Charting a course for advances in physiology education

Physiologists are currently faced with a spectrum of challenging questions related to education. The broad questions of what should be taught at various levels (e.g., secondary, college, professional), who should do the teaching, and how can we maximize learning by students at various levels encompass a variety of issues that are impacted by both scientific and social factors. What constitutes "modern physiology"? How can we best stimulate students' interest in physiological phenomena? How can we best help students develop accurate conceptual models? How can we promote active learning in physiology? What is the role of "alternatives" to student labs, and how can live preparations be utilized to derive maximum benefit for students? How can we design our training programs to ensure that young physiologists whose scientific focus is at the molecular level are able to perform well as teachers of integrative physiology? The problems that face us require creative solutions as well as research to test the effectiveness of those solutions.

Although there is much to learn from educational progress in other disciplines, the solutions must ultimately come from within our own discipline. Historically, few physiologists in the American Physiological Society (APS) have been willing to invest time in research and development efforts related to teaching or educational problems. The reward for such activity in most institutions is minimal. "Productivity" is generally based on the number of papers published in peer-reviewed journals and, to some extent, the degree of funding obtained to support research efforts. If, in fact, educational endeavors were given some weight in the "productivity equation," more faculty would be willing to invest the time necessary to explore creative solutions to these problems.

The primary goal of Advances in Physiology Education is to provide a peer-reviewed communication vehicle for physiologists to report the results of their educational research and development efforts. In this respect, the journal is similar to The Physiology Teacher, published by the APS from 1971 to 1985. However, the close association of our current effort with the American Journal of Physiology reflects the growing recognition by APS members that contributions in this realm are "scholarly" in the same sense as contributions to our understanding of physiological mechanisms. Thus this journal should have more of an impact in promoting appropriate recognition for such efforts in institutional reward systems than did The Physiology Teacher.

The Physiology Teacher was a peer-reviewed publication initiated to encourage laboratory instruction in physiology. Although its focus broadened somewhat in the later years, its primary thrust remained directed toward laboratory instruction (i.e., "wet" and computer-based labs). In contrast, the overall goals of Advances in Physiology Education deal with a spectrum of issues relevant to physiology education at all academic levels, including helping physiologists to improve their teaching skills. The articles in this first issue illustrate that spectrum with topics ranging from a specific laboratory exercise to broad areas in physiology education that warrant research and development.

The journal will serve as a forum for exchanging ideas related to educational issues in all areas of animal physiology (subcellular to systemic, invertebrate to vertebrate, normal and abnormal) and at all academic levels (secondary to postgraduate). Through invited essays, contributed essays, and letters to the editors, we intend to focus attention on relevant areas of concern to physiologists engaged in teaching and, through such exchanges, facilitate development of effective approaches to dealing with those concerns. Articles may, for example, focus on educational issues related to attracting students to physiology, improvements in physiology graduate training, innovative approaches to teaching physiology in larges and small class settings, and new approaches to helping students appreciate the similarities and differences in physiological systems throughout the animal kingdom.

Another goal for this journal is to help inexperienced faculty develop into the best teachers that they can be. Unfortunately, few training programs in physiology include an adequate component dealing with the principles of good teaching. In many programs, graduate students gain minimal or no practical experience in classroom teaching. Yet when these individuals become faculty members, they are expected to plan curricula and provide students with a learning experience that will stimulate their interest in physiology. For these faculty, we will publish tutorials focused on education theory and teaching methods written by recognized experts in the field.

We are all confronted with the dilemma of how to keep current with the literature. It is difficult at best to keep abreast of developments in our primary areas of interest. It is harder to be knowledgeable about progress in areas peripheral to our primary areas of interest. It is next to impossible to keep abreast of activities in areas like education that are related to our academic responsibilities but not related directly to our research interests. Yet, if we are to meet the challenges that face us in the realm of education, we must all at least be aware of advances in education that are relevant to our academic pursuits. To help accomplish this, a section in a future issue of the journal will be devoted to abstracts drawn from the relevant education literature.
The course that we have charted for this publication is formidable. Nevertheless, our goals are attainable. Our success in reaching them depends directly on you. We look to you, the readership, for contributions in the form of relevant research reports, essays, and letters to the editor, as well as feedback on our progress and future directions that we should consider for the journal. We encourage you to consider your educational efforts in the same light as you do your scientific efforts and help to make Advances in Physiology Education a premier publication in the area of science education.

Harold I. Modell, Editor
Advances in Physiology Education
June 1989, Volume 1