

with faculty members on research and other activities during their academic careers. The need to develop a work ethic, the need to develop a genuine understanding of the importance of scientific integrity, the need to develop a feel for priorities in research and other programs are items that were listed very frequently by all three categories of respondents. Their comments suggested that these attributes are developed primarily through work experience with faculty members. Most respondents indicated that their institutions had difficulty in making arrangements for such experience and admitted that this constitutes a serious deficiency in their program.

Are programs flexible?

The total set of courses offered by any land grant university represents an enormous potential for students from any part of the world. The question is whether foreign students are allowed free choice in making up their academic meal from such a cafeteria offering. Are there departmental restrictions, graduate school restrictions or other regulations which impose serious constraints on the student's ability to make the best possible program? Results from the questionnaire suggest that these restrictions are being modified, but they still present substantial barriers.

Transfer of credits between institutions in the host country and the U.S. university is another area of inflexibility that causes problems with foreign students. Many would like to take as much as possible of their graduate work at home and then come to the U.S. to complete the requirements for a degree. Alternatively, they would like to take much of the course work here and transfer these credits back home. To date they have encountered considerable inflexibility in going in either direction. Many universities now insist that there is no specific course requirement for the Ph.D. and therefore the student may be permitted to take much of his work at his home institution. This practice, however, is not sufficiently widespread to prevent its being a problem in many areas.

Graduate schools in the U.S. have characteristically been quite inflexible in their regulations regarding residence, thesis research and examinations. A few institutions are now permitting students to take their course work and their qualifying examinations on campus and then return home to conduct their thesis research. Some will now permit the student to write his thesis at home and only return for the examination. Others indicated in the questionnaire that they would even arrange for the examination in the student's home country if appropriate financing could be arranged. There is heartening evidence that graduate schools have become much more flexible in the last few years in these matters. Hopefully, over the next decade we will see the faculties of the major international agricultural research institutes playing an increasing role in thesis research supervision and examinations.

A few years ago the Agricultural Development Council held a series of seminars on graduate studies for foreign students particularly in the field of agricultural economics. The discussions indicated that

while a special graduate school was perhaps not necessary, there was considerable evidence that the economics taught in this country leaves much to be desired when applied to production technology in underdeveloped areas. Most of the developing countries are confronted with serious unemployment or underemployment in agriculture. They generally have strong national policies against the introduction of technology which would further aggravate the unemployment situation. The economics taught in this country has great difficulty in coping with such problems. Can you imagine, for example, a chapter in our textbooks on the economics of scale which focused attention on "generation of employment" as the dependent variable to be maximized rather than "returns per dollar invested?"

Many of the developing countries are engaged in serious agrarian reform activities. This necessarily pushes them strongly in the direction of socialist enterprises of various kinds. Most of the economics taught in the U.S. is based on free enterprise and free market situations and it is of little help under conditions of strong government control.

All of the developing nations are confronted with serious problems of balance of trade and foreign exchange. Most modern technologies in agriculture require capital investments and inputs that must be imported. The economics of these situations is poorly understood at the present time, and only recently have research projects begun to study the consequences of various alternative strategies which the developing nations might consider in resolving these problems. Again, this is an aspect in the fundamental training of almost every foreign student which has been grossly neglected by our U.S. university graduate programs.

Need for improvement

In summarizing the U.S. university perspective on the education of foreign students, I see a few areas where we can and should make some improvements, a few areas where changes would be helpful but too expensive to consider, and one area where we have little hopes for improvement in the immediate future.

The areas in which we can and should make improvements include the following:

1. Broaden the ecological, economic and cultural base in our technology courses.
2. Increase work experience opportunities on a rigidly scheduled, volunteer basis.
3. Improve advisory service.
4. Permit greater flexibility for including socio-economic courses in technology curricula.

Areas in which change would be helpful but too costly include:

1. Tailor-made courses for foreign students.
2. Greater personal attention to individual student needs.

The area in which we have little hope for improvement in the immediate future is an adequate economic base for developing countries. It is small comfort to add that I am not aware that any other nation fosters a better set of economic principles.

HORTICULTURAL EDUCATION FOR FOREIGN STUDENTS: A FACULTY ADVISOR'S VIEWPOINT

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In preparing for this discussion, I have assumed that our primary concern is for graduate level students from developing nations and that most of their undergraduate education has been obtained within their own national institutions.

It has been said that perhaps the weakest point in our entire university program as far as the foreign student is concerned is the role which the academic advisor plays in the student's program. As a faculty advisor, I would like to challenge that statement. I must, however, reluctantly agree with it.

While it is true that the advisory system is one of the weakest points, it is also the point which probably could most easily be strengthened. It would require somewhat more judicious selection of academic advisors for foreign students and an extra effort on the part of the advisor in reaching a better understanding of the student's real needs.

I'd like to explore why the advisory system is weaker than it should be and, to suggest some possible approaches we could employ to improve the foreign student's educational experience. I would also like to discuss ideas for improvements in areas which are outside the

direct control of the academic advisor.

Comparison of students

The best manner in which to approach and understand the subject of the foreign student is to compare him to the student with which we are all quite familiar. I suspect that most of us have obtained either our undergraduate or graduate training, and perhaps both, from a land-grant institution. Most of the students with whom we come in contact have travelled the same route. Our formal education has been a carefully orchestrated balance between a set of basic science courses and technology courses coupled with some exposure to active research programs. These research programs are kept in close contact with a highly mechanized agriculture through the Extension Service. There is an interchange in both directions. The U.S. student is exposed to this organization regularly. In fact, he is quite likely to have become familiar with the system while still a teen-ager because he is most often from an agricultural background, either having been brought up on the farm or closely associated with it through his family's farm-related business.

Contrast this typical U.S. student with the student from a developing nation. The foreign student is from a country in which the predominant segment of its society is agrarian. Yet this student is usually city bred and educated. The good schools are in the cities. The awareness of the value of advanced education and the greatest opportunities to achieve higher goals lie within the urban society. If this student has had any association with agriculture before entering his university, it has been an indirect one. Because of this background, the better universities require some type of agricultural work experience. The National Agrarian University of Peru, for example, has had a rigid set of agricultural work experiences as a part of its requirements for graduation. Unfortunately, not many institutions have this requirement.

This student, who has graduated with honors from his own national institution and who has survived a series of screening tests and interviews, is chosen to pursue studies toward a graduate degree. He arrives on the U.S. university campus rarely more than 7 to 10 days before classes begin and sometimes 2 to 3 days after they begin. Typically, he is financed either by his own government, the Agency for International Development or by one of the philanthropic organizations such as the Rockefeller Foundation. In any event his primary obligation, and usually the only obligation, is to satisfactorily pass a prescribed set of courses and to demonstrate his ability to conduct research through the completion of a thesis project.

Course scheduling

This student is eager to learn and he wants to make the most of this opportunity by taking every course that it is possible to schedule. He would take 20 or more hours each semester if allowed to do so. His attitudes toward beginning a research project and toward physical labor are something else, however. This student is not lazy – far from it. He just does not see the value of becoming that intimately associated with the menial tasks that are a necessary part of any research program. This type of activity is not a part of his cultural background. If he has a laboratory problem, someone else should clean his glassware. If he has a field problem, he wants to arrive on the scene in time to record the data. Nothing else is relevant to his learning experience from his point of view.

The foreign student frequently has mistaken and inflated ideas about the facilities available to him in the U.S. university. It is a rather common experience to have the student design a project which would tax the budget of an entire department. I once had a new student who informed me that he would like to begin his research as soon as we received the \$8,000 piece of equipment that he was requesting and had assigned him a laboratory. Since he was being supported by a Rockefeller Foundation scholarship, he felt that if the university couldn't buy the equipment, the Foundation would. This man became an excellent student and conducted a sound research project without the expensive piece of gear.

Upon his arrival in the United States for the first time, the student has some misgivings about his ability in the English language. He has been certified in English, but he soon learns that this certification took place under somewhat more ideal conditions and a more relaxed situation than that of the U.S. university classroom. In addition, his exposure to English has probably been limited to one accent – that of his teacher. By way of example, an Egyptian student acquaintance learned all his English from an Englishman. His mastery of the written language was excellent. This did not completely equip him, however. He realized this as soon as he arrived on the campus of a Southern U.S. university to begin his studies. Language is the greatest single difficulty named by students with whom I have come in contact.

Faculty advisor responsibility

The faculty advisor who does not have a genuine interest in advising foreign students should not be expected to do so. Department heads should consider this very carefully. The average foreign student needs a greater portion of the advisor's time than the U.S. student. For this reason, the advisor's student load should be reduced to reflect this demand for extra time. This is particularly true in the student's first year of residence.

The advisor frequently finds himself being an advisor in more than academic matters. He is often asked to advise on personal problems that the U.S. student handles alone or with his family. If the advisor is not over-scheduled and does not have too many advisees, then this is a valuable means of communication.

If the faculty advisor is going to do the best job, he needs to learn as much as possible about the student's country, its needs, its limitations, and what will be expected of that student upon his return to his country. Much insight can be gained regarding the background peculiar to the individual student if the advisor is interested.

Unfortunately, one approach which a small proportion of faculty advisors take toward solving the many problems faced by the foreign student is to design for him a study program that is shamefully weak. They assume that the student is returning to his home country and that the degree itself is all that matters. If they can lower the hurdles for the student, no harm is done. This approach is completely unacceptable. The student desires and deserves the best education possible.

Recommendations

I have looked briefly at the foreign student as an individual and have enumerated some of his problems and a few of the problems of those charged with providing him with as strong an education as possible. What can we do to help minimize some of these problems? Obviously we aren't likely to make major revisions of curricula nor many other measures which will be costly. There are several things we can do that are within reason when costs are weighed against benefits.

One recommendation I would make is that department heads and directors of instruction choose very carefully those faculty members who are to serve as advisors to foreign students. Foreign service by the faculty member is an invaluable experience in helping him to understand the special problems of the foreign student.

Junior faculty members should be encouraged to accept membership on advisory committees of foreign students and should take an active part in the planning and supervision of their study programs. The junior faculty member's flexibility and his likelihood of greater empathy for the student should make him a valuable asset to the advisory committee. It would also provide him with experience for future exploitation.

Institutions should consider changing residence requirements for foreign students who are studying in the United States for the first time. While these are not always fast requirements, most U.S. universities design the M.S. program to encompass two academic years. The new foreign student should be expected to spend 30 months (2½ years) to complete his program. The extra six months of scholarship allowance is small cost for the benefits to be gained. It represents a small portion of the total investment in the student's education.

Extension of time

Currently a sizeable percentage of foreign students petition their financial sources for extensions of time to allow an orderly completion of their work. If this additional time was understood to be a part of the program from the onset, it could be more intelligently planned and utilized from the beginning of the student's residence.

How would the extra six months of residence be spent? First, the student should be required to report to his U.S. university from 60 to 90 days before he is expected to begin formal class work. This time would allow the student to partially overcome language problems. It would permit further formal training in English as well as an adjustment period of enforced daily usage of the language.

Second, another semester would be available for the scheduling of additional courses which the individual student would need or desire. Frequently students have a particular deficiency in their undergraduate training which needs to be corrected with one or two well chosen courses. In addition, the advanced technology courses to help orient the student and the desired marketing courses mentioned by an earlier speaker could then be made a part of the student's curriculum.

A third, and perhaps most important, addition to the student's program would be that of work experience. The U.S. university graduate assistantship carries an obligation to earn the stipend through work within the department's teaching or research program. This practice is referred to in various ways, mostly unkind, by the students themselves at the time they are students. If asked to evaluate this five years after graduation, however, most will admit that it is a very valuable experience.

The foreign student is denied this experience and, if we consider his background, he needs the work experience and program contact even more than the U.S. student. I would not recommend that the work load be one-half time. I do think that a minimum of 10% and perhaps a maximum of 20% of a normal work load should be required of all foreign students. This should be clearly a part of the understanding between the university, the student, and his source of financing. The work experience requirement would not only give the student intimate contact with a functioning program, it would give him more contact with the advisor. It could, through the added assistance, provide the advisor with more time to devote to his advisory duties.