This is to certify that the

dissertation entitled

Using Graduates and Their Employers to Help Assess Agricultural Programs: The Centro Universitario de Oriente (CUNORI) Case

presented by

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has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Agricultural and Extension Education

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Date March 14, 1996

USING GRADUATES AND THEIR EMPLOYERS TO HELP ASSESS AGRICULTURAL PROGRAMS: THE CENTRO UNIVERSITARIO DE ORIENTE (CUNORI) CASE

By

Malaquías Q. Flores

A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Agricultural and Extension Education

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ABSTRACT

USING GRADUATES AND THEIR EMPLOYERS TO HELP ASSESS AGRICULTURAL PROGRAMS: THE CENTRO UNIVERSITARIO DE ORIENTE (CUNORI) CASE

By

Malaquías Q. Flores

This study was conducted to develop and try out a process of gathering information from the Centro Universitario de Oriente (CUNORI) graduates and their employers regarding the adequacy and appropriateness of those students' educational experiences while at CUNORI. In order to proceed with the investigation, a CUNORI curriculum evaluation committee was organized by the central administration and assigned to work closely with the researcher in the process.

The target population included graduates from three programs of study for the years 1989 to 1993 who had completed all of the requirements for graduation with a diploma and their current employers. During the 89' to 93' period, 89 students from the three agriculture programs finished all the requirements for diplomas and 15 employers were identified by the graduates. Two questionnaires were designed for the data collection, one for the students and the other for the employers.

The results of this work showed that the majority (70%) of the graduates were employed full time and also that 96% of them were

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continuing their education for a B.S. degree. Seventy three percent indicated that their present job was related or exactly the kind of job they expected to get while studying at CUNORI. Almost all (97%) indicated that the education received at CUNORI was useful or very useful in the fulfilment of their employment. The graduates want more emphasis in areas such as practical instructional activities, project administration, communication skills, research planning and analysis, and marketing. The graduates and the employers indicated that CUNORI should render extension service activities to serve the Chiquimula community. Possible services activities could include: short courses and presentations, visits to the surrounding communities, and dissemination of CUNORI-generated research information. The employers are pleased with the level of technical knowledge and quality of professionals CUNORI is graduating and would employ more if available.

Further studies should focus on the possibility of integrating the three fields of study to optimize CUNORI resources, and on methods for recruiting high school graduates to enter CUNORI's academic programs. Also, the process of involving stakeholders for future evaluative follow-up studies needs further study.

Dedicated to the memory of my father

Don Juan Flores-Ortíz

ACKNOWLEDGMENTS

I would like to express my thanks and gratitude to the following persons and institutions:

- The Centro Universitario de Oriente (CUNORI) for their hospitality and disposition to do the study. Especially the faculty and students that participated in the instrument design, testing and data collection.

- Rector of the University of San Carlos, Dr. Alfonso Fuentes Soria for his outstanding support in this study.

- Director of the Centro Universitario de Oriente, Ing Gabriel Heredia for his constant desire to assist. Also, to the former director of the center Dr. Hugo Dávila for his patience and professionalism.

- Guidance Committee members: Dr. Fred Whims; Dr. James Jay; Dr. Jake Wamhoff; and Dr. Mary Andrews, for their continuous support and guidance during the period of conducting the research.

- To Dr. O. D. Meaders and Dr. Murari Suvedi for their support in reviewing the drafts of the study.

- To Dr. N. Paul Johnston, director of "The Ezra Taft Benson Agriculture and Food Institute" that provided financial, academic and moral support.

- To my friends, Dr. Laren R. Robison and Luis V. Espinoza, who reviewed and spent many hour commenting the study.

- Special gratitude to my parents, whom always insisted that education is the key to a better life, and of whom I am proud of being their son.

- Finally, to my wife Ivelisse and our children Marcos and Mariel, to whom I owe more than I can think of. I would like to thank them for being loving, patient, supportive, and most of all, being there when I needed them the most.

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ABBREVIATIONS

ANOVA:	Analysis of variance
IIME:	Intituto de Investigación y Mejoramiento Educativo
CIPP:	Context, Input, Process, Product
IASS:	Institute of Agriculture and Animal Science
IICA:	Instituto Interamericano de Ciencias Agricolas
DIGESA:	Dirección General de Servicios Agropecuarios
DIGEBOS:	Dirección General de Bosques
FIDA:	Fideicomiso Internacional de Desarrollo Agrícola
INDE:	Instituto
IGSS:	Instituto Guatemalteco de Seguridad Social
DIGESEPE:	Dirección General de Servicios Pecuarios
INTECAP:	Instituto Nacional de Capacitación

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CHAPTER I

INTRODUCTION TO THE STUDY

The improvement of agricultural production is one of several development goals of most countries in Central America. Some of the major efforts to increase agricultural production are directed toward farmers, to increase the quantity and quality of food and fiber products. In addition, the infrastructure of roads, markets, irrigation systems, agricultural supplies and services, and credit are some of the other areas usually targeted for improvement. One of the specific targets for improvement is often the educational system, which is expected to provide agricultural professionals and technicians, the educated workforce for planning and implementing programs.

In this study, the researcher's focus was on the use of graduates from the Centro Universitario de Oriente (CUNORI) in Guatemala and their employers, in a process designed to determine the strengths and weaknesses of the present instructional programs for preparation of a technical and professional workforce in agriculture. For the purposes of this study, the target population from CUNORI included graduates from three programs of study who have completed all of the requirements for graduation with a

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diploma and their current employers. Since dropouts are a major problem at CUNORI, before this study was approved, the evaluation committee surveyed the dropouts. The results from the CUNORI dropout study will be mentioned in this study. Therefore, the dropouts were not surveyed again with the graduates at this time.

Evaluation of higher education programs has been widely accepted as necessary both to maintain the quality of existing programs and to develop new and improved programs. Accountability by departments and by professors in the educational institutions is an essential ingredient in any evaluation effort designed to determine the extent to which students who complete the required courses are prepared with skills and competencies essential to perform the tasks expected of them. In other words, evaluation is considered to be part of the curriculum-development process.

Evidence of this concept is inherent in the curriculum-development models devised by Tyler (1950) and Taba (1962). Evaluation is important in curriculum development because it enables decision makers to have objective information available as part of the process of reviewing and revising courses and curricula so as to better meet the current and future needs of students and of society. Systematic evaluation can help ensure that the curriculum is relevant and that deficiencies are identified before they cause major problems to arise (Finch, 1984).

The Centro Universitario de Oriente (CUNORI) is an educational institution in Guatemala that is in the process of assessing the effectiveness

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of its agricultural education programs. Those programs have as their major objective to provide quality education to prepare students for immediate employment upon graduation. Thus, evaluation is important to determine the degree to which the existing programs are effective in meeting the needs of the graduates and their employers, and in providing direction, for change.

Background for the Study

The national university of Guatemala is the University of San Carlos (USAC), which was founded in 1676. The main campus is located in Guatemala City, and 10 branch campuses or regional centers are located in cities throughout Guatemala. The main purpose of the regional centers is to decentralize and diversify higher education in Guatemala. Each regional center is expected to train local students, giving special attention to those from low income families, and to help with the economic development of the region. No one regional center offers all of the programs and fields of study that are available at the main campus.

This study was focused on the Centro Universitario de Oriente (CUNORI), which is located in the eastern sector of Guatemala in the department (state) and city of Chiquimula. CUNORI is one of the 10 regional centers of the USAC and the only higher education institution in the Chiquimula area offering instruction in agriculturally related fields. Its mission is to supply graduates for the agricultural sector, to deal with regional and national problems in production agriculture. A central administration group,

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the Honorable Superior Council, has asked CUNORI to assess, justify, and restructure, if necessary, the programs that are offered in order to better serve the needs of the students and society in the region (CUNORI, 1992).

CUNORI offers three 3-year diploma programs in agricultural fields; these programs are designed to prepare graduates for immediate employment, with the option to continue studying for a Bachelor of Science degree at CUNORI or at the main campus. However, because the programs at CUNORI are specially tailored to educate students for immediate employment, the curricula are influenced by trends and developments in the job market in the agricultural sector within the region. For example, the Técnico diploma program is an intermediate degree, specifically geared toward preparing graduates for employment at public or private agriculturally related institutions, non-governmental organizations, banks and other government institutions. Types of jobs that graduates are expected to enter include extension agent, agriculture agent, assistant researcher, forestry agent, consultant, accountant, teacher, farm manager, and administrator.

At Guatemalan universities, all students are required to complete a research project and present a thesis before receiving their diplomas. For most students, this represents another year at school beyond the 3 years needed to take the required courses and practicums. However, because they lack money for the research project, very few students complete a thesis. Most students finish all of the required courses, but because they do not finish the thesis they are considered dropouts.

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Chapter I

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Additional details regarding the setting for the study, with information about Guatemala and the country's educational system, may be found in Chapter II.

Statement of the Problem

The Centro Universitario de Oriente (CUNORI), the setting for this study, is one of 10 regional centers of the University of San Carlos and is located in the eastern sector of Guatemala. The general purpose of the regional institution is to provide young people at the post-high-school level with a wide and rich education as preparation for adulthood and working life.

CUNORI has three main purposes: (a) to educate a competent and dedicated work force to meet the current and long-term needs of the agricultural sector; (b) to conduct research; and (c) to collect, preserve, and disseminate knowledge related to agriculture (CUNORI, 1992). However, although CUNORI has been graduating students since its establishment in 1977, no systematic study has been conducted to assess the extent to which the existing programs are perceived to be meeting the needs of graduates and of the agricultural sector.

In measuring and evaluating the outcomes of agricultural education programs such as those at CUNORI, many factors need to be considered. The program outcomes depend on many factors such as: the characteristics of the students who are admitted--the human resource; the nature and characteristics of the courses, curricula, faculty, and facilities--the educational institution; and the characteristics of the communities for

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potential employment--the opportunities (Eninger, 1968). Simple casual observations are important but do not reveal enough of the picture to be reliable for decision makers to make changes.

A curriculum review committee at CUNORI is charged with the task of evaluating all of the programs offered by the regional institution. Their assignment includes the consideration of pertinent issues relating to curriculum development in general, such as available internal services, costs, admissions, enrollment, academic work load, course distribution, and academic regulations (CUNORI, 1992). However, one crucial dimension that the committee is not taking into account is the information that might be provided by the graduates and their employers. There appears to be no precedent at Guatemalan institutions of higher education for gathering and using such information.

In relation to educational programs such as CUNORI's, whose goal is to prepare graduates for immediate employment upon graduation (as well as opening the way for them to continue their education at the main campus), the evaluation process should include the consideration of information from graduates of the three programs of study and their employers. One of the ways to gather such information is to elicit feedback from recent graduates and their employers. Feedback from graduates and their employers is considered a prime source of information for curriculum decision making (Garrity, 1984; Paul, 1975; Wentling, 1982). Comments or criticisms from external groups such as employers also may be relevant in making decisions

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regarding curriculum matters. Thus, a follow-up study of former CUNORI students--graduates and their employers should be included in the overall process of evaluating the agricultural education programs at CUNORI.

One of the indicators of possible problems in the nature of the curricula and programs at CUNORI is the large numbers of students who leave the institution before completing all of the requirements, including a thesis, for the diploma. For example, in 1989, 95 students were registered in the class but only 10 graduated. In 1990, 123 were registered in the class but only 7 graduated. From these figures it can be seen that dropout before completion of all diploma requirements appears to be excessive. The curriculum committee decided to analyze the problem and surveyed the dropout population before this study was initiated. Some comments were made regarding their findings in this study. However, dropouts were not included in the study, only 1989 to 1993 CUNORI graduates and their employers.

Purpose of the Study

The primary purpose in this study is to develop and try out a process of gathering information from former CUNORI students and their present employers regarding the adequacy and appropriateness of those students' educational experiences while at CUNORI. The process includes procedures designed to enhance the future use of the information by the evaluation committee at CUNORI.

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Objectives of the Study

The specific objectives of this study are as follows:

1. To find out the current employment status and potential employers of CUNORI graduates.

2. To identify the perceptions of CUNORI graduates and their employers about their present job.

3. To find out the opinions and attitudes of CUNORI graduates and their employers regarding the overall learning experience at CUNORI.

4. To identify the additional training needs perceived by the employers of CUNORI graduates.

5. To find out the opinions of CUNORI graduates and their employers about the expansion of academic programs at CUNORI.

6. To identify the perceptions of possible service activities for CUNORI to serve the Chiquimula community.

Need for the Study

The absence of any precedent for including information from former students and their employers in the program-evaluation process by higher education authorities in Guatemala provides the primary basis for this study. Similarly, evaluation studies by similar institutions in the United States and some other countries traditionally do include information gathered from former students and their employers.

The task of improving agricultural production and productivity in developing countries often is handicapped by the lack of adequately prepared

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agricultural technicians and professionals. Cooperation among the various agencies and organizations is needed for adequate coordination as to the kinds and amounts of workforce needed. The use of follow-up studies as part of the evaluation efforts by higher education institutions may constitute a small step in the direction of cooperation, communication, and coordination among the affected agencies and organizations for agricultural development.

Administrators at CUNORI are involved in evaluating the curricula and programs with a process primarily established by the authorities in the central administration of the University of San Carlos (USAC). It is a process for bringing about change in the characteristics and nature of the current agricultural programs. In previous years, new courses or topic areas were added to or deleted from the curricula. However, the tendency has been to add new courses and content areas without making any deletions. Such a tendency is normal in the process of curriculum evolution (Garrity, 1984). Unfortunately, it is all too often the case that once material has been put into a program, it acquires a kind of tenure, and barring some highly unusual circumstances, some material too often remains part of the curriculum long after it ceases to serve a useful purpose. Dressel (1971) suggested that continuous review of the curricula should be done with proper control because, without continuous review and control, university courses are increased without an apparent rationale.

A follow-up study of former students as part of the evaluation of programs at CUNORI is both timely and important. The proposed study was

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the first attempt at CUNORI, or any other institution of higher education in Guatemala, to collect and use data from former students and their current employers as part of the review and evaluation process. A continuing evaluation is needed to ascertain how the program is meeting the needs of the students and what constructive suggestions can be made to improve the educational programs at CUNORI. Hopefully, the study will add depth and dimension to existing knowledge and information about current conditions and anticipated changes. Consequently, the significance of this study is that the information gained may be of value to the administrators at CUNORI in their efforts to improve the agricultural study programs so as to more effectively meet the needs of the students for future employment.

This study provided an opportunity to tryout in a different setting follow-up studies strategies and principles that have been widely accepted as the basis for principles to follow when conducting this kind of studies in the United States and other countries. The cultural and traditional differences between institutions of higher education in Guatemala and the United States may make some of those strategies and principles appear to be suspect when applied in developing countries such as Guatemala.

The absence of a tradition in Guatemala for administrators of higher education programs, especially technical programs, to seek close cooperation with industry and its leaders may be challenged as a result of this study. More important, the study may provide an opening of dialogue between representatives of industry and higher education, and lead to cooperative

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The proposed study alone will not solve the problems involved in preparing willing and able graduates to fill essential positions within the agricultural sector. However, feedback from former students and their employers, coupled with the curriculum-review process involving faculty members, may result in more effective instructional programs in the future.

This study is expected to generate new knowledge about the educational system and the effectiveness of schooling in Guatemala. Because the study will elicit information from former students and their employers, sources not usually included in the review and evaluation of curricula in Guatemala, it may, in the future, stimulate faculty and administrators to ask questions they have not asked before (Wagner, 1993).

Limitations of the Study

The following limitations to the scope and content of the study are dictated by circumstances beyond the control of the researcher.

1. The scope of the study is limited to former students at CUNORI who graduated from of the institution between 1989 and 1993, as well as their present employers. Former students and their employers are the appropriate population to provide data and information essential to the study. Only those students for whom CUNORI has maintained permanent addresses were included in the study.

2. The study did not include an evaluation of the procedures used in

screening applicants for admission, the orientation process, or other counseling and advising of the students while they were enrolled at CUNORI. Rather, the researcher focus was on the end product or perceived outcomes of the educational experience.

3. The researcher focus was on the opinions and attitudes of the graduates and their employers; the opinions and attitudes of faculty and staff were not included.

4. Evaluation of the relevance of the objectives in this study were based on the experiences surrounding this particular study and therefore are subject to the peculiar situations prevalent within the Chiquimula region.

Assumptions

A major assumption underlying this study is that the process used in collecting information from the graduates and their employers will encourage them to express their opinions and attitudes honestly and freely.

There is some political instability within Guatemala. However, the researcher assumes that the political situation is such that the opinions and attitudes of those being studied will reflect their best judgment and not be unduly influenced by current events.

Finally, the results and recommendations from this study may be most applicable to the region served by CUNORI, but it is assumed that information from the study may stimulate questions and possible change in other institutions throughout Guatemala.

Definitions of Key Terms

In order to minimize confusion and clarify the problem, the following terms are defined in the context in which they are used in this dissertation.

Assessment: The process of measuring the quality and quantity of learning and training, using a variety of techniques.

Certificate: A document testifying that one has fulfilled the course requirements of a program.

CUNORI: The Centro Universitario de Oriente, located in the department and city of Chiquimula, in Guatemala.

Curriculum: An organized set of formal educational and/or training objectives.

Diploma in Agricultural Studies Program: The 3-year diploma program offered by CUNORI.

Dropouts: Students who leave the institution before completing all of the requirements, including a thesis, for the diploma.

Effectiveness: A measure of the extent to which an activity or program achieves its objectives.

Evaluation: The process of establishing a value judgment based on evidence about a program or product (Smith & Glass, 1987).

Follow-up study: An investigation undertaken to collect information about the experiences of graduates and dropouts for the purpose of securing data to improve the existing curriculum.

Graduates: Those who have completed the Diploma in Agricultural

Studies Program at CUNORI in Chiquimula, Guatemala, after fulfilling all of the requirements for graduation.

Method/model: A pattern of procedures or an example for imitations or emulation.

Program: An organized set of activities for performing some service.

USAC: The Universidad de San Carlos de Guatemala (University of San Carlos).

Overview

Chapter I contained the background of the study, a statement of the problem, and the purpose and objectives of the research. The research objectives were stated, and the need for and importance of the study were explained. Limitations of the study, assumptions, and definitions of key terms were set forth.

The setting for the study is described in Chapter II. Literature relevant to topics of interest in this study is reviewed in Chapter III. Methods and procedures that were used in conducting the investigation are explained in Chapter IV. The analysis of the data is done on chapter V and the summary, conclusions and recommendations are in chapter VI. Appendices and list of References follow chapter VI.

CHAPTER II

SETTING FOR THE STUDY

Demographic Background

Guatemala is located just south of Mexico and is one of the Central American republics, bordering on Mexico to the north and west; the Gulf of Mexico, Honduras, Belize, and El Salvador to the east; and the Pacific Ocean to the south. The country has a land area of 108,889 square kilometers (42,031 square miles).

Guatemala is the most populous country in Central America. In 1990, the National Institute of Statistics estimated that Guatemala had a population of 9.2 million people. The annual population growth rate is 2.9%, and it is estimated that by the year 2000 the country will have 12 million inhabitants (Instituto Nacional de Estadistica,1990). By the same year, 25% of the population will be of college age, 17 to 30 years old, which translates into an estimated 103,000 potential university students (Universidad de San Carlos, 1987). However, according to national statistics, only 1.6% of the college-age group are likely to be enrolled in the country's universities.

During 1990, Guatemala's economically active population was estimated at 2.9 million, and the gross national product (GNP) of the country was 25,197.4

million quetzales, calculated at 1988 figures (Secretaría General de Planificación Económica,1990, p.27). The agricultural sector, in general, comprises 52% of the economically active population, contributes 26% of the GNP, and annually it generates 67% of the country's foreign exchange currency. Industry in Guatemala is not fully developed. During 1987, it generated 20% of the GNP and employed only 17% of the economically active population. The main products supplied by the national industry are packaged foods, textiles, leather, wood, and iron products. Other sectors that compose the national production system evidenced similar behavior during the year; for example, commerce and services contributed 54% of the GNP and employed 31% of the economically active population.

According to the Bank of Guatemala (Banco de Guatemala, 1990), the socioeconomic situation of the Guatemalan population has deteriorated in the past 15 years. During 1980, sixty-three percent of the population lived in poor conditions, and by 1990 that proportion had increased to 83%. Also, during 1980, thirty percent of the population lived in extremely poor conditions, and by 1990 that figure reached 65% . Inflation is one of the major causes of this economic deterioration because it has risen continuously since 1987 and expanded even more during 1990. To inflation is added the continuous devaluation of the quetzal and the standstill of the minimum wage, which has diminished people's purchasing power and, as a consequence, perpetuated the high levels of poverty.

Education in the National Context

Although literacy is increasing in Guatemala, many people still do not receive more than a few years of primary education. In many families, children are economic assets and leave school early in order to help provide for their family. According to a national sociodemographic survey done by the Instituto Nacional de Estadística (National Statistics Institute), during 1986-87, 42% of the Guatemalan population lacked education and 45% were studying or had some education at the elementary level. Only 9% had education at the secondary level, and 1.6% either were studying, had been studying and dropped out, or had finished some kind of higher education.

As Lourié (1989) pointed out in his book Education and Development: Strategies and Decisions in Central America, the educational system in Guatemala is mainly urban, a direct outgrowth of Spanish colonization. From the beginning of the eighteenth century to the middle of the nineteenth century, the Spanish founded, first, San Carlos University and then various centers of religious instruction in the larger towns. Both the content and structure of the educational system were affected initially by certain European influences, British and German in particular, when colonists from these nations came to replace the Spaniards. Later, North American types of colleges and universities were established, as the opening of the Panama Canal and, later, investment linked to

the exploitation and exportation of tropical fruit drew Guatemala into the sphere of influence of the United States.

The objectives of Guatemala's national educational system are set out in the laws of the republic. The Ministry of Education is in charge of formulating and directing educational policy. It plans and controls the measures needed to guarantee an adequate functioning of the national educational system and promotes community participation in educational development. The constitution of 1965 includes 19 articles related to education (Waggoner & Waggoner, 1971). The goals of education include (a) integrated development of the personality, (b) physical and spiritual betterment, a sense of the individual responsibility of the citizen, (d) civic progress of the nation, (e) stimulation of patriotism, and (f) respect for human rights.

Money for educational development comes from funds allocated in the national budget, resources set aside by the auxiliary education boards and the municipalities, assets controlled by the Ministry of Education, and legacies, subsidies, and donations made by private organizations and individuals.

Higher Education in Guatemala

In Guatemala, higher education is provided chiefly by the national university (Universidad de San Carlos de Guatemala) and by four private universities: Universidad Mariano Gálvez de Guatemala (established in 1966), Universidad Rafael Landívar (established in 1962), Universidad del Valle de

Guatemala (established in 1966), and Universidad Francisco Marroquín (established in 1968). The University of San Carlos, as the national university, is autonomous and functions according to its own statutes.

Higher education in Guatemala is divided according to the cost of the subjects offered. The University of San Carlos teaches the "expensive" subjects (medicine, science, and engineering) and has approximately 80% of higher education enrollment, whereas the subjects that do not require expenditures on infrastructure or high cost (law, letters, social sciences, management, and so on) are taught in four private universities, which share the remaining 20% of students (Lourié, 1989).

The University of San Carlos

The University of San Carlos (USAC), the national university of Guatemala, was founded in 1676. USAC is one of the oldest institutions of higher education in the Americas, and it has the responsibility for organizing, directing, and developing higher education in Guatemala. The main campus of USAC is located in Guatemala City, and branch campuses or regional centers are located in 10 cities throughout Guatemala.

To carry out its educational functions, USAC is integrated by ten faculties; five schools, which are independent of the faculties; and eight regional centers for the training of intermediate-level technicians. Also, it has two centrally run institutes, the Institute of Economic and Social Research and the Institute for Educational Research and Improvement (IIME). The faculties are headed by a

dean and a board of directors consisting of the dean and a secretary and five members; two full professors, two students, and one professional who is not a full professor. Each faculty has schools, departments, and research programs. The faculties award a *Licenciatura,* a professional title, such as engineer or dental surgeon, after 4 to 6 years of study; a doctorate is awarded after 2 additional years and completion of a thesis.

The ranks of the teaching staff are as follows: full professors (who have chairs for life), adjunct professors (who assist the full professors), honorary professors, extraordinary professors, visiting professors, and free professors.

In 1975, Guatemala adopted a 5-year plan (1975-1979) for university expansion. The plan was predicated on the need to decentralize, to coordinate the various universities, and to stress a regional perspective. Decentralization of the university resulted in the formation of a more effective university system, benefiting the entire region.

According to Article 100 of the constitution, the administration of the university is in the hands of the *consejo superior universitario* (Superior University Council), which consists of a rector, the deans of the faculties, a representative of each school who is drawn from the corresponding professional association, one titular professor from each school, one student from each faculty, a secretary, and a treasurer. The university is headed by a rector, who is the legal representative of the university and serves as the link between the university and the government.

Financing

USAC is financed largely by the state. It receives no less than 5% of the annual state revenue, and state aid represents between 70% and 80% of its total Income.

Regional Centers

In 1976, the Superior University Council authorized the functioning of the first University Regional Center in the city of Cobán in the department of Alta Verapaz. By 1990 there were 10 regional centers functioning throughout the country. The regional university centers are academic units that operate in different departments (states) of the country. They operate independently but not in isolation from the university extensions that are ascribed to the humanities faculty of the main campus.

The regional centers are teaching, research, extension, and service units of the University of San Carlos. These centers were created throughout the country to respond to the educational needs of the inhabitants of the region. Their main purpose is to develop programs of regional and national interest according to the policy of regionalization of higher education, which was approved by the Superior University Council on May 26, 1975 (Centros Regionales, 1985). The following are the general principles underlying the creation of the regional centers:

1. Democratization of university education.

2. Decentralization of the university population in the capital.

3. Decentralization of educational services.

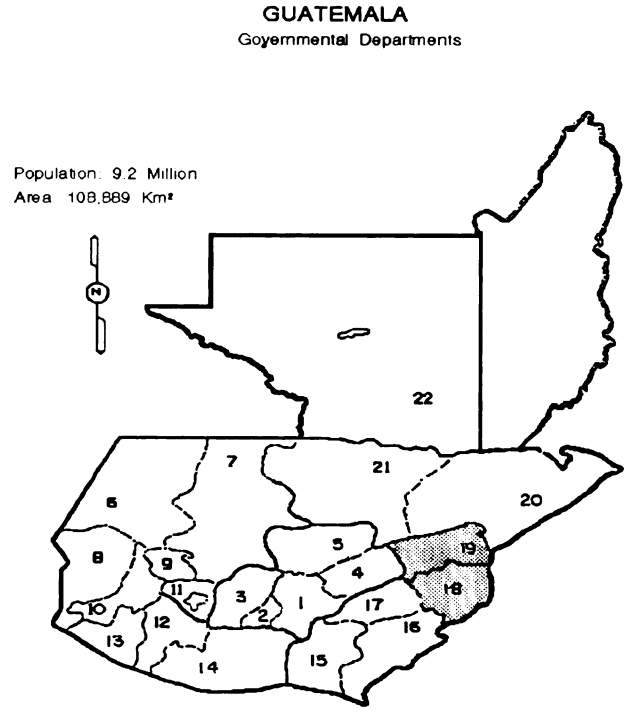
4. Contribution to the socioeconomic development of the country's population in general and of their area of influence.

With the creation of these regional centers, it is hoped that education will be more accessible to the rest of the population, especially those in rural areas, to help with the social and economic development of the country. In addition, there will be less migration for purposes of pursuing university studies, which will help to achieve a more efficient investment in education.

Centro Universitario de Oriente (CUNORI)

The Centro Universitario de Oriente (CUNORI) is located in the eastern sector of Guatemala, in the department (state) and city of Chiquimula. It was organized and inaugurated on February 12, 1977. At the beginning, CUNORI did not have its own infrastructure; it operated for 2 years in one of the local schools in Chiquimula. In 1979, CUNORI moved into the new installations built for the center, where it has been operating ever since. Its area of influence covers the departments of Chiquimula, Zacapa, and El Progreso. (See Figure 1, map of Guatemala.)

Figure 1. Map of Guatemala



DEPARTMENTS

1. Guatemala
2. Sacatepequez
3. Chimaltenango
4. El Progreso
5. Baja Verapaz
6. Huehuetenango
7. Quiché
8. San Marcos
9. Totonicapán
10. Quetzaltenango
11. Sololá
12. Suchitepequez
13. Retahuleo
14. Escuintla
15. Santa Rosa
16. Jutiapa
17. Jalapa
18. Chiquimula*
19. Zacapa*
20. Izabal
21. Alta Verapaz
22. Petén

The general aim of CUNORI is to provide young people at the post-high-school level with a wider and richer education, to prepare them better for adulthood and working life. This broad objective originated from the government's concern to produce a more skilled and adaptable work force.

Specifically, CUNORI aims to:

1. Encourage more young people to seek and obtain qualifications or skills that will be of direct value to them at work.
2. Develop their initiative, motivation, enterprise, and problem-solving skills.
3. Develop closer links between higher education and the productive sector of the region and the country (CUNORI, 1992).

CUNORI is the only higher education institution in the region that offers agriculture-related fields of study. It has the task of supplying graduates to confront regional and national problems in production agriculture. The nature and content of the agriculture-related programs are based on the unique needs and circumstances of the region.

The general long-standing objectives of CUNORI are as follows:

1. To carry out research according to the national reality, for the purpose of studying that reality critically and objectively to derive efficient actions to be taken toward its transformation
2. To know the national reality and the means for its transformation in a process that takes the university student to a rational praxis, one that is of collective benefit.
3. To contribute to the formulation of a national policy regarding the training and allocation of the human resources that the country needs.
4. To integrate the university functions of teaching, research, extension, and service with CUNORI's own educational guidance particular to the needs and characteristics of the departments of its area of influence.
5. To develop, through the integration of these functions, programs for the training of human resources appropriate to the characteristics and possibilities of the departments of CUNORI's area of influence

6. To serve as a learning center for the inhabitants of the departments of CUNORI's area of influence, with short-term educational programs, for a more efficient use of local resources and a better quality of life for the communities served.

7. To serve as a learning center for students in the different academic units of the Center.

8. To carry out, in the departments of CUNORI's area of influence, short-term programs appropriate to local needs.

9. To collaborate with the Supervised Professional Training Programs (Ejercicio Profesional Supervisado) and other extracurricular programs for the different professional careers that are offered at the University of San Carlos according to the respective agreement with each faculty.

10. To contribute to the study and solution of regional and national problems by examining local problems and their relationship to the national reality in a global focus through the integration of the university functions and the efforts of interdisciplinary teams.

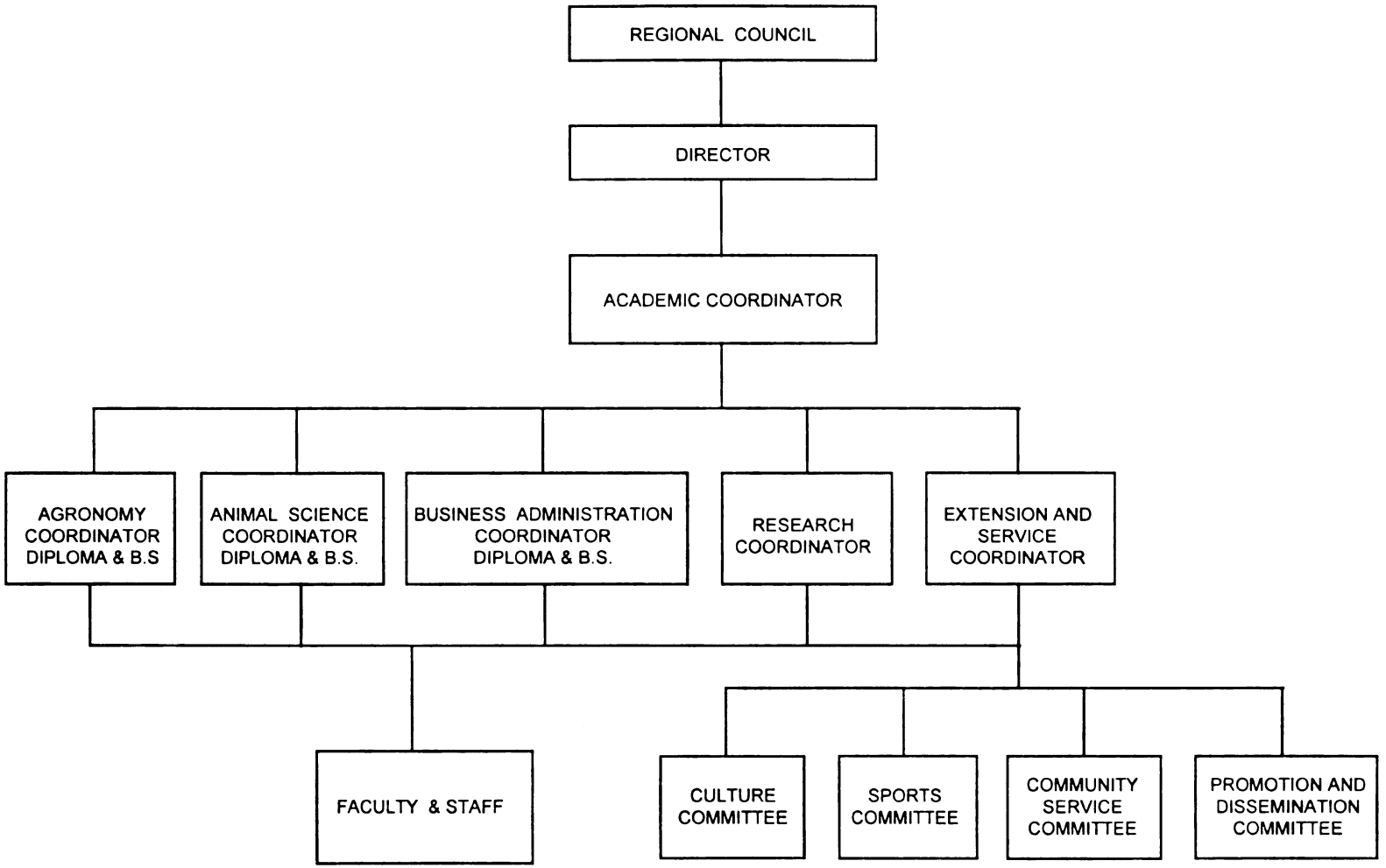
11. To serve as a service and extension center for the different regions of the country in general.

12. To produce goods and services that the region or the country needs, through university activities. (CUNORI, 1992)

Administration

The administration of CUNORI is in the hands of the *Consejo Regional Universitario* (Regional University Council), which consists of a director who presides over the council, an academic coordinator, coordinators of the programs, a representative of the community, a representative of the faculty, one student from each program, a secretary, and a treasurer. The council is the administrative-teaching organ that coordinates at the local level all CUNORI activities. Figure 2 shows CUNORI's organizational chart.

Figure 2 - CUNORI Organizational Chart



The council also has the responsibility of prescribing the rules and regulations for the direction and administration of the center. The center is headed by a director, who is the legal representative of the university and the link between the center and the main campus. The director of the center is appointed by the university rector, as proposed by the General Coordination of Regional Centers. Among other functions, the director represents the center before the local authorities and ensures that everyone complies with the academic and administrative functions of the center.

Programs of Study

The programs of study at CUNORI are planned for both students, who intend to enter the workforce immediately upon graduation, and students who are university bound. Each center develops its own programs of study with the approval of the University Council. When CUNORI was established, three programs of study were approved: Técnico en Horticultura (Diploma in Horticulture) Técnico en Porcicultura (Diploma in Swine Production), and Técnico en Avicultura (Diploma in Poultry Production). Later these programs were changed to Técnico en Producción Agrícola (Diploma in Production Agriculture) and Técnico en Producción Pecuaria (Diploma in Animal Science).

In 1988 a third program was added: Técnico en Administración de Empresas (Diploma in Business Management). One of the long-range goals of CUNORI is to offer B.S. degrees in all three programs. The University Council

has approved the expansion of all programs, but because of lack of funding, CUNORI officials have not been able to start offering B.S. degrees in all of the programs. Because of interest expressed by most graduates in 1989 with Diplomas in Business Management, this program was expanded to offer a B.S. degree. In 1994-95, CUNORI graduated the first class of students with a B.S. degree in Business Management.

CUNORI offers a 3-year diploma lateral degree program that prepares students for immediate employment, with the option to continue studying for a B.S. degree at the main campus. However, because the programs at CUNORI are specially tailored to train students to meet immediate employment needs, the curricula are influenced by trends and developments in the Production-Agriculture-related job market. For example, the Técnico diploma degree program, as an intermediate degree, is specifically geared toward preparing graduates for employment at public or private agriculture-related institutions, banks, or other financial institutions. Types of jobs for which these graduates are prepared include extension agent, agricultural agent, assistant researcher, forestry agent, consultant, accountant, teacher, farm manager, and administrator. The type of job will depend on the type of diploma degree program from which the student graduates.

CUNORI currently offers three agriculture-related programs: Técnico Agrícola (Diploma in Agriculture), Técnico Pecuario (Diploma in Animal Science), and Técnico en Administración (Diploma in Agribusiness). The three programs

cover the following areas of study: (a) basic area, (b) social humanistic area, and (c) general professional area. Each program has a specific objective. For the Técnico Agrícola diploma, the main objective is to:

> train professionals who are competent to diagnose and manage agricultural production systems, with a scientific-technological knowledge of the laws of nature and of society, with the aim of increasing production and obtaining better-quality agricultural products and better preservation and management of renewable natural resources. (CUNORI, 1991)

Through this program, students are taught to be more productive in their work, thereby contributing to the optimized production of goods and services that society needs.

CUNORI follows the semester system of education similar to the United States. The course of study is considerably more structured, allowing less leeway than in the United States. The curriculum is developed by the respective programs, following a model offered by the coordinator of regional centers at the main campus. Once a program is developed, the University Council and the General Coordination of Regional Centers have to approve it as it is or with the changes they think are needed. The curricula for the diploma programs that CUNORI offers are presented in Tables 1, 2, and 3.

Table 1: Curriculum for the Diploma in Production Agriculture.

Term	Course No.	Course Title
I	096	Biology
	113	Chemistry
	114	Mathematics I
	116	Scientific Methods
	117	Technical Drawing
	118	Practical Agriculture
II	119	Mathematics II
	120	Vegetal Anatomy and Morphology
	121	Agrometeorology
	123	Basic Grains
	136	Rural Sociology
	151	Organic Chemistry
III	052	Physics I
	122	Political Economy
	125	Systematic Botany
	126	General Entomology
	142	Tropical Fruit Growing
	146	Statistical Methods
IV	076	Topography I
	104	Biochemistry
	129	Soils I
	131	Agrarian History of Guatemala
	143	Regional Crops
	152	General Ecology
	154	Experimental Design
V	072	Agricultural Mechanization
	088	Vegetable Physiology
	144	Nontraditional Crops
	145	Soils II
	153	Soil Management and Conservation
	155	Genetics
VI	091	Phytopathology
	110	Administration Principles
	147	Professional Supervised Practice
	156	Weed Control
	157	Hydraulics
	158	Phytogenetics

Source: CUNORI (1993).

Table 2. Diploma in Animal Science

Term	Course No.	Course Title
I	096	General Chemistry
	058	General Biology
	114	Mathematics I
	097	Research Methods and Techniques
	035	Introduction to Animal Science
II	119	Mathematics II
	059	Organic Chemistry
	098	General Economics
	069	Botany
	099	Biologic Physics
	100	Zoomorfia
III	133	Biochemistry I
	134	Physics and Chemistry of Soils
	135	Zoology
	117	Technical Drawing
	036	Biostatistics
	136	Rural Sociology
IV	137	Biochemistry II
	138	General Ecology
	139	Comparative Anatomy
	140	Agrostology and Toxic Plants
	141	Rural Construction
	110	Administration Principles
	131	Agrarian History of Guatemala
V	150	Reproduction and Artificial Insemination
	040	Domestic Animals Common Diseases
	080	General Genetics
	037	Animal Nutrition
	102	Aquaculture
	049	Seminar
VI	045	Swine Production
	046	Cattle Production
	044	poultry Production
	047	Sheep and Goat Production
	147	Professional Supervised Practicum

Source: CUNORI (1993).

Table 3. Curriculum for the Diploma in Business Management

Term	Course No.	Course Title
I	159	Administration Research Methodology
	160	Administration Economic Foundations
	161	Socioeconomy
	162	Foundations of Philosophy
II	163	Economic History of Central America
	164	Economic Theory
	165	Agroindustry
	166	Mathematics I
	167	Computers I
III	168	Agroindustry II
	169	Legislation Applied to Administration
	170	Mathematics II
IV	171	Administration I
	172	Agroindustry III
	173	Marketing I
	174	Financial Mathematics I
	175	First Practicum
V	176	Administration II
	177	Marketing II
	178	Quantitative Methods
	179	Financial Mathematics II
VI	180	Administration III
	181	Marketing III
	182	Quantitative Methods II
	183	Financial Administration I
	184	Second Practicum

Source: CUNORI (1993).

A diploma may be awarded after 6 semesters of study, i.e., 3 years, but for this, the student has to pass successfully all the subject matter throughout the program. A semester lasts 15 to 17 weeks, and each subject carries a number of credits equivalent to the sum of lectures, laboratory, and/or fieldwork. The credit requirements for graduation vary slightly--from 125 to 130--among the programs of study. After 3 academic years of study, students who satisfactorily meet the institution's standards of achievement for graduation are awarded a diploma degree in the program of study.

The grading scale is from 0 to 10; 6 is the minimum passing grade. Professors have the freedom to determine how and when students will be evaluated. The final grade may represent a composite of any of the following: classwork, exams, and/or papers.

Admission to CUNORI

Admission to CUNORI is competitive, although students who have successfully completed any type of secondary school are eligible to apply. Admission is based on a student's performance on an entrance examination and on the availability of spaces. To apply for the CUNORI entrance exam, a student must present (a) an original birth certificate, (b) a photocopy of the secondary school certificate, (c) general certification of study, and (d) a vocational training card.

Drop-out problem at CUNORI

One of the indicators of possible problems in the nature of the CUNORI curricula and programs of study has been the large number of students that drop out before completing all the requirements for the diploma. CUNORI records showed that in 1989 there were 10 graduates out of 95 that were registered. The drop out problem was the same for all three areas of study. If we add to the drop out problem the information that fewer students have enrolled in the recent years, it makes the problem bigger. As explained before, drop outs were not included in the study population. The curriculum review committee appointed by CUNORI administration studied the drop out problem.

Following is a review of the findings of the study. The curriculum review committee's follow up study of the drop outs shows the major reasons for leaving school. One of the major reasons was because the students have to work full time to earn a living. This is a major problem since the majority of classes at CUNORI are during the day and very few during the night. CUNORI faculty need to pay more attention to the fact that the students work full time and may not be able to attend classes or come late. Therefore, the students will need more help in order for them to continue studying. The majority of drop outs (69%) leave school after or during the first semester. Other reasons are that CUNORI faculty do not assist the students, they are not well prepared to teach and that they use obsolete teaching methods.

As suggestions, the drop outs would like CUNORI to consider other

options of study such: as engineering, law, economics and medicine. They would also like that CUNORI offer more courses after 5:00 pm, and /or to offer summer school for those that work. They suggest that the administration and students evaluate more closely the faculty and improve their teaching methods. The library needs to be updated and there is a need for a better scholarship program for those students that really need them.

The Role of CUNORI in the Region

One of the reasons for having the regional centers is to train high-quality graduates who can help with the development of the region and the country. Because Guatemala's economy is based on agriculture, which employs 52% of the active work force, education is aimed at increasing agricultural production in the region. CUNORI has played and will continue to play a vital role in the development of the eastern sector of Guatemala, providing quality graduates who can contribute to this development effort.

The influence that CUNORI has had at the regional level can be assessed by locating where the majority of the graduates are working. Most of them are working for development projects that the government and other organizations have undertaken in the area. The demand for graduates has not been satisfied; that will take some time to happen because there is great activity in the region, and there is demand for quality graduates in production agriculture.

Research and Extension

CUNORI offers an agricultural study program in which each student must pursue some kind of research. Most lecturers and professors are charged with the responsibility of extending the scope of agricultural knowledge through research, publication, and extension. However, research in CUNORI's academic programs is hampered by lack of funding and lack of time on the part of staff members. Low salaries and lack of research funds compel staff members to devote a substantial amount of time to outside work. Moreover, gaining access to up-to-date information is difficult, if not impossible, due to language barriers. Therefore, staff members often engage in research only to the extent that this is required by their teaching duties, and even then, in most cases, they do so only to a limited extent.

At CUNORI, research is undertaken mainly at two levels. First, there is research by graduating students, which is primarily thesis research in which the academic program plays an advisory and guidance role. This type of research dominates the research activities in these programs. Second, there is research carried out by staff members at the departmental and/or university level, where projects may be disciplinary or multidisciplinary in nature. However, such research is of limited scope because the main emphasis is on teaching, and also for the reasons mentioned above.

Lately CUNORI has been involved in providing services to the community through extension and service programs. CUNORI has an agreement with the

International Agriculture Institute at Brigham Young University in Provo, Utah, to help in the development of the region. The two groups jointly have undertaken an agricultural program to help small farmers and their families achieve a better quality of life. As an institution of higher learning, CUNORI has an important role to play in efforts to provide solutions to Guatemala's socioeconomic problems and in the formulation of new strategies for development. CUNORI personnel believe that, to be fully effective, a university should be a part of the community in which it is situated. As an institution of higher learning it has something to contribute to as well as to receive from the environment in which it operates.

CHAPTER III

REVIEW OF LITERATURE

This chapter contains a review of literature on topics related to the present study. Included are sections on concepts related to outcome assessment and institutional effectiveness, evaluation, evaluation models or approaches, evaluation in higher education, evaluation of the occupational or professional curriculum, and follow-up studies.

Outcome Assessment and Institutional Effectiveness

Assessment has a narrower definition than evaluation but a broader meaning than measurement. It refers to the process of gathering data with which to measure student achievement and development (Gray, 1989), and fashioning these data into an interpretable form (Barak, 1982). The data can then be used by decision makers for program-evaluation purposes. If a broad definition of assessment is adopted, then assessment and evaluation begin to merge into a common effort to understand and judge the merit and worth of teaching and learning within a course, curriculum, educational program, sequence of study, department, unit, or institution (Davis, 1989).

The purposes of assessment are many. For example, Ewell and Boyer (1988) cited the following: to evaluate curricula, to demonstrate external

accountability, to recruit students, to raise funds for institutions, and to change the way teaching and learning occur in individual classrooms. Jacobi, Astin, and Ayala (1987) identified the following purposes of assessment: to provide information about students, change and development, to establish accountability for external agencies, to evaluate programs, to analyze cost effectiveness, and to set goals. Davis (1989) provided a more meaningful, less complex, and conceptually clearer way to think about the purposes of assessment by using the major distinctions that are made between formative and summative evaluation. According to Davis, institutions undertake assessments to improve what they are doing (formative evaluation) or to make decisions about resources, institutions, programs, faculty, or students (summative evaluation).

As part of the decision-making process, university officials need to conduct repeated and continuing assessment of their programs to satisfy the needs of the students and the society. Assessment is not done solely for its own sake. Institutions assess to improve their programs or to determine program effectiveness. In higher education, the prevailing emphasis in evaluation studies has been on measuring student outcomes (Conrad & Eagan, 1989). Assessment of student outcomes and institutional effectiveness has been a significant trend in higher education (Nichols, 1991), especially with regard to the activities of regional and professional accreditation associations (Fauser, 1992; Martini, 1989).

Outcome assessment is an evaluation of educational effectiveness that considers the final product of the institution, the graduate, and that examines either the competencies necessary for professional practice or the results of the practice itself (Martini, 1989). Criteria of the U.S. Secretary of Education specify that assessments are expected to evaluate the educational effectiveness of a program through a variety of measures, such as (a) student achievement, (b) employer evaluations, and (c) placement rates (Fauser, 1992; Martini, 1989). In other words, assessment of outcome focuses on the final product of the educational institution, the student.

Johnson County Community College (JCCC) in Overland Park, Kansas, uses a two-step model for assessing their programs (Seybert, 1993). First, administrators, researchers, and teachers pose a set of generic questions that deal with student outcomes that are relevant to employers. Then, data sources or measures are identified that can provide answers to those questions. JCCC uses the following five generic questions to determine the effectiveness of their programs:

1. Do students accomplish appropriate community college educational objectives?

2. How do students evaluate community college experiences and services?

3. Do program graduates obtain appropriate employment?

4. How do employers evaluate graduates' training?

5. Is the college meeting local/regional labor market and economic development needs?

According to Seybert, relevant data for such an assessment can be collected by using a relatively small number of measurement techniques, such as student records, student evaluations of instruction, follow-up surveys (of graduates and employers), impact studies, and public surveys.

An outcome assessment provides one of many pieces of information that are available to practitioners about institutional performance (Weiss, 1988). Information about outcomes is useful in establishing a context for decision making, rather than in determining the single correct decision (Ewell, 1983). Increased use of student-outcome information often leads to changes in the way certain kinds of decisions are approached--in the kinds of alternatives considered, for example--rather than in the substance of decisions (Jacobi et al., 1987). Outcome assessments can be useful tools in determining, for example, which subjects should be retained in a crowded curriculum and/or which subjects should be added. But even more important, as Martini (1989) pointed out, outcome assessments can be used to measure how successfully the institution and programs are meeting their goals.

For a comprehensive assessment of an institution, the questions of most interest to the stakeholders--the potential users and audience--need to be defined. The following ten questions were generated, in part, by faculty members of the University of California at a conference on "Assessing the Lower Division" (Davis, 1989)

1. Who applies to and enrolls in the university, and how well prepared are these students?

2. What do students learn?

3. What do students value?

   a. To what extent do students show interest in and respect for different cultures and different points of view?

   b. To what extent are students socially responsible and involved in the community?

4. Who is dropping out?

5. What is the quality of undergraduate teaching?

   a. Who teaches undergraduate courses, particularly in the lower divisions?
   b. How effective is undergraduate teaching?

   c. To what extent are faculty interested in undergraduate teaching?

   d. To what extent do lower-division students have opportunities for quality contact with professors?

   e. What is the level, nature, and quality of attention given by departments to the training of teaching assistants (TAs)?

   f. How effective are services provided to faculty and TAs for teaching improvement?

6. What is the quality of the curriculum?

   a. What reform efforts have taken place or are under way?

   b. How accessible are lower-division courses? Can students get into the courses that they need or want?

   c. What is the effectiveness of the lower-division curriculum in satisfying students, needs to explore a diversity of subjects and to pursue a major?

   d. What is the quality of departments with large undergraduate enrollments?

e. What are the class-size experiences of students?

7. How effective is the advising that students receive?

8. How do students feel about their undergraduate experiences?

9. How effective are support services?

10. What happens to students after they graduate?

For institutions that have not already established a tradition of comprehensive assessment, it is important to initiate any new outcome assessment modestly, with minimal disruption of institutional activities (Jacobi et al., 1987). A more comprehensive and complete system can evolve from these modest beginnings.

Evaluation

Definitions of Evaluation

Evaluation has been defined in many ways, according to its purpose and function (Nevo, 1986). Tyler (1950) defined evaluation as "the process of determining to what extent educational objectives are being realized" (p. 69). Another widely accepted definition of evaluation is that it is the provision of information for decision making (Alkin, 1969; Cronbach, 1963; Stufflebeam et al., 1971). Evaluation also has been defined as the systematic investigation of the worth or merit of some object (Joint Committee, 1981) and as the assessment of merit or worth (Scriven, 1967; Stufflebeam, 1974). Worthen and Sanders (1988) stated that, in education, evaluation is

the formal determination of the quality, effectiveness, or value of a program, product, project, process, objectives, or curriculum.

For the purposes of this research, the definition of evaluation by Smith and Glass (1987) was considered most appropriate. These authors defined evaluation as "the process of establishing value judgment based on evidence about a program or product", (p. 30). In this definition, a program refers to any organized set of activities for performing some service, whereas a product may be the outcomes (graduates) of the program. By "evidence," Smith and Glass meant the result of design, measurement, analysis, and reporting of data pertaining to the features of the program and its effects. The special features of evaluation, as a particular kind of investigation, include concerns with needs, description, context, outcomes, comparisons, costs, audience, utilization, and making and supporting sound value judgments (Davis, 1989).

Purposes of Evaluation

Evaluations are undertaken for a variety of reasons: to judge the worth of ongoing programs and to estimate the usefulness of attempts to improve them, to assess the utility of innovative programs and initiatives, to increase the effectiveness of program management and administration, and to satisfy the accountability requirements of program sponsors (Rossi & Freeman, 1982).

Wilson (1988) stated that there are at least five major reasons for

establishing a program-review process: (a) to help programs improve, (b) to meet multicampus or state-level review mandates, (c) to demonstrate institutional responsiveness to external constituencies, (d) to provide a basis for allocating and reallocating resources, and (e) to provide information to be used in making decisions about program discontinuance.

According to Branskamp (1980), there are multiple purposes for evaluation, but the three major ones are program improvement, resource allocation, and accountability. Evaluation is a valuable means to the end of improving the performance of individuals and institutions. Miller (1979) said that evaluation facilitates progress toward goals and objectives, and it is essential in determining both efficiency and effectiveness. As part of the decision-making process, universities need to conduct repeated and continuing assessments of their programs to satisfy the needs of the students and of society.

In the instance of ongoing programs, as is the case in Guatemala, evaluations help determine the degree to which the programs are effective--that is, how successfully they are reaching the intended target populations and providing the resources, services, and benefits envisioned by the program sponsors and designers. Knowledge of the extent to which programs have been implemented successfully and the degree to which they have had the desired outcomes is indispensable to program decision makers, stakeholders, and policy makers. Evaluation of higher education assists in the

development of programs that meet the needs of society in general and individuals in particular. Evaluation, in essence, is a procedure through which information is obtained by various means, from one source or several sources, to use in making judgments about the course, program, or institution that is being examined (Yoder, 1983).

Although it occasionally may be necessary to conduct an evaluation to comply with some external mandate, the real strength of evaluation lies in its potential to bring about educational improvement.

An evaluation for program improvement can be based on the view that change is iterative, requiring periodic monitoring and corrective input, or it can focus primarily on the outcomes of the change effort, resulting in a summary judgment. These two broad purposes--formative and summative--are not mutually exclusive, but evaluation designers need to choose where to place the strategic emphasis (Conrad & Eagan, 1989).

Evaluations that are formative in emphasis are conducted on an ongoing basis to determine the effectiveness of a project during implementation and to inform improvement (Scriven, 1967). This approach is favored by those who desire continuous feedback on which to base ongoing adjustments to their implementation strategy. In contrast, evaluation of the effectiveness of program change at the end of an arbitrary period constitutes a summative approach (Scriven, 1967). According to Conrad and Eagan (1989), this is more common than a formative approach and finds wide

application in educational settings.

Most kinds of student-outcome measurements address the end product of a program. Some evaluations are comprehensive and consider a holistic approach that includes both formative and summative evaluations. Others are directed at specific areas of concern and may include either type of evaluation.

Evaluation Models or Approaches

The many overviews of evaluation models in the literature can provide a helpful orientation to the field and can aid in determining which approach is best suited to the needs of a particular institution (Conrad & Wilson, 1985; Gardner, 1977; Madaus, Scriven, & Stufflebeam, 1983; Shapiro, 1986). Worthen and Sanders (1987) classified approaches to evaluation into the following six categories:

1. **Objective-oriented approach.** This approach focuses on specifying goals and objectives and determining the extent to which they have been attained.

2. **Management-oriented approach.** Here, the central concern is to identify and meet the information needs of managerial decision makers.

3. **Consumer-oriented approach.** The central issue in this approach is to develop evaluative information on educational products, broadly defined, for use by educational consumers.

4. **Expertise-oriented approach.** This approach depends primarily on the

direct application of professional expertise to judge the quality of educational endeavors.

5. **Adversary-oriented approach.** Here, the central focus of the evaluation is planned opposition to the points of view of different evaluators (pro and con).

6. **Naturalistic and participant-oriented approach.** Here, naturalistic inquiry and involvement by participants are central in determining the values, criteria, needs, and data for evaluation.

Pace and Frienlander (1978) described four models or approaches to evaluation, which are as follows:

1. **Psychology models.** In these types of models, evaluations are carried out by comparing performance data with clearly specified objectives. This type of evaluation is widely used for the improvement of programs, instruction, testing, and learning.

2. **Decision models.** These types of models assume that evaluation should be of practical use to decision makers.

3. **Scientific models.** These models use experimental research designs in which variables are manipulated and controlled so that the results can be explained. This demands technical expertise on the part of the evaluator.

4. **Change models.** Also called self-study of learning models, these models emphasize the use of evaluation for individual learning and of institutional self-study for institutional improvements. Thoughtful

consideration of group processes is required.

According to Conrad and Wilson (1985), there are four major types of evaluation models: (a) goal-based model, (b) responsive model, (c) decision making model, and (d) connoisseurship model. Characteristics of these four evaluation models are summarized in the following paragraphs.

1. **Goal-based model.** Variations on this model predominate in evaluation efforts in higher education and are grounded in the work of Tyler (1949). Evaluating the attainment of objectives is at the heart of the goal-based approach. Previously established program goals, objectives, and standards of performance are identified, program outcomes are measured, and a judgment is made, based on the congruence or discrepancy between planned objectives and demonstrable outcomes (Gardner, 1977). Although a goal-based approach is typically summative in intention, Provus (1971) expanded the scope of the model to serve formative purposes as well, by including analysis and interpretation of intended program processes in addition to outcomes.

2. **Responsive model**. The responsive approach is organized broadly around the concerns and issues of stakeholding audiences (Guba & Lincoln, 1981). Originally developed by Stake (1975), the responsive model stresses that evaluation efforts should not be driven narrowly by program goals, but rather that an understanding of unintended effects (Scriven, 1973) and of stakeholder concerns is necessary for interpreting outcomes. The design of a

responsive evaluation is an ongoing process because each step is informed in part by previous activity (Guba & Lincoln, 1981).

3. **Decision-making model.** Some educators believe that the ultimate purpose of an evaluation effort is to inform administrative decisions. Thus, this model is organized around the decision-making process. The most widely known decision-making model is the Context, Input, Process, Product (CIPP) model (Stufflebeam et al., 1971), which holds that the different types of decisions inherent in the evaluative process require different kinds of evaluation activities. Four types have been identified: (a) context evaluation, which helps decision makers determine goals and objectives; (b) input evaluation, which helps clarify alternative ways of achieving program goals and objectives; (c) process evaluation; and (d) product evaluation, which provides feedback to decision makers with information as to whether a program should be continued, modified, or terminated. Although the CIPP approach has not been widely applied in higher education, the number of institutions initiating decision-oriented evaluation is increasing (Conrad & Wilson, 1985).

4. **Connoisseurship model.** In many instances, evaluations are entrusted to persons whose expertise qualifies them to judge the relative merits of a program in all its complexity, subtlety, and nuances. Under the connoisseurship model, the connoisseur or expert alone guides the evaluation, balancing and comparing information gleaned through documents,

interviews, and observation with a continuous, more intuitive awareness and sense of appreciation, which Eisner (1976) likened to the appreciation of art. The visits of accreditation review teams are based partly on this model. Team members, extensive experience gives them a connoisseurship on which to base their judgments about program quality.

Evaluation in Higher Education

Evaluation plays an important role in higher education. Borg and Gall (1983) observed that educational evaluation has attracted much interest from the government, as public administrators have come to view evaluation as an important tool in policy analysis, in the political decision-making process, and in program management. Many writers have viewed evaluation as an activity that comes periodically in conjunction with accreditation procedures (Fauser, 1992; Martini, 1989; Miller, 1979). Realistically, administrators cannot wait that long to find out how successful they have been. Program evaluation has to be an ongoing activity (Sims, 1992), one that is planned and conducted in a systematic manner. For this reason, evaluation of higher education programs often is dreaded and avoided.

Evaluation is a valuable means to the end of improving the performance of individuals and institutions. It facilitates progress toward goals and objectives, and it is essential in determining both efficiency and effectiveness (Miller, 1979). Evaluations in higher education typically focus on the goals and objectives of the program, processes used in program

implementation, and resources available for the program. As part of the decision-making process, universities need to conduct repeated and continuing evaluations of their programs to satisfy the needs of the students and of society. Every university should know where it is going, what human and material resources are needed to get there, and how well it is progressing toward where it wants to go.

The literature contains numerous accounts of assessment and evaluation practices that are used in higher education, ranging from statewide assessment plans (Banta & Fisher, 1984), to institutional assessment plans, to departmental and program-level evaluations (Conrad & Wilson, 1986). Although these descriptions often contain ideas worth considering in designing evaluations, Ewell (1985) cautioned that because each project is distinctive, none should prompt direct imitation. Ewell suggested that evaluators should glean an understanding of the choices made in project design and, if possible, the consequences that follow from these choices.

According to Dressel (1971), a comprehensive evaluation process in higher education programs may focus on three distinctive aspects: the environment, the process, and the results. He stated that the environment, which comprises the characteristics of the scene in which education takes place, in great part is based on human interactions (student with student, student with faculty, faculty with faculty), as well as on physical facilities.

The environment stimulates learning, which affects and is affected by the formal learning processes that are deliberately planned to promote students, education. As such, evaluation that is focused on the environment examines instructional and library facilities, extracurricular cultural programs, residence halls, student activity centers, and the climate of learning generated by these facilities.

Evaluation focused on the process, which is the quality and organization of the learning experience provided, involves study of the organization and the quality of learning experiences provided. This includes an examination of the process of curriculum development because this process strongly influences the receptivity of faculty and students to the program.

Evaluation focused on the results, which is the progress and achievement of students, is primarily concerned with the outcomes of a program. This involves an evaluation of the effectiveness of a course or of the whole program. Student achievement constitutes a major element in such an appraisal, in addition to evaluation that concentrates on the course, the practice, and the program as affecting agents.

Dressel (1971) believed that the environment, the process in which the faculty members are actively involved, the results as found in student achievement, and the interrelationships of these three elements form a useful trichotomy for program evaluation in higher education. The environment must

be examined in relation to its influence on educational experiences and objectives. Similarly, the daily process of education should be assessed, and the results of a program should be examined.

Most educational programs are, to some extent, student oriented, and programs in higher education are no exception. Currently, there is great concern about how a program can best meet students, needs. One of the major evaluation models considered most appropriate for use in evaluation in higher education is the CIPP model developed by Stufflebeam et al. (1971). The CIPP model is considered most appropriate because it illustrates how evaluation could contribute to the decision-making process. This model portrays an evaluation scheme that is both comprehensive and systematic. The CIPP model would also complement Dressel's (1971) approach to evaluation, which focused on the environment, the process, and the results.

The CIPP model includes four types of evaluation: (a) context evaluation, (b) input evaluation, (c) process evaluation, and (d) product evaluation. The diagram shown in Figure 3 illustrates the various aspects of evaluation that relate to curriculum initiation, structuring, and operation (Finch & Bjorkquist, 1977).

The four elements of evaluation, according to Finch and Crunkilton (1984), include:

1. **Context evaluation,** which deals with whether or not to offer a curriculum and, if so, what its parameters will be, including

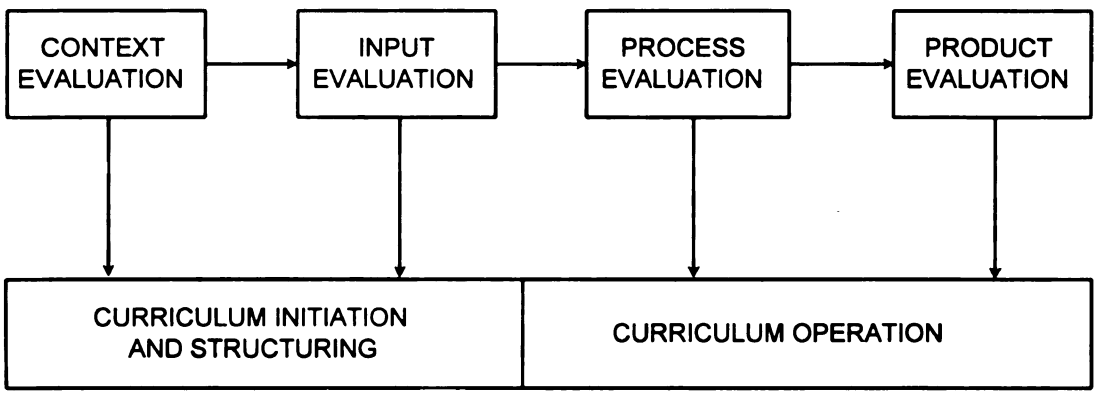
focus, goals, and objectives.

2. **Input evaluation,** which relates to deciding what resources and strategies will be used to achieve curriculum goals and objectives.

3. **Process evaluation,** which focuses on determining that effect the curriculum has on students in schools.

4. **Product evaluation,** which deals with examining the curriculum's effects on former students. It is used to determine the effectiveness of the project after it has run its full cycle. Its objective is to relate outcomes to objectives and to context, input, and process. It also assesses the extent to which ends are being attained with respect to change efforts within the system.

Figure 3. A framework for curriculum evaluation



Source: Finch and Crunkilton

Context, input, process, and product were espoused by Stufflebeam (1969) as the key elements of a comprehensive evaluation. Thus, it is appropriate to use these four elements as a foundation for meaningful curriculum evaluation. Context and input evaluations are employed as the

curriculum is being initiated and structured. Process and product evaluations relate to curriculum operation. Process evaluation focuses on decisions associated with the effects of the curriculum on students (e.g., whether or not content is learned by students), whereas product evaluation is more closely aligned with decisions about the effects of the curriculum related to former students (e.g. , whether or not the curriculum affected graduates, employability (Finch & Crunkilton, 1984),

Regarding product evaluation, major consideration must be given to ways the educational program has aided former students.

In the CIPP model, evaluation serves four types of decisions, which correspond to the four types of evaluations discussed earlier:

1. Planning decisions, which determine the selection of goals and objectives; these correspond to context evaluation.

2. Structuring decisions, which relate to strategies and procedures for achieving the objectives; these go with input evaluation.

3. Implementing decisions, which are those involved in carrying out the strategies or action plan; these correspond to process evaluation.

4. Recycling decisions, which are used in determining the relationship of attainments to objectives and whether to continue, terminate, evolve, or modify the activity or the program; these correspond to product evaluation.

In developing countries, there is a critical need for program evaluation

because of these countries' numerous problems, the consequent need for many higher education programs, the lack of models for comparison, the severe limitations on resources and funding, and the need to deal with political pressures for particular programs (Greenberg, 1981). The present study is concerned with the effectiveness of CUNORI's educational programs in preparing students for future employment. Therefore, one focus of this study will be on product evaluation. Evaluation must accomplish more than just focusing on the student in school. Major consideration must be given to ways the program has aided former students. Product evaluation uses former students as a focal point in determining this aspect of program quality (Finch & Crunkilton, 1984). The end product of any program is the graduate, and this product, as well as his or counterpart who did not graduate, needs to be studied if realistic statements are to be made about the worth of the educational program.

Evaluation of the Occupational or Professional Curriculum

Given reasonable costs, the viability of occupational or professional educational programs for training depends to a large extent, like the rest of the educational system, on its efficiency and quality. When giving consideration to program evaluation, it is important to distinguish between the two types of evaluation: formative and summative (Conrad & Eagan, 1989; Scriven, 1967). Formative evaluation of occupational programs is used to improve them while they are being developed. This sort of evaluation

typically is conducted by someone such as a program developer who is familiar with the program materials and/or has worked closely with them. Summative evaluation, on the other hand, involves the examination of a complete item to determine its effect on the potential consumer. Unbiased persons from outside the organization are brought in to conduct the summative evaluation (Scriven, 1967).

Of the several evaluation models described in the literature, the CIPP decision-making model is best suited to evaluating occupational or professional programs. The CIPP model holds that the different types of decisions inherent in the evaluation process require four different kinds of evaluation activities: context evaluation, input evaluation, process evaluation, and product evaluation. Each activity is used to evaluate a different aspect of the program from initiation through process and outcomes.

A program evaluation can take a broad, comprehensive view, addressing a host of factors that affect the implementation and outcomes of change (Conrad & Eagan, 1989). For example, the assessment plan at the University of Arizona places major emphasis on the total undergraduate experience, taking into account the initial capabilities of students, the academic curriculum and extracurriculum, elements of the institutional environment, and a broad range of student outcomes (Conrad, 1987). Such large projects are characterized by great complexity and ambiguity, but they also hold the potential for rich analysis.

An evaluation effort may be aimed specifically at measuring and judging the effectiveness of curricular change from as narrow a perspective as desired. The assessment program at the University of Arizona, in addition to its more global perspective, provides for specific evaluation efforts to respond to current questions that arise within the institution (Dinham, 1988); shorter-term, focused attention is given to special problems and concerns.

Evaluations designed to judge the effectiveness of specific programs or isolated curricular modifications may be less hampered by complexities of the sort found in comprehensive efforts, but their findings may also have more limited applications (Conrad & Eagan, 1989). Inevitable limits on resources and time make it advisable to restrict the scope of a project to those areas of greatest concern that can be dealt with fully. Because the present study is being conducted to assess the effectiveness of educational programs (outcomes), the focus will be on the product evaluation part of the CIPP evaluation model, which provides decision makers with information as to the effectiveness of the program. To gain a complete picture of the educational experience, an institution must include elements of context, input, process, and product evaluations.

Product evaluation typically takes place in the field, with information gathered from sources such as employers, supervisors, and former students. These sources of information are extremely important because process evaluation deals only with short-range in-school effects (Wentling, 1980).

Measures associated with product evaluation must be selected with care to ensure that an accurate assessment is made of program effectiveness. Information that may be gathered by means of questionnaire items includes worker mobility, salary, unemployment, and additional training taken by the worker (Bjorkquist & Finch, 1969).

Evaluating the curriculum and the program would be the logical step for curriculum decision makers to take in conducting a product evaluation. The curriculum and the program need to be reviewed, revised, and modified in relation to their quality and quantity, as well as their relevance and adequacy. In this regard, Garrity (1984) pointed out that decision makers are faced with the task of reviewing program objectives, course requirements, and course content. The questions that need to be asked are: Are the programs meeting existing or expected manpower needs? Are the graduates of the program able to perform adequately once they have entered the job market? Does the program include extraneous and outdated material? Wentling (1980) concurred on this issue and further suggested that:

> An evaluation approach must do more than analyze the extent to which a given program had adhered to an original plan or attained its primary goals and objectives. Evaluation must assess the objectives themselves and determine if they are realistic and appropriate to the on-the job situation encountered by the learner. (pp. 5-6)

One of the ways to evaluate a program is to seek the opinions of those who have gone through the program. Follow-up studies of recent graduates who are currently employed can provide pertinent information

about the relevance and adequacy of the curriculum or the effect of the program on graduates, current job performance. According to Garrity (1984), graduates are in the best position to let their alma matters know the strengths and weaknesses of a program as they experience them in the first few months on the job.

Along with follow-up studies of graduates, surveys of students who elect not to continue their education also can reveal useful information. Institutions may find these students, evaluations of educational programs to be a helpful means of assessing the effectiveness of those programs (Nichols, 1991).

Equally important indicators of institutional effectiveness are an institution's graduates who successfully continue their education at other institutions. Similarly, surveys of employers of these graduates will provide an opportunity to cross-validate the information supplied by the graduates. Garrity (1984) pointed out that employers "naturally know what they expect in a new employee and are usually only too willing to let the institution know how well graduates meet these expectations" (p. 41). Thus, former students are considered prime sources of data for curriculum or program evaluation. Paul (1975) suggested that follow-up of former students is essential because "it provides a periodic feedback mechanism for planning, helps to determine manpower and supply, and provides an important input for resource allocation decisions" (p. 1).

Follow-Up Studies

With the primary attention of assessment activities in higher education now focused on student outcomes, those who are calling for more and better assessment have emphasized such approaches as:

1. Standardized tests of student knowledge, general as well as specialized.
2. Follow-up studies of graduates and their careers.
3. Studies of student attrition and retention.
4. Surveys and interviews of students to discuss their perceptions of the quality of their educational experiences, the climate of their institutions, and gains from their educational experiences.

Although many approaches are used, the follow-up survey has been recognized as a means to obtain candid and valuable information from former students (Stufflebeam, 1968). Jones (1985) viewed the follow-up survey as a subsystem of a comprehensive evaluation system designed to identify the outcomes of an educational program. Similarly, Lightfield (1976) noted that follow-up surveys are conducted to assess how well an academic institution has met its objectives.

In recent years, follow-up studies increasingly have been used to provide information necessary for assessing the extent to which higher education agricultural programs are achieving their objectives. A follow-up study involves the systematic collection of data from both former students

and their employers (Jones, 1985). Former students are asked to review how the program helped or failed to help them prepare for work. Employers are asked to evaluate the current work behaviors of their employees.

According to Jones (1985), the specific purposes that can be achieved through follow-up studies are the following:

1. To determine the occupational difficulties and successes encountered by former students.

2. To identify the number and kinds of employment which former students have entered locally on a part-time or full-time basis.

3. To obtain information from the students about how well they believe the career program achieved its objectives.

4. To discover the degree of occupational mobility among the former students.

5. To obtain a realistic picture of what lies ahead for present students.

6. To gather ideas for program improvement.

7. To identify ways in which the institution could be of further assistance to both the former students and employers.

8. To evaluate the degree of employer satisfaction with the performance of former students.

Follow-up studies can be used for program planning and improvement. They may be the impetus for change, or they can be used to support quality programs, not just to point out areas that need improvement. Follow-up studies also can be used for improving services or offering new ones, such as short courses needed on specific topics, or to update former students. The data collected in the formal follow-up surveys at specified intervals (e.g.,

4 to 6 months, 1 year, 3 years, and 5 years) should also relate to the stated purposes of the follow-up and the goals and objectives of the educational institution's program (Johnson, Shellberg, & Gómez, 1980).

Palmer (1985) reviewed 48 follow-up surveys conducted at either the institutional or state level to assess the employment experiences of students who had earned associate degrees in community college vocational programs. All of the studies selected for review had response rates of 50% or more. Among other factors, study findings were analyzed in relation to (a) graduates, employment rates, (b) the relationship of the graduates, employment to their programs of study in college, and (c) the graduates, opinions concerning the contribution of community college vocational training to their career lives. Despite the fact that varying methodologies were used in the studies, several common findings emerged:

1. Most survey respondents (70 to 80%) reported that they were employed full-time; of those who were not employed or who were employed only part-time, the majority were either homemakers, military service personnel, or students.

2. Sixty-six percent to 96% of the employed respondents reported that their jobs were in some way related to their programs of study at college. But this relationship between employment and program of study varied greatly by occupational area. Those graduating from allied health and secretarial programs were most likely to find related employment, while those in management, business, and natural science programs were less likely to find jobs that make use of their skills.

3. The graduates, when asked, gave relatively high marks to the colleges for providing "technical knowledge" or "job skills" that are requisite to finding employment, but they expressed considerably less satisfaction with the colleges, helpfulness in providing knowledge about career opportunities, or in preparing them for career advances.

4. Available data on vocational program graduates, in short, present a mixed picture. Most graduates apparently find employment, although some program graduates are more successful than others in securing jobs for which they were trained. Respondents also indicate satisfaction with the job skills they acquire at college, but they consistently express dissatisfaction with the college's role in paving the way for career advances beyond the first job.

Meaders and Shrestha (1977) conducted a follow-up study of former students of the Institute of Agriculture and Animal Science (IAAS) in Nepal. The study was a general assessment of the existing IAAS degree programs and was based on a mailed questionnaire. Overall, the findings were generally positive with regard to current job satisfaction and how the general IAAS program prepared graduates for work. Mixed results were found with regard to classroom instruction, practical project work, and the physical condition of the hostel. Last, there was strong support for more emphasis on practical in service training and an advanced degree program.

Robson, Suvedi, Shivakoti, Pokharel, and Maughan (1987) conducted a follow-up study 10 years later to evaluate the same institution. A number of educational issues were examined, and similar responses were received. The findings fell into two categories: (a) the overall question of the quality of the current educational programs and (b) the overall question of future programs and educational direction. Overall, respondents thought the quality of the institution's B. sc. Agriculture program was generally sound. However, the quality of practical course work lagged behind that of theory courses, and some respondents perceived a decline in the quality of course work and

programs/facilities. In terms of the future of the institution's programming, some redirection in course work offerings was recommended. Movement from a generalistic degree to specialist degrees was supported by more than 50% of both graduates and supervisors, and nearly half of both groups recommended the addition of an advanced degree within 5 years.

Both of the above-mentioned follow-up surveys provided findings that are important in outlining educational issues to be addressed by institutional administrators. Follow-up evaluation is a valuable tool for gathering information on the strengths and weaknesses of an educational activity from those who are in the best position to judge--that is, the former students and their employers. Such evaluation provides feedback from these two groups on how well the training has prepared the graduates for actual jobs, and it tells the institution's administrators in what ways the training activity might benefit from improvement. A follow-up evaluation focuses on whether or not the specific or immediate objectives of the institution with regard to educating students were actually attained and whether these objectives are consistent with the graduates' actual work situations.

Naranjo (1966) conducted a study of the graduate program of the InterAmerican Institute of Agricultural Sciences in Turrialba, Costa Rica, and reviewed all follow-up studies in higher education in Latin America that had been conducted up to 1966. He stated that only two such studies had been carried out in Latin America: Chapparo conducted one in 1955 as part of a

cooperative program between IICA and FAO, which included all Latin American countries, and the second dealt primarily with agricultural education in Colombia. Chapparo investigated the factors affecting higher education in agriculture in Latin America. He presented a summary of that information in the following order: (a) historical development of higher education in agriculture at the undergraduate level, (b) growth of agronomy faculties in that part of the world, (c) subjects of study or curriculum, (d) specialization in higher education in agriculture in Latin American countries, (e) teaching methods employed, (f) faculty members, (g) students, and (h) general information.

Among the main problems found in the Colombian follow-up study of higher education in agriculture were:

1. A lack of integration between the different levels of education; this problem was especially acute in the rural areas.

2. The vocational education system in agriculture was insignificant and deficient, especially in those respects dealing with subject matter and teaching methods.

3. There was a lack of buildings and other physical facilities, as well as a lack of equipment and supplies in most of the universities and faculties of agriculture, veterinary medicine, and forestry schools.

4. In many instances, thesis presentation at the end of the training period was not a requirement, and the course content was based mainly on

straight lectures.

5. There was a high percentage of dropouts during the first year of university training.

6. Because a uniform status was recognized for all the professors at the university level, a lack of motivation was found in those personnel toward graduate studies.

7. The Commission reported a high degree of isolation of the faculties and schools in relation to the official and private institutions dealing with agriculture and rural life, as well as with all the graduates from the same educational institutions.

8. An identical pattern was discovered in relation to the research activities that were carried out under the direct responsibility of the Ministry of Agriculture, departmental agricultural agencies, and some semi-official institutions.

9. Extension work was also located under the Ministry of Agriculture in various departmental agricultural agencies and some semi-official institutions, but no relationship was found with similar international institutions, as normally happened with the research activity.

10. In 1961,the demand for well-trained personnel indifferent fields of agriculture at various educational levels surpassed the number of well-qualified persons available at the time to work in those fields (Naranjo, 1966).

Naranjo's follow-up study was aimed at eliciting the opinions of graduates regarding the value and achievement of the school's educational objectives, the academic program, and related aspects. He also studied the relationships between graduates, department of study at the school and their jobs after graduation, job satisfaction, and job expectancy, as well as graduates' compelling problems. The major findings of his study were as follows:

1. Graduates awarded a high value to the Tropical Center of Graduate Teaching and Research, as a graduate educational institution serving the Latin American country members of the Organization of American States (OAS). One hundred twelve of the 128 respondents indicated a highly favorable attitude toward the IICA graduate school.

2. The graduates awarded the highest value to all of the educational objectives set by the graduate school, and they recognized that the Institute had met those objectives in an appropriate way.

3. The strengths that Turrialba presented as an educational institution at the graduate level were: "an ideal combination of teaching and research," endowed with "very good library facilities," "faculty with Ph.D.'s and scholarship," and "very good environment, facilities", and "scientific attitude to carry on research and teaching in tropical agriculture", "agricultural extension", and "animal husbandry". The majority of the graduates (89%) recognized a very high level of academic competence in the

faculty that formed the center.

4. Most of the graduates, following doctoral studies in American universities, had received recognition for their "Magister" degree granted by the IICA, and 24 out of 28 pursuing such studies recognized that the training received at Turrialba was of great value to them in the process of their doctoral education.

5. The graduates recommended that some sort of placement bureau for graduates be established.

6. The IICA graduates expressed extremely low job dissatisfaction. Only 5% of the respondents were dissatisfied with the specialization chosen.

7. The favorite aspiration of the 100 graduates was that of increasing their efficiency by way of expanding their knowledge, skills, abilities, and understanding. It was recommended that studies be made to cover more deeply certain important areas dealing with personality and effectiveness of the graduate school faculty, the academic program, the research program, and many other areas.

Other studies dealing with the situation of higher education in Central American countries have been carried out by IIME of the University of San Carlos and Michigan State University. Friedman (1963) reported on data gathering at the universities in Costa Rica, Honduras, and San Carlos in Guatemala, as well as two university-level normal schools. In all cases, the author reported some gaps in the data, where information was either

impossible or extremely difficult to obtain. He found the technique of administering questionnaires to be extremely slow in eliciting returns, which he thought could be taken as an indication that very few questionnaires would be returned. This fact was particularly true in the case of forms sent to professors, graduates, administrative officers, and especially selected observers of the educational scene. Friedman found that personal gathering of data by members of the IIME was much more efficient than other means of data collection. Some of the data collected concerned programs of study, course offerings, enrollment in and completion of courses, instructional costs, and classroom time.

Palmer (1985) pointed out some methodological weaknesses of institutional follow-up studies that severely limited the validity of survey data as measures of the effect of programs on graduates' careers. For example, most of the follow-up studies Palmer considered were conducted on a one-shot basis anywhere from 6 weeks to 3 years after graduation, thus providing only a limited picture of the graduates' careers. The respondents, expressed dissatisfaction with the college's role in promoting career advancement may have been an artifact of this one-shot design. Because the surveys were conducted at one time shortly after graduation, many respondents probably had not had a chance to settle into their jobs and to discover the paths to advancement in the internal labor markets of their firms.

Other methodological problems found in many (although not all) of the follow-up studies included the following;

1. Low response rates, with only limited control for respondent bias.

2. Failure to control for the graduates' previous employment experience.

3. Lack of control groups against which the graduates' employment experiences could be assessed.

Palmer (1985) and Williams and Snyder (1974) suggested that, to improve follow-up studies, the following measures might be taken:

1. Increase response rates by reducing the size of survey instruments. This can be accomplished, in part, by eliminating questionnaire items requesting information that is normally gathered at registration.

2. Solicit information on the graduates' educational goals and previous employment experience.

3. Gather longitudinal data to trace the career development of former students and to obtain time-tested perceptions of their college experiences.

4. Base follow-up studies on well-chosen samples of the study population as an alternative to surveying all of the graduates.

5. Include a control group of nongraduates in the study.

CHAPTER IV

METHODS AND PROCEDURES

The methods and procedures that were used in conducting the research are described in this chapter, which is divided into six sections. In the first section, the nature of the study is described. The next four sections contain a description of the population, sampling procedures, instrumentation, and data collection techniques. The final section contains a description of the procedures used in analyzing the data.

The purpose of this study was to try out a process of gathering information from former CUNORI students and their present employers regarding the adequacy and appropriateness of those students' educational experiences while at CUNORI. The CUNORI Administration played a vital role in the process of this study. The administration put together a curriculum review committee, with the assistance of the faculty, program coordinators, and the academic coordinator, to review the programs offered at CUNORI. Since the beginning of the study the curriculum review committee, administrators, coordinators and faculty have been participating actively with the researcher to conduct the research study. They provided the lists of graduates, student addresses, comments on the instruments and assistance

in selecting two students to help with the survey. Meetings were conducted with all the faculty and students for them to be aware of the study and for them to provide any comments or assistance needed for the study. Much time was spent in reviewing the instruments used to adapt them to local conditions to asses the CUNORI situation. This was done to collect data that would be useful to CUNORI administrators to make wise decisions on curriculum and program improvements.

The design chosen, according to a typology used by researchers in the field of education (Ary, Jacobs, & Razavieh, 1990; Borg & Gall, 1989) can be categorized as a descriptive survey in the form of follow-up research. The necessary information was gathered through a self-administered questionnaire. The researcher with the assistance of two CUNORI students in their last year of study in the B.S. program, personally delivered the instrument to the graduates and their employers. The dropouts were not included in this study, since CUNORI officials decided to study them first.

Population

Identifying the study population is a critical step in the research process. According to Rossi (1983), there are two types of populations: a target population and a survey population. The target population includes all of the elements that the researcher would like to study. The survey population is the population that was sampled and from which the data was obtained.

The total number of diploma students registered in the three agricultural programs at CUNORI during 5 academic years, 1988-89 through 1992-93, represent the target population. From the three CUNORI agricultural programs during those years, 89 students finished all of the requirements for diplomas (see Table 4). The survey population included all of the graduates from the three agricultural programs during the 5 academic years, 1988-89 through 1992-93 and their employers.

Table 4: Number of students completing all of the requirements for diplomas in the three CUNORI agricultural programs, 1988-89 through 1992-93.

Year	Registered	Total Graduated
1989	95	10
1990	123	8
1991	332	31
1992	326	14
1993	327	26
Total	1,203	89

Source: CUNORI academic coordinator reports, 1993.

The Sample and Sample Selection

According to Ary et al. (1990), sampling involves taking a portion of the population, making observations on this smaller group, and then generalizing the findings to the parent population, the larger population from which the sample was drawn. Considering the smaller number of graduates,

the CUNORI research committee determined that the data should be collected from all graduates (i.e. population) of the three diploma programs. Since the dropout population was studied prior to the time this study began, the results will be mentioned in this study. The three CUNORI diploma programs from which the graduates will be identified are the Diploma in Production Agriculture, Diploma in Animal Science, and Diploma in Business Management.

A list of graduates was compiled by the researcher with the help of the graduate coordinator, and the research committee. Eighty nine CUNORI graduates were identified. All the graduates of the three diploma programs were visited at their homes or place of work and hand delivered a questionnaire for them to answer. A time was agreed to pick up the completed questionnaire and the same person that delivered it picked it up.

To obtain judgments of the employers of CUNORI graduates, a questionnaire was prepared which provided an opportunity for responses to give their opinions of the work and training of the graduates.

Frequency counts and the percentages were made for all items on the questionnaires.

Instrumentation

The section on instrumentation consists of a description of the design and development of the instruments that were used to collect data from

graduates and their employers.

The Questionnaires

Questionnaires were designed to gather perceptions of CUNORI graduates, and their employers regarding the adequacy and appropriateness of the educational experiences the students received while they were at CUNORI. Separate questionnaires were prepared for the former students and for their employers. Both the former-student questionnaires and the employer questionnaires included some items designed to elicit demographic information from the respondents.

The objectives from which the questionnaires were developed were carefully prepared by the researcher and the CUNORI review committee after consulting several studies. Questions directed to the graduates served to obtain valued judgement on their education obtained at CUNORI and also information about their employers. Information was gathered by the use of a questionnaire that was hand delivered to 89 CUNORI graduates and 15 of their employers.

Both closed and open ended items were used to measure respondents' perceptions of the adequacy and appropriateness of CUNORI graduates' educational experiences. Most of the closed-ended items were responses on a Likert-type scale. Others required yes/no responses. The Total Design Method (TDM) of conducting survey research (Dillman, 1978) was used.

A major concern for any researcher is to establish reliability and validity of the data collection instrument. Validity refers to systematic error in measurement: Is the researcher measuring what he or she thinks is being measured, or is there some systematic error involved? According to Ary et al. (1990), validity is concerned with the extent to which an instrument measures what one thinks it is measuring.

To establish content and face validity, the instrument was reviewed by a panel of experts consisting of professors from the Agricultural and Extension Education Department at Michigan State University and by the research team and faculty members at CUNORI. Panel members were asked to comment on the instrument, especially with regard to:

1 . Relevance of the items to the purpose of the study.

2. Clarity of the items.

3. Completeness with which the items cover the areas of interest in the study.

4. Format and layout of the questionnaire and its general appearance.

5. General suggestions and comments.

Reliability refers to random error in measurement, or the extent to which the instrument is consistent in measuring whatever it measures (Ary et al., 1990). Reliability indicates the ability to be confident that the questionnaire elicits similar responses if it is administered to the same individuals at different times or by a different investigator. Reliability of the

questionnaire for CUNORI graduates and the questionnaire for employers was determined by conducting a pilot test using a similar group of graduates and their employers from another center in Guatemala and by running a reliability coefficient test with the Statistical Package for the Social Sciences (SPSS-PC+) using Cronbach's alpha. Cronbach's alpha is used when measures have multiple-scored items, such as a Likert-type scale (Ary et al., 1990). The Cronbach's alpha for scales pertinent to questions 12, 15, 17 and 19, were .75, .93, .76, and .99 respectively.

Collecting the Data

To enhance the credibility of the study and perhaps to elicit more responses, the questionnaire package included the instrument along with a cover letter directed personally to each respondent and signed by the CUNORI director and the researcher conducting the study. The cover letter introduced the researcher and explained the purpose of the study. An identification number was assigned to each questionnaire, to control the distribution procedure and to facilitate follow-up calls, if necessary. The respondents were assured of the confidentiality of their responses. In line with the policy of CUNORI, the cover letter and the questionnaire were printed in Spanish, the official language of Guatemala.

After reviewing other studies done in developing countries in which questionnaires were mailed, the decision was made to hand deliver them to encourage a better response rate. Two CUNORI students were assigned by

the evaluation committee to assist the researcher with this task. The response rate, 95% was very high. It was anticipated that the response rate would be higher than other studies done in Nepal, Costa Rica , and Colombia, which was below 50 percent.

The questionnaire packets were hand delivered and collected by two individuals known as information collectors--CUNORI students who were in their final year in the Agribusiness BS program. A training workshop was provided to acquaint the information collectors with the purposes and objectives of the study. The workshop also covered other matters such as how to meet the former students and employers, possible questions the former students and employers might ask, how to avoid bias through discussion, and how to convey the importance of the responses.

The Michigan State University Committee on Research Involving Human Subjects (UCRIHS) was provided with a copy of the research proposal, proposed questionnaires and cover letters for approval before data collection began.

Data Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS-PC+) on an IBM PC computer. With this statistical package, the researcher obtained the response frequency distributions, means, percentages, ranks, and standard deviation for each of the quantified questions. A one-way analysis of variance (ANOVA) was used to determine

the mean differences between groups. Frequency and percentage distributions were used to present the demographic characteristics of the respondents. Data were presented for each of the objectives of the study.

CHAPTER V

STUDY FINDINGS

The purpose of this research was to develop and try out a process of gathering information from former CUNORI students and their present employers regarding the adequacy and appropriateness of those students' educational experiences while at CUNORI. This study was an attempt to design a procedure to enhance the future use of the information gathered by the evaluation committee at CUNORI.

The CUNORI administration, program coordinators, faculty, and students participated in the process. The organization of a curriculum review committee by the administration made it easier for the researcher to involve all the participants in the study. Their participation made it possible to use this type of study to seek information from graduates and their employers to make decisions on program changes. Follow-up studies found in the literature were used to adapt a process that could be used to evaluate the curriculum in a different setting such as CUNORI in Guatemala. Of the four types of evaluation included in the CIPP model (Stufflebeam et. al., 1971; Finch & Bjorkquist, 1977), product evaluation was used in this study. The major focus of this study was to gain information from the opinions and

experiences of former CUNORI students and their employers regarding the graduates' educational experience while at CUNORI. The findings are presented in two parts. Part I describes the responses given by the graduates, and Part II describes the employers' responses.

Part I. Responses of CUNORI Graduates

Respondents' Characteristics

The respondents for the study were 1989-93 graduates from the three diploma programs at CUNORI (Agriculture, Animal Science, and Business Administration) and their employers.

During these years, 89 graduates received the technical degree diploma from all three programs, with the largest number being 35 (40%) in Business Management, 31 (35%) in Production Agriculture and 23 (25%) from Animal Science. (The distribution of graduates in each area of study is shown in Table 5 as part of the respondents' characteristics. The majority of the respondents, 92 % (81), had an urban permanent residence. Eighty percent were male and only 20 percent female. CUNORI graduates from all three programs were relatively young, with an average age of 27 years. Table 5 is a summary of the respondents' characteristics.

Table 5. Characteristics of Respondents

Factor	Number	Percent
Residence		
Urban	78	92
Rural	07	08
Gender		
Male	68	80
Female	17	20
Curriculum in:		
Agriculture	30	35
Animal Science	20	24
Administration	35	41
Year of Graduation		
1989	09	11
1990	08	09
1991	31	36
1992	14	17
1993	23	27
Age (Average Age:	27	
Employment Status		
Full time	57	84
Part time	05	07
Unemployed looking for work	06	09
School status		
Full time	31	55
Part time	25	45

The graduates interviewed offered a wide variety of reasons for pursuing the technical degree diploma. Table 6 provides a list of the major reasons given for pursuing a technical diploma at CUNORI.

Table 6. Reasons for enrolling in a diploma program at CUNORI. N = 81

Reasons	Frequency of mention			Total*
	Production Agriculture	Animal Production	Business Management	
University close to home	20	17	15	52
Economic situation	26	15	30	71
Future employment opportunity	29	16	26	71
Liked the diploma option offered	21	15	33	69
Vocation	17	18	27	62

*Total N exceeds the sample size because of multiple answers.

Diploma in Business Administration Graduates

The 35 graduates with diploma in Business Administration were 40% of all the graduates from the three programs. Some key characteristics of the Business Administration Graduates were: 32 (91%) graduated in the years 1991 to 1993 only one interviewee had a permanent residence in a rural area and 26 were employed full time or had their own business (see Table 7). Only two are unemployed and looking for work. Twenty-four of the 35 diploma graduates decided to continue their education toward a bachelor of science degree at CUNORI or other institutions close to the Chiquimula area. Business Administration is the program that has the most students at technical and bachelor of science levels.

Table 7. Characteristics of Respondents who were Business Administration Diploma graduates from CUNORI for the years 1989-93.

Factor	Number	Percent
Residence		
Urban	34	97
Rural	01	03
Gender		
Male	21	60
Female	14	40
Year of Graduation		
1989	01	03
1990	02	06
1991	13	37
1992	08	23
1993	11	31
Employment Status		
Full time	24	78
Part time	03	10
Owner of Business	02	06
Unemployed looking for work	02	06
School status		
Full time	09	37
Part time	15	63

Diploma in Agronomy Graduates

There were 30 (35%) respondents who were graduates from the Agronomy program during the academic years 1989 to 1993. Table 8 contains descriptive data about this group of respondents. The majority (60%) of the agronomy diploma graduates who were interviewed were 1991 and 1993 graduates. Most of them, 84%, came from urban areas. Approximately 94% were male, and the average age for the group was 27 years. Eighteen (55%) of the respondents reported that they were employed

full-time, part time, or had their own business. Another 25 (81%) reported that they were attending school full (72%) or part-time (28%).

Table 8. Characteristics of Respondents who were Agronomy Diploma 1989 - 1993 graduates from CUNORI

Factor	Number	Percent
Residence		
Urban	25	84
Rural	05	16
Gender		
Male	28	93
Female	02	07
Year of Graduation		
1989	05	17
1990	04	13
1991	11	37
1992	03	10
1993	07	23
Employment Status		
Full time	09	50
Part time	02	11
Owner of Business	06	33
Unemployed looking for work	01	06
School status		
Full time	18	72
Part time	07	28

Diploma in Animal Science Graduates

The number of respondents who graduated from the Animal Science program for the years 1989 to 1993 was 20, which is 25% of the total surveyed. Twenty, or 95%, of the respondents who graduated from the animal science program were males, and the average age was also 27 years

(see Table 9). Only one interviewee reported coming from a rural permanent residence.

The majority of the graduates (94%) reported that they had a job. Only 30% of the respondents from this group reported that they were attending school at CUNORI while working toward a bachelor of science degree.

Table 9. Characteristics of Respondents who were Animal Science Diploma 1989 - 1993 graduates from CUNORI

Factor	Number	Percent
Residence		
Urban	19	95
Rural	01	05
Gender		
Male	19	95
Female	01	05
Year of Graduation		
1989	03	14
1990	02	09
1991	07	32
1992	03	14
1993	05	23
Employment Status		
Full time	13	58
Part time	03	14
Owner of Business	03	14
Unemployed looking for work	03	14
School status		
Full time	04	17
Part time	03	13

Current employment status and potential employers of CUNORI graduates

Seventy percent of the respondents reported that they were employed full time at an institution or are self employed. Only seven percent reported that they were unemployed and seeking work. Twenty three percent of the respondents reported that they were unavailable for employment. The major reasons for not being available for employment were "going to school" and "for health conditions". Sixty percent of the respondents who were working reported that it took them less than one month to find a job, 22% took less than twelve months and 18% took more than 12 months to get the first job. When the respondents were asked how they got their first position after leaving CUNORI, the majority responded that they got their first job through a family member (26.4%), on their own (20.8%), or through a contest of merit (24.5%) (Appendix Table 1). Of all the Animal Science respondents who were employed or had their own business, 96% were also in school full- or part-time.

Among the most important factors the respondents considered in taking their first job were: "importance of work" (21%), "salary" (19%), "working conditions" (17%), and "opportunity for promotion" (17%). "Serving others" and "personal interest" were rated last or not very important in taking their first job (Appendix Table 2). For the majority of the respondents (52%), their present job was the first job. Only 23% of the graduates have had three or more jobs.

Characteristics of employers of CUNORI Graduates

The major employers in the area of Chiquimula are rural development programs that the government or non governmental organizations have in the area. Federal government organizations such as: DIGESA, DIGEBOS, FIDA, INDE, IGSS, CUNORI, DIGESEPE, INTECAP, and the National Institute of Cooperatives employ most CUNORI graduates. In addition, there are several non governmental organizations (NGOs) in the area that also provide employment to the CUNORI graduates. Included in this type of organizations are CARITAS, World Vision, PROZACHI, and The Benson Institute. All of these organizations are working in development programs for the region. Other private and state organizations that provide employment for the graduates are: Bottling Company of the Atlantic, Central American Beer Company, Maderas San José (a construction company), the state, and the municipality. Only two graduates have their own business.

The nature of job reported by the respondents varied, with the most common being production (25%), followed by research and service with 20% each. Jobs such as "public relations," "purchasing," and "sales" was reported by 12, 9, and 9% of the respondents respectively. Table 10 lists the major employers of CUNORI graduates by organization and study area.

Table 10. Major employers of CUNORI graduates by study area

Major employers	Frequency			Total N = 51
	Production Agriculture N = 13	Animal Production N = 12	Business Management N = 26	
CARITAS International	1	2	0	3
DIGESA\DIGESEPE	2	4	0	6
CUNORI	2	0	4	6
FIDA	2	0	0	2
World Vision	1	0	0	1
Benson Institute	4	2	1	7
INACOP	1	0	0	1
INDE	0	0	3	3
Education Department	0	1	2	3
Private Business	0	1	10	11
State	0	0	5	5
INTECAP	0	2	1	3

Perceptions of CUNORI graduates about their present job.

For 52% of the respondents, their present job was their first job after finishing their studies at CUNORI. The average starting salary per month was below 1000 quetzales for 79% of CUNORI graduates who found a job when they finished their studies. However, the salary increased as they gained more experience in their jobs. Seventy five percent of the respondents indicated that their actual salary is between 1000 and 2000 quetzales, which is much better than when they started. Of those

respondents, 52%were above 1000 quetzales. This is a good indicator for new graduates who are entering the job world. Table 11 shows the range of salaries for the respondents.

Table 11. Salary ranges for respondents.

Salary in Quetzales	Frequency of mention N=52	
	Beginning	Current
500 to 1000	41	20
1001 to 2000	09	27
2001 to 3000	02	05

When asked about the relationship of their present job to the type of job they thought they would follow when they left CUNORI, 73% responded that their present job was somewhat related, closely related, or exactly the kind of job they expected to get while studying. When asked about the relation of their education at CUNORI to their present job, the majority (63 %) responded that their education provided a general background, while 25% reported that it provided specific preparation.

When respondents were asked their agreement or disagreement with different statements about their present job, they responded positively to all the statements. Table 12 shows the agreement of the graduates regarding all the statements about their perception of how they feel in their present

job. All graduates in the three programs agreed on the following statements about their present jobs: "I try hard to do quality work" and I am very well trained for my present job". All disagreed with the statement "My job is boring." In general, the respondents feel good about their present job situation.

Table 12. CUNORI graduates perception about present job by study area.

Statements about present job	Production Agriculture N = 11		Animal Production N = 14		Business Management N = 27	
	% Agree	% Disagree	% Agree	% Disagree	% Agree	% Disagree
There is a good future for me on my job	64	36	79	21	70	30
My job is boring	0	100	0	100	7	93
I like the people I work with	82	18	93	7	100	0
I will get more pay by promotion	64	36	79	21	18	82
I have good supervision at work	73	27	43	57	18	82
I try hard to do high quality work	100	0	100	0	100	0
I will only get more pay by staying on the job a long time (seniority)	9	91	43	57	67	33
I am very well trained for my present job	100	0	100	0	93	7
My employer cares about safe working conditions	64	36	86	14	70	30
I like my job	100	0	86	14	100	0

Opinions and attitudes of CUNORI graduates regarding the overall learning experience at CUNORI.

The respondents generally perceived their Diploma education as a positive influence and an aid to their employment. Almost all (97%) of the interviewees responded that the education received at CUNORI was useful or very useful. Some of the experiences the respondents most appreciate from their education were: Planing and organizing agriculture and management activities, having the technical knowledge and skills for present job, being able to diagnose real job situations, and participating in school work at CUNORI that helped them formulate research to solve regional problems (Appendix Table 3). When asked about the most important thing learned at CUNORI, all three groups reported three main concepts. (listed in order of most frequent to least frequent reported):

(1) Increase and/or improve work production
(2) Individual preparation in education that is important in job world
(3) The use of the concepts learned to solve job related problems

As they reflected on their educational experience at CUNORI, the respondents rated the quality of variables such as: teacher command of subject area; teaching skills; library facilities; use of textbooks (Table 13). The respondents reported an average of regular to good (2.7) on a scale of one (poor) to four (excellent), on all variables.

Table 13. Perceptions about learning experience at CUNORI

Learning experience	Mean*		
	Agriculture Production N = 30	Animal Production N = 20	Business Management N = 35
a. Teachers command of subject area	2.7	2.8	2.8
b. Teaching skills	2.6	2.5	2.7
c. Classroom discipline	2.6	2.7	2.7
d. Helping students outside classroom	2.9	2.5	3.1
e. Evaluation and grading of students	2.5	2.7	2.7
f. Library facilities	3.0	2.9	2.6
g. Use of textbooks in courses	2.7	2.3	2.4
h. Practical training	2.9	2.4	2.4

* Mean scores were computed based on a 4 point scale: 1 = Poor; 2 = Regular; 3 = Good; 4 = Excellent

Regarding the contact with CUNORI since graduation, 62, (71%) of the respondents reported that they continued their studies at CUNORI, while 17 (19%) reported that they had contact with a CUNORI faculty member. Table 14 shows the frequencies for the type of contact graduates had with CUNORI after graduation.

Table 14. Contact with CUNORI since graduating

Type of contact	Frequency		
	Agriculture Production N = 30	Animal Production N = 20	Business Management N = 35
CUNORI faculty contact	5	11	1
Association contact	0	0	0
Attended short course	0	1	1
Continued studies at CUNORI	24	9	29
Other	0	0	1
No contact	2	1	3

Opinions of CUNORI graduates about the expansion of academic programs at CUNORI

The respondents indicated that there are several areas that CUNORI could expand. Appendix Tables 4, 5, and 6 show, by program, how the respondents reported the different areas CUNORI should expand in the next five years.

Most areas reported by the respondents regarding the expansion of CUNORI for the three programs of study were "desirable" to "essential" for all three groups. The graduates perceive that CUNORI needs to update the curricula to help with the development of the area. They want more emphasis in areas such as: more practical instructional activities, project administration, communication skills, research planning and analysis, and more internships for students.

Perceptions of possible service activities for CUNORI to serve the Chiquimula community.

In trying to explore the opinion of the graduates whether CUNORI should render extension service activities to serve the Chiquimula community, a great majority or 95%responded positively. Only a few (5%) responded negatively.

Extension and public service are part of the CUNORI mission as a public institution. Institutions such as CUNORI publish and disseminate research findings and related information, providing a public service for the nearby communities.

Among the possible service activities for CUNORI to serve the Chiquimula community, "organize presentations" and having "students visit and disseminate information" were rated high by 68% of the respondents. Fifty-five percent of the graduates reported that extension service should also be a priority as an activity to serve the community. Table 15 shows the response on all the activities that CUNORI could offer for the development of the Chiquimula area. When the interviewees were asked what each of the three diploma programs could offer for the development of the area, they reported that "providing short on campus training" in areas of the different programs were areas in which CUNORI should participate. For example, in Production Agriculture "training on cultivation practices of vegetables and field crops" was rated the highest by the graduates in the program. The graduates in Animal Production perceived that CUNORI

should offer "short on campus training" on control of common farm animal diseases (77%) and animal nutrition (68%). The Business Administration graduates feel that CUNORI should offer short campus training on Total Quality (74%) and Human Relations (69%). Table 16 shows the responses that the interviewees from the different diploma options of study provided as possible service activities that CUNORI could offer to serve the community.

Table 15. Activities that the respondents of the three Diploma programs feel CUNORI could offer for the development of the Chiquimula area.

Activities	N	% Agree	% Disagree
Students visit and disseminate information	85	61	18
Provide extension services	85	55	25
Set up demonstration plots/modules	85	52	33
Publish and distribute bulletins, posters, pamphlets	85	31	52
Organize presentations	85	68	14
Organize farm exhibitions	85	71	19
Prepare extension materials for the use of the mass media	85	40	40
Provide extension service in the nearby communities	85	62	23

Table 16. Campus training activities that CUNORI could offer for the development of the Chiquimula area as perceived by the respondents of the three Diploma programs.

Campus Training Activity	N	% Agree	% Disagree
Provide short on-campus training in **Production Agriculture** such as:			
-Control of insect, pest and plant diseases	30	87	3
-Control of farm animal diseases	30	87	3
-Improving soil fertility	30	81	13
-Proper use of farm chemicals	30	81	19
-Cultivation practices of vegetables	30	100	0
-Cultivation practices of field crops	30	94	0
Provide short on-campus training in **Animal Production** such as:			
-Control of common farm animal. diseases	20	77	14
-Animal genetic improvements	20	41	27
-Artificial insemination	20	50	27
-Animal Nutrition	20	68	18
-Small animal production	20	50	18
-Marketing	20	23	27
-Industrialization of animal by products	20	23	45
-Administration of animal production enterprises	20	27	41
-Machinery and agricultural equipment	20	36	36
Provide short on-campus training in **Business Administration** such as:			
-Human Relations	35	69	20
-Inventory Control	35	63	20
-Total Quality	35	74	11
-Budgeting	35	63	23
-Publicity	35	60	20
-Human Resources	35	56	23

Part II. Responses of employers regarding CUNORI Graduates

From the questionnaires that were collected from the graduates, a list of 15 employers was compiled. The list was used to send questionnaires to those employers that graduates identified as their supervisors. All the supervisors responded to the survey demonstrating that the employers are willing and interested in assisting CUNORI to better prepare its graduates to get a job. The responses of the employers will help the committee at CUNORI to give direction in developing stronger programs.

Potential employers of CUNORI graduates.

Table 17 shows some background information on the employers of CUNORI graduates. Forty-six percent of the employers of CUNORI graduates are government organizations, federal, or state. The rest are non governmental organizations (NGOs) working in the area. However, the government organizations are the largest sources of employment for CUNORI graduates. The supervisors who responded to the survey held high level positions within the organizations, such as program coordinators or directors. With the exception of CUNORI, which has some part-time faculty teaching, the majority of organizations do not have part-time employees. The graduates are represented among all the institutions that are potential sources of employment for CUNORI graduates. The major function of employers of CUNORI graduates employers were service, education, research and community development.

Table 17. Background information of CUNORI graduate's employers

Name of Organization /Institution	Position of respondent	Number of Employees		Number of CUNORI Graduates	Major functions
		Full time	Part time		
DIGESEPE	Regional Director	120		6	Service (Agriculture training), Research
World Vision	Project Coordinator	5		1	Service, Research and Community Development
CUNORI	Program Coordinator	35	15	6	Education, Service, Research
Plan International	Extension Coordinator	44		3	Service, (Agricultural training)
FIDA	Program Coordinator	145		2	Service, (Agricultural training) Community Development
DIGEBOS	Regional Coordinator	13		6	Forestry
CARE	Regional Coordinator	8		2	Loans, Extension Service, Community Development
Benson Institute	Guatemala Coordinator	15	1	7	Research, Ag. production, Community Development
Savings & Loans Cooperative	Director	18		5	Production loans, Agriculture, Rural Development
Sacachispas	Treasurer	3	2	1	Professional Soccer Club
CASVACHI	Manager	17		2	Agriculture
Municipality	Treasurer	151		2	Service
INTECAP	Director	19		3	Education
INDE	Director	25		3	Electrical Power Company
Maderas San José	Manager	4		2	Lumber Sales

Table 18 shows the different methods used by employers to recruit the CUNORI graduates. Very few(2) contacted educational institutions as a method to recruit employees. Seventy-three percent of the respondents use personal contact with radio and newspaper advertisements to recruit new employees. None of the respondents indicated that their organization provided scholarships as an incentive to attract employees.

Table 18. Methods used to recruit employees by the different organizations

Recruiting method used	Frequency
Contact Educational Institution	2
Newspaper advertisement	7
Personal contact	11
radio advertisement	8

Employers perceptions about performance of CUNORI graduates.

When the employers were asked about the adequacy of technical knowledge by CUNORI graduates, 100% indicated that the graduates possess good technical knowledge. Sixty-seven percent of the respondents indicated that the graduates were "somewhat prepared" for their jobs in technical knowledge, and 20% indicated that the graduates were "very well prepared" in technical knowledge. When the employers were asked about the skills needed for entry level positions, 80% responded that the

graduates are "somewhat" and "very well prepared" with the skills needed. None of the employers indicated that the graduates were "not well prepared" Table 19 shows the perception of the employers regarding technical knowledge, level of preparation, and the skills needed for entry level position.

Table 19. Perceptions about CUNORI's graduates

Statements	Number	Percent
A. Graduates has technical knowledge needed		
Yes	15	100
No	0	0
B. Level of preparation of CUNORI graduates:		
a. Very well prepared with technical knowledge	3	20
b Somewhat prepared with technical knowledge	10	67
c Not too well prepared with technical knowledge	0	0
d Not at all prepared with technical knowledge	0	0
e. Don't know	2	13
C. Do graduates possess skills needed for entry level position?		
a. Very well prepared with skills needed	4	27
b Somewhat prepared with skills needed	8	53
c Not too well prepared with skills needed	0	0
d Not at all prepared with skills needed	1	7
e. Do not know	2	13

The opinions and attitudes of employers of CUNORI graduates regarding the overall learning experience at CUNORI.

It is important, when looking for ways of improving the curricula at an institution, to ask employers their opinion regarding the overall learning experience of the graduates they employ. When the employers were asked if CUNORI did a good job of preparing graduates for employment, 60 % indicated that CUNORI could have done a better job. Only 27 % indicated that the graduates had an adequate preparation for their job. Table 20 shows the employers' perception of CUNORI's job of preparing graduates for employment. The employers were given a series of fourteen statements on which to rate CUNORI graduates. Table 21 shows the mean and standard deviation of the employers regarding the statements. All employers rated CUNORI graduates above average on all the statements. The mean was computed based on a five point scale, i.e. 1 = poor, 2 = below average, 3 = average, 4 = good, and 5 = excellent, respectively. The employers indicated that the graduates are promotable on their jobs because of their willingness to learn new job skills or by attending additional in service training. Job performance related statements like the ability to work with others, follow suggestions, and the ingenuity/ability to meet new situations were rated high, 3.60 or higher. The mean scores for this statements were based on a one to five scale, with 1 being poor and five being excellent.

Table 20. Perceptions about CUNORI's job of preparing graduates for employment.

Response	Number	Percent
Yes, could have done better	9	60
No, preparation all right	4	27
Don't know	2	13

Table 21. Employers' ratings of CUNORI graduates

Statements	Mean*	Standard Deviation (sd)
Technical knowledge needed for present job	3.67	.98
Skills needed for present job	3.67	.90
Willingness to learn new job skills or take training	3.93	.88
Ability to follow suggestions	3.80	.77
Work habits	3.73	.88
Pride in work	3.73	1.10
Ability to work with others	3.87	.83
Promotable	4.00	.78
Creativity/originality	3.60	.91
Ambition/motivation to get ahead	3.67	.98
Concern for productivity	3.73	.88
Ability to meet the public	3.87	1.06
Accuracy in figures and words	3.73	.59
Ingenuity/ability to meet new situations	3.80	.77

*Mean was computed based on the scales of 1 = Poor, 2 = Below Average, 3 = Average, 4 = Good, and 5 = Excellent.

Additional training needs perceived by the employers of CUNORI graduates.

The response rate for the perception of employers regarding additional training was high. All 15 employers identified by the graduates responded to questions regarding additional training CUNORI graduates needed for better preparation. Employers were asked to indicate areas of additional training for CUNORI graduates, which training areas were needed for the "employees personal growth," and also if it would help "the growth and development of the organization". The majority of the employers indicated that additional training was needed for the employees' personal growth and development. The area of leadership/management was mentioned by nine of the employers as being an important area of additional training. As shown in Table 22, the different areas of additional training needed by CUNORI graduates include technical training/education, general skills for project administration, and public speaking. Fewer employers responded that CUNORI graduates need no further training. When the employers were asked whether if they were employing new graduates, they would employ individuals who had the training and education that CUNORI graduates possess, all responded that they would hire such graduates.

Table 22. Areas of additional training for CUNORI graduates

Training Areas	Frequency of mention N = 15	
	For Employees personal growth and development	For growth and development of Organization
a. On the job in service training	5	5
b. Needs additional college education	8	1
c. Technical training related to job	8	3
d. Leadership/management	9	4
e. Improve attitude/respect for employer	3	1
f. Public relations/public speaking	5	1
g. General skills for project administration	8	4
h. Special job related training	4	0
I. No further training	3	1

Opinion of CUNORI graduate employers about the expansion of academic programs at CUNORI.

Table 23 shows the perception of the employers of CUNORI graduates regarding the different areas that need to be expanded in the next five years. For the Production Agriculture graduates, the employers rated practical instruction in horticulture, regional crops, farm management, and farm machinery and equipment as important areas to expand or initiate in the future. The employers of the Animal Production graduates gave the

highest ratings to marketing, the processing of animal products, and the production of animal feed as important areas to expand in the next five years. For the Business Management graduates, the employers perceived a need for expansion in the areas of marketing, marketing research, and finances.

In the opinion of the employers, marketing apparently is an important area that needs to be expanded more in the next five years. All the employers perceive that skills in communication, preparation of materials, practical research planning, and analysis are important areas that need to be expanded in the future. They also feel that it is important to support financially the graduates as they provide community assistance through the final supervised practicums. All employers agree that there is a need in the next five years to expand some areas, especially more practical instruction at CUNORI. The employers perceive that the diploma programs need to be analyzed and updated to prepare the graduates with better skills necessary for the jobs that will be available in the future.

Table 23. Perceptions about different areas needing expansion/initiation in next five years.

Areas needing Expansion	Frequency of mention N = 12		
	Unnecessary	Desirable	Essential
A. **Diploma in Production Agriculture** Practical instruction in:			
a. Production Agriculture	2	5	4
b. Horticulture	2	6	2
c. Soils	1	5	5
d. Regional Crops	1	6	4
e. Farm Management	1	6	4
f. Farm Machinery/Equipment	3	7	0
B. **Diploma in Animal Science:** Practical Instruction in:			
a. Animal Production	2	5	3
b. Administration of animal production enterprises	2	5	4
c. Machinery and animal production equipment	4	5	1
d. Processing of animal products	1	8	2
e. Large scale bovine production	4	3	1
f. Marketing	1	6	6
g. Animal feed production (all kinds)	2	7	2
h. Small animal production	2	4	6

Table 23 (cont.)

C. **Diploma in Business Management** Practical Instruction in:			
a. Business Administration	2	3	5
b. Human Resources	2	5	5
c. Finances	1	5	6
d. Marketing	4	9	2
e. Sales Executive	2	7	2
f. Marketing Research	1	5	7
D. **All three diploma options**			
a. Communication skills			
Mass media	2	4	5
Preparation of materials	1	7	4
b. Research planning & Analysis	2	4	7
c. Computers	2	5	5
d. Financial assistance and advice for final supervised practices	1	6	5

Possible service activities for CUNORI to provide the Chiquimula community.

The CUNORI campus is surrounded by a large agricultural community mostly are populated by small farmers. As part of its mission, CUNORI is expected to provide extension services to help these communities solve some of their problems through research. When asked whether CUNORI

should render some agricultural services to its nearby communities, 93% of the employers responded positively (Table 24). When the employers were

Table 24. Should CUNORI render agricultural services in its nearby communities.

Response	Number N = 15	Percent
Yes	14	93
No	0	0
Do not know	1	7

asked to indicate possible areas or kinds of service CUNORI should offer, "on campus training", "pilot extension projects," and "technical information" were listed. Table 25 shows the possible areas or kinds of service CUNORI could render in the communities near the campus. The employers perceive that practical training is an important area for CUNORI to get more involved in. The CUNORI administration feels it is important for CUNORI to get the students involved in research projects that will help the farmers in the nearby communities. CUNORI has initiated a program in which students in their last year participate in the communities by providing a service practicum before they graduate. A t-test was done between the groups, but no significant differences were observed.

Table 25. Possible services CUNORI should render to communities.

Area or kind of service	Frequency
Provide farmers, cattle producers, and businessman training at the campus	9
Provide information regarding improved practices through individual and group methods such as tours, demonstrations, field days, production competitions, etc., to farmers, cattle producers and businessman.	7
Prepare professional publications for use in extension programs	4
Conduct insect and disease control clinics at the village.	6
Provide staff support to help solve farmers, cattle producers, and businessman, problems in its service area by visiting them.	6
Send senior college students to the "aldeas" to help identify and solve the farmers problems.	5
CUNORI should start pilot extension projects in its nearby "aldeas*"	8

* "aldea" is a group of houses in a rural area and no services are available

The data in this chapter have been presented in an attempt to develop and try out a process of gathering information from former CUNORI students and their present employers. The major focus of this study was to gain information from the opinions and experiences of former CUNORI students and their employers regarding the adequacy and appropriateness of those students' educational experiences while at CUNORI. The information gathered from this study will help the CUNORI curriculum committee make decisions regarding the changes that need to be made to better prepare its graduates.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

This chapter presents a brief summary of research objectives, procedures used to conduct this study, and results. Finally, it presents the conclusion and recommendations based on the findings of the study.

The Centro Universitario de Oriente (CUNORI) was established by the University of San Carlos (USAC) on February 12, 1977, and is located in the eastern sector of Guatemala in the department (state) and city of Chiquimula. The general objective of CUNORI is to provide individuals at a post high school level with a wider and richer education to prepare them for adulthood and working life. CUNORI offers three 3-year diploma program options that prepare students for immediate employment with the option to continue studying for a B. S. degree. However, because the programs at CUNORI are specially tailored to train students to meet immediate employment needs, the curricula are influenced by trends and developments in the production-agriculture-related job market.

CUNORI is in the process of offering a B. S. degree for students who finish the diploma option in the areas of Production Agriculture, Animal

Production, and Business Management. As part of the planning process for the new degree program, the administrators of CUNORI decided to conduct a follow-up study of former students and their employers. Since follow-up studies have never been part of the evaluation process at CUNORI, the purpose of this research was to develop and try out a process of gathering information regarding the adequacy and appropriateness of those students educational experience while at CUNORI. A research committee was appointed to carry out the study. The research committee was organized by the Director of CUNORI, was headed by the Academic Coordinator, and includes faculty from the three programs offered. Both the Director and the Academic Coordinator asked this researcher for assistance in carrying out the follow-up study. The CUNORI administration and the faculty have been of great help to the researcher by providing graduate and course lists and reviewing the instruments used in the study.

Since gathering this type of data is not common at CUNORI, to secure the largest number of returns the curriculum committee at CUNORI was consulted on the best method to collect the data. The researcher and the curriculum committee agreed that two CUNORI students could be trained in collecting the data from the former students. Responses to the questionnaires with this method were very good, with 95% of the graduates and 100% of the employers returning completed questionnaires. The information gained is significant for the purpose of presenting to the CUNORI

administration and the curriculum review committee factual information of former student's opinions and their employers regarding their educational experience.

Objectives of the study and data analysis

A series of specific objectives were prepared to guide the development of questions to ask former CUNORI students and their employers related to the graduates' experiences while at CUNORI. The responses were desired as one part of information needed to make curricular changes. The responses would be helpful in determining the appropriateness of the process used for gathering information on the students' educational experience while at CUNORI and its relationship to employers.

Because of the descriptive nature of the study, mostly descriptive statistics-frequency, percentage, means, and standard deviations were used to analyze the data. A one-way analysis of variance was performed to determine significant relationships and differences. However, there were no significant differences between the groups studied. Data were analyzed by using computer software called Statistical Package for Social Science (SPSS for Windows). Alpha was set a-priori at .05.

A total of 85 (95%) CUNORI graduates and 15 (100%) employers participated by providing complete information asked in the survey questionnaires. Following is a summary of answers received: Part I, summary of data collected from CUNORI graduates, and Part II, summary of

data collected from employers.

Part I. The objectives designed to seek the perception and opinion of CUNORI graduates and the responses received were:

1. TO FIND OUT THE CURRENT EMPLOYMENT STATUS AND POTENTIAL EMPLOYERS OF CUNORI GRADUATES.

CUNORI graduates from the years 1989-93 found a demand for their services. Seventy percent reported that they were employed full time. Twenty three percent indicated that they were unavailable for employment. The major reason for not being employed was because of going to school. Ninety six percent of those are continuing their education for a B. S. degree and are attending full or part time.

The major employers for CUNORI graduates are rural development programs that the government or nongovernmental organizations have in the area. Federal government organizations such as DIGESA, DIGEBOS, FIDA, INDE, IGSS, DIGESEPE, and INACOP employ most of CUNORI graduates. Nongovernmental organizations (NGO's) that also provide employment for CUNORI graduates include CARITAS INTERNATIONAL, World Vision, CARE, PLAN INTERNATIONAL, and the Benson Institute.

2. TO IDENTIFY THE PERCEPTIONS OF CUNORI GRADUATES ABOUT THEIR PRESENT JOB.

For 52% of the graduates, their present job was their first job after finishing their studies at CUNORI. Seventy-five percent of the graduates indicated that their actual salary was between 1000 and 2000 quetzales, which is much better than their starting salary of under 1000 quetzales.

Seventy-three percent of the respondents indicated that their present job was related to or exactly the kind of job they expected to get while studying at CUNORI. When asked the relation of their education at CUNORI to their present job, the majority of the graduates (63%) responded that their education provided a general background. Twenty-five percent reported that their education only provided a specific preparation for their job. The graduates responded positively to a series of statements regarding their present job.

3. TO FIND OUT THE OPINIONS AND ATTITUDES OF CUNORI GRADUATES REGARDING THE OVERALL LEARNING EXPERIENCE AT CUNORI.

CUNORI graduates generally perceived their diploma education as a positive influence and an aid to their employment. Ninety-seven percent indicated that the education received at CUNORI was useful or very useful. The concepts learned while at CUNORI that the graduates most appreciated were: learning to plan and organize agriculture and management activities, learning the technical knowledge and skills for present job, learning to be able to diagnose real job situations, and learning to be able to formulate research projects to solve regional problems. The most important things learned while at CUNORI were:

a. How to increase and/or improve work production
b. That individual preparation in education is important in the job world.

c. How to use concepts to solve job related problems.

As the graduates reflected on their educational experience at CUNORI they reported an average of 2.7 (fair to good) on a scale of one (poor) to four (excellent) for such variables as: teacher command of subject area, teaching skills, library facilities, and use of textbooks.

4. TO FIND OUT THE OPINIONS OF CUNORI GRADUATES ABOUT THE EXPANSION OF ACADEMIC PROGRAMS AT CUNORI

CUNORI graduates reported that there are several areas that CUNORI could expand in the next five years. The Production Agriculture graduates indicated that more practical instruction is desirable or essential in agricultural production (81%), horticulture (48%), and crops in general (48%) is needed. Sixty one percent also indicated that project administration is an area that needs to expand in the next five years. The Animal Production graduates also indicated that more practical instruction in animal feed production (82%), machinery and animal production equipment (77%), processing of animal products (68%), and marketing (73%) are areas that are essential that CUNORI should expand in the next five years. Sixty-eight percent of the graduates indicated that communication skills are desirable and that research planning and analysis are areas essential for CUNORI to expand.

The graduates perceived that CUNORI needs to update the curricula to help with the development of the area. They want more emphasis in areas such as practical instructional activities, project administration,

communication skills, research planning and analysis, and more internships for students.

5. TO IDENTIFY THE PERCEPTIONS OF POSSIBLE SERVICE ACTIVITIES FOR CUNORI TO SERVE THE CHIQUIMULA COMMUNITY.

A great majority, 95% of the graduates responded positively to questions regarding whether CUNORI should render extension service activities to serve the Chiquimula community. Among the possible service activities for CUNORI to serve the Chiquimula community, "organizing presentations" and "students, visit to disseminate information" were rated high by 68% of the graduates. The graduates from all three programs agreed that "providing short on-campus training" in the different programs were areas in which CUNORI should participate.

Part II. The objectives designed for the employers of CUNORI graduates and the responses received were:

1. TO FIND OUT THE POTENTIAL EMPLOYERS OF CUNORI GRADUATES

Forty six percent of the employers of CUNORI graduates are government, federal, or state operated. The rest, 54%, are non-governmental organizations (NGOs) that have development projects in the area. With the exception of CUNORI, which has some part-time faculty teaching, the majority of organizations do not have part-time employees. The major function of CUNORI graduate employers are mainly service, education, research, and community development. None of the employers

provide scholarships as an incentive to attract employees. The CUNORI administration feels that this needs to change and are trying to convince potential employers to donate money for scholarships.

2. TO IDENTIFY THE EMPLOYERS' PERCEPTIONS ABOUT CUNORI GRADUATES' PRESENT JOBS.

All employers (100%) indicated that the graduates have a good technical knowledge needed for their present job. Sixty-seven percent of the employers indicated that even though the graduates have the technical knowledge, they are only somewhat prepared for their jobs in that area. Eighty percent of the employers responded that the graduates are somewhat and/or very well prepared with the skills needed for their present job.

3. TO FIND OUT THE OPINION AND ATTITUDES OF CUNORI GRADUATE EMPLOYERS REGARDING THE OVERALL LEARNING EXPERIENCE AT CUNORI.

Sixty percent of the employers indicated that CUNORI could have done a better job of preparing its graduates for employment. The employers were given a series of fourteen statements on which to rate CUNORI graduates. All employers rated the graduates above average on all statements. The mean was computed based on the scales of 1 = poor, 2 = below average, 3 = average, 4 = good, and 5 = excellent, respectively.

4. TO IDENTIFY THE ADDITIONAL TRAINING NEEDS PERCEIVED BY THE EMPLOYERS OF CUNORI GRADUATES.

The majority of the employers indicated that additional training was needed for the employees' personal growth and development. The area of

leadership and management was mentioned by 60% (9) of the employers as being an important area of additional training for the employees. Only twenty percent of the employers responded that CUNORI graduates need no further training. All the employers agreed that they would employ individuals with the training and education that CUNORI graduates possess.

5. TO FIND OUT THE OPINIONS OF CUNORI GRADUATE EMPLOYERS ABOUT THE EXPANSION OF ACADEMIC PROGRAMS AT CUNORI.

The employers' perception regarding the different areas that need to be expanded in the next five years is presented by program option. For the diploma in Production Agriculture graduates, the employers rated practical instruction in horticulture, regional crops, farm management and farm machinery and equipment as important areas to expand in the future. The employers of the diploma graduates in Animal Production rated high marketing, the processing of animal products, and the production of animal feed, as important areas to expand in the next five years. For the Business Administration diploma graduates, the employers perceived a need of expansion in the areas of marketing, marketing research, and finances.

Regarding all three programs, the employers perceived that the areas in communication skills for the preparation of materials and practical research planning and analysis are important areas that need to be expanded. In the opinion of the employers, marketing is an important area that needs to be expanded in the next five years. The employers agreed that the three

programs need to be analyzed and updated to better prepare graduates with practical training instruction and with better skills that are necessary for the jobs that will be available in the future.

6. TO IDENTIFY THE PERCEPTIONS OF POSSIBLE SERVICE ACTIVITIES FOR CUNORI TO SERVE THE CHIQUIMULA COMMUNITY.

As part of the mission, CUNORI faculty and students are supposed to provide extension services to help the surrounding communities in assisting them to solve some of the problems they might have through practical research activities. Almost all the employers (93%) agree that CUNORI could render agricultural services to its nearby communities. Possible areas or kinds of service activities that CUNORI could render include: research pilot projects, the production of pamphlets with information related to agricultural problems, field days for producers, demonstrations of the research done at the school, sending students to the communities to help identify and solve problems, and more practical training activities. The employers perceive that practical training in areas of the three programs is urgent for CUNORI to get involved.

As found out in the review of literature from previous evaluation studies, the process of evaluation is important in making curriculum changes, which is the case in CUNORI. It is important to involve as many as possible of the stakeholders in the evaluation process. The administrators at CUNORI have been involved since the beginning of the study, as well as the

Curriculum review committee and the faculty. All have participated in the development of the instruments and on the overall adaptation of a follow-up study to gather information relevant to CUNORI. One important aspect of this study was the participation of the employers of CUNORI graduates and the graduates themselves. They have been very collaborative and are participating more in the decision making process of curriculum change at CUNORI. As found in the review of literature, such sources are important since they are the main actors in the field. Former students were asked to review how the program helped or failed to help them prepare for work. Employers were asked to evaluate the current work behaviors of their employees (Jones, 1985). They also know the type of jobs that are available and what kind of skills are needed for those jobs. It was also important to use native persons to assist with the collection of the data. When native persons are used to collect the information, the respondents are more willing to cooperate in the process.

Instrumentation of the study

This was a descriptive study. In answering the specific objectives of the study, the information was collected through the use of two questionnaires that were prepared, revised, pre-tested, translated, and hand delivered. The population for this study was 89 CUNORI graduates of three diploma programs from the years 1989 -93, and 15 of their employers. The questionnaires were hand delivered with a return envelope that was collected

two days later. Two CUNORI students were trained on how to carry out the research to avoid bias in the data collection. They also assisted the delivering and collecting the questionnaires. Frequency counts and percentages were made for all responses on the questionnaires from the former students and their employers.

The collection of information on dropouts were not included in the research because the evaluation committee at CUNORI decided to study them first. Results from that study done by the evaluation committee are mentioned in this dissertation. The questionnaires for the dropouts were prepared by the Curriculum Review Committee with the assistance of the Administration and faculty and the Academic Coordinator.

Conclusions and Recommendations

The following conclusions and recommendations were drawn based on the data analysis and findings of the study:

Conclusion #1. The education received by the graduating CUNORI students has prepared them satisfactorily and has contributed to their employability. Graduating student employment becomes a measure that CUNORI can use to evaluate the quality of the programs.

Recommendation #1. Although a majority of CUNORI graduates were successful in finding employment, there is evidence that CUNORI and employers need to establish a collaborative relationship for the purpose of evaluating the programs contributing to the needs of the students,

employers, CUNORI and of society. As Finch & Crunkilton state, "product evaluation uses former students as a focal point in determining the program quality".

Conclusion #2. Fifteen employers were included in the survey. Only CUNORI offered part time employment. The majority of employers require that the employees work full time.

Recommendation #2. Employers and CUNORI should work together in providing employees the opportunity to continue their education. CUNORI might consider having courses in the evening after five and on weekends to accommodate those who want to continue their studies but cannot attend during the day. Also, offering summer school would accommodate the growing number of graduates who want to continue their education but cannot attend year round.

Conclusion #3. The employers consider that CUNORI graduates have a good technical knowledge base for their present job but lack appropriate training in leadership/management, general skills for project administration, and practical training. CUNORI has the potential to provide in-service training for the graduates that are employed.

Recommendation #3. CUNORI in collaboration with the employers should provide additional training in the areas of leadership/management, general skills for project administration, and practical training. In addition the graduates would be advantaged by having practical internships to gain more

job simulated experience and preparation.

Conclusion #4. Even though CUNORI graduates are satisfied with their jobs, they are limited in having a better opportunity for job promotion without the B. S. Degree.

Recommendation #4. CUNORI should provide the opportunity and encouragement to the graduates to return for additional study required for the Bachelor of Science degree. This opportunity should help the graduates to be promoted in their jobs or to help them find a better one, thus making more jobs available for the new graduates.

Conclusion #5. The opportunity exists for CUNORI to teach more practical courses with a theoretical foundation along with providing the students with the necessary skills and abilities needed for successful job performance.

Recommendation #5. Changes recommended should include: (1) Agriculture area: practical instruction in horticulture, regional crops, farm management and farm machinery, and equipment; (2) Animal Science area: marketing, the processing of animal by-products, and the production of animal feed; and, (3) Business Administration area: marketing, marketing research, and finances.

Conclusion #6. It is important for CUNORI to get more involved in providing brief on-campus in-service training and practical research projects that will help satisfy the needs of the graduates and that of the nearby communities.

Recommendation #6. Extension and public service should to be a vital function of CUNORI's mission. The CUNORI graduates and their employers

were in agreement that CUNORI should offer extension service activities to the Chiquimula community.

Conclusion #7. In conclusion, CUNORI is an important local institution for higher education.

Recommendation #7. CUNORI should continue to be a leader in graduating high quality students to better serve the needs of the employers as well as the community and the students. CUNORI should proceed to review all three programs and to make the necessary changes in response to student needs. With the changes taking place in the three areas of study, CUNORI should provide a model for the other regional centers as they review their programs. CUNORI can provide the factual information for establishing the review process of the programs in other regional centers.

Suggestions for further study:

Areas for further study may include:

1. A follow-up study of this same group in five to ten years should be conducted to determine changes in job performance, advancement, and of special interest how many graduates will have continued to study at CUNORI for purposes of obtaining a B.S. degree?

2. The value of the process design of involving the stakeholders in the present research requires further study.

3. The Implementation of the process used in this study to other Guatemalan university centers.

4. A follow up study of students who did not graduate to determine their employment status and job satisfaction.

5. An Investigation of the economic benefits for students who complete the three year technical program and the five year B. S. Program.

6. Exploring potential job opportunities that exist beyond the fifteen employers identified in the study.

7. Investigating the possibility and value of establishing a placement center for CUNORI graduates.

Additional Observations

Observation #1. Trying out the process of evaluating curricula at CUNORI through a follow-up study works when the stakeholders are involved and there is a genuine interest. The CUNORI administration and the curriculum review committee made the difference in this study by assisting and supporting the researcher in the development of the instruments and providing counsel throughout the study. Their support was invaluable for the success of implementing this type of study in a developing country. As found in the review of literature, "for institutions that have not already established a tradition of comprehensive assessment, it is important to initiate any new outcome assessment modestly, with minimal disruption of institutional activities" (Jacobi et al., 1987). CUNORI should continue with the review of the curriculum. They should include the employer and graduates as they make decisions on changes that need to be made to better

prepare the students for future employment. Graduates understand employment availability and what is required from them to be prepared with the necessary skills and abilities.

Observation #2. CUNORI should involve more of the employers and graduates in the decision making process of curriculum review and implementation. A more comprehensive and complete curriculum evaluation system can evolve from these modest beginnings. Employers and graduates were not utilized as important sources of information for the review and development of CUNORI's curriculum. The employers have always been in the area but there has been no connection between CUNORI and them. The graduates have had very little continuing contact with the faculty and administrators at CUNORI. CUNORI should involve the employers and the graduates in the process of reviewing the curricula and in the implementation of any changes to the programs. CUNORI should follow-up the graduates to assess how they are performing in their jobs, as it is done in other countries. The employers and graduates are important sources of information for curriculum review as discovered in this study and supported in the literature review.

Observation # 3. CUNORI has initiated a program in which students in their final year select a community, do an assessment of the community, and prepare a plan of action to provide for a supervised practicum for three months as a graduation requirement. The practicums are helping both the

students and the communities. Students get real life experiences and the communities benefit from the students' work.

Observation # 4. From the participation in the study, CUNORI administration, department heads, and faculty have already started implementing some of the findings in this study. They are using focus groups, interviews and other assessment techniques to continue with the process of evaluating the centers programs.

Observation #5. It is important to note that the instruments used were planned with the assistance of the CUNORI administration, department heads, and faculty.

Observation #6. The success of the return of the questionnaires was in large measure precipitated by the fact that they were hand delivered to all the graduates and their employers. This procedure improves the response rate in developing countries where the mail system is not dependable.

Observation #7. As a result of this study, Dr. O. Donald Meaders (Retired Professor, Agricultural and Extension Education Department, Michigan State University) was invited to CUNORI as a consultant to help with the review process. Following his visit the department heads and the faculty began working to design a core curriculum for the three programs.

Observation #8. CUNORI should investigate improved methods for recruiting high school graduates. The CUNORI administration needs to know and understand what the high school graduate interests. The administration also

needs to know if the options of study at CUNORI are still appealing to high school graduates or if there is a need for other fields of study.

Observation #9. An investigation of the possibility of integrating the three fields of study to optimize CUNORI resources is essential. CUNORI needs to consolidate courses that are being duplicated in the three areas of study, i.e., math, chemistry, etc.. This would provide an opportunity for inter disciplinary learning experiences.

APPENDICES

Appendix A: Tables

Appendix Table 1. Sources of assistance for finding first job after leaving CUNORI.

Sources of assistance	Frequency			Total N=53
	Production Agriculture N= 11	Animal Production N= 14	Business Management N= 28	
Through a family friend	2	3	9	14
Through CUNORI recommendation	2	2	1	5
Through personal contact by an employer	1	1	2	4
Through newspaper advertisement	2	1	2	5
Through a contest of merit	2	3	8	13
By self	2	4	6	12

Appendix Table 2. Most important factor for CUNORI former students in taking first job.

Important factor in taking first job	Frequency			Total N=52
	Production Agriculture N=11	Animal Production N=14	Business Management N=27	
Working conditions	3	1	5	9
Salary	4	3	3	10
Importance of work	3	3	5	11
Opportunity for promotion	0	2	7	9
Serving others	1	4	1	6
Personal interest	0	1	6	7

Appendix Table 3. Graduates perceptions about education at CUNORI

My education at CUNORI prepared me to:	Percent Responding					
	Agriculture Production N=30		Animal Production N=20		Business Management N=35	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
Plan and organize activities	100	0.00	96	4	94	6
Manage efficiently	94	3	77	14	89	6
Have the skills to implement improved practices in	94	6	96	4	97	3
Determine problems and solve them	83	6	64	27	100	0.00
Be a teacher to help others gain knowledge and skills in	87	6	82	4	66	17
Understand basic principles	74	13	77	9	97	3
Take pride in my work	80	13	86	14	83	6
Have the ability to work easily with others	90	6	68	14	97	3
Be a problem solver when faced with new situations	94	6	73	9	94	6
Be willing to learn new job skills or take training	97	3	100	0.00	100	0.00
Have the ability to meet the public	90	3	91	4	92	3
Be ambitious/have motivation to get ahead	90	10	77	14	90	3
Have the technical knowledge for present job	90	10	91	4	89	11
Have the skills for my present job	90	10	77	14	81	9

Appendix 3 - (cont'd).

My education at CUNORI prepared me to:	Percent Responding					
	Agriculture Production N=30		Animal Production N=20		Business Management N=35	
	Agree	Disagree	Agree	Disagree	Agree	Disagree
Diagnose real situation in	87	6	86	14	89	6
Supervise the execution of projects	80	19	86	9	74	17
Diagnose regional problems	87	10	82	9	66	14
Formulate research to solve problems in	77	16	64	19	69	11

Appendix Table 4. Areas of CUNORI expansion in Production Agriculture, N=30

Areas for CUNORI to expand / initiate in the next five years.	% Indicating		
	Unnecessary	Desirable	Essential
A. Practical instruction in:			
Agricultural production	0	81	19
Horticulture	0	48	52
Crops	3	48	48
Soils	3	23	74
Agricultural Administration	3	36	61
Farm Machinery/equipment	0	29	71
B. Project administration	0	61	39

Appendix Table 5. Areas of CUNORI expansion in Animal Production, N=20.

Areas for CUNORI expansion	% Indicating		
	Unnecessary	Desirable	Essential
A. Practical instruction in:			
-Animal production	4	46	50
-Administration of animal production enterprises	0	41	59
-Machinery and animal production equipment	0	23	77
-Processing of animal products (milk, meat, etc.)	0	32	68
-Large scale bovine production	4	82	14
-Marketing		27	73
-Animal feed production	4	14	82
-Small animal production		41	59
B. Communication skills in:			
-Preparation of materials	9	68	23
C. Research planning and analysis	0	32	68
D. Internships for students	0	23	77

Appendix Table 6. Areas of CUNORI expansion in Business Management, N=35.

Areas for CUNORI to expand / initiate in the next five years.	% Indicating		
	Unnecessary	Desirable	Essential
A. Practical instruction in:			
-Business Administration	0	40	57
-Human Resources	6	57	34
-Finances	3	43	51
-Marketing	3	52	40
-Sales Executive	0	62	35
-Marketing research	0	45	43
B. Communication skills in:			
-Editing	3	66	29
-Preparation of materials for publication	0	66	31
C. Research planning and analysis	0	51	46

APPENDIX B: QUESTIONNAIRES

QUESTIONNAIRE FOR CUNORI FORMER STUDENTS
IN AGRICULTURE
Centro Universitario de Oriente

Date: _____

1. Gender. _____ Male _____ Female

2. In what year were you born? _____

3. Your permanent residence is in an:

   _____ Urban Area _____ Rural Area

4. Please indicate the study program in which you were registered:

   _____ Diploma in Production Agriculture

   _____ Diploma in Business Management

   _____ Diploma in Animal Science

5. Please list 2-3 reasons why you enrolled in the diploma program at CUNORI?

   _____

   _____

   _____

6. Did you successfully complete your diploma program?

   _____ Yes If **yes**, in what year did you receive your diploma? _____

   _____ No If **no**, please check the major reason(s) for not completing your training.

   _____ Not satisfied with my progress
   _____ Had problems with the school administrators
   _____ Family problems
   _____ No money and no one to help me
   _____ Had to run family farm
   _____ Got married

_____ Parents/family requested I drop out

_____ Was failing in courses

_____ Training course was too long

_____ Problems with teachers

_____ Got job offer

_____ Not interested in courses

_____ Other (specify)

_____

7. What is your present employment status? (check as many as apply)

   a. ___ Employed for wages full-time (40 hours or more per week)

   b. ___ Employed for wages part-time (less than 40 hours per week)

   c. ___ Farming

   d. ___ Personal Business

   e. ___ Unemployed and seeking work

   f. ___ Other (specify) _____

   g. ___ Unavailable for employment (you cannot accept a job for one or more of the following reasons)

      1. ___ In school full-time

      2. ___ In school part-time

         If in school: Name of school _____

         Describe program _____

      3. ___ Health condition

      4. ___ Housewife / pregnancy

      5. ___ Other (specify) _____

If unemployed or unavailable for employment, skip to question number 14.

8. How did you get your first position after leaving CUNORI?

   a. _____ Through a family or friend

   b. _____ Through CUNORI recommendation; What person in CUNORI: _____

   c. _____ Through personal contact by an employer

   d _____ Through Newspaper Advertisement

   e. _____ Through public employment agency

f. _____ Through private employment agency

g. _____ Through a contest of merit

h. _____ By self

i. _____ Other (specify) _____

9. How long did it take after leaving CUNORI to get your first job?

_____ Less than 1 month
_____ 1 to 2 months
_____ 3 to 4 months
_____ 5 to 6 months
_____ 6 to12 months
_____ 12 to 24 months
_____ more than 24 months

10. When taking your first job, which was the most important to you?

_____ Working conditions
_____ Salary
_____ Importance of work
_____ Opportunity for promotion
_____ Serving others
_____ Personal interest
_____ Other, specify _____

11. If you are now employed

a. Who is your current employer? _____

b. Briefly describe your work (job title, etc.) _____

_____

_____

c. How many jobs have you had since leaving CUNORI?

_____ This is my first job

_____ This is my second job

_____ Have had three or more jobs

d. To what extent is your present job like the type of work you thought you would follow when you left CUNORI?

_____ Didn't have any definite idea about this work while at CUNORI

_____ Not related at all

11. continue

_____ Is somewhat related

_____ Closely related but not what I expected

_____ Exactly the kind of job I thought I would get

If you are now employed.....

e. What is the relation of your education at CUNORI to your present job?

_____ No relation at all

_____ Gave me a general background

_____ Gave me specific preparation

12. We are going to ask you now about your agreement or disagreement with different statements about your present job.

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
a. There is a good future for me on my job	SD	DA	Neither	A	SA
b. My job is boring	SD	DA	Neither	A	SA
c. I like the people I work with	SD	DA	Neither	A	SA
d. I will get more pay by promotion	SD	DA	Neither	A	SA
e. I have good supervision at work	SD	DA	Neither	A	SA
f. I try hard to do high quality work	SD	DA	Neither	A	SA
g. I would like to change to another occupation	SD	DA	Neither	A	SA
h. I will only get more pay by staying on the job a long time (seniority)	SD	DA	Neither	A	SA
i. I would like to change to a different employer but keep the same kind of work	SD	DA	Neither	A	SA

12. (Continue)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
j. I am very well trained for my present job	SD	DA	Neither	A	SA
k. I work to support my family	SD	DA	Neither	A	SA
l. This is the kind of work for which my education prepared me	SD	DA	Neither	A	SA
m. The pay is just for my training and experience	SD	DA	Neither	A	SA
n. I consider my job temporary for me	SD	DA	Neither	A	SA
o. My employer cares about safe working conditions	SD	DA	Neither	A	SA
p. It is okay for me to be absent when I feel like it	SD	DA	Neither	A	SA
q. I like my job	SD	DA	Neither	A	SA

13. Please indicate your monthly starting salary (in quetzales, before taxes) upon leaving CUNORI and your present salary.

Starting (first job)	Present situation
___ Less than 500	___ Less than 500
___ 501 to 750	___ 501 to 750
___ 1000 to 1250	___ 1000 to 1250
___ 1251 to 1500	___ 1251 to 1500
___ 1501 to 1999	___ 1501 to 1999
___ 2000 to 2500	___ 2000 to 2500

14. In your opinion do you think the education you received at CUNORI was useful to the needs of your job or to continue your education?

_____ Useless _____ Useful _____ Very useful

15. We are going to ask you now about your agreement or disagreement with different statements about your education at CUNORI.

My education at CUNORI prepared me to:

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
a. Plan and organize the production activities for farming	SD	DA	Neither	A	SA
b. Plan and organize for improved efficiency of crop production	SD	DA	Neither	A	SA
c. Have the skills to implement improved production practices	SD	DA	Neither	A	SA
d. Be an Extension agent for working with farmers	SD	DA	Neither	A	SA
e. Be a teacher to help youth and adults gain knowledge and skills in agriculture	SD	DA	Neither	A	SA
f. Understand basic principles for diffusion and dissemination of technical information	SD	DA	Neither	A	SA
g. Take pride in my work	SD	DA	Neither	A	SA
h. Have the ability to work easily with others	SD	DA	Neither	A	SA
i. Be a problem solver when faced with new situations	SD	DA	Neither	A	SA
j. Be willing to learn new job skills or take training	SD	DA	Neither	A	SA
k. Be accurate in figures and words	SD	DA	Neither	A	SA

15. (Continue)

My education at CUNORI prepared me to:

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree
l. Have the ability to meet the public (persons outside with whom you have to deal)	SD	DA	Neither	A	SA
m. Be ambitious/have motivation to get ahead	SD	DA	Neither	A	SA
n. Have the technical knowledge for my present job	SD	DA	Neither	A	SA
o. Have the skills for my present job	SD	DA	Neither	A	SA
p. Diagnose the real situation in production units	SD	DA	Neither	A	SA
q. Supervise the execution of agricultural projects	SD	DA	Neither	A	SA
r. Diagnose regional agricultural problemsl	SD	DA	Neither	A	SA
s. Formulate research projects to solve agricultural problems	SD	DA	Neither	A	SA

16. What do you think is the single most important thing you learned at CUNORI?

---

17. As you reflect on your educational experience at CUNORI how would you rate the quality of the following:

a. Teachers command of subject area	Poor	Fair	Good	Excellent
b. Teaching skills	Poor	Fair	Good	Excellent
c. Classroom discipline	Poor	Fair	Good	Excellent
d. Helping students outside classroom	Poor	Fair	Good	Excellent
e. Evaluation and grading of students	Poor	Fair	Good	Excellent

17. continue

As you reflect on your educational experience at CUNORI how would you rate the quality of the following:

f. Library facilities	Poor	Fair	Good	Excellent
g. Use of textbooks in courses	Poor	Fair	Good	Excellent
h. Practical training	Poor	Fair	Good	Excellent

18. What contact have you had with CUNORI since you graduated / left? (check as many as apply)

_____ No contact _____ Attended short course

_____ CUNORI faculty contact _____ Continue studies at CUNORI

_____ Association contact _____ Other (specify) _____

19. How would you rate the importance of each of the following areas for CUNORI to expand / initiate in the next five years.

	Unnecessary	Desirable	Essential
a. Practical instruction in: Agricultural production	_____	_____	_____
Horticulture	_____	_____	_____
Crops	_____	_____	_____
Soils	_____	_____	_____
Farm Management	_____	_____	_____
Farm Machinery/equipment	_____	_____	_____
b. Communication skills			
Mass media	_____	_____	_____
Preparation of materials	_____	_____	_____
c. Research planning and analysis	_____	_____	_____
d. Internships for students	_____	_____	_____
e. Project administration	_____	_____	_____
f. Other (specify)	_____	_____	_____

20. Following is a list of service activities that CUNORI offers for the development of the agricultural sector in Chiquimula as part of the training for the students. How would others like yourself rate each of the following items? Circle your answer, using the following code:

SD	=	Strongly Disagree
D	=	Disagree
N	=	Neutral
A	=	Agree
SA	=	Strongly Agree

a. students visit and disseminate information on new farm practices, identifying farmers' problems and help solve these problems	SD	D	N	A	SA
b. CUNORI provides extension services to the community and visits farmers regularly	SD	D	N	A	SA
c. Put up demonstration plots where farmers can see how improved farm practices are done	SD	D	N	A	SA
d. Publish and distribute farmers' bulletins, posters pamphlets, leaflets, etc.	SD	D	N	A	SA
e. Organize presentations related to improved methods of growing regional crops and raising farm animals	SD	D	N	A	SA
f. Organize farm exhibitions during local ceremonies like fiestas	SD	D	N	A	SA
g. Organize farmers' field days in the college campus and show on-going research, experiments and share other information	SD	D	N	A	SA
h. Provide short in-campus/off-campus training in different aspects:					
1. control of insect, pest and plant diseases in the farm	SD	D	N	A	SA
2. control of farm animal diseases	SD	D	N	A	SA
3. Improving soil fertility	SD	D	N	A	SA
4. Proper use of chemicals like fertilizer, pesticides, etc.	SD	D	N	A	SA
5. Cultivation practices of vegetables	SD	D	N	A	SA
6. Cultivation practices of field crops	SD	D	N	A	SA
7. Others (specify) _____	SD	D	N	A	SA

20. (Continue..)

i. Prepare extension materials for the use of mass media	SD	D	N	A	SA
j. Provide extension service in its nearby communities	SD	D	N	A	SA
k. Others (specify) _____	SD	D	N	A	SA
_____	SD	D	N	A	SA
_____	SD	D	N	A	SA

21. Are there other issues facing the farmers and agribusinesses in the area which CUNORI should be addressing?

_____

_____

_____

_____

_____

Thank you for completing this questionnaire. Please place this in the envelope which has been provided and give to the CUNORI student who will come to pick it up.

QUESTIONNAIRE FOR CUNORI FORMER STUDENTS
IN ANIMAL SCIENCE
Centro Universitario de Oriente

Date: _____

1. Gender. ____ Male ____ Female

2. In what year were you born? _____

3. Your permanent residence is in an:

   _____ Urban Area _____ Rural Area

4. Please indicate the study program in which you were registered:

   _____ Diploma in Production Agriculture

   _____ Diploma in Business Management

   _____ Diploma in Animal Science

5. Please list 2-3 reasons why you enrolled in the diploma program at CUNORI?

   _____

   _____

   _____

   _____

6. Did you successfully complete your diploma program?

   _____ Yes If **yes**, in what year did you receive your diploma? _____

   _____ No If **no**, please check the major reason(s) for not completing your training.

   _____ Not satisfied with my progress
   _____ Had problems with the school administrators
   _____ Family problems
   _____ No money and no one to help me.
   _____ Had to run family farm
   _____ Got married

_____ Parents/family requested I drop out

_____ Was failing in courses

_____ Training course was too long

_____ Problems with teachers

_____ Got job offer

_____ Not interested in courses

_____ Other (specify)

_____

7. What is your present employment status? (check as many as apply)

   a. ___ Employed for wages full-time (40 hours or more per week)

   b. ___ Employed for wages part-time (less than 40 hours per week)

   c. ___ Farming

   d. ___ Personal Business

   e. ___ Unemployed and seeking work

   f. ___ Other (specify) _____

   g. ___ Unavailable for employment (you cannot accept a job for one or more of the following reasons)

      1. ___ In school full-time

      2. ___ In school part-time

         If in school: Name of school _____

         Describe program _____

      3. ___ Health condition

      4. ___ Housewife / pregnancy

      5. ___ Other (specify) _____

If unemployed or unavailable for employment, skip to question number 14.

8. How did you get your first position after leaving CUNORI?

   a. _____ Through a family or friend

   b. _____ Through CUNORI recommendation; What person in CUNORI: _____

   c. _____ Through personal contact by an employer

   d. _____ Through Newspaper Advertisement

   e. _____ Through public employment agency

   f. _____ Through private employment agency

   g. _____ Through a contest of merit

   h. _____ By self

   i. _____ Other (specify) _____

9. How long did it take after leaving CUNORI to get your first job?

   _____ Less than 1 month _____ 6 to12 months

   _____ 1 to 2 months _____ 12 to 24 months

   _____ 3 to 4 months _____ more than 24 months

   _____ 5 to 6 months

10. When taking your first job, which was the most important to you?

    _____ Working conditions _____ Serving others

    _____ Salary _____ Personal interest

    _____ Importance of work _____ Other, specify _____

    _____ Opportunity for promotion _____

11. If you are now employed

    a. Who is your current employer? _____

    b. Briefly describe your work (job title, etc.) _____

    _____

    _____

    c. How many jobs have you had since leaving CUNORI?

    _____ This is my first job

    _____ This is my second job

    _____ Have had three or more jobs

    d. To what extent is your present job like the type of work you thought you would follow when you left CUNORI?

    _____ Didn't have any definite idea about this work while at CUNORI

    _____ Not related at all

    _____ Is somewhat related

    _____ Closely related but not what I expected

    _____ Exactly the kind of job I thought I would get

    If you are now employed.....

    e. What is the relation of your education at CUNORI to your present job?

    _____ No relation at all

    _____ Gave me a general background

    _____ Gave me specific preparation

12. We are going to ask you now about your agreement or disagreement with different statements about your present job.

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. There is a good future for me on my job	SD	DA	Neither	A	SA
b. My job is boring	SD	DA	Neither	A	SA
c. I like the people I work with	SD	DA	Neither	A	SA
d. I will get more pay by promotion	SD	DA	Neither	A	SA
e. I have good supervision at work	SD	DA	Neither	A	SA
f. I try hard to do high quality work	SD	DA	Neither	A	SA
g. I would like to change to another occupation	SD	DA	Neither	A	SA
h. I will only get more pay by staying on the job a long time (seniority)	SD	DA	Neither	A	SA
i. I would like to change to a different employer but keep the same kind of work	SD	DA	Neither	A	SA
j. I am very well trained for my present job	SD	DA	Neither	A	SA
k. I work to support my family	SD	DA	Neither	A	SA
l. This is the kind of work for which my education prepared me	SD	DA	Neither	A	SA

12. (Continue)

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
m. The pay is just for my training and experience	SD	DA	Neither	A	SA
n. I consider my job temporary for me	SD	DA	Neither	A	SA
o. My employer cares about safe working conditions	SD	DA	Neither	A	SA
p. It is okay for me to be absent when I feel like it	SD	DA	Neither	A	SA
q. I like my job	SD	DA	Neither	A	SA

13. Please indicate your monthly starting salary (in quetzales, before taxes) upon leaving CUNORI and your present salary.

Starting (first job)	Present situation
___ Less than 500	___ Less than 500
___ 501 to 750	___ 501 to 750
___ 1000 to 1250	___ 1000 to 1250
___ 1251 to 1500	___1251 to 1500
___ 1501 to 1999	___ 1501 to 1999
___ 2000 to 2500	___ 2000 to 2500

14. In your opinion do you think the education you received at CUNORI was useful to the needs of your job or to continue your education?

_____ Useless _____ Useful _____ Very useful

15. We are going to ask you now about your agreement or disagreement with different statements about your education at CUNORI.

My education at CUNORI

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Plan and organize animal production activities	SD	DA	Neither	A	SA
b. Plan and organize for improved efficiency of animal production	SD	DA	Neither	A	SA
c. Have the skills to implement improved animal production practices	SD	DA	Neither	A	SA
d. Be an Extension agent for working with farmers	SD	DA	Neither	A	SA
e. Be a teacher to help youth and adults gain knowledge and skills in animal production	SD	DA	Neither	A	SA
f. Understand basic principles for diffusion and dissemination of technical information	SD	DA	Neither	A	SA
g. Take pride in my work	SD	DA	Neither	A	SA
h. Have the ability to work easily with others	SD	DA	Neither	A	SA
i. Be a problem solver when faced with new situations	SD	DA	Neither	A	SA

15. (Continue)

My education at CUNORI prepared me to:	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
j. Be willing to learn new job skills or take training	SD	DA	Neither	A	SA
k. Be accurate in figures and words	SD	DA	Neither	A	SA
l. Have the ability to meet the public (persons outside with whom you have to deal)	SD	DA	Neither	A	SA
m. Be ambitious/have motivation to get ahead	SD	DA	Neither	A	SA
n. Have the technical knowledge for my present job	SD	DA	Neither	A	SA
o. Have the skills for my present job	SD	DA	Neither	A	SA
p. Have a concern for safety	SD	DA	Neither	A	SA
q. Diagnose the real situation in production units	SD	DA	Neither	A	SA
r. Supervise the execution of animal production projects	SD	DA	Neither	A	SA
s. Diagnose regional animal production problems	SD	DA	Neither	A	SA
t. Formulate research projects to solve animal production problems	SD	DA	Neither	A	SA

16. What do you think is the single most important thing you learned at CUNORI?

_____

_____

_____

17. As you reflect on your educational experience at CUNORI how would you rate the quality of the following:

a. Teachers command of subject area	Poor	Fair	Good	Excellent
b. Teaching skills	Poor	Fair	Good	Excellent
c. Classroom discipline	Poor	Fair	Good	Excellent
d. Helping students outside classroom	Poor	Fair	Good	Excellent
e. Evaluation and grading of students	Poor	Fair	Good	Excellent
f. Library facilities	Poor	Fair	Good	Excellent
g. Use of textbooks in courses	Poor	Fair	Good	Excellent
h. Practical training	Poor	Fair	Good	Excellent

18. What contact have you had with CUNORI since you graduated / left? (check as many as apply)

_____ No contact

_____ CUNORI faculty contact

_____ Association contact

_____ Attended short course

_____ Continue studies at CUNORI

_____ Other (specify) _____

19. How would you rate the importance of each of the following areas for CUNORI to expand / initiate in the next five years.

	Unnecessary	Desirable	Essential
a. Practical instruction in: Animal Production	_____	_____	_____
Administration of animal production enterprises	_____	_____	_____
Machinery and animal production equipment	_____	_____	_____
Processing of animal products (milk, meat, etc.)	_____	_____	_____
Large scale bovine production	_____	_____	_____
marketing	_____	_____	_____
Animal feed production (all kinds)	_____	_____	_____
Small animal production	_____	_____	_____
b. Communication skills			
Mass media	_____	_____	_____
Preparation of materials	_____	_____	_____
c. Research planning and analysis	_____	_____	_____
d. Internships for students	_____	_____	_____
e. Business management	_____	_____	_____
f. Other (specify)	_____	_____	_____

20. Following is a list of service activities that CUNORI offers for the development of the agricultural sector in Chiquimula as part of the training for the students. How would others like yourself rate each of the following items? Circle your answer, using the following code:

SD	=	Strongly Disagree
D	=	Disagree
N	=	Neutral
A	=	Agree
SA	=	Strongly Agree

a.	students visit and disseminate information on new animal production practices, identifying farmers' problems and help solve these problems	SD	D	N	A	SA
b.	CUNORI provides extension services to the community and visits animal producers regularly	SD	D	N	A	SA
c.	Put up demonstration plots/modules where farmers can see how improved practices related to animal production are done	SD	D	N	A	SA
d.	Publish and distribute farmers' bulletins, posters pamphlets, leaflets, etc.	SD	D	N	A	SA
e.	Organize presentations related to improved methods of growing regional crops and raising farm animals	SD	D	N	A	SA
f.	Organize farm exhibitions during local ceremonies like fiestas	SD	D	N	A	SA
g.	Organize farmers' field days in the college campus and show on-going research, experiments and share other information	SD	D	N	A	SA

20. (Continue)

SD = Strongly Disagree
D = Disagree
N = Neutral
A = Agree
SA = Strongly Agree

h. Provide short on-campus/off-campus training in different aspects, such as:

1. control of common farm animal diseases	SD	D	N	A	SA
2. Animal genetic improvements	SD	D	N	A	SA
3. Artificial insemination	SD	D	N	A	SA
4. Animal nutrition	SD	D	N	A	SA
5. Small animal production	SD	D	N	A	SA
6. Marketing	SD	D	N	A	SA
7. Industrialization of animal by products (milk, meat, etc.)	SD	D	N	A	SA
8. Administration of animal production enterprises	SD	D	N	A	SA
9. Machinery and agricultural equipment	SD	D	N	A	SA
10. Others (specify) _____ _____	SD	D	N	A	SA

i. Prepare extension materials for the use of mass media — SD D N A SA

j. Provide extension service in its nearby communities — SD D N A SA

k. Others (specify)

_____	SD	D	N	A	SA
_____	SD	D	N	A	SA
_____	SD	D	N	A	SA

21. Are there other issues facing the farmers, cattle producers, and agribusinesses in the area which CUNORI should be addressing?

_____

_____

_____

_____

_____

Thank you for completing this questionnaire. Please place this in the envelope which has been provided and give to the CUNORI student who will come to pick it up.

QUESTIONNAIRE FOR CUNORI FORMER STUDENTS
IN BUSINESS ADMINISTRATION
Centro Universitario de Oriente

Date: _____

1. Gender. _____ Male _____ Female

2. In what year were you born? _____

3. Your permanent residence is in an:

   _____ Urban Area _____ Rural Area

4. Please indicate the study program in which you were registered:

   _____ Diploma in Production Agriculture

   _____ Diploma in Business Management

   _____ Diploma in Animal Science

5. Please list 2-3 reasons why you enrolled in the diploma program at CUNORI?

   _____

   _____

   _____

6. Did you successfully complete your diploma program?

   _____ Yes If **yes**, in what year did you receive your diploma? _____

   _____ No If **no**, please check the major reason(s) for not completing your training.

   _____ Not satisfied with my progress
   _____ Problems with teachers
   _____ Family problems
   _____ Had problems with the school administrators
   _____ Had to run family farm
   _____ Parents/family requested I drop out
   _____ No money and no one to help me
   _____ Was failing in courses
   _____ Got married
   _____ Training course was too long
   _____ Got job offer
   _____ Other (specify)
   _____ Not interested in courses

   _____

7. What is your present employment status? (check as many as apply)

   a. ___ Employed for wages full-time (40 hours or more per week)

   b. ___ Employed for wages part-time (less than 40 hours per week)

   c. ___ Farming

   d. ___ Personal Business

   e. ___ Unemployed and seeking work

   f. ___ Other (specify) _____

   g. ___ Unavailable for employment (you cannot accept a job for one or more of the following reasons)

      1. ___ In school full-time

      2. ___ In school part-time

         If in school: Name of school _____

         Describe program _____

      3. ___ Health condition

      4. ___ Housewife / pregnancy

      5. ___ Other (specify) _____

If unemployed or unavailable for employment, skip to question number 14.

8. How did you get your first position after leaving CUNORI?

   a. _____ Through a family or friend

   b. _____ Through CUNORI recommendation; What person in CUNORI: _____

   c. _____ Through personal contact by an employer

   d. _____ Through Newspaper Advertisement

   e. _____ Through public employment agency

   f. _____ Through private employment agency

   g. _____ Through a contest of merit

   h. _____ By self

   i. _____ Other (specify) _____

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9. How long did it take after leaving CUNORI to get your first job?

_____ Less than 1 month
_____ 1 to 2 months
_____ 3 to 4 months
_____ 5 to 6 months
_____ 6 to12 months
_____ 12 to 24 months
_____ more than 24 months

10. When taking your first job, which was the most important to you?

_____ Working conditions
_____ Salary
_____ Importance of work
_____ Opportunity for promotion
_____ Serving others
_____ Personal interest
_____ Other, specify _____
_____

11. If you are now employed

a. Who is your current employer? _____

b. Briefly describe your work (job title, etc.) _____

_____

_____

c. How many jobs have you had since leaving CUNORI?

_____ This is my first job
_____ This is my second job
_____ Have had three or more jobs

d. To what extent is your present job like the type of work you thought you would follow when you left CUNORI?

_____ Didn't have any definite idea about this work while at CUNORI
_____ Not related at all
_____ Is somewhat related
_____ Closely related but not what I expected
_____ Exactly the kind of job I thought I would get

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If you are now employed.....

e. What is the relation of your education at CUNORI to your present job?

_____ No relation at all

_____ Gave me a general background

_____ Gave me specific preparation

12. We are going to ask you now about your agreement or disagreement with different statements about your present job.

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. There is a good future for me on my job	SD	DA	Neither	A	SA
b. My job is boring	SD	DA	Neither	A	SA
c. I like the people I work with	SD	DA	Neither	A	SA
d. I will get more pay by promotion	SD	DA	Neither	A	SA
e. I have good supervision at work	SD	DA	Neither	A	SA
f. I try hard to do high quality work	SD	DA	Neither	A	SA
g. I would like to change to another occupation	SD	DA	Neither	A	SA
h. I will only get more pay by staying on the job a long time (seniority)	SD	DA	Neither	A	SA
i. I would like to change to a different employer but keep the same kind of work	SD	DA	Neither	A	SA
j. I am very well trained for my present job	SD	DA	Neither	A	SA
k. I work to support my family	SD	DA	Neither	A	SA

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	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
l. This is the kind of work for which my education prepared me	SD	DA	Neither	A	SA
m. The pay is just for my training and experience	SD	DA	Neither	A	SA
n. I consider my job temporary for me	SD	DA	Neither	A	SA
o. My employer cares about safe working conditions	SD	DA	Neither	A	SA
p. It is okay for me to be absent when I feel like it	SD	DA	Neither	A	SA
q. I like my job	SD	DA	Neither	A	SA

13. Please indicate your monthly starting salary (in quetzales, before taxes) upon leaving CUNORI and your present salary.

Starting (first job)	Present situation
Less than 500	___ Less than 500
___ 501 to 750	___ 501 to 750
___ 1000 to 1250	___ 1000 to 1250
___ 1251 to 1500	___1251 to 1500
___ 1501 to 1999	___ 1501 to 1999
___ 2000 to 2500	___ 2000 to 2500

14. In your opinion do you think the education you received at CUNORI was useful to the needs of your job or to continue your education?

_____ Useless _____ Useful _____ Very useful

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15. We are going to ask you now about your agreement or disagreement with different statements about your education at CUNORI.

My education at CUNORI prepared me to:	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
a. Plan and organize company activities	SD	DA	Neither	A	SA
b. Manage efficiently the company	SD	DA	Neither	A	SA
c. Have the skills to implement improved management practices in the company	SD	DA	Neither	A	SA
d. Determine company problems and solve them	SD	DA	Neither	A	SA
e. Be a teacher to help youth and adults gain knowledge and skills in business management	SD	DA	Neither	A	SA
f. Understand basic principles in business management	SD	DA	Neither	A	SA
g. Take pride in my work	SD	DA	Neither	A	SA
h. Have the ability to work easily with others	SD	DA	Neither	A	SA
i. Be a problem solver when faced with new situations	SD	DA	Neither	A	SA
j. Be willing to learn new job skills or take training	SD	DA	Neither	A	SA
k. Be accurate in figures and words	SD	DA	Neither	A	SA
l. Have the ability to meet the public (persons outside with whom you have to deal)	SD	DA	Neither	A	SA
m. Be ambitious/have motivation to get ahead	SD	DA	Neither	A	SA

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My education at CUNORI prepared me to:

	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
n. Have the technical knowledge for my present job	SD	DA	Neither	A	SA
o. Have the skills for my present job	SD	DA	Neither	A	SA
p. Have a concern for safety	SD	DA	Neither	A	SA
q. Diagnose the real situation in company mangement	SD	DA	Neither	A	SA
r. Supervise the execution of projects	SD	DA	Neither	A	SA
s. Diagnose regional problems	SD	DA	Neither	A	SA
t. Formulate research projects to solve management problems	SD	DA	Neither	A	SA

16. What do you think is the single most important thing you learned at CUNORI?

---

17. As you reflect on your educational experience at CUNORI how would you rate the quality of the following:

a. Teachers command of subject area	Poor	Fair	Good	Excellent
b. Teaching skills	Poor	Fair	Good	Excellent
c. Classroom discipline	Poor	Fair	Good	Excellent
d. Helping students outside classroom	Poor	Fair	Good	Excellent
e. Evaluation and grading of students	Poor	Fair	Good	Excellent
f. Library facilities	Poor	Fair	Good	Excellent
g. Use of textbooks in courses	Poor	Fair	Good	Excellent
h. Practical training	Poor	Fair	Good	Excellent

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18. What contact have you had with CUNORI since you graduated / left? (check as many as apply)

_____ No contact

_____ CUNORI faculty contact

_____ Association contact

_____ Attended short course

_____ Continue studies at CUNORI

_____ Other (specify) _____

19. How would you rate the importance of each of the following areas for CUNORI to expand / initiate in the next five years.

	Unnecessary	Desirable	Essential
a. Practical instruction in:			
Business Administration	_____	_____	_____
Human Resources	_____	_____	_____
Finances	_____	_____	_____
Marketing	_____	_____	_____
Sales Executive	_____	_____	_____
Marketing research	_____	_____	_____
Other (specify)	_____	_____	_____
b. Communication skills			
Editing	_____	_____	_____
Preparation of materials for publication	_____	_____	_____
c. Research planning and analysis	_____	_____	_____
d. Other (specify)	_____	_____	_____
f. Other (specify)	_____	_____	_____

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20. Following is a list of service activities that CUNORI offers for the development of the agricultural sector in Chiquimula as part of the training for the students. How would others like yourself rate each of the following items? Circle your answer, using the following code:

SD	=	Strongly Disagree
D	=	Disagree
N	=	Neutral
A	=	Agree
SA	=	Strongly Agree

a. students visit and disseminate information on new management practices, identifying business' problems and help solve these problems	SD	D	N	A	SA
b. CUNORI provides extension services to the community and visits regional business regularly	SD	D	N	A	SA
c. Publishes and distributes research bulletins to regional business	SD	D	N	A	SA
d. Organizes seminaries related to business management	SD	D	N	A	SA
e. Organizes management seminaries during local ceremonies like fiestas	SD	D	N	A	SA
f. Provide short in-campus/off-campus training in different aspects, such as:					
1. Human Relations	SD	D	N	A	SA
2. Inventory Control	SD	D	N	A	SA
3. Total Quality	SD	D	N	A	SA
4. Budgeting	SD	D	N	A	SA
5. Publicity	SD	D	N	A	SA
6. Human Resources	SD	D	N	A	SA
7. Others (specify) _____	SD	D	N	A	SA
g. Prepare extension materials for the use of mass media	SD	D	N	A	SA
h. Provide extension service in its nearby communities	SD	D	N	A	SA
i. Others (specify) _____	SD	D	N	A	SA

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Thank you
been provi

21. Are there other issues facing the farmers and agribusinesses in the area which CUNORI should be addressing?

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Thank you for completing this questionnaire. Please place this in the envelope which has been provided and give it to the CUNORI student who will come to pick it up.

Date: ____

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EMPLOYER/SUPERVISOR QUESTIONNAIRE OF CUNORI'S
DIPLOMA FORMER STUDENTS

Date: _____

1. What is your position? _____

2. What is the name of your organization? _____

3. How many former CUNORI students do you now employ?

   Graduates _____

   Non-graduates _____

4. What methods does your organization/business use to recruit employees? (Check as many as apply)

   _____ Contact educational Institutions

   _____ Employment office (Public & Private)

   _____ Newspaper advertisements

   _____ Personal contacts

   _____ "Bonding" students by scholarships

   _____ Other (specify) _____

5. How many employees do you have?

		Number
a.	Full - Time	_____
b.	Part - Time	_____

6. What are the functions of your organization/business? Check each one which applies.

a.	Sales _____	f.	Research _____
b.	Service _____	g.	Maintenance _____
c.	Transportation _____	h.	Purchasing _____
d.	Processing _____	i.	Production _____
e.	Public Relations _____	j.	Other (specify) _____

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7. Do you feel that the CUNORI graduates/non-graduates had the TECHNICAL KNOWLEDGE needed for entry level employment?

_____ Yes _____ No

7a. What do you think is their level of preparation?

_____ Very well prepared with technical knowledge

_____ Somewhat prepared with technical knowledge

_____ Not to well prepared with technical knowledge

_____ Not at all prepared with technical knowledge

_____ Don't know

8. Do you feel that the CUNORI graduates/non-graduates had the SKILLS needed for entry level employment?

_____ Very well prepared with skills needed

_____ Somewhat prepared with skills needed

_____ Not too well prepared with skills needed

_____ Not at all prepared with skills needed

_____ Don't know

9. Considering the work these CUNORI graduates/non-graduates now perform, how would you rate their training, abilities, and attitudes in the areas named.

	Poor	Average	Below Average	Good	Excellent
Technical knowledge needed for present job	_____	_____	_____	_____	_____
Skills needed for present job	_____	_____	_____	_____	_____
Willingness to learn new job skills or take training	_____	_____	_____	_____	_____
Ability to follow suggestions	_____	_____	_____	_____	_____
Work habits	_____	_____	_____	_____	_____
Pride in work	_____	_____	_____	_____	_____

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	Poor	Average	Below Average	Good	Excellent
Ability to work with others	_____	_____	_____	_____	_____
Promotable	_____	_____	_____	_____	_____
Creativity/originality	_____	_____	_____	_____	_____
Ambition/motivation to get ahead	_____	_____	_____	_____	_____
Concern for productivity	_____	_____	_____	_____	_____
Ability to meet the public (persons outside with whom they must deal)	_____	_____	_____	_____	_____
Accuracy in figures and words	_____	_____	_____	_____	_____
Ingenuity --ability to meet new situations	_____	_____	_____	_____	_____

10. Do you think CUNORI could have done a better job of preparing them for employment in this (your) organization?

_____ Yes, could have done better

_____ No, preparation all right

_____ Don't know

11. What additional training will these CUNORI graduates/non-graduates need? (Check each which applies)

	For Employees' personal growth & development	For growth and development of employing organization
a. No further training	_____	_____
b. On the job training	_____	_____
c. Needs additional education	_____	_____
d. Technical training	_____	_____
e. Leadership/ management	_____	_____

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	For Employees' personal growth & development	For growth and development of employing organization
f. Improve attitude/respect for employer	_____	_____
g. Public relations/ public speaking	_____	_____
h. General skills for project administration	_____	_____
i. Special training (specify)	_____	_____
k. Don't know	_____	_____

12. If you were filling similar positions today, would you seek individuals with the kind of past training and education these employees had?

_____ No _____ Yes _____ Don't know

13. How would you rate the importance of each of the following areas for CUNORI to expand/initiate in the next five years?

	Unnecessary	Desirable	Essential
A. **Diploma in Production Agriculture**			
Practical instruction in:			
a. Production Agriculture	_____	_____	_____
Horticulture	_____	_____	_____
Soils	_____	_____	_____
Regional crops	_____	_____	_____
Farm Management	_____	_____	_____
Farm Machinery/Equipment	_____	_____	_____
Other (specify)	_____	_____	_____
B. **Diploma in Animal Science**			
Practical instruction in:			
Animal Production	_____	_____	_____
Administration of animal production enterprises	_____	_____	_____

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	Unnecessary	Desirable	Essential
Machinery and animal production equipment	_____	_____	_____
Processing of animal products (milk, meat, etc.)	_____	_____	_____
Large scale bovine production	_____	_____	_____
marketing	_____	_____	_____
Animla feed production (all kinds)	_____	_____	_____
Small animal production	_____	_____	_____
Other (specify)	_____	_____	_____

C. Diploma in Business Management
Practical instruction in:

Business Administration	_____	_____	_____
Human Resources	_____	_____	_____
Finances	_____	_____	_____
Marketing	_____	_____	_____
Sales Executive	_____	_____	_____
Marketing research	_____	_____	_____
Other (specify)	_____	_____	_____

D. All three diploma options:
Communication Skills:

Mass media	_____	_____	_____
Preparation of materials	_____	_____	_____
E. Research planning & analysis	_____	_____	_____
F. Computers	_____	_____	_____
G. Financial asistance and advice for final supervised practicals	_____	_____	_____
H. Other (specify)_____	_____	_____	_____

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15. If yes,

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14. As an institution of higher learning in agriculture, do you think the CUNORI, should render agricultural services in its nearby communities?

_____ No, **go to question number 16**

_____ Yes **go to question number 15**

_____ Don't know, **go to question number 17**

15. If yes, what kind of services should CUNORI render? (Please check)

_____ Provide farmers, cattle producers, and businessman training at the campus

_____ Provide information regarding improved practices through individual and group methods such as tours, demonstrations, field days, production competitions, etc., to farmers, cattle producers and buisenessman.

_____ Prepare professional publications for use in extension programs

_____ Conduct insect and disease control clinics at the College

_____ Provide staff support to help solve farmers, cattle producers, and businessman, problems in its service area by visiting them.

_____ Provide College-produced inputs at reasonable price like seeds, seedlings, piglets, poultry, baby chicks, etc.

_____ Send senior college students to the aldeas to help identify and solve the farmers problems

_____ The CUNORI should start pilot extension projects in its nearby aldeas

_____ Others (specify)

_____

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16. If not, why not? (Please give your reasons)

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17. Do you have any suggestions about how the CUNORI should go about in establishing its service program in the area?

    a. Cooperation with your organization?

    _____
    _____

    b. Cooperation with other organizations?

    _____
    _____

    c. Other ideas?

    _____
    _____

16. Are there other issues facing the farmers, cattle producers and agribusinesses in the area which CUNORI should be addressing?

    _____
    _____
    _____

Thank you for completing this
Questionnaire, please return it to the
Centro Universitario de Oriente

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