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## Biology Team Teaching at Wahlert

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*Wahlert High School*

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## Biology Team Teaching at Wahlert<sup>1</sup>

SISTER BERNICE ANN HUBERTY, O.S.F.

### BACKGROUND

Our own program had its remote beginning in the spring of 1961 following the North Central meeting in Chicago. Informal discussions and questions with faculty members found us having had no direct experience with team teaching nor were we familiar with schools using it. We began reading and discussing the then new book: *FOCUS ON CHANGE — GUIDE TO BETTER SCHOOLS*. An outgrowth of our discussions and a desire to learn resulted in trips to the Chicago area to attend seminars and observe teaching-teams in action.

In early May the first formal faculty discussion proposed possible objectives that could be derived from this type of program. Some of the objectives included:

1. Student responsibility — to make the transition from the high school to the college-type of assignments less difficult and thereby prevent dropouts during the first year of college because of failure of students to adjust their study habits successfully; to aid the non-college bound student and the less academically gifted to benefit from the large-group instruction by the use of a greater variety of visual aids;

<sup>1</sup> Wahlert High School — Dubuque, Iowa

2. To utilize individual teaching strengths;
3. To provide an improved quality of instruction;
4. To bring about an integration in course objectives and content, presentation and grading;
5. To give beginning teachers in-service training because of increased work with experienced teachers making them responsible for only a portion of the total subject matter rather than the final authority on the total course.

The school year, 1961-1962, was used for experimental team teaching projects in sociology, government and American history. Our project began the following year. Initial plans were formulated in the spring of 1962. These have continued to be the basic guidelines for our present structure.

#### GENERAL ORGANIZATION

Our teaching personnel consists of two teaching teams with two teachers per team. Biology is a required sophomore course. The student population is programmed into the course level best suited to their mental ability and general performance. A breakdown of current student enrollment to instruction levels will show the relationship to the team teaching plan.

| Instruction Level | Track | Course | Student Number | No. Of Sections | No. Of Large Groups |
|-------------------|-------|--------|----------------|-----------------|---------------------|
| Lower             | C     | Bio 23 | 58             | 2               | 1                   |
| Middle            | B     | Bio 25 | 420            | 16              | 8                   |
| Upper             | A     | Bio 27 | 62             | 2               | 1                   |

The lower and upper level groups apply for admission into these courses. Authorized teachers from the department, one selected from each team, do the screening and admit students on the basis of: ITED scores, mental ability and semester averages. Initial screening for the lower group begins with those below the 24%-ile of the ITED composite; the upper level begins with those above the 80%-ile.

Each team is responsible for 5 of the 10 large groups. For clarity, I will designate the teams as TEAM I and TEAM II. The teaching load pattern follows this form:

| INSTRUCTION LEVEL — Large groups<br>(Maximum: 68 per group) | TEAM | Lower | Middle | Upper |
|---|------|-------|--------|-------|
|   | I    | 1     | 4      | 1     |
| II  |      |       |        |       |

Teaching areas include a lecture room and 2 laboratories. Large groups are limited to 68 because of laboratory facilities for 34 students. The following is a class-schedule model for 1 class period, 55 minutes in length:

|                            | MONDAY          | TUESDAY          | WEDNESDAY | THURSDAY | FRIDAY |
|----------------------------|-----------------|------------------|-----------|----------|--------|
| Large Group:<br>(Room 103) | A-B<br>(Team I) | C-D<br>(Team II) | A-B       | C-D      | A-B    |
| Laboratory:<br>(Room 302)  | C<br>(Team II)  | A<br>(Team I)    | C         | A        | C      |
| Laboratory:<br>(Room 304)  | D<br>(Team II)  | B<br>(Team I)    | D         | B        | D      |

This same pattern is followed for each of 5 daily periods. In a 2-week span this involves 5 large-group sessions and 5 laboratory periods. Each teacher of a team has the same section for laboratory work each time a laboratory session meets. These groups represent approximately one-half of a large group. The individual team member is directly responsible for the final grades for the 5 small groups.

#### TEAM ASSIGNMENTS

Distribution of instruction levels gives each team 2 different lecture and laboratory preparations. The middle group involves both teams and the majority of the student population. All 4 teachers must possess the spirit of teamwork plus the ability to give and take needed for the organization and planning of a functional program. Planning includes the selection of: lecture topics, laboratory investigations and a testing program. Each team and each team-member are given flexibility in class presentation but perform within the basic outline.

The team member of each team doing the large-group work is responsible for lectures, assignment and guide sheets for class distribution for the chapter or unit being taught. Large-group work usually extends over a two-week period. Each team member is doing one or other large-group and laboratory assignment at any one time.

#### LECTURE ROOM

The lecture room was not in the original school plan. It was necessary to remodel an area for this purpose. We do have the benefit of a windowless room which facilitates our visual aids program. A platform in the front of the room has a standard science demonstration desk with gas, water and electric outlets. Adjacent to this desk is a special-designed table for the overhead projector and lecture materials. Electric switches at the desk enable us to control room lighting. A permanent screen is mounted on the front wall for use with the overhead projector.

On the opposite wall is a permanent beaded screen which makes the easy use of films, slides and filmstrips. These are readily available from the Dubuque Cooperative Film Library. The team teaching program was begun with the traditional approach, hence, we have 3 sets of commercial transparencies for botany, zoology and human biology. This year the set to accom-

pany: BIOLOGICAL SCIENCES, AN INQUIRY INTO LIFE, has been added. A public address system is an essential part of the equipment.

#### LABORATORIES

With a transition from the traditional to the BSCS approach the laboratories have been given a new look. Plastic colored refrigerator dishes, lined with a piece of rubber matting, and a transparent cover prove to be excellent tote trays for basic pieces of glassware for the student teams. Other additional items include: two-burner hot plates, portable propane burners, plastic dish pans, stainless steel carts for storage of long-run experiments and for equipment transportation, refrigerators, pressure cookers and an incubator.

The laboratory-centered program, a team approach in its own right, has shown the effectiveness of 4 cooperative teacher-heads and 8 willing hands in contrast to 1 head plus 2 hands. As of now, we have not worked out a suitable program for student laboratory assistants.

#### THE CURRICULUM

To test the workableness of the BSCS approach in a team teaching situation a three-phase plan was proposed and approved by the administration. BIOLOGICAL SCIENCE: MOLECULES TO MAN was introduced in the fall of 1964 to our upper level as a pilot study. This involved one team. The 1965-1966 school year has involved both teams. BIOLOGICAL SCIENCE: AN INQUIRY INTO LIFE is now being used with the middle group. The third phase, SPECIAL MATERIALS, under the new title, BIOLOGICAL SCIENCE: PATTERNS AND PROCESSES, will be introduced in the fall of 1966 to the academically less-gifted.

#### GRADING AND TESTING PROGRAM

All team members follow the same grading system. The students are informed at the beginning of the session the standards to be used for quarter and semester grades. At the present time this is the point system we use for our quarter grades:

| AREAS                   | POINTS |
|-------------------------|--------|
| Short quizzes .....     | 10     |
| Lecture notebooks ..... | 5      |
| Classwork .....         | 10     |
| Laboratory .....        | 25     |
| Tests .....             | 50     |
| Chapter .....           | 25     |
| Quarter .....           | 25     |

All classes in the middle group are administered the same chapter test on the same day. This has been prepared by the 2 team members responsible for the lectures. Cumulative test results determine the distribution of A's to E's. This system is

used for quarter tests, semester and achievement tests. The above plan is also followed for the lower and upper groups.

Since May 1961 we have administered the NELSON BIOLOGY TEST, forms AM and BM, as one means of analyzing our total program. The following table gives the general results and a breakdown for each level of instruction. There are many factors involved in the interpretation of test data, however, we feel that the team teaching project has not produced down-grading of test results. In fact, there is a degree of probability that the program has helped improve our overall teaching effectiveness.

SUMMARY OF THE NELSON BIOLOGY TEST RESULTS: 1961 - 1965

| YEAR   | TOTAL<br>%-ile | BIO.<br>47<br>%-ile             | BIO.<br>27<br>%-ile | BIO.<br>25<br>%-ile | BIO.<br>23<br>%-ile | TOTAL NO.<br>TESTED |
|--------|----------------|---------------------------------|---------------------|---------------------|---------------------|---------------------|
| 1961:  | 64             | 95<br>(15)                      | No course           | 75<br>(385)         | 31<br>(87)          | 487                 |
| 1962:  | 67             | 99+<br>( 9)                     | No course           | 77<br>(395)         | 27<br>(79)          | 483                 |
| *1963: | 69             | 97<br>(14)                      | *96<br>(65)         | *69<br>(426)        | *21<br>(52)         | 557                 |
| *1964: | 75             | 97<br>(30)                      | *95<br>(75)         | *72<br>(426)        | *35<br>(50)         | 581                 |
| *1965: | 77             | Not admin.<br>to the<br>seminar | **<br>*96<br>(58)   | *80<br>(452)        | *27<br>(52)         | 562                 |

\*TEAM TEACHING

\*\*ESCS  
(Blue V.)

## SUMMARY

Teachers' experiences, students' reactions, goals and pitfalls of team teaching, modifications of our present program, and a carry-over into other approaches and areas of study are topics open for discussion. To summarize briefly the points that have been presented in this paper one may state:

1. An up-graded type of instruction has evolved. Greater intensity of preparation and research with a better use of visual aids for more students has been a result of the program.

2. Students are being taught to assume more individual responsibility, both in lecture and laboratory situations.

3. A better testing program is possible. It is more professional to produce 1 well-constructed test than 4 of inferior quality, because of the time factor.

4. One standard of grading is more effective than 4 different standards.

5. The American history team is spared some preliminary work in the junior year because of student adjustment to team-teaching situations.

6. Graduates have indicated gratitude for study habits developed from this teaching approach that has been part of their education from their sophomore to senior year.

As a biology team, and part of an entire faculty, we hope we have and are helping in the total development of each student we teach. We hope, too, that working as team-members our own learning and teaching are improved.

## A Study of the Laboratory Method Versus the Lecture Method of Teaching Biology

CURTIS E. McCALLUM

*Abstract:* Two sections of biology students at the eighth grade level were taught a unit concerned with the cell with two different methods. One group experienced only lectures and discussions. The other group experienced only laboratory sessions. Although there were certain limitations to the study, the general results tended to favor the laboratory approach. This was particularly apparent in the case of the upper one-third of the classes.

The purpose of this study was to determine whether the lecture method of teaching is superior to the laboratory method. The study was extended to see which group was better able to retain material presented to them. This study was conducted on two classes at the University High School in Iowa City, Iowa. The lecture group with 20 students was taught by Mr. Robert E. Cook, and the laboratory group with 21 students by Mr. Donald J. Schmidt. Both teachers were on the staff of University High School at Iowa City.

### PROCEDURE

The study was begun on December 7, 1964, when the same pre-test of 50 questions covering chapters 10, 11, and 12 of *Biological Science—Molecules to Man; BSCS Blue Version*, was given to both lecture and laboratory groups. The test was styled to test for biological concepts rather than recall of facts. The students were unaware of the purpose of the pre-test.

Chapters 10, 11, and 12 were outlined for Mr. Cook to follow. Mr. Schmidt followed the text's laboratory suggestions that correlated with the chapters studied. A brief resume of the material covered the following:

Chapter 10—The Evolved Cell—Material about cells, their structural features, and cell division.