

whole problem of land use and the delineation of land for agricultural purposes. In the past 18 months, 3 of the provincial governments in Canada have taken positive action in placing freezes or extensive review procedures on the sale of farm land. This question is of an immediate nature and one to which agriculture must successfully respond. I believe that there is a great deal of sympathy and support for the concept of land use planning in agriculture from all sectors of society with the possible exception of one. The individuals most affected by agricultural land use planning are those that are now using the land for agricultural purposes, namely, the farmer. Their concern in the government imposed freezes on the sale of land is one of self interest and is of legitimate concern in that their farm may represent their total lifetime productivity. To be prevented from selling that asset at \$3,000 or \$4,000 per acre to an industrial developer is, in their opinion, an infringement on their rights as an individual. There is no question that a great deal of ingenuity and forward thinking is needed among agriculturalists if any semblance of a viable land use plan is to be developed and implemented.

3. Rural Development and Rural Communities. Renewed interest has been shown in recent years in the development of rural communities and the changing patterns of these communities. These developments will require colleges of agriculture which have been primarily production oriented to add a social science dimension in their faculty, education programs and research.

When one considers that the top 20% of farmers are producing 80% of our agricultural produce and that 50% of the farmers in Canada are 52 years of age or older, it is apparent that many changes are going to take place in the composition of rural Canada in the next few years. Farm population has been steadily declining and is expected to continue to decline to a 3 to 4% level in the 1980's. Government programs at the federal and provincial level are being initiated to facilitate the adjustments that are going to occur in rural communities.

Summary

Agricultural education in Canada has developed since 1874 and its development reflects to some degree the geography, politics and educational philosophy of the country. More recently, curriculum development and research activities have been influenced by developments in the United States.

The problems and concerns of both colleges of agriculture and agricultural industry have many similarities to those with which you are confronted in the United States. One would expect that agricultural educators could mutually benefit from an "international discussion" of similar programs.

¹ Paper presented at the NACTA Conference, Cobleskill, N.Y., June 14, 1973 by G. M. Jenkinson, Ontario Agricultural College, University of Guelph, Guelph, Canada.

THE TRANSFER DILEMMA

Harold J. Ecker

The Problem

Students enrolled in technical programs are similar to students in four-year degree programs in at least one respect — they often change their career goals. Many technical students request transfers to other academic programs. In the Institute of Agricultural Technology at Michigan State University, 20-25% of the graduates transfer to a four-year degree program in agriculture. At some institutions the percentage of transfers is even higher. I am told that over 30% of the technical graduates from our host campus (Cobleskill) transfer to a degree program at Cornell or elsewhere.

Four-year college admissions counselors face two problems as they review applications from technical graduates:

1. What criteria should be used to determine if the technical graduate has a reasonable chance of success and should be admitted to a degree program?
2. Once admitted, how should the technical credits be evaluated in terms of credits towards a degree?

Four-year colleges have struggled with these questions for at least 75 years. Policies regarding the transfer of technical graduates vary widely from institution to institution. For example, graduates of the Institute of Agricultural Technology have received from 0-90 term credits at four-year colleges of agriculture in the U.S. I would be hard-pressed to defend either of these extremes.

A number of four-year institutions have adopted what appears to be a reasonable approach to this transfer dilemma. A three-fold increase in technical students in agriculture in the last seven years has magnified the need to establish guidelines for transfer that are fair to both the student and the institutions involved.

The National Association of Colleges and Teachers of Agriculture is a logical organization to work on the articulation between technical and professional programs in agriculture and natural resources. To stimulate the thinking of this group I would like to discuss four areas:

1. Implications of the growth of technical education.
2. The type of student in technical programs.
3. How technical students have performed in degree programs at Michigan State University.

4. Possible guidelines to help solve the transfer dilemma.

The Setting

Technical education is not a new phenomenon — the national emphasis on this type of education is new. During the period from Sputnik to the early 1960's the proponents of technical education were pretty much talking to themselves. Since 1963, however, technical education has come to be regarded by educators, government officials, taxpayers, and parents as an area of great need.

Today the majority of the job openings in many fields, including agriculture, are at the technician level, and it appears that this emphasis will continue throughout this decade. A recent U.S. Department of Labor study, which covers all occupational areas, indicates that only 20% of the jobs that will be open in the 1970's will require a bachelor's degree or higher(1). There is evidence that a similar situation exists in many agricultural career areas. An AAJC study(2) estimates that agricultural firms will need three post high school vocational/technical graduates for every degree graduate in this decade.

U.S. colleges are currently turning out about the same number of technicians as degree students in agriculture and natural resources. Last year, about 10,000 young men and women completed 1-3 year technical programs in agriculture in the U.S. In the same period, about 10,000 bachelor's and 2,000 master's and doctoral degrees were granted in agriculture and natural resources(3).

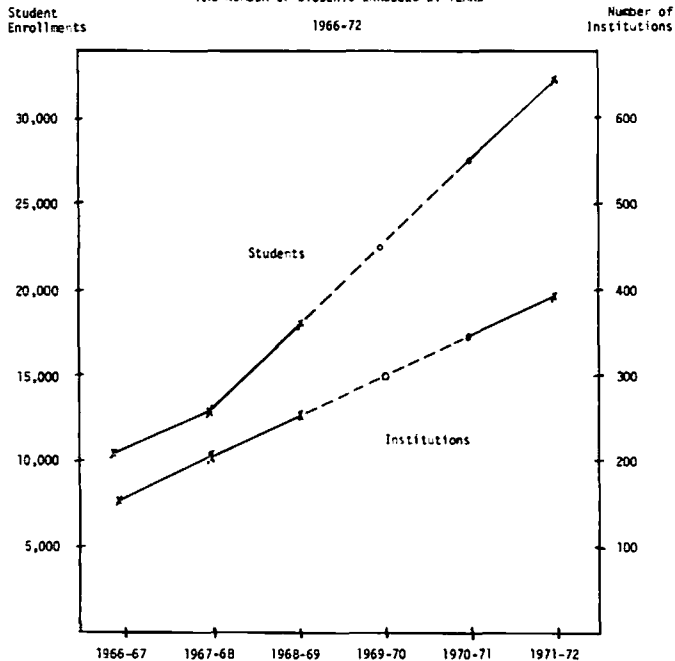
The Growth of Technical Education in Agriculture

The growth of 1-3 year technical programs in agriculture and natural resources has been dramatic since 1966. (Figure 1) The number of programs has more than doubled in seven years. The number of students enrolled in technical agricultural programs has increased from about 10,000 in 1966 to over 30,000 in 1971-72.

The prospect of less financial support for technical education from state and federal sources may cause a leveling off of new programs. However, given the current demand for technicians

and the number of existing programs, it is feasible that there could be over 50,000 students in technical agriculture programs by 1980. This implies that four-year colleges could be receiving applications from five times the number of technical transfer students that they had in 1967.

FIGURE 1
NUMBER OF INSTITUTIONS OFFERING POST-HIGH SCHOOL
TECHNICAL PROGRAMS IN AGRICULTURE IN THE U. S.
AND NUMBER OF STUDENTS ENROLLED BY YEARS



Source
1966-69 - Mr. Fred Manley, Technical Curriculums in Agriculture, State Board of Education, Raleigh, North Carolina, September 1969
1969-71 - Estimated (Data not available)
1971-72 - Dr. Maynard Iverson, Directory of Post Secondary Education in Agribusiness Occupations, NACTA Journal, March 1972, p. 13

Type of Students Enrolled in Technical Programs

To help understand the transfer problem it is helpful to know as much as possible about the technical student. The following information is based on a study of students in the Institute of Agricultural Technology at Michigan State University. It is assumed that these students are reasonably representative of technical students in other institutions.

A study by Anderson(4) compares freshmen in agriculture and natural resources with first year Agricultural Technology students at MSU. Some of Dr. Anderson's findings include:

1. Technical students have a wider range of academic abilities than their degree counterparts. *High school grades of technical students ranged from 1.1 to 4.0. Four-year freshmen ranged from about 2.3 to 4.0 high school GPA. At this time (1965) the Institute of Agricultural Technology had an open admissions policy and four-year admissions were selective.*
2. Technical students have significantly lower reading and communications scores than their degree counterparts.
3. Technical students generally have lower career aspirations.
4. Technical students tend to be more dogmatic in their approach to learning; they tend to have a closed belief system. *To overcome this handicap to learning requires more one-to-one contact with instructors and/or counselors.*
5. Technical students tend to have more definite career plans when they enter college.
6. Technical students tend to exhibit less geographic mobility as they view future employment possibilities.

What do these findings tell an admissions counselor? First, there is an extremely wide variation in academic abilities among technical graduates. Second, there are psychological and motivational differences between the typical degree student and the technical student. To predict success for the technical student in a degree program will require a careful analysis of a number of documents. High school records, test scores, technical transcripts, and advisor recommendations are all useful in foretelling the technical student's academic performance in a four-year

degree program.

Four-year admissions counselors should also have a basic understanding of the goals and objectives of technical education. The student transferring from a technical program should (and usually does) have a completely different academic background than the typical student from a community college who has followed a prescribed college transfer program.

How Do Technical Students Perform in Degree Programs at MSU?

Between 20 and 25% of the graduates in the Institute of Agricultural Technology transfer to a four-year degree program at MSU. Seventy-one Institute of Agricultural Technology graduates who entered a four-year degree program at MSU in 1968-70 have been studied to determine their progress in degree level work. By 1971 these students had completed an average of 101 credit hours (including transfer credits) in a degree program. The following represents a statistical summary of the progress of these students:(5)

1. Total number of technical graduates admitted to degree programs at MSU 1968-70: 71
2. Number remaining in degree programs in spring 1971:
 - number dropped for academic reasons 7 60
 - voluntary withdrawals (good standing) 4
3. Average number of degree credit hours earned (60 persistors): 101
 - four-year non-agriculture courses 43 cr
 - four-year agriculture courses 22 cr
 - transfer credits from Institute of Agricultural Technology 36 cr
4. Average GPA of all freshmen in agriculture at MSU: 2.36
5. Average four-year GPA of transfer students (60 persistors): 2.23
 - GPA in 43 non-agriculture course credits 2.01
 - GPA in 22 agriculture course credits 2.68
6. Average technical GPA of students at the time of transfer: 3.30
7. Average change in GPA from Institute of Agricultural Technology to four-year: - 1.07

The MSU admissions office had been using a 3.0 GPA in the Institute of Agricultural Technology as a minimum requirement for admission to a degree program. This study supports this policy. The average Institute of Agricultural Technology student would find himself in grade trouble if admitted with less than a 3.0 GPA.

The four-year GPA of this sample of students is more than one letter grade lower than the Institute of Agricultural Technology GPA. The average GPA in non-agriculture courses is 1.3 less than the GPA earned in the Institute. The transfer student will take primarily general education courses for at least the first year in a degree program. The last year he will be able to elect courses in his major area of interest and will probably do nearly as well in these courses as he did in technical courses. However, he must get past the 'basics' in good standing and, in doing so, face the 1.3 drop in his GPA.

Most of the students in the above study will graduate by June 1973. A follow-up on these students will be made this summer.

Suggested Guidelines for Articulation Between Technical and Professional Programs in Agriculture and Natural Resources

Complete agreement on the articulation from technical to professional programs will never be achieved. Much of the problem centers around a lack of meaningful communications between institutions, and this is where NACTA can play an important role. Representatives of both technical and professional programs come together at NACTA meetings to discuss common interests. The articulation of technical and professional programs should be an area of common interest.

It would be presumptive for one individual from one institution to even try to speak for all who are involved in this issue. So, permit me to simply raise issues that will need considerable refinement before they become guidelines.

Before proceeding, let me make some assumptions:

1. More than 30,000 students will be enrolled in technical agriculture programs annually in the U.S. in the 1970's.
2. At least 30% of these students will change their educational and/or career plans.
3. A smaller percentage (10-15%) will desire to transfer to a professional program in agriculture.
4. Qualified technical graduates who desire to enter a four-year program should be allowed to do so under conditions fair to both the student and the institution.
5. The majority of the 30,000-plus technical students will be located in two-year institutions. This means that the students must make an inter-institutional transfer to enter a professional program.
6. All courses in a technical program should be terminal in nature. All are designed to prepare technicians for rather specific employment rather than for transfer. This applies to 'basic' as well as technical courses.
7. Both two-and four-year programs are in existence to serve the needs of both students and society.

Proposed Guidelines

1. Acceptance of a two-year student in a professional curriculum must be based upon a reasonable chance of success. *The successful completion of a technical program alone is not a good predictor. Until experience is gained by working with transfer students, an admissions counselor should rely on much the same information that would be used to evaluate a new college applicant. In addition, the technical transcript should be examined carefully to determine the performance in relation to the level and type of courses completed.*
2. Technical program coordinators should be realistic in their recommendations on transfer applications. *The coordinators are more apt to make recommendations on the basis of the student's performance in his or her major subject matter area. Four-year degree students rarely face academic problems as a result of their performance in their major areas of study; it is the 'basics' which plague them!*
3. To change from a technical program to a professional program must result in a loss of both time and credits. *The goals and objectives of technical education are centered around preparing students for a job or cluster of jobs. The goals and objectives of a professional program are completely different. I know of no way to compromise the two sets of goals. To design or attempt to alter a technical program*

- to serve both a transfer and a terminal student will fail on both counts.*
4. Technical students transferring to a degree program should receive four-year credit for their courses in a technical program. *How much credit and in which specific areas will depend upon a number of factors:*
 - a. *Is the subject matter area of the technical and degree programs similar?*
 - b. *Are the credits to be given outright or only after some type of proficiency examination?*
 - c. *Are the transfer credits to be assigned as specific four-year course credits or as electives?*
 5. Wider use of proficiency testing seems to be a logical way to assess the level of competency in a given subject matter area.
 6. It seems logical that technical transfer credits could be used more extensively to meet 'elective' requirements in a degree program.
 7. Technical credits should be equated to degree credits in a uniform manner. *At Michigan State University, a maximum of one-half of a transfer student's technical credits may apply to a four-year degree. This may not be the logical percentage. However, in my opinion, it is easier to defend 50% than 0% or 100%.*

The above guidelines are broad, general statements on the various aspects of articulation between technical and professional programs. The author recommends that a NACTA committee be appointed to study this problem and submit a set of guidelines to the next convention for approval.

Selected References

1. Hodson, J. D., Manpower Magazine, June 1972, p. 15.
 2. American Association of Junior Colleges, "Post Secondary Programs in Agriculture and Natural Resources," Washington, D.C., 1971.
 3. National Association of State Colleges and Landgrant Universities, Annual Report, 1972.
 4. Dr. Duane Anderson, "Comparative Description of First Year Agricultural Technology Students and Freshmen Degree Students," a Ph.D. Dissertation, Graduate School, Michigan State University, 1965.
 5. Brown, Dr. Norman and Dr. Harold Ecker — An unpublished study of transfer students, Michigan State University, 1971.
- ¹ Paper presented at the NACTA Conference, Cobleskill, New York, June 14, 1973 by Dr. Harold J. Ecker, Director of the Institute of Agricultural Technology at Michigan State University.

TECHNICAL EDUCATION — A COORDINATE EFFORT*

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Whether we think of students in two-year or four-year curricula, the curriculum objectives appear the same. We outline a scheme that will somehow change the entering freshmen sufficiently that after two or four years they will possess saleable skills that heretofore did not exist or have now been polished to reveal the gem-like qualities.

With the diversity of professional opinions available to confuse the issue and the number of institutions available that promote innovative approaches, it is immediately apparent that there must be more than one way to get the job done. Through the entire educational process, regardless of the procedures employed, some common elements must be present.

The students should have the common bond of interest and desire to be effective individuals through the acquisition of marketable skills. Hopefully, they are receptive to the notion that as educational professionals we know best, and thus should be amenable to following our guidelines. Admissions officers are supposed to have that insight which will allow detection of hidden qualities essential to success, elements not revealed on the high school transcript. In truth, most of us are readily swayed by good grades and a statement of

support by a guidance counselor. Thus, our entering students are as diverse a population as possible within the limits established for academic acceptability, with a common bond: the desire to receive training that will eventually qualify them for employment.

The difference in students in the two and four-year colleges lies in the speed at which the student is able to attain skills and the level at which the skill will be utilized. In two-year programs, course work immediately applicable must be introduced to maintain student interest and lay the foundation for subsequent specialized course work. There is little time to be lost searching for alternatives. The requirements for social sciences and humanities as established by the State Board of Regents must be included, and in designing the two-year program we find that the end result is a locked in, structured curriculum. On the other hand, the four-year college enjoys an additional time factor which permits flexibility in the curriculum, time to ponder alternatives and options, and still include technical instruction. Thus, the senior institutions enjoy the freedom to delay access to technical instruction and substitute courses of a general nature, which, so students are informed, are

"broadening," pre-requisites, or our college graduation requirements. The effect of the latter procedure is to produce irritation for the goal oriented student and continued uneasiness for the individual who is really not sure that he is on the right road. It is assumed that time and exposure will produce commitment, but recent developments and events lead us to believe, that the uncommitted student in a professional college is being subjected to undue emotional strain. As a consequence, we have suddenly seen a large number of leaves and withdrawals as an expression of uncertainty now that draft laws permit time off for soul searching. Perhaps this attitude had been building up over the past ten years but was suppressed by thoughts of the military draft.

To change directions in the two-year college is costly for the students in terms of additional time required to complete requirements of a new curriculum. A more logical procedure is to earn the associate degree in the required time period and then transfer to a senior college for the new specialization, hoping for a smooth integration and no additional penalty, in terms of time. In fact, most transfers hope to achieve or attain something that they now feel was omitted in the previous two years.