IMPACT OF THE REGIONAL CENTERS ON FACULTY AND STUDENTS
AT THE COLEGIO de POSTGRADUADOS, MEXICO

Anibal Quispe Limaylla
Colegio de Postgraduados, Chapingo
Mexico 56230, MEXICO

Julia A. Gamon, Associate Professor
W. Wade Miller, Professor
Agricultural Education and Studies
Iowa State University

Abstract

This descriptive study was designed to assess the educational impact of the regional centers on the research, teaching and extension functions of the Colegio de Postgraduados of Mexico. Data were collected by hand-delivered questionnaires and analyzed by descriptive statistics, t-tests, one-way analysis of variance and Pearson's correlation. According to the findings, campus faculty and students participated infrequently in the regional centers. Campus faculty perceived that they did not improve their professional competencies very much as a result of their activities in the regional centers, but regional center faculty felt strongly that they gained knowledge about the regions and practical experiences. Lack of communication among faculty members and lack of institutional support were the main reasons for low participation. There were no significant relationships between faculty perception of basic agricultural education principles and their degree of participation in the regional centers. Students perceived that the Colegio de Postgraduados was following educational principles.

Introduction

For decades, institutions of higher education in Latin America have been criticized because they have not responded to the needs of agricultural development. Main concerns have been: curricula that were incompatible with agricultural education objectives, lack of linkages between educational institutions and rural communities, and little integration among research, teaching, and extension (Olcese, 1965; Pino, 1974; ALEAS, 1985; FAO & ALEAS, 1991). Conscious of those problems, the Colegio de Postgraduados (CP) implemented creative programs to improve its educational functions. This graduate college, in the period between 1976 and 1986, created four regional centers with the purpose of linking its educational function with the agricultural and rural problems of the regions. Located in four different ecological and socioeconomic regions, the regional centers were established to be natural laboratories in which the institution had functional responsibilities for conducting research, teaching students, and extending services to the farmers. The regional centers would make it possible to incorporate new conceptual, theoretical, and methodological elements into the curricula (Casas et al., 1977). In spite of some signs of progress, the community of CP has had increasing concerns about the role of the regional centers in relation to the objectives of the institution.

Purpose and Objectives

The purpose of the study was to assess the impact of the regional centers for research, teaching, and extension on the educational function of the Colegio de Postgraduados, which is one of the principal higher agricultural education institutions of Mexico that prepares students at the master and doctoral levels.
Objectives of the study were:

1. To describe the demographics of the students and faculty.
2. To assess the participation of campus faculty in the regional centers, the impact of participation and the reasons for nonparticipation.
3. To assess students' perceptions of their participation in the regional centers and the educational function of the Colegio de Postgraduados.
4. To compare faculty and students' perceptions of the educational function of CP with their participation in the regional centers.

What has been the impact of the regional centers on the educational functions of the institution? Specifically, how have the activities of research, teaching, and extension, carried out in the regional centers by faculty members, affected the education of students?

Methods

The design used for this study was the descriptive survey method. Data were obtained from campus faculty (70), regional-center faculty (40), and students (76) of the Colegio de Postgraduados. The samples were selected by the stratified random sampling technique. Three different versions of questionnaires were designed to collect information. They were hand-delivered to the subjects. Also, direct observation, informal interviews face to face, and review of official documents and records were employed. Descriptive statistics, t-tests, one-way analysis of variance, factor analysis, and Pearson's correlation were used to analyze data. The instrument was developed based on an extensive literature review and a review by the researcher's doctoral committee. The reliabilities of the instrument were .96, .75 and .92 for campus faculty, regional center faculty and student questionnaires, respectively. The alpha level of significance was set a priori at .05.

Results and Conclusions

Findings are arranged under the following headings: 1) Demographic description of the respondents, 2) Participation of campus faculty in the regional centers, 3) Improvement of academic performance as a result of faculty members' activities in regional centers, 4) Reasons for low participation of campus faculty in the regional centers, 5) Participation of students in the regional centers, 6) The educational performance in the Colegio de Postgraduados as perceived by students, and 7) Relationship between faculty members' and students' perceptions regarding basic principles and concepts of agricultural education and their degree of participation in the regional centers.

Demographic description of the respondents

Participants in the survey were predominantly male: 80.0% campus faculty; 92.5% regional center faculty; and 85.5% students. The average age was 40.7 years among campus faculty, 35.2 years among regional center faculty, and 31.1 years among students. In both campus and regional-center faculty, the group holding a master's degree was larger than those holding a bachelor's and doctorate (51.4% and 82.5%). Almost half (47.1%) of the campus faculty held a doctorate, compared with 15.5% of the regional-center faculty. The distribution of faculty members by academic rank was not the same for faculty from campus and regional centers. The largest group among campus faculty (45.7%) consisted of Professors and Associate Professors, but Assistant Professor was the largest group among regional center faculty (47.5%). When considering time spent on teaching, research and extension activities, the largest percentage of campus faculty (50.2%) and regional-center faculty (50.3%) spent time on research. This result was different from that found by Macias-Lopez (1990) in his study of professors and graduate students of Mexico, Central America, and Caribbean agricultural education institutions. In that study, teaching was the activity in which faculty members spent the most time (41.9%).
Participation of campus faculty in the regional centers

Campus faculty were asked to rate five levels of frequency of participation in the regional centers. The scale utilized was: 1= never to 5= very frequently. Findings indicated that participation of campus faculty in the regional centers was infrequent (M=1.81; SD=1.03). To find differences of the degree of participation between or among groups, t-test and one-way ANOVA were used. Groups were compared by age, academic degree, and academic rank. When groups were compared by age (from 25 to 34, from 35 to 44, and 45 or more), and by academic rank (Professor or Associate Professor, Assistant Professor, and Instructor or Research Assistant), a one-way ANOVA showed a highly significant difference (p=0.001) among groups in both cases. The interpretation of the Scheffe' post-hoc analysis indicated that the groups who were 25 to 34 years old, and those in the rank of Assistant Professor, and Instructor or Research Assistant, participated less frequently than those older than 34 years of age, and those in Professor or Associate Professor ranks. When groups were compared by academic degree (master's and doctorate), a t-test analysis indicated a highly significant difference (p=0.001) existed between the two groups. The group holding master's degrees participated less frequently than those holding doctorates.

Improvement of Academic Performance of Faculty Members as a Result of their Activities in the Regional Centers

This study was designed to assess the impact that participation in the regional centers had on faculty members. The assumption was that faculty and students might gain practical experience and knowledge and change their attitudes, forms of thinking and acting as a result of their participation in planned activities, as is explained in Leontiev's theory of action (Zuber, 1991). The action may refer to any aspect of learning, teaching, or other professional activities. Whether the action is practical (exterior) or mental (interior), its aim is to be reflected, refracted, or transformed in the subject's consciousness, together with the product of action (the object), which is also to be reproduced in the subject's consciousness (Figure 1).

To assess their perception of their academic improvement as a result of their activities in the regional centers, campus and regional-center faculty were asked to rate nine statements about knowledge, experience, and changes in their attitudes as a result of their activities in the regional centers. In general the campus faculty members' perceptions of acquired knowledge, experience, or changed attitudes as a result of their participation in the regional centers was slight. The three items rated most highly were close to the midpoint of the four-point scale. They were "practical experiences" (M=2.59), "understanding of agricultural problems of the region" (M=2.49, SD=1.15), and "understanding of ecological problems of the region" (M=2.57, SD=1.06). On the contrary, regional-center faculty felt strongly that they had improved as a result of their activities in the regional centers. All the nine statements were highly scored; "gained practical experiences" and "gained
understanding of agricultural problems of the region" had the highest average scores (M=3.70, SD=0.61 and M=3.6, SD=0.54). To find differences between campus and regional-center faculty, t-tests were used (Table 1). The results revealed highly significant (p=0.01) differences between the two groups for the nine statements.

In addition, campus faculty were asked to rate nine statements in regard to the importance of their gained experiences and knowledge in the regional centers toward improving curriculum and other academic aspects. To rate each statement, the scale of 1=not useful to 4=very useful was utilized. In general, campus faculty felt that their gained experiences and knowledge in the regional centers were slightly useful for improving curriculum and other academic aspects. They felt that their acquired experience and knowledge in the regional centers were useful mostly to "improve research methods" (M=2.65, SD=1.20) and "prioritize research areas" (M=2.59, SD=1.22). Large standard deviations indicated a wide range of perceptions by respondents.

Faculty from regional centers were also asked about the frequency of their participation on campus by type of activity. The scale of 1=never to 5=very frequently was used. The results indicated that regional center faculty rarely participated in academic activities on campus (teaching: M=1.87, SD=1.14; research: M=1.85, SD=1.18; and other activities: M=2.27, SD=1.48).

**Reasons of Low Participation of Campus Faculty in Regional Centers and Faculty from Regional Centers on Campus**

Because of anticipated low participation of campus faculty in regional centers and faculty from regional centers on campus, faculty members were asked to rate seven statements of potential reasons for their lack of participation. They were asked to complete any additional reasons for their lack of participation by answering an open-ended question. To rate the statements, the scale of 1=completely disagree to 7=completely agree.

**Figure 1. A model of faculty activities (Modified from Zuber, 1991)**
Table 1.

Means, standard deviations, t-values, and probabilities of scores on the perception of campus and regional center faculty regarding their professional improvement as a result of their activities in the regional centers

<table>
<thead>
<tr>
<th>Statements</th>
<th>Variables</th>
<th>Mean</th>
<th>S.D.</th>
<th>t-values</th>
<th>Prob.</th>
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<tr>
<td>Gained practical experience</td>
<td>CF</td>
<td>2.58</td>
<td>1.19</td>
<td>29.09</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.70</td>
<td>0.61</td>
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<td>Gained understanding of agricultural problems of the region</td>
<td>CF</td>
<td>2.57</td>
<td>1.15</td>
<td>27.17</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.60</td>
<td>0.54</td>
<td></td>
<td></td>
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<tr>
<td>Gained methodological experiences to solve problems</td>
<td>CF</td>
<td>2.25</td>
<td>1.13</td>
<td>35.50</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.47</td>
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<tr>
<td>Changed attitudes</td>
<td>CF</td>
<td>2.21</td>
<td>1.12</td>
<td>27.93</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.37</td>
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<td>Gained understanding of socio-economic problems of the region</td>
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<td>2.35</td>
<td>1.16</td>
<td>23.40</td>
<td>0.000**</td>
</tr>
<tr>
<td></td>
<td>RCF</td>
<td>3.35</td>
<td>0.66</td>
<td></td>
<td></td>
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<tr>
<td>Gained understanding of ecological problems of the region</td>
<td>CF</td>
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<td>1.06</td>
<td>18.41</td>
<td>0.000**</td>
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<td></td>
<td>RCF</td>
<td>3.32</td>
<td>0.69</td>
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<tr>
<td>Changed forms of thinking</td>
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<td>1.09</td>
<td>16.69</td>
<td>0.000**</td>
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<td>RCF</td>
<td>3.10</td>
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<td>Changed attitudes toward campesinos</td>
<td>CF</td>
<td>1.92</td>
<td>1.04</td>
<td>27.40</td>
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<td></td>
<td>RCF</td>
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<td>Changed forms of acting</td>
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<td>RCF</td>
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Scale: 1 (low) to 4 (high)
CF = campus faculty, N = 51
RCF = regional center faculty, N = 40
**Significant at p. = 0.001
was utilized. Findings indicated that although faculty of both campus and regional centers did not completely agree with the suggested reasons for their low participation, they agreed with the following statements: "lack of communication among campus and regional-center faculty," "lack of institutional support," and "lack of institutional sources."

Participation of Students in the Regional Centers

The regional centers were a possible means for professors and students to interact, learn, and gain cognitive and affective knowledge. Based on that assumption, students were asked about the frequency of their participation and their means for becoming familiar with the regional centers. The scale of 1=never to 5=very frequently was used. Findings indicated that students rarely participated in the regional centers (M=1.51, SD=0.55). To determine whether or not familiarity took place as part of the planned process of teaching-learning, students were asked about the means by which they became familiar with the regional centers. They were asked to respond to five statements of probable answers. Frequencies and percentages were used for the analysis. Findings indicated that students became familiar with the regional centers mostly by "other means" (30.3%), such as visiting the region for a particular interest, working in the region, or through friends and peers. Student familiarity with the regional centers was most often not a result of a planned teaching-learning process by the institution.

Educational Performance in the Colegio de Postgraduados (CP) as Perceived by Students

Based on the definition of regional centers, it was assumed that the educational function of the CP would be more effective if faculty members and students participated in the regional centers. Curricula, programs, and teaching methods would be improved as a result of the knowledge and experience gained. To what extent was this happening in the CP? To assess educational function in the CP, students were asked to rate 30 statements regarding principles and educational needs and goals that should be met and applied by in the institution on a seven-point scale ranging from 1=strongly disagree to 7=strongly agree. The statements were grouped logically into six groups of common content: 1) teaching and learning, 2) content of the courses, 3) plan of study, 4) competency of professors and instructors, 5) academic and social environment in the institution, and 6) competency of graduates. According to findings, students agreed in general that the principles and other desired educational aspects were met or applied in the CP. Students agreed with the following statements: "the instructors are qualified professionals" (M=6.05, SD=0.98), "the graduates have solid and balanced preparation" (M=5.72, SD=1.05), and the instructors are supportive" (M=5.67, SD=1.37). Students slightly agreed with "the institutional environment invites students to participate in academic and social activities" (M=4.67, SD=1.66), and "the institutional environment is supported by strong leadership" (M =4.47, SD=1.63). Students seemed to perceive that educational principles and desired educational aspects were met in the CP. However, participation of faculty members in the regional centers was low. The reviewed literature (Hernandez, 1988 and Teliz, 1988) on educational aspects of the CP suggests that deeper and more detailed studies about educational performance are required.

Perceptions of Faculty Members and Students Regarding Basic Principles and Concepts of Agricultural Education, and Relationships Among those Perceptions and the Degree of Faculty and Student Participation in the Regional Centers

To what extent did faculty members and students agree or disagree with the basic principles and concepts of agricultural education? And how were their perceptions of those principles and concepts related to their degree of participation in the regional centers? A literature review provided the basis for 25 statements regarding: the integration of teaching, research, and extension; the integration of theory and practice in the process of teaching-learning; agricultural professional competency;
the role of agricultural education institutions; professional training in developing countries; the importance of small scale agricultural producers; and the definition of regional centers.

Respondents were asked to rate each statement on a scale of 1=completely disagree, to 7=completely agree. Results show that, in general terms, respondents agreed with the 25 statements. Respondents completely agreed with the following statements: "teaching-learning process must be carried out through the integration of theory and practice" (M=6.67, SD=0.55), and "agricultural universities should contribute importantly to the discovery of future agricultural practices that are socially desirable, culturally feasible, and ethical defensible" (M=6.50, SD=0.69). To find out if campus faculty's perceptions of those basic principles and concepts were related to their degree of participation in the regional centers, analyses of correlation were made. The results indicated that no relationships existed among campus faculty's perceptions of the basic principles and concepts of agricultural education, and their degree of participation in the regional centers. This does not mean, however, that academic activities of faculty members were not related to their basic beliefs and values about agricultural education. Faculty participation in the regional centers could be more closely related to external factors, such as the organizational structure of the institution, the administrative system, and social and economic factors.

**Conclusion**

Findings of this study lead to the conclusion that the educational potentials of the regional centers were not being fully utilized. The study found that participation of campus faculty in the regional centers was infrequent. Those who participated in the regional centers perceived that they did not improve their professional competency very much as a result of their activities in the regional centers. On the contrary, regional center faculty felt strongly that as a result of their activities in the regional centers they gained knowledge and experience, and underwent changes in their attitudes and forms of thinking and acting. However, faculty from regional centers perceived that their participation in academic activities on campus was infrequent. The main reasons for infrequent participation of campus faculty in regional centers and faculty from regional centers on campus were: lack of communication among faculty members, lack of institutional support, and organizational structures of the institution. Participation of students in the regional centers was also infrequent. Students became familiar with the regional centers not as a result of the planned academic activities of the institution but by other means, such as personal interest, previous work in the region, and through peers. In spite of the infrequent participation of campus faculty and students in the regional centers, students perceived that educational principles and desired educational aspects were met in the Colegio de Postgraduados. Also, faculty members and students agreed with most of the basic principles and concepts of agricultural education. Yet, no relationships existed among campus faculty members' and students' perceptions of the basic principles and concepts of agricultural education, and their degree of participation in the regional centers.

**Recommendations**

To be more effective in their function and role, educational institutions should become aware of the processes, context, results and potentials of their programs. For that, institutions should continuously assess and evaluate their programs. This is even more urgent in a time of drastic changes in political and economic concerns, as in Mexico. Agricultural education institutions, to respond effectively to the needs of agricultural and rural development, need to revise their institutional components, including their programs.

**Implications**

The concept of regional centers as exemplified by the Colegio de Postgraduados may serve as model for agricultural education institutions in Mexico and in Latin America. It has the potential for overcoming the weaknesses of conventional educational models practiced by
many institutions where the teaching-learning process has been carried out mostly in classrooms and laboratories, with little or no interaction with farmers and their environment. As a consequence, national and international institutions have urged the adoption or creation of linkages between educational institutions and rural communities for their mutual benefit, a situation in which professors and students work together and learn from each other.

References


