Agronomic Education Section

Self-Study Teaching Programs for Crop Science

D. A. Miller and W. M. Lewis

ABSTRACT

An experimental Crop Science self-study teaching program using 2 x 2 slides as the basic ingredient has proven effective in a North Carolina State University study. Students in the experimental class performed at a higher level when compared to students in the conventional lecture-laboratory situation.

IT HAS been stated many times that the primary objective of instruction is learning. Knowledge of the subject matter and ability to present it in an organized manner are not the only requirements for effective teaching. Effective instruction necessitates an insight into the effect that various methods of teaching have on the quantity and quality of student learning. A good teacher is aware of his effectiveness and is flexible enough to make changes in his teaching techniques that would appear to increase his teaching effectiveness. The objectives of this paper are to explore a self-study program in the Crop Science Department at North Carolina State University and some measures of its effectiveness in teaching.

The idea developed during the summer of 1963 at North Carolina State University to study the possibility of removing certain areas of instruction from laboratory presentation and supplement the lecture by developing a self-study program. In this manner the entire subject matter concerning a certain crop or group of crops could be more effectively presented during the lecture.

It was felt that a number of subject matter areas commonly taught in a beginning crop science course, such as, developmental plant morphology, plant reproduction, crop improvement, plant breeding techniques, nutrient deficiencies, plant diseases, seed and plant identification, seemed to lend themselves to presentation on 2 x 2 photographic slides. Visual aids of this type have a dual advantage. They allow the student ample time to review a series of learning steps on his own, thus reaching a measurable level of competence in the subject from which the instructor may progress. Secondly, the method presents an entire subject matter area in one package; avoiding the lecture-laboratory description of a line of thought.

MATERIALS AND METHODS

A single-lens reflex 35-mm camera and accessories including copying equipment were purchased to aid in obtaining slides of plant specimens, drawings, and graphs. Following the development of slides, they were placed in a slide file. Slide files held a limit of thirty 2 x 2 slides. Visual aids of this type have a dual advantage. They lend themselves to presentation on a semi-automatic slide projector on which permanent instructions were assigned. This responsibility entailed the operation of a semi-automatic slide projector on which presentations were well outlined. Students were also given an information sheet accompanying each area of study explaining each slide or frame. This aspect of the self-study technique was similar to programmed instruction as the information was given to students as a series of facts eventually developing the study (Fig. 1).

Student performances were compared using the method of instruction, lecture-laboratory sequence, to self-study method of instruction. There were 234 students enrolled during the fall semesters of 1961 and 1962 using the conventional method of instruction compared to 241 students during the fall semesters of 1963 and 1964 using the lecture self-study method. The lecturer was the same for each year, except 1963.

RESULTS AND DISCUSSION

Students have been very receptive to the self-study program. Slide series allowed them to allocate their own time for study.

Student performances were compared using the method of instruction, lecture-laboratory sequence, to self-study method of instruction. There were 234 students enrolled during the fall semesters of 1961 and 1962 using the conventional method of instruction compared to 241 students during the fall semesters of 1963 and 1964 using the lecture self-study method. The lecturer was the same for each year, except 1963.

Students following the self-study program have obtained higher grades in the subject areas described above. The examinations were different each year to eliminate carryover by students. Thus, in an effort to determine the effectiveness of this program, the examinations were different each year, yet the subject areas were covered each year by different types of questions or the rewording of some questions.

Students following the self-study program have obtained higher grades in the subject areas described above. The examination averages have shown an overall 18.8% increase over the conventional method of instruction.