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Lena Keithahn

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# Volunteer Laboratory Assistants in BSCS Biology Program

LENA KEITHAHN

Mason City

**Abstract:** With the introduction of B.S.C.S. Biology and its intense laboratory centered approach into our school curriculum, the need for additional help to check equipment and student findings during class sessions became apparent. The use of volunteer assistants proved to be



Mrs. Keithahn

helpful, not only to the instructor, but also to the student by providing him with an opportunity to be of service to the school and also to carry on supervised research work.

## INTRODUCTION

The Mason City school system adopted the B.S.C.S. Biology (yellow version) three years ago. The top ten percent of the student body scoring at the 90th percentile or higher on the ITED composite score were tracked into the accelerated science program and studied B.S.C.S. Biology in the ninth grade. The low group of the student body scoring at the 35th percentile or lower on the ITED com-

posite score were scheduled into a low track traditional biology course at the tenth, eleventh, or twelfth grade, using *Your Biology* by Smith and Lisonbee as the text book. Those students scoring between the 35th percentile and the 90th percentile on the ITED composite scores became the average general track taking B.S.C.S. Biology in the tenth, eleventh, or twelfth grade to meet the high school science requirement. This paper deals entirely with this large middle group.

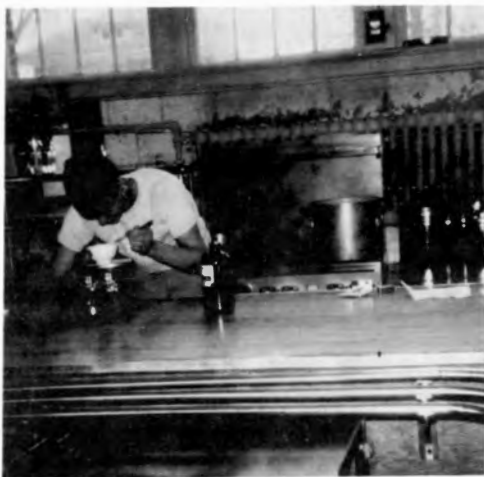
## OBSERVATIONS

It soon became apparent that if the instructor had to teach five 55-minute classes daily and to have two or three labs weekly it would be difficult, if not impossible, to be certain that every student in the class of thirty actually learned the new techniques and experienced success in performance. Additional help was



Jay Pedelty and BSCS Biology students—Jay demonstrates how to fill a membrane for a diffusion lab.

Mrs. Keithahn has a BS degree from the State College of Iowa, and teaches biology at the Mason City High School. She is currently working on a Master's degree at Colby College in Waterville, Maine.



Frank Pearce prepares food materials for his *Drosophila* culture for his research project and also for class work.

needed during the class session. A careful check of study halls found that one or two former students who had had traditional biology would be available for each class. They volunteered to help. All of us, teacher, lab assistants, and students, discovered things together that first year.

The second year students with A and B grades who planned to continue with science courses were encouraged to volunteer as assistants. Those whose schedules made it possible were assigned to a particular biology class rather than to a study hall. Since these students had had some experience with many of the B.S.C.S. labs from the previous year, they could be of help in checking microscopic findings and could also assist in setting up lab trays for the next class. Two of those assistants who had become interested in research through Science Club membership worked on their projects during available class time. Both were accepted for participation at summer science institutes, one at Luther

College and one at University of Iowa.

The third year more care was taken in selecting possible candidates since the idea of becoming a laboratory assistant was now a desirable prestige achievement. Of the six selected, four read papers at the Iowa Junior Academy in the spring of 1966.

### DISCUSSION

The future of the volunteer laboratory assistant program seems to be assured now that the move to the new high school with larger class rooms and a program of more flexible scheduling will be available. In a look backward on the successes and failures in the program, perhaps the following guidelines for student selection will be of help to others.

Each quarter B.S.C.S. students



Bob Platts sets up all materials and gives the class demonstration for electrolysis of water.

were required to perform a laboratory experiment as a part of an independent studies day. This exercise might be a lab from the B.S.C.S. manual that was not done by the class, or a variation of a lab that had been done (i.e. using *Daphnia* instead of *Paramecium*) or an exercise of their own original design. Students were required to set up their own equipment from the stock room, provide their own perishable living materials (raw milk, fresh pineapple, live earthworms, crayfish, gold fish, or rotifers), and also to clean up and return all equipment to the stock room at the completion of their laboratory. A written report which included abstract, purpose, materials used, data, and conclusion was required of each person. This period of supervised yet independent study gave the instruc-

tor an opportunity to observe at first hand the creative thinker, the independent worker, the honest observer, the dependable student, and the youngster with a true scientific bent.

After the third series of independent labs the instructor made a tentative list of about twelve candidates. Checks were made on regular attendance, grades of B in most subjects, extra curricular activities such as band or chorus, courses selected for the junior year, and membership in Science Club. Students who were thorough, dependable, honest, quiet, and mature were especially desirable. The instructor asked for volunteers who could qualify and would be willing to assist. Permission from parents and the vice principal was secured, and students were assigned to biology on the computer print out sheets.

The jobs that the junior lab assistants performed varied with the ability of the students and the needs of the particular day. Basically, the tasks were the usual ones of taking roll, passing out papers, operating audio visual equipment, feeding live animals, caring for plants, culturing protozoa and algae, checking microscopes from and to the stock room, replenishing the lab trays for the next class, preparing simple solutions, checking on the autoclave and incubator, repairing equipment, replacing parts, and cleaning glassware. The most valuable help came from the assistant checking of microscopic findings—mitosis, cytoplasmic streaming, conjugation and the like—when the instructor wanted to be positive that each student really saw what was supposed to be seen.

Lab assistants did not correct papers nor record grades. They were



Dave Hammer feeds the laboratory animals.

not responsible for any of the class discipline. They were not expected to put in any time in addition to their one assigned period. They might have pass slips to go to the library or to other classes if there was not a particular job to be done that period. Most had a research project of one kind or another going on in a corner of the lab so there was time to check results or do some extra reading on the problem.

Lab assistants were not paid—this was a voluntary gift of time and

energy to make the school function more efficiently. The pride in their work, the admiration of the sophomores, and the recommendations of their supervisor seemed to be a more than adequate reward.

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