Creative Teaching Models for the Innovative Faint of Heart
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As a biology professor surrounded by colleagues who believe in lecture as the most effective teaching method, I continue to search for literature that might convince my reluctant colleagues to explore more creative, learner-centered teaching models. Hard evidence of enhanced student learning and straightforward models, that complement existing approaches to their sub-discipline, might encourage them to change their methodology. A recognized expert in the constructivist theory of learning, Robert E. Yager, has recently published a monograph, Exemplary College Science Teaching, designed to encourage and support changes in college science teaching. This book outlines a novel approach to incorporating a learner-centered model and offers preliminary evidence of enhanced student learning.

Dr. Yager, Professor Emeritus of Science Education at the University of Iowa, skillfully uses the preface to introduce the tenets of constructivist learning in the context of teaching practices, highlighting the parallels between this model of teaching and scientific inquiry. As Yager notes, science begins with questions. Therefore, why not encourage students to start with problems or questions? He goes on to urge faculty to consider the effectiveness of lectures for promoting deep learning, the role of technology in the classroom, and promoting 'real' change in teaching practices. This overview motivates the reader to learn more about how to implement inquiry methods in the classroom.

I enjoyed reading about Dr. Katherine B. Follette's journey to become an effective science communicator, described in Chapter I. Follette notes the challenges of incorporating interactive learning into a course, including student resistance. She explains how she successfully used educational research data to convince her dean that inquiry-based methods (e.g. lecture tutorials) would promote more learning than lecture alone.

The remaining chapters could be read in any order depending upon one's interest. Among the innovative and inquiry-based methods for engaging students, the essays
explore: lecture-free college science teaching, inquiry as part of a large-group setting, clickers, jigsaw method, peer-led study groups, service learning, and interactive video conferencing.

Chapter 6, by Dr. Ellen Yerger, brought a smile to my face as I read the all too familiar list of “recurring challenges” faced when teaching introductory biology laboratories. I was pleased to learn that at Yerger’s institution, faculty had moved beyond making lists. A lab survey given to Indiana University of Pennsylvania biology students revealed students’ preference for complex labs that present relevant challenges, solving ‘real world’ problems.

Chapter 10, by Dr. Elizabeth Allan, describes how reform of a core biology course at the University of Central Oklahoma has led to the gradual transformation of biology faculty. She notes that instructors have “become aware of the need to find ways that go beyond traditional lecture to help students understand the content.” Based on this statement, it is clear that we have a long way to go to convince our colleagues that lecture alone does not promote deep learning.

I recommend reading Exemplary College Science Teaching with colleagues to stimulate discussion about how to address recurring challenges in a way that promotes deep learning. The essays clearly demonstrate that small changes to make a course more learner-centered can enhance student learning. This monograph also successfully promotes Yager’s assertion that education is something that can be studied and improved, but more evidence and more rigorous assessment of student learning are needed. Although some specific essays could have benefitted from another round of editing, the book is a valuable resource for introducing the novice to a variety of innovative classroom approaches and provides helpful resources for further exploration. I will refer to the essays for encouragement and assessment ideas as I continue to transform my courses to make them more learner-centered.

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