

An Overture

New Dimensions in Biology Education

Previous special topic issues of *American Biology Teacher* have addressed environment (1975), entomology (1976), water biology (1977), and careers (1978). Education is the theme of this year's special issue, not because it is time we did something on education; it is this year's theme because biology education is taking on noteworthy new dimensions.

Many teachers at every level of education are expressing concern about dealing with bioethical issues that arise from the teaching of biological concepts. Recent developments in teaching strategies as evidenced by articles in this issue demonstrate ways to address ecological and biomedical issues.

Advances are being made in our understanding of how people learn and in applying those understandings to our task of helping people learn. Several of the articles in this issue deal with such matters as intellectual development, concept maps, and cognitive styles.

Programs addressed to the special needs of particular groups of students reflect our increasing concern that each learner's needs be met. These programs range from special education for handicapped students to special training for graduate teaching assistants.

These new dimensions of biology education—dealing with bioethics, applying learning theories to the design of instruction, meeting the needs of individuals—have the potential for significantly changing both the content and the methods of biology education. Let's look at some of the possible changes and the effects they might have.

Until recently formal methods for evaluating the ethical consequences of alternative choices did not exist. Now that methods are being developed, teachers can help their students to use rational decision-making processes to reach ethical positions. Conscious reasoned choice can replace gut-level decisions.

As I read the literature of educational theory, I believe a point has been reached that enables us for the first time to formulate testable hypotheses about how people learn *and* to apply our findings to the design of instruction. Rationally chosen teaching strategies can replace trial-and-error methods.

Although individualization of instruction has been practiced by many teachers for a number of years, most of these efforts have been focused on allowing variation in the rate at which students learned the same information or on providing some choice of emphasis within total course content. New trends in individualization include providing physical and intellectual access to education for a variety of handicapped individuals who have heretofore been denied such opportunities. Equal educational opportunity may become a reality.

This special topic issue focuses attention on trends in education and invites readers to consider new ideas. Adapting these ideas could add new dimensions to the teaching experience of each of us—together we would change the future of biology education.

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