Learning through Inquiry: Example II

Course: Physiology of Human Movement

Level: introductory

Length: Thirteen weeks, two hours, twice a week

Description: During the first six weeks, the general agenda includes the following:

- Learning to read scientific papers in the field of kinesiology
- Getting some background from discussions of the papers as well as brief lectures
- Becoming familiar with the use of the EMG for measuring muscle activity
- Learning library techniques, such as the use of *Biology Abstracts* to find articles
- Developing ideas into project topics

During the second half of the semester, students work on the project topics they have developed. The projects are very structured: students compare muscle activity in the same muscle on the same subject under two different conditions and repeat the measurements at least ten times. Many ideas come from students' own experiences as runners, dancers or skiers.

The instructor uses alternate class days as office hours. On other days, students report on their individual and group projects; students hear from one another about lab and research techniques and watch one another's ideas develop.

In the final weeks, students present the results of their completed projects.

Presentation of knowledge: brief lectures, reading/discussion of journal articles, library research. Much of this is "front loaded" at the beginning of the semester.

Presentation of method: reading/discussion of journal articles, use of EMG, active engagement in research projects, discussion of student research projects in process and when completed.

Origin of research topics/questions: After the first six weeks, students generate research topics/questions within specific parameters defined by the instructor.

Continuum of inquiry: Instructors uses a range of approaches to engage students indirectly and directly in the process of inquiry: reading and discussion of journal articles, library research, direct engagement in their own research projects, and hearing about the progress of other students' projects.

Communication: Students communicate the results of their projects in written reports and in oral presentations to the class.

From McNeal, A.P. (1989). Real science in the introductory course. In F.S. Weaver (Ed.) **Promoting inquiry in undergraduate learning**, 17-24. San Francisco, CA: Jossey-Bass.