

Engaging guided-inquiry laboratory classes

K.L. Colthorpe and H.G.G. Ernst, School of Biomedical Sciences, University of Queensland, St. Lucia, Qld, Australia.

The teaching of physiology has traditionally included a variety of delivery modes with laboratory classes often contributing a large component of many courses. These classes are seen as the opportunity for students to test their understanding of concepts and to develop critical thinking skills. However, often these classes were based on a 'cookbook' approach which failed to engage the students and led to disinterest, lethargy and poor learning outcomes. Furthermore this approach meant the students had little input into experimental design and lacked the opportunity to predict experimental outcomes. To enhance the learning experience we developed guided-inquiry laboratory classes each involving highly interactive discussions and concluding with a short-answer assessment task. The introduction to each class consists of a broad overview of the physiological concepts and experimental design, during which students are encouraged to identify the methodology required to apply those concepts to a practical situation, develop a hypothesis and predict the outcomes of those experiments. At the conclusion of the experiments discussions of their results, from individual, class and population viewpoints are held, with further discussions on how these results might differ under varying circumstances. Finally, students have an opportunity to consider the concepts, experiments and results in small peer groups just prior to the assessment task. This approach allows the students to develop an understanding of the experimental design in order to apply the physiological concepts previously introduced in lectures to relevant practical situations and to draw conclusions based on the experiments they performed. The students enjoy and actively participate in the classes, with improved learning outcomes evident in the summative assessments. The assessment tasks also appear to promote teamwork and diligence and, in particular, the students value the immediate feedback they receive.