Possibilities for use of the tele-lecture equipment are varied[7]. At the University of Illinois, it has been used as long as a 2-hour lecture or as short as a 10-minute interview. Intercommunication between instructor, students and resource person can proceed just as if the resource person were in the classroom. A swine raiser that had produced a hog with a 9-inch loin eye was interviewed to find how he would maximize subsequent expression of the trait in his herd. In another class meeting the director of a hybird hog production business lectured for 30 to 40 minutes; this was followed by a question-answer session between the producer and the students. The most effective use of tele-lecture equipment has been the replacement of all traditional off-campus field trips in Pork Production. All significant points to be discussed on the particular field trip are photographed and organized into a logical sequence. The resource person with a duplicate set of visuals guides the tour of his premises with much greater specificity, clarity and opportunity for discussion of all points of interest.

In summary, the increasing wealth of knowledge of all basic and applied sciences challenges the concerned instructor to implement changes in teaching methods that will facilitate the most effective coverage of applicable disciplines.

The methods here described, using the course Pork Production as an example, offer alternatives to the standard lecture format. The auto-tutorial references also provide the student the opportunity to proceed at his own learning pace with as much repetition and reinforcement as is necessary.

1 Presented at National Association of Colleges and Teachers of Agriculture Conference, April 8, 1968.
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An Introductory Course In Agriculture

GEORGE A. GRIES

The content and sequence of a course or a curriculum is the responsibility of the faculty of the college or university in which it is offered. It varies from school to school depending on local conditions, type and origin of students, and ultimate goal of the course or program. Few will argue with this statement; yet we all know that until about ten years ago most programs in agriculture were designed by the rubber-stamp method. Individual courses, the major components of the curriculum, and even the supporting course requirements were marked by a uniformity—a sameness, that was hard to disguise.

In recent years, however, there has been a sharp change in the order of things. Courses and curricula are in a state of ferment; new ideas are being tried and in certain institutions new curricular patterns are emerging.

Among the forces at work to stimulate this study and effort for improvement are three that I would dwell on briefly.

1. *Changes in the Agricultural Industry.* It is becoming more diverse and hence requiring persons with different backgrounds and particularly backgrounds that are broad and afford experience in the systems approach or the integration of concepts from different basic disciplines. It is becoming more sophisticated and requiring people better trained than ever before.

2. *Changes in the Student Body.* Although high school preparation of the incoming freshman is better than ever before, there is, unfortunately, an ever widening gap between the poorest and best. This poses serious problems in the handling of freshmen. Are they all to be put through the same funnel during their final collegiate year? If so, do we cater to the student with the poor background and bore our most exciting resource or do we teach him and leave the lad who because of no fault of his own comes to us with an inferior background?

Increasing percentages of our student body come from an urban background. Their interests, their experiences and, frequently, their goals are different. What impact does this have on our elementary courses?

The problem of junior college transfers and the increasing percentage of intercollege transfers confuses the issue even more as does the one- or two-year "basic college" plan as adopted by several universities. How do we program our general courses and beginning specialized courses in agriculture to not only accommodate but to effectively challenge students of such diverse backgrounds?

3. *Changes in Objectives of Students.* Our students are not only becoming more variable as to background but also as to the range of goals they have when they enter or develop while in school. Many new fields of specialization are emerging—particularly in the interdisciplinary areas: system ecology as applied to land use, biomathematics including computerization of feed lot operations, and biochemical genetics applied to problems of chemurgy. An increasing emphasis is being placed on global agriculture. It's high time we shifted the local or regional forms of our courses, especially in those institutions that have accepted the challenge of educating and training students for the careers of tomorrow instead of yesterday.

The great increase in the number of students continuing to be graduated from college is another factor that makes it imperative that we critically examine our curricula and make it possible for students to prepare for their ultimate goal with a minimum of wasted effort.

Picture with me two freshmen with identical I.Q.'s sitting side by side in a beginning course in plant science. One has lived all his life on a general farm, has been in an active FFA chapter, has worked side by side with his Dad in the day-to-day operations with his Dad, has had several projects of his own on which he kept complete records. He plans to return to the farm upon attaining his B.S. Oh, yes, he rode the bus to a small township school that offered algebra and trig, a nature-study type of biology in the 9th grade and a general physical science course in the 10th.

The other student is from an urban background who went to a high school of 2,000 students. He (or she) has had calculus, B.S.C.S. biology, and two years of honors chemistry. His extracurricular activities have been science fairs, guided investigations in biology with a professor in a nearby college. He probably doesn't know a field of beans from one of safflower, and most definitely wouldn't know oats from barley. His academic interest is the field of genetics, and he plans to obtain the Ph.D. and become a professor of plant genetics.

The two students we've described certainly mark the extremes, but can you conceive a course at the freshman level in agronomy or even plant science that can really challenge them both? Are we really placing the student's needs first in our curriculum planning or are we compromising the issues?

Our discussions this morning are to revolve around a hypothetical beginning course in agriculture designed to challenge and motivate all students in agriculture regardless of their backgrounds and aspirations. It allows time for the students to equalize their backgrounds in science, in communication skills, and in general understanding of the agricultural industry and its potential before attempting specialized technical courses.

In attempting to define the course that I thought would be ideal for entering students in the Department or College of Agriculture, I endeavored to establish a series of premises that had at least certain elements of logic to them. I'm not sure all are valid. Each one has its strong proponents but probably few would have them all.

Premise No. 1. Students of agriculture should have a broad integrated understanding of the industry . . . not only as it exists today in various parts of the world but *why* and *how* it attained its present level in the United States and *where* it can be expected to go in the future.

Premise No. 2. It is desirable, although perhaps not essential, for the freshman or the transfer students to have some contact with agriculture during his first year on the campus.

Premise No. 3. Many of the old "careers" type of freshman course fail to give students a truly integrated picture of agriculture.

Premise No. 4. Agriculture, taken as a whole, is a series of applied sciences.

Premise No. 5. Excessive or needless redundancy is poor pedagogy.

Premise No. 6. Technical agriculture can best be taught against a background of science.

Some incidental premises that might be made are: (a) that incoming students vary greatly in their ability to read, their understanding of the basic sciences, and their knowledge of the fields of agriculture; and (b) we can not expect the chemist, the mathematician, the physicist or even the biologist to explain *why* the freshman student will need his subject matter to understand technical agriculture. A corollary of this is that the agriculturist himself should make it clear to the student *why* he needs to be firmly based in "pure" sciences.

Two presumably logical conclusions can be drawn from these presumably logical premises. These are:

(1) That technical agricultural courses, if they are to be applied science and not art, should be deferred in the program of the student until he has at least a modicum of understanding of the basic principles of science. The professor of agriculture does not have the time to waste in teaching such subjects as biology and chemistry at the freshman level.

(2) That the freshman course in agriculture should be taught more as a social science—or even a humanity, with a strong emphasis on the socio-economic aspects of agriculture. It should be in part history so that the student may learn to appreciate the vital linkage between agricultural production to level of attainment of civilization. It should likewise contain some crystal-balling—a look into the future—to picture agriculture as it will be in 1985 or in 2000. This also gives us the opportunity to demonstrate the role the frontier areas of science are playing and will play in agricultural practice.

Some months ago I had the audacity to outline such a course as the one we've been talking about. I've tried it out on a number of people and gotten an equal number of reactions to it ranging all the way from *huzzas* to less than enthusiasm. In reviewing it with my fellow members of CEANAR, they saw another possibility — that with slight shift in emphasis it might serve as a general education course for the entire campus.

Over the years Dick Geyer has been collecting outlines of introductory courses in agriculture—both technical and non-technical. In reviewing these for additional ideas, it became apparent that few schools offer a significant course of the type we had conceived. None attempted to cover all four of the objectives we had outlined. Most neglected the vested interest of the college, the department, or the instructor. Several good outlines of course in world agriculture were found, but most of these were from departments of geography. Few effectively related the need for a sound background in sciences as a preparation for technical courses in agriculture.

There were two outstanding outlines among those we reviewed. One was the course entitled "Agrarian Heritage" taught by Professor Robinson at Arizona State. The other is an outline prepared at Nebraska under Frank Eldridge's guidance. This latter has not yet been offered.

It is significant in view of the above that at a recent CEANAR meeting when the ways and means of getting some institutions to experiment with such an offering, Commissioner Hal Barker stated that a number of NACTA institutions had expressed an interest in developing such a course and trying it out. He said that this is the type of thing that NACTA could address itself to. From that came this morning's workshop; so if you don't like it blame Hal, not me.

I would like to discuss one further point before we attempt to create some sample outlines this morning. It is simply that one of the most frequent criticisms that has been leveled at a course of this nature is that it would be difficult if not impossible to find someone who could teach it. Gentlemen, to me this is a very serious indictment of agricultural education. Do we make such a fetish of specialization that we fail to develop persons broad enough in their interests and capacities to develop such a course? Personally, I don't believe it. Certainly as scientists we must be cognizant of the impact of our profession on civilization. An educated man can not be aware of this without contemplating how we got into our present state and where we're heading. I'm convinced we have plenty of personnel. I would guess that a more critical problem is to find the administration in position to (or willing to) give the necessary relief time from normal duties to prepare such a course. Many qualified individuals feel that they can not devote the time to such a service course in their attempts to attain professional recognition.

This is a suggested outline for working group chairmen, recorders and participants to follow in discussing the paper to be presented by Dr. George Gries on the morning of April 9th at the NACTA Convention.

FOR GENERAL EDUCATION

Assume you are charged with the responsibility of developing a course at the freshman level to be given to ALL non-agricultural students as a part of their general education—

1. **What goals would you establish?**
2. **What should be the content and orientation of such a course?**
3. **What reference material is available?**
4. **What preparation would be necessary for you to do an effective job?**