

Computer Center

Computers in Biological Education: The Future Is Now!

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Biological education is more exciting and challenging than ever. In part, this is due to the recent extraordinary advances in biological knowledge and insight. But the excitement and challenge also arise because of the increasing need and urgency to educate students about science in a value-oriented way. This requires an understanding of how biology is relevant to people, both as individuals and as members of society. Such considerations of necessity lead to interdisciplinary studies that include, but also go beyond biology regardless of whether they involve molecular biology (e.g., creation of new microbes to produce insulin or to digest oil), environmental biology (e.g., the decision to spray chemicals in populated areas to control agricultural pests in California), or any area in between. At the same time, basic biological knowledge and understanding can not be ignored.

I believe that the *wise* use of computers can enhance biological education at any level, from grade school through graduate school. Proper use of computers by motivated teachers and students not only can contribute to basic biological education, but also can allow us to provide a more meaningful value-oriented education. If modern technology has permitted society to cause some of our current problems, then technology

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For use in The Computer Center, Ted welcomes suggestions on what subjects should and not be treated, summaries of educational computing centers, innovative uses of computers, and information about relevant books and events.

should be used to help solve them, too. Computers in education have this potential, and it is becoming a reality even today. The future is now!

The overall goal of this new department in *The American Biology Teacher* is to help educators to see how the wise use of computers can enhance bioeducation. Specific objectives include the supply of information on specific topics, e.g., the elements of a successful Computers

In Biological Education (CIBE) module. Let's pause to define a few concepts. A "CIBE module" is a part or topic of a course that meaningfully integrates a computer system into it. A "computer system" contains three essential parts: the "hardware," i.e., the actual physical components such as keyboard, display screen, disk and disk drive, and main memory boards; the "software," i.e., the programs, the sets of instructions created to tell the computer just what to do; and "people" (defined as usual!). People should bring to mind not just the users, such as students, but also module creators, facilitators, and evaluators. These may include programmers and other computer professionals, but also academic administrators, teachers, and even students.

In my experience, the best use of CIBE occurs in instances when constructive interaction occurs among all of these types of people. Teachers are in charge, and usually decide on the general and specific characteristics of CIBE modules in their classes. Capable administrators can assure optimal integration of CIBE modules at the departmental level, thereby avoiding needless duplicate purchases of hardware or, worse yet, of incompatible computers. Students come alive when they are asked to be more than passive recipients of knowledge. They are

the major receivers of our pedagogy and thus can offer a unique point of view on how to improve it! Furthermore, increasing numbers of students can even help to write programs for a CIBE module, and not just college-level students.

This new CIBE department in *ABT* initially will appear in every other issue. It will address both general and specific aspects of CIBE. It will not always have the same format, such as an essay. Sometimes all or part of a monthly contribution may be a bibliography, a list of germane events, a review of a book or two, information on sources of CIBE programs, useful examples of CIBE modules, etc. However, our goal is not to duplicate what is generally available in other printed sources or the classroom. Thus we plan no features to teach readers Basic, Pascal, or other languages. Emphasis will be on topics related to biology teaching. Consequently, approaches to computer graphics which optimize learning could be an appro-

priate subject, as would general criteria to determine if computers actually are enhancing our teaching.

Because of other commitments, I will not be able to answer letters that ask, "What microcomputer should I choose?" or "Which predator-prey program is best?" A well-founded answer to such questions simply cannot be given without a detailed study of your specific situation (your course type, its goals, type of students, your or your colleague's background, etc.). My colleagues and I do offer week-long mini-courses on computers in bioeducation, have served as consultants, and are developing a worldwide directory of CIBE programs. But a major goal of this *ABT* series will be to help you raise your consciousness and understanding of general and specific aspects of CIBE so that you can become your own best consultant!

To reach our overall goal and specific objectives will require your active participation. I will share with you what I know, and will provide

evaluations from my vantage point. But each of you has a unique vantage point too. In addition, many of you are wisely using computers already. Send me your insights and suggestions and I will try to pass them on to other readers through these pages. Or simply indicate what topics you would like to see addressed (as well as those you do not want!). You can reach me at the Notre Dame address accompanying my name.

Alan McCormack, the editor of our journal, indicates that he prefers an informal writing style. I will try to oblige, and will strive for a feature that is enjoyable as well as valuable and timely. I want to close this first feature by sharing one final thought. When I consider what we are beginning here, realize that my fellow travellers are also educators, and that our goal is to see how computers can help us to educate people even better, I feel a close and essential unity among all of us. Let's grow in our profession and in our humanity together!

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The National Association of Biology Teachers is the only professional association devoted exclusively to the concerns of people in biology education. Active Membership is open to any person sympathetic to our purposes, without regard to sex, race, color, creed, or nationality. Dues are \$25 per year, of which \$15 is allocated for a subscription to *The American Biology Teacher*. Benefits include two bimonthly newsletters, an annual convention, an insurance program, and much more.

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