It seems that other students are responding in a similar manner. Though it is difficult to measure the cause and effect relationship between recruiting efforts and enrollments, undergraduate enrollment trends in the Department of Horticulture have taken an upward swing for the first time in five years.

Figure 1 shows a plot of undergraduate student enrollment in the Horticulture Department versus the academic years under consideration. Between the years 1978-79 and 80-81, the figure shows a sharp trend towards decreasing enrollment. Recruiting efforts begun in 1982 seem to slow this downward trend significantly, and at the beginning of the 1984-85 academic year, a positive trend is observed.

Encouraged by this positive trend and by undergraduate's interest and participation in the program, the Clemson Horticulture Department plans to continue involving students in its recruiting process. Our goal has now changed from slowing the previously projected decline and maintaining present enrollment levels to increasing the enrollment!

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Evaluating the Impact Of An Undergraduate Program

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Introduction

It has long been agreed that the evaluation of instructional programs should be undertaken at more than one point in time. Typically, however, such evaluation is done at the termination of a course or program in order to determine to what extent objectives have been achieved. Occasionally, to be sure, evaluations are conducted during the sequence of instruction in the attempt to monitor the progress toward meeting instructional objectives. (Both of these forms of evaluation, summative and formative respectively, assume that initial objectives have, in fact, been established — but that issue is not central to this discussion.) On the other hand, little effort has gone into the attempt to assess the impact of instruction after students have graduated. Desirable as such impact assessment might be, it is thought to be difficult, awkward, and probably somewhat redundant and unnecessary, given the immediate demands on instructors. We must assume, after all, that if course objectives have been met and degrees granted, the instructors have done their job. And if succeeding cohorts of students keep demanding our courses and degrees, we must be doing most things (especially our teaching) right.

The summative or terminal approach to instructional assessment is probably fairly characteristic of most agriculture degree programs, despite the fact that one of the most compelling tests of a professional academic program is the degree to which graduates practice the skills they have learned and express in behavioral terms the attitudes they have developed while undergraduates. Some understanding of the ways in which graduates perceive the value of their undergraduate training would provide valuable feedback for instructors and administrators responsible for maintaining and enhancing the quality of undergraduate education. Although we tend to assume that high quality learning somehow sticks in the graduates, there are doubtless less desirable results and we benefit from knowing about those as well. But how do we find out what those lasting outcomes may be? And even if we find out, what do we in the universities do with the information? It is precisely these questions that prompted the study we report here.

Objectives of the Study

The following objectives guided the evaluation:

1. To assess the value of the Minor in International Agriculture as seen by the participants in the program.
2. To seek input and constructive ideas on ways and means of improving the program.
3. To understand the reasons why (or why not) students enrolled in the minor.
4. To use the information obtained to make recommendations for the future.

The Program

The Minor in International Agriculture was designed in 1972 both to promote an awareness of agriculture's role in international development and to sensitize students to international career possibilities. Students at the University of Guelph normally take 5 courses in each of eight semesters (four academic years), with a minimum of 40 semester courses required for the degree. The six international agriculture courses are usually taken in the third and fourth years. Students who enroll in the minor are usually majoring

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in areas of study such as Animal and Poultry Science, Agricultural Economics/Business, Crop Science, Horticultural Science and Soil Science.

The Minor consists of 3 pairs of courses:

- two required courses: a field study course in third year and an integrative seminar course in fourth year.
- two restricted electives in agricultural production (animal science, soil science, crop science, horticultural science).
- two restricted electives in the social sciences (economics, political studies, geography, extension education).

The basic principles upon which the program was established have proven to be well-founded.

- Registration in the minor is optional and takes place after a students' selection of a major.
- Course work is confined to 6 semester courses in third and fourth year.
- Faculty members teaching courses in the minor have had firsthand experience in developing countries.
- Ideally the minor will be comprised of 15-20 students annually (out of a total class size of about 300) who are interested in development.

It was decided in 1983, after 10 years of existence, that the minor was due for a thorough evaluation, and the authors were asked by the Dean of the Ontario Agricultural College to undertake the review.

Methodology

We used the following techniques to collect views, reactions, and comments on the minor in its impact:

1. Group discussion and individual consultation with faculty members teaching courses in the minor.
2. Survey of students enrolled in the minor at the time of the study, by both questionnaire and group discussion.
3. A control survey of 100 agriculture students who chose not to enroll in the minor (in order to identify factors militating against their possible participation).
4. Discussions with faculty in other colleges in the University offering programs with an international development emphasis.
5. Most significantly, in our view, a mail survey of all graduates of the minor in which we solicited their views on specific courses constituting the minor, financial considerations, and the value and impact of the program since graduation.

Although the views of employers would have yielded additional useful information, the scattered locations of the graduates and the diversity of their positions made it quite impractical to solicit such responses.

In addition to these discussions and survey methods, we examined the course outlines of all courses in the minor and reviewed the enrollment pattern from 1974-75 through 1983-84.

Findings[1]

As a result of employing the above methods of investigation, we found that:

1. Participating faculty members supported the minor and encouraged its continuation.
2. Students enrolled in the minor, though seemingly more job-oriented and concerned with the "marketability" of the international minor than their predecessors, were finding their participation of great value.
3. Students in the control sample offered a variety of reasons for not participating, including shortage of elective time, unawareness of the existence of the minor, perceived irrelevance of the minor to a career in Canadian agriculture, and simple lack of interest in international issues.
4. Discussion with faculty members in other colleges pointed up the opportunities for greater collaboration with other degree programs, both on-campus and in the tropical Field Trip.
5. Of the 115 graduates who had completed the minor since its inception in 1974, we were able to locate 111, of whome 54 responded to our questionnaire, for a rather encouraging response rate of 49 per cent. Nineteen of our respondents (35 per cent) are working or have worked abroad in some 15 countries of the developing world with a variety of aid agencies, voluntary groups, non-governmental organizations, and consulting firms. Not all students, however, enter the minor with the intention of working overseas. The views of these graduates, though tempered by the occasional negative comment on a course or professor, were unanimously positive with respect to the value they felt they had received from their participation in the minor. These are fairly typical of comments we received from graduates:

> The minor was the best part of my program. It provided the larger perspective for understanding the human situation as it relates to international agricultural development. The minor is invaluable for awakening us from the slumber and indolence of our apathetic contentment.
>
> I would like my children to someday have the opportunity to take a minor in International Agriculture to open their eyes to the real world. It definitely shaped my life for the better.
>
> I find in retrospect that the courses I took in the minor are some of the more valuable to my present work.
>
> If I had not taken the minor, I feel that I would now be living in the dark.
>
> It brought out the interdependencies of agriculture, economics, and politics which was severely lacking in the regular curriculum.

[1]A copy of the report may be obtained on request.

This comment was made by a minor participant who is now pursuing graduate work in soil science.

> It has made me aware of how much our continent wastes resources. That is why my thesis work is directed towards using N fertilizers much more efficiently in Southern Ontario.

With regard to the Field Trip[2], responses were almost uniformly favorable. Some examples:

> The field study course was the worthwhile course I took at the University of Guelph. I learned a lot in those two short weeks. Seeing the way people actually live and produce agricultural goods is a lot better than reading about it... For the first time in my life, I know what it is like to be a minority. That was a shocking realization.
>
> The Field Trip was the best part of the minor. The personal experience taught me more about the people, cultures, society, and agriculture than any classwork could impress upon me.
>
> Found the Field Trip to be the highlight of the minor ... No number of courses can match the real thing.
>
> This experience helped alleviate my fears of the Third World in a positive manner and gave me the assurance that at a future point in time I could work in this environment.

Consequences of the Evaluation

On the strength of the strong support expressed by students, faculty, and especially graduates for the educational value of the Minor in International Agriculture in the agriculture baccalaureate degree, we strongly recommended to the Dean that the minor be continued with several refinements in content and instructional approach. We recognized that the minor is likely to appeal to a limited proportion of agriculture students and that a significant number of agriculture students elect some courses in the minor and thereby may assimilate some benefits identified by students completing the minor. We urged that the scholarship support already available to Field Trip participants be continued and that active steps be taken to explore greater collaboration with faculty in the humanities and social science programs of the university. We proposed that our questionnaire responses be accessible to all participating faculty. In addition, we recommended that a tropical semester be examined in association with a Third World university. To our immense satisfaction, these and all other recommendations we offered were accepted in toto and are currently in the process of implementation. In our experience, such wholehearted willingness to implement the recommendations arising from any evaluation is uncommon.

But in many ways, the most satisfying element in the evaluation process has been the response of our graduates, and it is largely for that reason that we share this experience with colleagues through the pages of this journal. Rarely do routine course or program evaluations yield as rich a variety of responses as we received in this assessment. Not often, moreover, do we obtain any systematic data concerning the impact of our teaching on the professional lives of our graduates.

Conclusion

Our study indicated that the perceptions of students currently enrolled in the program were similar to those of graduates, with respect to the value of the minor. On the other hand, graduates tended to place more emphasis on the positive benefits of the total educational experience rather than on the purely technical information which they received in individual courses. Although approximately one third of the graduates have worked directly in international development, virtually all of the graduate respondents feel strongly that the minor has contributed significantly to their undergraduate educational experience. Moreover, the graduates tend to place more emphasis on the positive benefits of their participation in the whole minor than on the purely technical information which they received in individual courses.

One view of educational outcomes is that they are largely unpredictable and that instructors are not responsible for the ways in which graduates think, behave, or practice their professions. Our study, on the other hand, suggests that when instructional programs are sensitively designed, refined, and monitored and their impact on students and graduates assessed (preferably by a mixture of techniques) instructors can be somewhat reassured that the impact of their teaching is likely to be beneficial, positive and lasting.

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[2]Note: **The Field Trip consists of 2 weeks of travel and study in the Caribbean, enabling students to visit individual and corporate farms, university and government research stations and become familiar with agricultural production systems. Following the field trip classes are held once per week in the winter semester, and students are evaluated on the basis of reports and oral presentations.**