

Ensure Students Are Learning: Faculty Descriptions of Innovative Teaching Practices

Interactive Learning in Anatomy and Physiology

Innovative Teaching Practice Description:

To bring anatomy and physiology principles to life in the classroom, the instructor employs the following activities: build long-bone tissue structure models, design either a workout routine or a dance routine for muscle physiology, conduct medical case studies of real patients, and complete a final cumulative project involving sports medicine.

Long-Bone Tissue Structure Models

Students construct their own long-bone tissue structure model, incorporating all of the details. This helps students remember the structure. Supplies for this project include straws, yarn or string, paper, and glue.

Workout/Dance Routine for Muscle Physiology

Students must individually create their own workout or dance routine and describe how to execute the routine. Students need to include the following components:

- The routine can focus on different parts of the body (such as arms, hands, fingers, thighs, and legs) but must address three or four muscles from the different muscle groups.
- The student must provide a list of the muscles involved in the workout or dance.

- The project must show how the muscles are contracting as well as identify what type of contraction is being used.
- The student must be able to sell the routine, by showing that the muscles listed are in fact being used in the workout or dance.
- If the project is a workout routine, the student should specify the number of repetitions for each movement.
- If the project is a dance routine, someone has to demonstrate the dance to test the authenticity or validity.

Students earn extra points by performing the routine themselves.

Case Studies

Students work in groups to conduct case studies of actual topic-specific injuries sustained by athletes, with each group studying a unique case. The instructor should prepare several examples from different sports for the groups to use and should provide specific guidelines for what the students are expected to address in the case studies. Upon completion, a group leader, with team support, is required to present the results of their case study in detail to the class. The presentation must address how the injury occurred, the anatomy and physiology of the injury, the appropriate treatment of the injury, and preventative measures (if any) to avoid the injury.

Final Cumulative Project

For the final project, students have the option of working in a group of four or five or individually to complete a major paper project with visual aids and to present their findings to the class. Alternatively, students can opt to take a cumulative final exam.

The expectations for the final cumulative project should be described in detail in the course syllabus. A list of the project components can include the following:

- Research topics should cover three of the most common injuries for the selected sport. Each group must choose a different set of injuries to avoid repetition.
- For each injury, this project must address
 - » how the injury occurs,
 - » whether the injury is limited to the one sport or observed across different sports,
 - » a complete anatomy of what occurs with the injury,
 - » outcomes of the injury, and
 - » a description of the immediate treatment as well as long-term care for the injury.
- Students are required to deliver a presentation in class, approximately 20 minutes in length, to share the results of their research.

- To better engage the rest of the class, students are encouraged to make the project interesting by including videos, handouts, and/or quizzes.
- A major research paper must support and accompany the presentation.
- Students will complete team member evaluations.
- Within each group, students should designate roles and decide how the work is distributed. Everyone must fulfill their assigned role.

Grading for this project is based on the information shared; the quality of the oral presentation, including the visual materials; and the quality and content of the written assignment.

Notes From the Instructor About This Innovative Teaching Practice:

“In my teaching, I have found that chunking the material into short sections, like mini-lectures, has helped students learn the course content. I divide the PowerPoint into sections, and after each section the class takes a short break. When the class re-convenes, students form into groups to discuss the content presented prior to the break. This is followed by whole-class group discussion that includes capturing salient points on a chart and then creating a concept web based on the most salient points.”