A Performance Evaluation of an Alternative Approach for Training International Students

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For many international students who study agricultural economics in the United States, English is not their first language nor the language of academic instruction in their home country. This paper evaluates a program designed to permit international students with English deficiencies to begin their graduate training while simultaneously taking an intensive course in English as a second language. It is found that there is no significant difference in the performance of students in this program and other international students who begin their training with a capability in English.

The international student has long been a significant part of the student body in departments of agricultural economics in the United States, especially at the graduate level [AJAE]. A 1978 survey concluded that "there is a continuing strong demand for graduate level training in the U.S. departments of agricultural and resource economics as measured by the total number of entering (international) graduate students" [Stevenson, p. 105]. Graduate students from less developed countries (LDC) represent 31.5 percent of all graduate students entering fields of study related to the economics of agriculture [Stevenson].

Training in agricultural economics is one of the areas of critical human resource deficiency for the developing countries. Since many of these countries currently lack the facilities to undertake this training domestically, international students will likely continue to make up a significant portion of the enrollment in departments of agricultural economics throughout the United States. For many of these students, English is not their first language nor the language of academic instruction in their home country. These students need to learn English prior to their matriculation at a university in the United States or to undertake intensive study in English upon their arrival. This situation favors persons with a language capability in English and tends to discriminate against persons who do not have English capability, even though the latter group may be superior in training and experience.

"One of the main obstacles to Latin American students earning advanced degrees in the United States is English language proficiency. Each year international scholarships and fellowships are left vacant simply because students fail to meet the standards of TOEFL or other tests of English language proficiency required of international students for admission by universities throughout the United States. The traditional remedy has been placement in an intensive English institute, which has not been successful for all students. Many find unrelieved instruction in

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English beyond their endurance; others perceive it as a setback in their careers" [Beecher, p.79]. Programs are needed that allow persons with little or no English training to initiate a graduate program without sustaining large opportunity costs while learning the language.

This paper presents and evaluates a method of training agricultural economists and other agricultural professionals who have little or no prior knowledge of English. The program evaluated is the graduate program for Spanish speaking international students at New Mexico State University (NMSU). It is referred to in this paper as the Special Spanish Masters Program (SSMP).[1] The program is designed to permit a student with an appropriate academic background and the equivalent of a B.S. degree, as granted in the United States, to complete a M.S. degree in two years without having to undertake English language training prior to initiating professional study.

"No (language) proficiency level is required for admission, while a TOEFL score of 325 is the upper limit. The students, all native speakers of Spanish, are exposed to over six hundred hours of language instruction in a ten-month period. Aural/oral training predominates for the first six months, after which reading improvement and composition are emphasized. Classes are conducted in small homogeneous groups (between four and seven students per instructor). Approximately one hour a day of language laboratory practice is provided during the first six months. Students may take one or two regular university courses for credit or audit in their subject area during the program, although the majority of their time is devoted to the language program and a two-semester course in experimental statistics taught in Spanish. Following successful completion of the intensive English component, students continue (in regular university

courses) for a second year carrying a full academic load leading to a Master's degree" [Weissberg and Stuve, p. 62].

As a minimum the SSMP approach at NMSU requires one English as a Second Language (ESL) specialist, four quarter time graduate assistants in ESL, and one bilingual statistician. SSMP course offerings are subject to the same university size requirements as all othe graduate courses.

The limiting factors for the SSMP approach are a critical mass of students who speak a common foreign language, faculty who can teach and advise in the students' language, and first year courses of wide academic appeal. Spanish and French are the languages most likely to meet these criteria.

There are certain environmental factors which directly influence the acquisition of English proficiency. Successful programs must isolate the student as much as possible from his native language, integrate the student in regular school activities from the start, and teach the student English within the context of other school subjects when possible [Fathman, 1976]. Marton reports that "situations must be created in which the incentive to practice and improve these various areas of proficiency (vocabulary, pronunciation, and verbal expression) are given the fullest possible play."

Immediate initiation of the graduate program in the United States provides the student with the environment, motivation, and opportunity to use the newly acquired English in a meaningful context. Krashen reports that to the extent the target language is used realistically, acquisition of the language will be increased. Use of English within a graduate program should provide this type of environment. Carroll has also found that time spent abroad where the target language is spoken directly influences the level of proficiency attained. The SSMP approach provides this type of environment.

Analytical Structure

This analysis tests the hypothesis that the academic performance of students who par-

ticipate in the SSMP program is not significantly different from international students who begin their graduate training with English language capability. This hypothesis is evaluated by comparing the performance of SSMP students with that of all other international students for their first and second academic years. This hypothesis is evauated by analyzing the significance levels of estimated coefficients from multiple linear regression models. This analysis is not an attempt to identify all factors that influence the academic performance of foreign graduate students, but is an evaluation of the effectiveness of the SSMP program at NMSU. Motivation, social behavior, innate intelligence, and personal learning strategies all have a significant influence on the students' academic performance, but these variables are beyond the scope of this analysis. It is implicitly assumed that the background and prior training of international students are similar regardless of country of origin.

Each of the observations in the data set was an international graduate student in the College of Agriculture at NMSU during the period 1974-1977. There are 105 observations in the data set for the second year of graduate studies. The difference in size of the two samples occurred because one student graduated in one calendar year and four students, all with a GPA above 3.0, did not continue graduate study.

The Analysis

First, the relationship between grade point average[2] for the first and second academic years, GPA1 and GPA2 respectively, and participation in SSMP were examined. Although grade point average does not measure all aspects of the students' professional and academic development, it is used as the performance indicator in this analysis as no better measure of achievement is available. The English language courses are graded satisfactory or unsatisfactory and

are not included in the SSMP students' GPA. The relationships between SSMP and GPA1 and GPA2 are contained in equations (1) and (2) respectively.[3]

$$(1) \qquad GPA1 = 3.555 - 0.196 \; SSMP$$
$$(54.75)* \; (-2.50)*$$
$$R^2 = .0564 \quad N = 105$$

$$(2) \qquad GPA2 = 3.524 - 0.164 \; SSMP$$
$$(46.63)* \; (-1.82)$$
$$R^2 = .0327 \quad N = 100$$

where SSMP $= 1$ if in the SSMP program, 0 if not.

The relationships show that SSMP students have a significantly lower performance than non-SSMP students during their first academic year. Even though this difference is significant, it is small in absolute magnitude and accounts for only 6 percent of the observed variation in GPA1. Since many factors in addition to SSMP participation influence the performance of graduate students, the low R^2 might be expected. In equation (2), which reflects performance during the second academic year, the coefficient of SSMP is not significant. Admittedly, these differences are small, but they suggest no significant difference between the performance of SSMP and non-SSMP students during the second academic year.

If cumulative grade point average at the end of the second year (GPAC) is used as the dependent variables rather than the grade point average for the second year, different results are obtained. This relationship is contained in equation (3).

$$(3) \qquad GPAC = 3.540 - 0.180 \; SSMP$$
$$(56.71)* \; (-2.42)*$$
$$R^2 = .0563 \quad N = 100$$

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[2]Grade point average is based on a 4 point scale.

[3]In the study, the numbers in parenthesis below the estimated parameters are the respective t statistics. The study uses a significance level of $\alpha = .05$ and an asterisk indicates parameters significant at that level.

The coefficient for SSMP is negative and significant. Some might interpret this to mean that SSMP participants have a significantly lower level of performance at the end of the second year. Given the results contained in equations (1) and (2), one may conclude, however, that the results in equation (3) represent an inability to overcome a slow start during the first year rather than an inability to achieve an equal level of performance during the second year. If program evaluation is based upon cumulative grade point average, SSMP participants are required to achieve a higher grade point average than non-SSMP students during the second year in order to attain the same level of measured performance.

Since age has been found to influence the rate at which students learn English as a second language [Fathman, 1975], it is possible that differences in performance could be attributable to differences in age. The average age of students in the sample was 34.69 years with a standard deviation of 4.87 and a range of 23 to 49. Thus, age is evaluated as a variable which could explain the variation observed in the GPA of international students. The relationships between AGE and GPA1 and GPA2 were:

(4) $GPA1 = 4.113 - 0.020 \text{ AGE}$
         $(15.85)^* (-2.70)^*$
         $R^2 = .0648 \quad N = 105$

(5) $GPA2 = 3.486 - 0.002 \text{ AGE}$
         $(11.16)^* (-0.25)$
         $R^2 = .0006 \quad N = 100$

where AGE = age of the student in years.

The parameter estimate for age is significant in equation (4), but is small in absolute magnitude. Although age has a significant impact on grade point average in the first year, it does not explain a significant portion of the variation in grade point average for the second year.

Since the variables SSMP and AGE had significant coefficients in equations (1) and (4), the relationship between GPA1 and AGE and SSMP was estimated to determine whether these variables accounted for the same or independent variation in GPA1. The relationship was:

(6)   GPA1 =
         $4.220 - 0.188 \text{ SSMP} - 0.019 \text{ AGE}$
         $(16.41)^* (-2.48)^* \qquad (-2.67)^*$
         $R^2 = .1169 \quad N = 105$

The parameter estimates for SSMP and AGE were significant and very close in magnitude to the parameter estimates in equations (1) and (4) where they were estimated independently. In addition, R^2 for equation (6) is approximately equal to the sum of the R^2's for equations (1) and (4). Based upon these results, SSMP and AGE may be interpreted as explaining independent sources of variation in GPA1.

Conclusions

This analysis suggests that, although SSMP participants perform at a significantly lower level during their first year of enrollment, no significant difference between SSMP participants and other international students exists during the second year. Age also has a significant and negative impact during the first year, but is not a significant source of variation in performance during the second year. The analysis demonstrates that SSMP students and older students tend to start slower. However, during the second year of a two year program, students who entered the SSMP program do not differ significantly in performance from other international students as measured by grade point average. The results also demonstrate the need for judicious selection and aggregation of performance criteria for programs such as the SSMP. If the ultimate measure of success is to be the final level of performance attained, care must be taken to avoid the inclusion of a penalty for a slow start which will prejudice

the outcome of the evaluation. Based upon this analysis, the SSMP approach appears to be an effective means of training non-English speaking graduate students.

This analysis has not evaluated all variables which would be expected to influence student performance. To achieve a more thorough evaluation, one would need additional information such as time since last academic work, previous academic record, amount of prior exposure to English, some measure of basic intellectual ability, and motivation. Some of these factors are quantifiable and could be gathered in a survey. Others could be obtained through standardized testing or are not quantifiable. Because of the cost involved in obtaining such information, no attempt was made to collect such data for this analysis.

A comparative evaluation of programs such as SSMP, English language training in the home country, and English language institutes is necessary for effective planning and program development. Since it is likely that departments of agricultural economics will continue to train large numbers of international students, additional research which would provide the required information is necessary.

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