammer 9/98; Revised to reflect biological relationships based on recent studies and reports in genetics and molecular biology: March 2006.