

## Vocational Education Careers in Biology Education

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One of the new environments for a secondary school biology teacher is the vocational school where emphasis must be on training for an occupation.

A young person looking toward a career in biology teaching might do well to consider training for a job in vocational education. Vocational schools are a comparatively recent development in American education, and teaching opportunities are as numerous and varied as they are important. Furthermore, vocational teaching positions, as a consequence of being specialized, often command higher salaries than similar teaching jobs elsewhere. Requirements for certification to teach science in vocational schools are similar to those for other secondary school teaching, but there may be additional requirements specific to vocational education, so those planning a career in vocational education should check certification requirements with their State Department of Education at an early stage of their college careers.

A vocational and technical high school

combines academic subject matter with trade or technical training. Such a school provides youth with opportunities to become skilled workers. Its program is for capable youth who plan to enter employment upon high school graduation. Entry into the program may be at 10th, 11th, or 12th grade levels, but enrollment for at least two years is generally required for a technical high school diploma. For the most part, prospective students have an average ability, with an I.Q. range from 90 to 110.

The vocational school provides general education as well as shop or laboratory training. The student divides his time between shop or laboratory, learning how to perform a trade, and the study of such subjects as English and history, and the mathematics, science, safety, and drafting related to his trade. In these related areas, emphasis is

placed on mastery of fundamental concepts and principles as well as on ability to solve practical problems. The shop gives the student practical experience in which the fundamental concepts are applied and reinforced.

Biology is not taught as a course *per se*, but by its branches as they apply to the trade. For instance, a biological science teacher would teach bacteriology to commercial foods students, or applied chemistry to bakers, or, perhaps, human anatomy to beauticians. The content and skills included would be those relevant to the trade. For example, dissection is not taught as part of a human anatomy course, because the practical nurse or beautician does not dissect. However, recognition of the organs and their location and functions is required on State Board examinations.

In an applied chemistry class for beauticians, the student learns about elements that make up the hair, skin, and nails. She learns about the chemicals that affect these tissues and how the use of chemical solutions can be controlled by varying dilution, temperature,

and time exposure. To put these points across, the laboratory includes preparation of solutions, changing the composition of solutions, and the application of these on hair for differing lengths of time.

The practical nurse must know the importance of personal hygiene and sanitary practices in the performance of her duties. The sanitation skills learned in shop activities become more meaningful in microbiology class when comparative cultures are made from dirty and clean implements. Smears are made of the cultures to identify the microorganisms present. The student may report on pathogenic organisms as a project resulting from interest stimulated by these activities.

Though the vocational school student may be science-shy at first, he learns quickly by demonstration and experimentation. Since, if given a choice, most vocational students would rather be in a shop class than in a related science class, it is important to relate the subject matter to the trade. Indeed, success in teaching demands this.

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## Biology Teaching in Junior High School

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**The junior high school is the bridge between elementary and secondary school science education, and the science teacher has an important role to play in this context.**

Although the term “junior high school” is generally understood to refer to a unit encompassing grades 7, 8, and 9, the ninth grade may be part of a senior high, with grades 7 and 8, or 6, 7 and 8 making up the intermediate level. Some communities are experimenting with intermediate programs for grades 5 through 8, 6 through 9, or 8 and 9. Or grades 7, 8 and 9 may be part of a six-year unit including grades 7 through 12. Thus, the term “junior high school” will refer to the intermediate level between elementary school and secondary school.

At present, a large proportion of teachers of junior high school science are teaching without science certification, and the demand for science specialists at the intermediate level far exceeds the supply. Few schools have biology teachers as such; they are more likely to have teachers who teach all intermediate science, including biology. This is one of the major differences between biology teaching at the intermediate level and that at the senior high school. Another is the age and the greater variety of students the teacher works with, since often intermediate science