

# The Biologist and His Student Teacher

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One of the most universal cries of anguish that the college coordinator of student teaching hears at the beginning of each term is, "What can I do with my student teacher before he can teach my classes? What am I supposed to teach him? What does he need to know?"

Needless to say, these laments come from the lips of cooperating teachers. Some of them are old hands at supervising student teachers but still uncertain as to how to begin the term. Saddest to say, often it is the biology teacher who worries the most, the one who is wisest in the ways of relating theory to practice, laboratory to discussion—the biology teacher who has as much, if not more, to give the novice than any teacher in the building.

Perhaps the reason for this state of affairs is that the typical biology teacher is unable to use the age-old crutch of the poor teacher—lecture, question, read, test—because of the very nature of his subject matter, and hence is more knowledgeable about the intricacies of the eclectic type of methodology. This tends to make him more sensitive to the needs of his students and thus to the needs of his student teacher. Ergo: a worried supervising teacher.

Speaking broadly, many things can be done that will help the student teacher before he is able to assume the role of the teacher in the biology class, and they all fall into the five areas in which all student teachers need guidance: (1) learning administrative details, (2) learning instructional resources, (3) learning to plan, (4) learning to guide student activities, and (5) learning human relationships. None of these five areas are unique to the biology class, but there are unique points to be considered within the framework of the five areas that, if they are provided for by the supervising teacher, can give the biology student teacher a memorable experience in his teacher training.

We must assume, for purposes of discussion, that the student teacher has had little contact with high school or junior high school students. We must also assume that we are try-

ing to give him as realistic an experience as possible. Now, what can we do with him?

## Administrative Details

All student teachers need to know the policies and practices of the school: how to use the auditorium, the special services of the school system, the testing program and cumulative records, the attendance keeping, etc. They need to become acquainted with the school calendar, Parent-Teacher Association meetings, faculty meetings, in-service training meetings, etc. However, there are other administrative details that the biologist must consider to a greater extent than, let us say, the English teacher.

Because of the use of the laboratory, the biology teacher must know first aid. The student who finds that the frog has eyeballs may become excited enough accidentally to find, by means of a probe, that humans also possess this structure. There may be an overly ambitious bleeder in the room during the blood-testing laboratory period. Some students tend to put things in their mouths which can be regrettable when testing for protein. Does your student teacher know first aid?

Biology teachers also must learn the sources, storage, and requisitioning of supplies. Explain these occupational facets to the student teacher. Perhaps continual activity arising from this would be a discussion on what we can expect from the school custodian.

Many biology teachers who are fortunate enough to teach in a building that has a good library utilize this facility in their teaching. Unfortunately, the typical student teacher may need help in this utilization. Can he do minor research in preparing lesson plans? Can he find periodical sources to direct the students' research? Can he use the *Readers Guide*? Biology is ever-changing. Help him to keep up with it.

Finally, he needs help in reporting to parents. Can you help him realize that the pupil's attitude toward laboratory work, toward living things, toward the interrelationships of

biological phenomena are as important as his ability to spell *Platyhelminthes*? Does he know that a biology grade is a synthesis rather than a monolithic absolute?

#### Instructional Resources

All student teachers need to become familiar with the basic textbooks and the common resource books in their fields. It is easy to forget that, in general, they are not familiar with them when they report for student teaching. Remember that they have been using college texts for almost four years and seldom have had an opportunity to explore in a high school library. They must also become familiar with the teachers' manual and the course of study, if these are available.

Biology student teachers must also become familiar with the materials that are to be found in the classroom or in the audio-visual aids department. Biology teachers, in order to become appreciative of this, need only recall their first year of teaching. How long did it take us to find all the equipment that was stored in the room? How long was it before we were able to utilize this material?

#### Lesson Planning

In order to plan lessons, all student teachers must know: (1) the needs and abilities of the pupils, (2) the standards of the course, (3) the purposes of the course, (4) how to ask and utilize questions, (5) how to make generalizations, and (6) subject matter. But there are unique knowledges involved in biology lesson planning. We are presumably dedicated to the idea that young people must learn to solve problems—to use the scientific method. Does your student teacher know how to teach this? Does he know that a legitimate question from a pupil represents the isolation of a problem and that the teacher must assist the student in formulating and testing hypotheses? Does he know how to help a class formulate hypotheses by means of discussion, or to test hypotheses in the field or in the laboratory? Is he dedicated to the proposition that he must teach problem-solving every day?

Most biology teachers, in planning, must strive for a meaningful integration of lecture, discussion, demonstration, laboratory, and field work. The student teacher, typically, needs much help in this. He also needs constant reminders that he must bring out relationships and generalizations in his planning and work-

ing with pupils. Help him to plan effective lessons. You owe it to his future pupils.

#### Student Activities

All student teachers need help in learning to work with audio-visual aids, in learning to work with small groups, etc., but there is a wealth of activities with which only the biology student teacher comes in contact. In spite of the fact that they have majored in an area that relies heavily upon audio-visual aids such as demonstrations, experimentations, field trips, bulletin boards, films, and filmstrips, few student teachers have ever had the opportunity of planning these activities. They have never set up a display; they have never introduced a film; they have never guided a field trip. They need help in this planning and can assist the supervising teacher with these activities almost on the day that they arrive.

Another fertile field of endeavor in biology is the resource person. Contacting a doctor, a public health scientist, an entomologist, or some other expert, and arranging for them to come to the classroom is an excellent way to teach the student teacher the elementary values of utilizing community resources. When the resource person visits the school, the student teacher can introduce him and, perhaps, handle the discussion period.

Another effective way to help the student teacher get his feet wet is through working with individuals on projects or groups in the laboratory. This helps the student teacher overcome his shyness and possibly helps the classroom teacher do a more thorough job of instructing. At the end of the period, the student teacher can supervise the cleaning up session, also.

Perhaps this is the chance that the classroom teacher has been waiting for to have more help in planning that assembly program that he has been thinking about for so long. Not only would he be doing a service for the school but for the student teacher as well.

#### Human Relationships

All student teachers need to know the role of the teacher in our society. They need to know how better to equip pupils to take their places as citizens. They need to learn to appreciate students in terms of guidance, discipline, and creative activities. They need to know the place of their specific subject area in the

curriculum of the school.

The biology student teacher needs to develop an appreciation of his role as a teacher of biology. He must realize that biology as general education fulfills a need in the high school pupil who is growing up in a scientific age, but with all the needs of a prior age, for understanding of himself and his interrelationship with all living things.

In addition to this, the student teacher must be helped to equip himself to be able to cope with the various controversial issues that arise so often in the biology classroom, such as sex, the practice of medicine, evolution, etc. To sum up, the student teacher must be helped to see biology as a vast, interrelated discipline that, when properly taught, can make a permanent contribution to the general education

of all the pupils who enroll in the course.

When the student teacher has been exposed to the above mentioned activities, helps, and discussions, he should be ready to assume responsibilities for the instruction in some of the biology classes. His instruction in these classes will have a solid base because he will understand his place in the classroom, the place of the subject in the curriculum, and the place of the curriculum in the education of youth. He will have had some practice with small groups of pupils, he will have engaged in some creative planning for instruction, and he will have a knowledge of instructional materials. If the student teacher is capable of profiting from all of this he should have no significant problems in his classroom instruction.

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### New Booklets

A ten page booklet listing popular non-technical books, articles, pamphlets, etc., is now available for use by interested schools, parents, civic groups, for information concerning the improvement of science instruction, facilities, science career information, and methods of obtaining local action. The booklet has been carefully compiled by the Scientific Apparatus Makers Association. The booklet, "Closing the Gap," is available by writing Gap, Scientific Apparatus Makers Association, 20 North Wacker Drive, Chicago 6, Illinois. Single copies cost twenty five cents.

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A new quarterly publication, by and for high school science students, was initiated recently under the editorship of Dunbar Aikens, an undergraduate student at the University of California, and Lloyd Prentice, a student at Castlemont High School in Oakland, California. The publication, "Particle," attempts to publish writings of project reports by students. They are interested only in experimental or mathematical reports. Copies of the publication may be obtained from Lloyd Prentice, 10533 Stella Street, Oakland 5, California.

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A new publication, "Your Future Occupation," is now available from the Randall Pub-

lishing Company, 2970 Mills Avenue, N. E., Washington 18, D. C. It is published twice a month and has as its aim the providing of accurate current information on job opportunities, training, and career guidance. Science teachers will find this a useful publication for students wishing more complete career information about various scientific occupations.

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### Tranquilizers

Some tranquilizers exert their effects by working in tiny "chemical factories" within the body cells. It is in these tiny "factories," called mitochondria, that chemical processes which produce energy occur, explains Dr. Leo G. Abood of the University of Illinois College of Medicine. A number of agents, including phenothiazine tranquilizers, barbiturates and some essential hormones, interfere with this energy-making process, known as phosphorylation, he observed.

The mode of action of these drugs is a highly intricate problem which is not well understood at present, said Dr. Abood, who is associate professor and director of the research laboratories in the University's Department of Psychiatry. Dr. Abood said, "It can inhibit some vital enzyme (an agent that controls certain chemical processes in the body), either by direct chemical interaction, or by interaction with some essential substance. It can interfere with the delicate balance of enzymes."