

BIO-BULL

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Since 1970, I have used an approach to college biology that may be helpful to others—a weekly bulletin called *BIOlogy BULLetin*. The *BIO-BULL* idea came from a seminar I attended in 1970 (Long 1970). Each *BIO-BULL* contains four sections: Bio-briefs, assignments for the week, behavioral objectives-lecture, and behavioral objectives-laboratory.

Bio-briefs

Each week I summarize three to five current biology articles from various periodicals and newspapers. The bio-brief contains the summary as well as complete bibliographic information. The purpose of the bio-briefs is to familiarize students with the diversity of biological information being printed each day and to stimulate them to read more biology-related materials. The summaries always interest some of the students and cause them to seek out and read the entire article. When possible, the entire article is available in the laboratory. Brief book reviews are occasionally printed. Students are not required to read the bio-briefs and are never tested on materials or ideas from the bio-briefs.

Assignments for the Week

Each *BIO-BULL* lists the assignments for the coming week. Included

here are text assignments, lab manual assignments, quizzes or tests to be given, field trip assignments, library assignments due, and reserve readings. In addition, the assignment section may include reminders of items past due, early announcements of future items, and hints as to appropriate clothing and methods for field trips and field assignments.

Behavioral Objectives— Lecture and Laboratory

The assignments section is followed by sections containing the behavioral objectives for the lecture and laboratory for that week. Behavioral objectives are statements which describe the person doing the learning, the observable or measurable action that the subject will demonstrate as a result of the learning experience, the conditions of performance, and a standard or criterion of acceptable performance (Mager 1962).

My study on the effects of behavioral objectives on student achievement in biology (Carlson 1978) compared the mean grade point of students in the two years preceding the use of behavioral objectives with the mean grade point of students in the first two years when behavioral objectives were applied. A one-tailed t-test using mean biology grade point was used

to test the directional hypothesis; the experimental group achieved at a measurably higher level than the control group. The directional hypothesis was tested at the .05 level of significance for a one-tailed test. The critical t-value was 1.645. The calculated t-value was 1.76. The data supported a conclusion that use of behavioral objectives in the freshman biology sequence can significantly improve student achievement.

First Bulletin

The first *BIO-BULL* of each quarter contains information in addition to the sections already described, including:

- *Goals*—The general goals expected to be achieved during the course.
- *Assignments*—A brief statement on using the assignment section each week.
- *Behavioral Objectives*—A brief statement explaining the use of behavioral objectives. Students are assured that if they master the objectives, they will be performing satisfactorily. I check every quiz or test question to make certain it relates directly or indirectly to one of the behavioral objectives.
- *Library Assignments*—I usually make one or more library assignments for the quarter. The

assignments are spelled out in detail with deadline dates in the first bulletin.

- *Testing and Grading*—My testing and grading policies are explained in detail. The standard or criterion of acceptable performance is established for the quarter in the first *BIO-BULL*.
- *Attendance, Make-up, and Re-testing*—My guidelines on these are explained in detail and ground rules for the quarter are established.
- *Materials*—This part explains what text, lab manual, and other materials will be required for the quarter.
- *Suggestion Box*—I point out that a suggestion box is provided in the lab. Students are invited to make suggestions directly to me or, if anonymity is preferred, to place them in the suggestion box.

Evaluation

I have used an evaluation sheet with each class since implementing *BIO-BULL*. Virtually 100% of the students agree that *BIO-BULL* has been of value to them and that it should continue to be used. The following quotes are representative of comments received: "You know what is expected of you on tests and

quizzes and also for lab." "It keeps you up-to-date on what is happening." "It was a big help on the final and on quizzes." "Lets you know what you have to do." "It has been of value in finding the correct areas to study in the book." "It helps me study and I like to read the articles attached." "It keeps the student informed on what is happening to his environment and the objectives make it easier to study."

Summary

Americans have increasingly charged the public education system with inefficiency. A 1970 Gallup Poll reported that 80% of the population wants some form of accountability for the tax dollars spent on education (Nordh 1971). In the classroom, the central issue has become "what is learned," not "what is taught" (Houston 1977). The charges of inefficiency have caused school administrators and faculty to emphasize educational reforms that allow for evaluation of student performance in terms of accomplishment of specific objectives. The use of behavioral objectives may help answer the question of accountability by shifting emphasis from the processes of education to the finished product—what students can actually do (Jordan 1971).

I recommend a method such as *BIO-BULL*—its use has removed the need for students to guess at what is expected of them. They know what is expected and can set about meeting those expectations. It has been proved that student achievement can be improved by using behavioral objectives. Accountability cannot help but be enhanced by such a system. Additionally, the bio-briefs section stimulates those who are really interested to explore biology topics not covered in the objectives.

References

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