HIGHER EDUCATION RESEARCH PAPERS

ISBN 971-840-044-3, Volume I, 2001

An Occasional Publication of the Commission on Higher Education

Contents:

Higher Education Research Papers

Commission on Higher Education
DAP Building
San Miguel Avenue
Ortigas Center
Pasig City, Philippines

Certificate of Registration No. 840

ISBN 971-840-044-3

Cover Design, Layout and Text/Manuscript Editing: Nicasio J. Agustin
Printing and Binding: EC-Tec Commercial, St. Louis Compound, 7 Baesa, Quezon City

HIGHER EDUCATION RESEARCH PAPERS

ISBN 971-840-044-3, Volume I, 2001

An Occasional Publication of the Commission on Higher Education

Contents:

FOREWORD

Much has been written about the sad state of higher education research in the Philippines. For instance, the Congressional Commission on Education (EDCom), the 1998 Philippine Education Sector Study (PESS) and lately, Allan Bernardo, a well-known academician and expert in the field of education, observed that the research outputs produced by higher education institutions (HEIs) are "repetitive and stereotyped" and heavily biased in favor of the field of education and allied areas, the sciences being relegated to a lower priority. The poor quality of research outputs from HEIs was attributed at least in part to the measly budget that has been allotted to higher education research.

In the Philippines where the culture and environment for research are not well developed, it is necessary to place emphasis on research to enable this country to join the ranks of world class nations in the 21st century. This is the reason why the promotion of research in HEIs is one of the mandates of the Commission on Higher Education (CHED).

CHED formulated the National Higher Education Research Agenda (NHERA) 1998-2007, which provides the policies, strategies, priorities and procedures as well as guidelines to promote, encourage and support research in Philippine public and private HEIs. As embodied in the NHERA, higher education research aims to:

- push the frontiers of knowledge across all disciplines in the country,
- enhance instruction through original contributions in specialized disciplines thereby encouraging students to become themselves creative, innovative and productive individuals, and
- develop unifying theories or models, which can be translated into mature technologies for the purpose of improving the quality of life of the Filipinos within the sphere of influence of academic institutions in the country.

With these goals in mind, the crafters of the NHERA identified priority disciplines with special emphasis on researches that are multi-disciplinary, leading edge scientific or technological, breakthrough or pioneering, and/or policy oriented. In particular, as spelled out in the NHERA, CHED shall provide:

- policy environment for the management and administration of research,
- technical assistance programs for research, and

- funding/financial assistance for research in higher education - in the form of block grants, grants-in-aid, commissioned research.

Three years into the life of the NHERA, CHED funded a number of research undertakings worth more than P 50M. Of these, nine research projects have been completed. The CHED, cognizant of the importance of disseminating as widely as possible the results of these researches, is launching this publication entitled " Higher Education Research Papers" to serve as venue for sharing and discussing scientific and empirical findings.

It is hoped that through this publication, the role of research in higher education would be given the prominence and recognition it truly deserves. May this publication also serve as a stimulus for others to do scholarly work.

ESTER A. GARCIA
Chairperson
Commission on Higher Education

INTRODUCTION

The Higher Education Research Papers is meant to serve as a vehicle for disseminating the outputs of research undertakings in and on higher education. The first two volumes will be devoted to products of studies (commissioned and/or grants-in-aid researches) initiated by the Commission on Higher Education (CHED) since 1999, in line with the implementation of the National Higher Education Research Agenda (NHERA) and funded by the Higher Education Development Fund (HEDF). The objectives however are to encourage sharing of findings and ideas, and to stimulate further scholarly inquiries. Hence, succeeding issues will be open to researchers in higher education institutions (HEIs) who wish to publish their research findings on higher education concerns.

"A Redefinition of Laboratory Schools as Support Structures for Teacher Education Programs", by Estefania S. de Guzman tackles the issues relative to laboratory schools, and summarizes the salient points on the pros and cons of maintaining basic education courses in state colleges and universities. State-funded HEIs are fully subsidized by the national government to offer higher education courses relevant to the needs of the society. When a significant portion of such government subsidy is diverted to support basic education, which is a concern of the Department of Education (DepEd) and not of CHED, then the public has a cause to question the huge resources intended to defray the cost of operating state colleges and universities. Conducted by expert educators from the Philippine Normal University, the article dissects the information gathered through survey and observations from the different colleges and universities in the Philippines. The result indicated that there is a need to redefine the functions of the existing laboratory schools of teacher training institutions. The laboratory schools should be used not only as a site for student teaching but also, and more importantly, as center for teaching and learning (sites for demonstration, research, observation, try-out for curricular innovations, material development and as a center for professional development).

"A Filipino Model of a Teaching Expertise in Higher Education", by Flordeliza C. Reyes, an expert from the De La Salle University, synthesizes the best practices of model teachers identified by the Metrobank Foundation. It identifies desirable characteristics and traits of model teachers, their cognitive and affective skills that make them effective as learning facilitators. The study mentions the need for acting and expressive communication as a course requirement for Teacher Education as well as the inclusion of lessons on creativity in the curriculum.

A major concern of CHED, as the agency tasked to oversee the production of higher education graduates, is the mismatch between the supply of and demand for higher education skills and competencies in the country. The research on "The Supply of and Demand for Higher Education Graduates in the Philippines" by a team of researchers from the Mindanao Polytechnic State College points out that most colleges

and universities offer programs to respond to student demands rather than to the end-user demands for graduates. Consequently, higher education training does not conform to the training desired by the industries and the labor market. The study points out that more appropriation and support should be given by CHED and the Department of Budget and Management (DBM) to state universities and colleges (SUCs) offering under subscribed courses deemed important to national development.

The Higher Education Research Papers will be published at least once a year. It is hoped that this shall become a medium for intellectual exchange on higher education in the country.

ROBERTO N. PADUA
Commissioner, CHED

ACKNOWLEDGMENT

This maiden issue of the Higher Education Research Papers would not have been possible without the help, cooperation and assistance of a number of people and professionals in the field. To them, the Commission is greatly indebted.

We also wish to thank Dr. Milagros Ibe, Dr. Dionisia Rola, and Dr. Roberto Borromeo, who served as referees, for the many hours they spent reviewing and going over the manuscripts for publication.

Office of Policy, Planning, Research and Information
Commission on Higher Education

A REDEFINITION OF LABORATORY SCHOOLS AS SUPPORT STRUCTURES FOR TEACHER EDUCATION PROGRAMS

ESTEFANIA S. DE GUZMAN, Ph.D.

ABSTRACT

The main objective of this research project was to gather significant inputs and adequate bases to redefine the laboratory schools as support structures of teacher education programs. This three-phase evaluative-survey sought to determine: (a) the status of the student teaching program for which a laboratory school principally exists; (b) the status of the field schools that complement the student teaching program; and (c) the best practices in laboratory schools that may help redefine the other potential functions of these structural units. As a collaborative study, it involved nine regions of the country with their respective Centers of Excellence in Teacher Education (COETEs) as the research collaborators.

The findings of the Student Teaching Survey (STS) revealed that: (a) practically all aspects of the student teaching program have consistently reached acceptable levels of adequacy, relevance, and effectiveness in their implementation or performance across all the participating regions; (b) clearly defined policies in student teaching exist; (c) good coordination exists between the laboratory schools and the other units of the Teacher Education Institutions (TEIs) as well as between the TEIs and the cooperating schools; (d) the laboratory schools are able to perform their functions well enough although not much attention is given to activities like research and outreach programs; (e) the present program for student teaching generally produces capable student teachers; (f) the student teachers are sufficiently imbued with positive attitudes and values considered significant in the teaching profession; and (g) student teachers generally accomplish more during their off-campus work than during their on-campus assignment.

Results of the Field Capability Survey (FCS) showed that despite slight regional variations, the Cooperating and the Regular Teachers of the cooperating schools are competent enough to handle student teaching. Moreover, they, as well as their heads, were found to generally have a favorable attitude toward the Student Teaching Program. Their school facilities, equipment and instructional materials are generally adequate for the program.

All the participating regions, through case studies, were able to identify best practices that illustrate other functions which their laboratory schools have aside from student teaching. These practices are categorized into: (a) managing alternative student teaching program practices; (b) maximizing student learning practices; (c) engineering institutional resource practices; and (d) enriching student teaching program practices. Hence, the study recommends other roles, which the laboratory schools can do to better serve their purpose.

I. INTRODUCTION

A. Background of the Study

The existence of the laboratory schools in teacher education institutions (TEIs) has always been part of the tradition in running teacher education programs particularly in designated "normal schools" of the government. The practicum component of the earlier programs had the training department, which was later renamed as the laboratory school. It has always been the support structure providing early field experiences, both teaching and non-teaching.

More recently, however, the existence of laboratory schools in TEIs is increasingly being scrutinized from different value perspectives. The issue of accountability introduces the concept of an audit to ascertain whether the resources being accorded the laboratory schools are indeed being utilized for their specified purposes (Dressel 1985). Their outcomes and manner of utilization are also being verified. These questions both arise from those with fiscal concerns and those with academic considerations. The former interests itself with the benefits being derived from the laboratory schools in relation to its operational costs, raising primarily the question of worth. Are the outcomes or output worth the resources expended to run these structures? The latter zeroes in on whether these institutional structures are functioning, as they had been conceptualized to function, i.e., mainly, as model provider of effective teaching practices and student learning. Equally related to this issue is the nagging question of whether or not the basic function of a laboratory school could and should be expanded. 'Should it only become a practice site for student teachers or could it also serve other functions that can further enrich the teacher education programs such as serving as laboratories for testing new teaching methods or as research sites for studying the learning styles of Filipinos? This question on merit focuses on the effectiveness of the laboratory schools in terms of their assumed and achieved program goals. These emerging issues inevitably give rise to a need to re-examine the accomplishments of laboratory schools and at the same time redefine their functions as support systems in teacher education programs.

In 1996, the Commission on Higher Education (CHED) began reviewing the existence of laboratory schools in state universities and colleges (SUCs) and CHED-supervised institutions (CSIs). With the Department of Budget Management's observation that a large part of the budget of TEIs in SUCs and CSIs is largely being used to maintain elementary and secondary laboratory schools, CHED consequently came up with orders limiting their operations. CHED Order Nos. 4 and 8, series of 1996 and CHED Order No. 21, series of 1997 all aim to downsize the present enrollment of laboratory schools and to gradually phase down the elementary schools of those TEIs not offering Elementary Education program, and to limit enrollment to 600 only, if such a program exists. The CSIs, on the other hand, had been ordered to phase out their secondary programs effective CY 1997-1998. These moves of the Commission have generated quite expectedly varied reactions from the field, particularly the stakeholders of the student teaching programs. Therefore, this study intends to gather adequate bases either to support or challenge these policies.

Another legitimate issue surrounding the laboratory schools is their relevance to the present context of teacher education in the country. Historically speaking, the training departments in the normal schools had been established as part of the institution to, indeed, provide a venue for practice teaching experiences. The apprenticeship model was heavily applied in the training departments during these times, i.e., the practice teachers or the student teachers served as apprentices to the master teachers in the training department. Such model was rationalized by the fact that very few public schools existed then with trained teachers who could competently model "good teaching". The few TEIs established during the American period were not enough to meet the demand for preparing the teachers needed in the field.

The scenario for teacher training or development has now changed with the presence of schools, both public and private, in practically all places in the country. Thus, the question of whether to limit the early teaching experiences of pre-service teachers to laboratory schools is now being strongly expressed. The move to provide them with early field-based experiences by immersing them right away to public school teaching-learning systems is gaining ground. There is now a clamor for teacher education to become more field-based to enable pre-service teachers to be more exposed to a wide variety of situations and to different types of students (McIntyre and Byrd 1997). Consequently, this study addresses the rationalization of laboratory schools in the country and, in the same breath, examines the context and ecology of the field schools to determine the kind of experiences these schools can offer.

B. Conceptual Framework of the Study

A review of studies done in different parts of the world in teacher education has been done by Tisher and Wideen (1990) and is capped by a proposed framework for research in the field. This framework includes 11 parameters, each one indicating a category of variables that applies to every teacher education program: goals, characteristics of the candidates, content, methods, time/timing, ethos, regulations, resources, evaluation practices, and impacts of the program (Katz and Raths 1990). Relevant to the present study is the parameter of goals, content, methods, evaluation practices and resources. The last variables look into "variations in the availability of laboratory or demonstration schools, microteaching laboratory, teachers' center, curriculum library and so forth".

The present study takes an evaluative look at the teaching laboratories as support structures for student teaching in teacher education programs. Instead of adhering to a single evaluation model, the present study takes an eclectic and pragmatic approach in finding the most appropriate bases for making decisions as regards the maintenance of the teaching laboratories. Scriven's model (Brinkerhoff et al. 1983) of classifying purposes of evaluation into formative, (i.e., provides directions for the improvement of programs) and summative (i.e., rationalizes decisions for the program continuity or abolition) serves the substantive as well as methodical considerations of the study. The evaluation content borrows from Stufflebeam's decision-making model to review the context, input, process and product components of the student teaching program to gauge the relevance of the student teaching practices to the contextual needs of the field. Figure 1 shows the paradigm that guides the present investigation.

C. Project Objectives

General: As a commissioned research project by CHED, the study intended to assess the student teaching programs of teacher education institutions (TEIs) in order to redefine the functions of laboratory schools as support systems for their teacher education programs.

Specific:

a. To assess the present functions and operations of the student teaching programs in TEIs with and without laboratory schools in terms of their program objectives, program inputs/resources (faculty, students, curricular program, buildings and facilities and instructional materials), internal processes and operations (organizational structure, implementation policies and practices, management provision, and program expenditures), level of outputs/outcomes (student teachers' performance, their values and attitude toward teaching, innovations in improving teaching-learning processes, instructional materials developed, faculty development, and community services rendered).

b. To evaluate the availability of field resources and capabilities outside of the

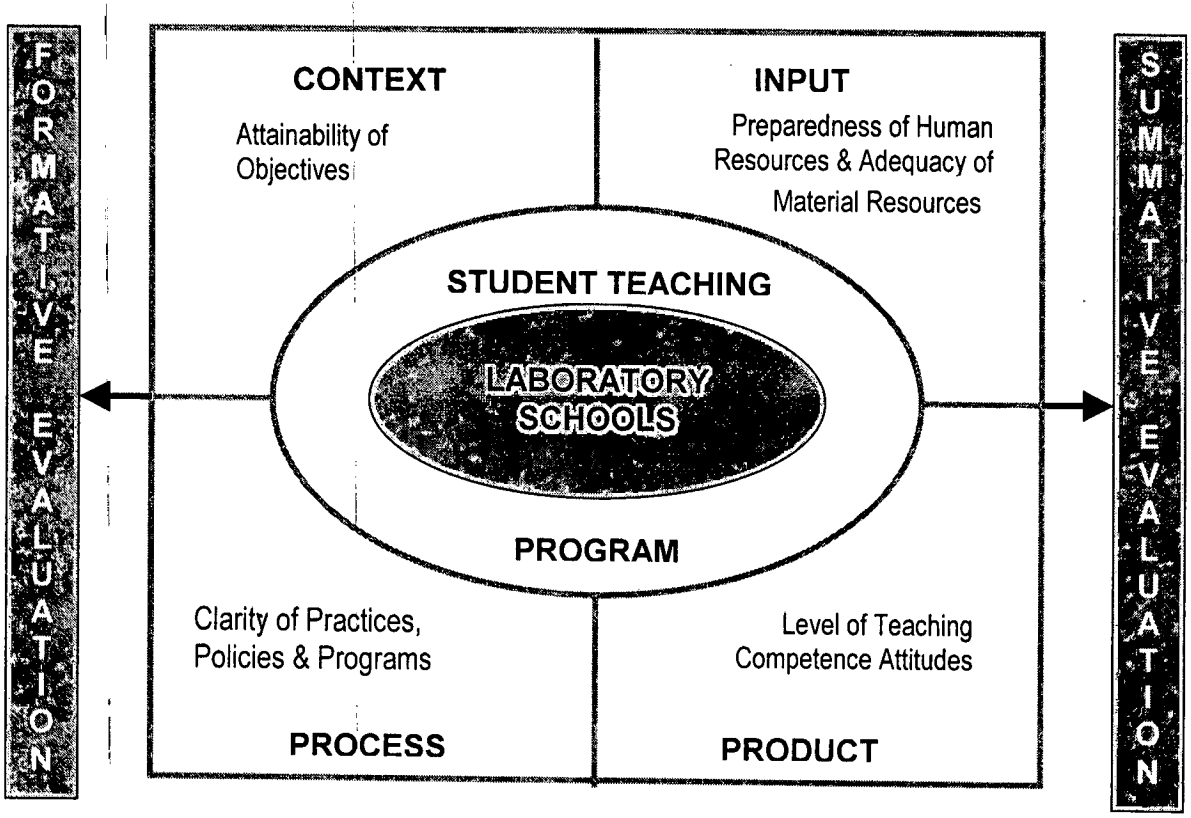


Figure 1. EVALUATION PARADIGM

TEIs of the SUCs and CSIs that can provide support to student teaching programs in terms of teaching competence of teachers, teachers' preparation, teachers' efficacy to handle student teaching, schools' program resources (curricular and non-curricular programs, physical resources) and other potentials.

c. To identify special laboratory schools in the country that have demonstrated or implemented special functions or innovations and describe their processes of operations. Specifically, the investigative study seeks to:

- Identify exemplars of best practices showing innovative educational programs carried out in laboratory schools;
- Trace the historical development of these best practices in order to identify the driving forces that have brought them about;
- Distinguish the various factors that help shape the best practices;
- Describe the outcomes and benefits derived from these practices; and
- Determine the contextual factors needed to sustain these best practices.

II. METHODOLOGY

A. Collaborative Working Scheme

The entire study operated as a collaborative networking project among nine Centers of Excellence in Teacher Education (COETEs). The participating regions and their corresponding COETEs are found in Table 1.

Each participating COETE was contracted by the proponent (i.e., PNU) to compose a regional research team to carry out all the research activities for the respective region following the general research design. Their participation was in terms of the following:

1. validation of instruments
2. identification of participating laboratory schools
3. administration of survey instruments to respondent groups in the selected schools
4. analysis and interpretation of the survey data
5. writing of regional survey reports
6. writing of case studies of the special laboratory school
7. regional presentation of research findings

The research proponent took care of project management, including planning and monitoring, as well as the synthesis and preparation of the final report. Its project responsibilities covered the following:

1. overall planning and designing
2. development of instruments
3. conduct of planning and orientation workshops among COETEs
4. coordination of research activities among COETEs
5. monitoring of activities of COETEs according to agreed plans of action
6. synthesis of regional reports
7. preparation of final research report for submission to CHED
8. presentation of research findings to relevant forum

Table 1. Participating Regions and their Respective Centers of Excellence In Teacher Education (COETEs)

REGION	COETE
Region I (Ilocos Region)	Mariano Marcos State University
Region II (Cagayan Valley)	St Mary's University
Region V (Bicol Region)	Aquinas University of Legaspi
Region VI (Western Visayas)	West Visayas State University
Region VIII (Eastern Visayas)	Leyte Normal University
Region XI (Southern Mindanao)	Ateneo de Davao University
National Capitol Region	Philippine Normal University
Cordillera Autonomous Region*	St Louis University
Region IV* (Southern Tagalog Region)	Palawan State University

*Case Study only

B. Research Design

The entire project was basically a descriptive-evaluation study intended to assess the student teaching program of TEI's *vis-a-vis* the functions of the laboratory schools. It was a two-phase project with the first component zeroing in on an evaluative survey of the student teaching program and the field capabilities of the cooperating schools. The second phase involved the preparation of case studies to describe the operations of selected laboratory schools that have successfully implemented practices at introducing educational innovations.

C. Student Teaching Survey

1. Participants

Table 2 shows the breakdown of the regional samples by category. The inclusion of different groups of participants was intended to gather their perspectives on the same issues and concerns. All in all, a total of 2,181 participants got involved in the Student Teaching Survey (STS) coming from 62 TEIs.

Table 2. Total Number of Participants Across Regions by Categories

Category	Region							
	I (N)	II (N)	V (N)	VI (N)	VIII (N)	XI (N)	NCR (N)	Total
1. Type of Institution								
SUC	2	4	4	4	4	3	4	**25**
CHED Supervised	1	1	5	2	2	0	3	**14**
Private	4	2	4	3	4	2	4	**23**
Total	**7**	**7**	**13**	**9**	**10**	**5**	**11**	**62**
2. Type of Student								
Teaching Program								
(A) On/Off Campus	4	4	7	5	8	3	6	**37**
(B) Off Campus only	3	3	6	4	2	2	5	**25**
Total	**7**	**7**	**13**	**9**	**10**	**5**	**11**	**62**
3. Level of Respondents								
Student Teachers (ST)	240	226	311	259	287	135	260	**1,718**
Supervising Instructors (SI)	53	109	50	68	35	3	35	**353**
College Supervisors (CS)	10	13	11	11	9	6	11	**71**
Deans	7	3	9	8	7	5	-	**39**
Total	**310**	**351**	**381**	**346**	**338**	**149**	**306**	**2,181**

The actual selection of participants was carried out by the regional teams following the collective agreements during the orientation period. A maximum of 2 TEIs per category was suggested , but not followed in all regions especially for the CSIs and those with off-campus programs only.

2. Instruments

Table 3 shows the 4 sets of data-gathering instruments developed for the STS: (a) STS Form 1 – for College Supervisorss (In-charge of supervising Student Teachers in their Off-Campus program); (b) STS From 2 – for Supervising Instructors (In-charge of supervising Student Teachers in their On-Campus program. They are sometimes called Critic Teachers); (c) STS Form 3 – for Student Teachers (On and Off-Campus); and (d) STS Form 4 – for Deans of Colleges of Education.

The Context, Input, Process, Product (CIPP) model of Stufflebeam (1971), the framework used in the study, guided the construction of the table of specifications for the items in the STS Forms (Table 4). As operationalized, ***context*** refers to the program objectives to be attained; ***input*** spells out the program resources to achieve the objectives; ***process*** specifies the program's internal processes and operations or the implementation part; and ***product*** refers to the program's output or outcomes.

As suggested in Table 4, the items developed were designed to show status (i.e., present or not, available or not) and assessment (i.e., degree of adequacy, relevance, appropriateness, etc.) through a criterion relevant to every aspect or component of the program.

3. Data Collection Procedures

The Research Center had established networking with the 7 participating regions, thus, the regional sampling design and data collection process was left to the Regional Research Team (RRT).

The RRT was headed by a Regional Project Management Chair appointed by the president of the COETE. The Chairs attended two consultative conferences for briefing on the project, in particular, review of the instruments, administration, scoring and analysis of results.

The RRT and researchers hired for the purpose took charge of data collection in their own particular regions. The regional reports provided a complete description of the specific data collection procedures adapted by each team.

Table 3. Student Teaching Survey Forms

Form	Respondents	Description
STS Form I	College Supervisors	In-charge of supervising Student Teachers in their Off-Campus program
STS Form 2	Supervising Instructors	In-charge of supervising Student Teachers in their On-Campus program
STS Form 3	Student Teachers	On/Off Campus
STS Form 4	Deans of Colleges of Education	

Table 4. Areas of Concern of the Student Teaching Survey Forms Across Respondents

Dimension	College Supervisor	Supervising Instructors	Student Teachers	Deans of College
Context	• Adequacy of implementation of objectives	• Adequacy of implementation of objectives	• Attainability of objectives	
Input	• Quality and preparedness of cooperating teachers and student teachers	• Quality and preparedness of supervising instructors and student teachers	• Quality and preparedness of cooperating teachers, supervising instructors and student teachers	• Components of the student teaching program
	• Relevance and adequacy of curriculum content	• Relevance and adequacy of curriculum content	• Relevance and adequacy of curriculum content	
		• Adequacy of resources (buildings, facilities, instructional materials of the laboratory school)	• Adequacy of resources (buildings, facilities, instructional materials of the laboratory school)	• Adequacy of resources (faculty, facilities and buildings, instructional materials, budget)

Table 4. Areas of Concern of the Student Teaching Survey Forms Across Respondents *(Continued)*

Dimension	College Supervisor	Supervising Instructors	Student Teachers	Deans of College
Process	• Systematic carrying out of actual practices	• Systematic carrying out of actual practices	• Systematic carrying out of actual practices	• Systematic carrying out of actual practices
	• Implementation of clearly defined policies	• Implementation of clearly defined policies	• Implementation of clearly defined policies	• Implementation of clearly defined policies
	• Extent of implementation of management provisions	• Extent of implementation of management provisions	• Extent of implementation of management provisions	• Extent of implementation of management provisions
	• Systematically coordinated organizational relationships	• Systematically coordinated organizational relationships	• Systematically coordinated organizational relationships	
	• Extent of performance of the other functions of the LS	• Extent of performance of the other functions of the LS	• Extent of performance of the other functions of the LS	• Faculty development program

4. Treatment of Data

Descriptive statistics using means, frequency counts and percentages were the main statistical tools used to analyze the data. Means were computed for the objective items calling for ratings separately by type of institution, by type of student teaching program and by region. Frequency counts and percentages were obtained for items requiring the presence of entries in certain categories. All the quantitative data were summarized in tabular and graphic forms.

Answers to the open-ended questions and other qualitative data were tallied and frequencies taken on similar responses. Given enough data, comparisons across type of institution, type of student teaching program and by region were done.

D. Field Capability Survey

1. Participants

About 190 cooperating schools were surveyed across 7 regions to assess their capability to provide the needed support to student teaching programs of TEIs in the region. The schools, chosen purposively, are shown in Table 5.

Coming from each cooperating school were 4 types of respondents: the Cooperating Teachers, the Regular Teachers, the Heads of Departments for high schools/Grade Coordinators for elementary schools, and the Principals. A Regular Teacher, as used in this study, refers to a teacher who has not been assigned to handle student teaching assignment, while a Cooperating Teacher supervises student teachers.

As shown in Table 6, the survey comprised 1,060 Cooperating Teachers, 1,014 Regular Teachers, 463 Heads/Grade Coordinators, and 157 Principals. A maximum of 5 cooperating schools was set for each participating TEI. The selection of cooperating teachers considered the maximum number available in each school and a counterpart number among the regular teachers.

2. Instruments

Four sets of data gathering instruments were developed for the Field Capability Survey (FCS), as indicated below:

a. FCS Form 1 – designed to elicit information from Cooperating Teachers on their competence to handle student teachers, their attitudes towards the student teaching program, their assessment of their school resources, and the perceived benefits in being Cooperating Teachers;

Table 5. Distribution of Participating Schools by Region

Region	No of Schools
I	7
II	39
V	34
VI	30
VIII	48
IX	20
XI	20
NCR	12
Total	190

Table 6. Frequency Distribution of Respondents by Region and by Group

Region	Schools Surveyed	Cooperating Teachers	Regular Teachers	Heads/Grade Coordinators	Principals
I	7	142	137	21	17
II	39	276	237	84	32
V	34	166	238	159	33
VI	30	129	141	127	19
VIII	48	199	156	36	27
XI	20	66	55	21	17
NCR	12	82	50	15	12
TOTAL	190	1,060	1,014	463	157

b. FCS Form 2 - contains similar questions as FCS 1, but administered to Regular Teachers;

c. FCS Form 3 – designed to help obtain Heads/Grade Coordinators' assessment of the competence and efficacy of teachers under their departments in handling student teachers, their attitude towards student teaching program, available resources in their schools, the co-curricular activities that the school engages in, and contributing factors to the efficient implementation of Student Teaching Program (STP); and

d. FCS Form 4 – has similar questions as FCS 3, but administered to the Principals.

3. Data Collection Procedures

Each Regional Center had a Research Team that managed and monitored the data gathering processes. They were given a free hand in selecting schools as respondents for the FCS, as long as they did not deviate from the general sampling plan.

Before making the final reports, the RRT Chairs re-assembled at PNU-Manila to discuss the format of the presentation of data and writing of the final reports. Roundtable discussions were also scheduled and held in all the 7 regions participated in by the respondents: Principals, Supervising Instructors, Deans, and Cooperating Teachers. During the roundtable discussions (RTDs), initial findings were presented and validated by the respondents.

4. Treatment of Data

For quantitative data, descriptive statistics were used in the form of frequency and percentage distribution for nominal data and means for interval data in the form of ratings.

For qualitative data, responses were categorized and frequencies were obtained whenever possible.

E. Case Studies

Ten teacher education institutions from 9 regions participated in this phase of the project giving a total of 22 case studies with at least 2 contributions coming from each TEI. St. Louis University was able to contribute 4. The participating COETEs are: Mariano Marcos State University (Region 1); St. Louis University (CAR); Philippine Normal University-Isabela Campus (Region 2); St. Mary's University (Region 2); Palawan State University (Region 4); Aquinas University (Region 5); West Visayas State University (Region 6); Leyte Normal University (Region

8); Ateneo de Davao University (Region 11); and Philippine Normal University (NCR).

Except for PNU-Isabela Campus, St. Louis University, and Palawan State University, all the other institutions also participated in the survey studies phase of the project.

Case Writers, who had been given a briefing on case writing, concentrated on best practices and/or innovations currently carried out in the laboratory schools of their choice. Investigative methods varied - writers used interview data, questionnaire responses, documentary evidence, observations, and focused group discussions.

Each case study was validated by the regional team by presenting it to the institution concerned in an organized forum. Additional comments obtained from the roundtable discussions were incorporated in finalizing the case report.

III. HIGHLIGHTS OF FINDINGS

A. Student Teaching Survey

1. Regardless of the type of institution and the availability of a laboratory school in a TEI, practically all aspects of the student teaching program were found to have consistently reached acceptable levels of adequacy, relevance, and effectiveness in their implementation or performance across all the participating regions. These areas are:

   a. *Adequacy of implementation and attainability of the program's objectives.* Among the objectives however, the student teachers felt less confident in the area of student learning assessment and in being able to apply educational principles and theories in planning and preparing lessons.

   b. *Level of preparedness and competence of the Supervising Instructors and Cooperating Teachers on what are required to handle student teaching assignment.* The higher academic qualifications and better decision-making skills of the Supervising Instructors were especially noted. Attributed to the Cooperating Teachers as their strength are their greater knowledge and understanding of the learners and their ability to manage the classrooms.

   c. *Adequate preparation of student teachers to undertake the student teaching program.* There were evidences however, in certain regions, which show that the students who had undergone on-campus student teaching first before being fielded out understandably felt better prepared than those who did not. Generally, the student teachers showed apprehension on their adequacy in English language proficiency and instructional skills. The former is quite alarming since language proficiency is a requisite enabling skill to effective teaching.

   d. *Relevance of the General Education component of the Teacher Education Program.* The degree of relevance was perceived to vary by course. The courses found less relevant are English for Specific Purposes and Computer Literacy. The variations appearing across regions in the way these two courses are seen, imply the relationship between relevance and the handling of these courses in an institution.

   e. *Relevance or the Professional Education component of the Teacher Education Program.* Although majority of the professional education courses were found relevant, seen as less relevant were *foundation courses* and *Introduction to Research.* TEIs seem to fail in making the students fully understand the bases for the current educational practices. The students are not led to see the application aspect of these courses. *Introduction to Research*, as having been rated

relatively low in relevance, shows the failure to develop inquiry skills which is the bottom line for instilling the culture of research among the students. The lack of research orientation among the faculty can possibly account for this finding.

f. *Relevance of the specialization component of the Teacher Education Program.* The Student Teachers may not see relevance in taking higher forms of the discipline than what are necessary for teaching the basic education level or they feel that these courses do not seem to adequately prepare them for student teaching work. Some form of inadequacy in knowledge of subject matter is felt by the student teachers themselves and confirmed by their College Supervisors.

g. *Adequacy of facilities and equipment in laboratory schools and cooperating schools varies by region.* In some regions, the facilities of the laboratory schools are better than those of the cooperating schools (Regions II, VI, VIII and XI). The opposite could be found in other regions (Regions I, V, and NCR) where the facilities of the cooperating schools are better than the laboratory schools. Many regions fall a little short in adequacy when it comes to technology-based facilities like computer rooms, educational technology/audio-visual rooms, and science laboratories in both laboratory schools and cooperating schools.

h. *The systematic implementation of the different components of the student teaching program.* This has been generally established by the implementors as well as the recipients of the program. Among the components of the program, the pre-assessment practice appeared to be least systematically done in schools, together with the handling of clubs and organizations and the provision of experiences for ancillary services especially by the field schools. The pre-assessment activity is more systematically implemented in laboratory schools.

2. Overall, the existence of clearly defined policies in student teaching was felt particularly by the student teachers in matters concerning their being assigned to cooperating teachers. Both Supervising Instructors' and College Supervisors' ratings, however, suggest improved guidelines in such aspects as workload of cooperating teachers and in how make-up work for student teachers having deficiencies can be provided.

3. Good coordination between the laboratory schools and other units of the TEIs as well as the coordination between the TEIs and the cooperating schools was generally reported by the respondents. Although some problems were openly reported in the focused group discussions, these were light enough to be resolved. What was emphasized is the need for open communication lines between the structural units.

4. The laboratory schools are able to perform their functions well enough although not as much attention is given to activities like research, and outreach programs that can widen the scope of the laboratory schools' operation. They are perceived to function primarily only for the student teaching program. This is reflected in the data coming from majority of the regions. The exceptional regions, Regions I, VI and NCR, have indicated however, that their Laboratory Schools are also performing as research laboratories and sites for materials production. While other functions of the laboratory schools have been accepted as legitimate and possible, very few cooperating schools have explored them.

5. The present program for student teaching generally produces student teachers who adequately meet the expected standards of performance during their on- and off-campus work. The overall performance of the student teachers in their practicum work has been assessed as acceptable both by the faculty's and by their own

standards. No marked advantages have been noted for one type of program over the other across regions.

6. The student teachers were also found to be imbued with positive attitudes and values considered significant in the teaching profession. Their strongest asset was shown in their positive attitude, sense of responsibility and commitment to teaching, which had made them perform satisfactorily in their student teaching program. This finding as revealed by their self-assessment, has, in fact, been confirmed by the observations given by the student teaching faculty particularly by the teachers in the field.

7. A significant number of student teachers (i.e. less than half) missed out on accomplishing what were generally expected of them. By and large, the percentage of student teachers' actual involvement in STP activities only ranged from 16-67% and 36-70% for on- campus and off-campus, respectively. The regional differences are very apparent in this area. The data seem to show that greater participation is more apparent when the student teachers are in the field than when they are in laboratory schools. Although the regional reports show some variations in percentages, similar patterns have evolved. Inability to accommodate large number of student teachers in laboratory schools is cited as a major factor as well as the short time spent for off-campus work. Relatively more student teachers accomplish more during their off-campus work.

B. Field Capability Survey

8. Although the competence of the teachers varied across regions, a general consensus has been reached that the Cooperating Teachers and the Regular Teachers are competent enough to handle student teaching. The Cooperating Teachers assessed themselves to be most competent in the mastery of the subject matter they teach and in encouraging student teachers to be creative and innovative especially in constructing good lesson plans. Both the Cooperating Teachers and the Regular Teachers obtained the lowest rating in conducting regular professional discussions with student teachers and in updating themselves through collecting and reading professional articles to share with student teachers. It is heartening to note the availability of competent teachers even among the regular ones who have not been given student teaching assignment.

9. The reported competence of the cooperating teachers and the regular teachers to handle student teaching assignment is understandably apparent when it comes to routinary and basic tasks of teaching as opposed to more methodical, professional and academic ones which are expected by TEIs. This aspect strongly suggests the need for in-service training to build teachers' capability to handle student teaching.

10. The Cooperating Teachers, Regular Teachers, Heads/Grade Coordinators and Principals across regions generally have a **favorable** attitude toward the program. They all agreed that STP, as they are implementing it, makes pre-service teachers more ready for teaching and that the program benefits derived from handling students teaching assignments far outweigh the burdens inherent in such responsibility. The favorable attitude of the four respondent groups towards student teaching program creates the appropriate ambience to enable the field to absorb student teaching programs of TEIs. However, such positive attitude needs to be complemented with appropriate orientation and understanding of the complexities of the whole range of work relevant to STP.

11. The 4 groups of respondents rated facilities, equipment and instructional materials across regions as generally **adequate** for the student teaching program although attention should be paid to the technology-based facilities and those for special events. It was evident

from the regional findings that there is inequitable resource allocation going on among regions, with NCR and its neighboring regions getting the bulk of the share. The findings suggest a direct relationship between access to resources and teacher competence and efficacy.

C. Case Studies

An initial review of the 20 case studies brought about a scheme of classification to consider the 4 main themes: Part A, Managing Alternative Student Teaching Practices; Part B, Maximizing Student Learning Practices; Part C, Engineering Institutional Resources Practices; and Part D, Enriching Student Teaching Practices.

The 3 case studies in Part A reveal 2 different practicum venues for student teaching and how each alternative has effected positive gains, as evidenced in the employment profile of their students after graduation and in the expressed assessment of stake holders (Domingo; Fortes-Busalla; De los Santos). The schools' decision to deviate from the standard on- and off-campus program of pre-service teachers and to limit it only to either on-campus only or off-campus only has not affected adversely the quality of prospective teachers. While the three institutions differed in the benefits and problems encountered, the goal to produce quality teacher graduates using either on-campus or off-campus student teaching program only was satisfactorily attained by both.

Seven investigations comprise Part B. Of these, one dealt with sophomore high school laboratory students on the teaching of the Environmental Conservation subject using team learning (Dañocup). The innovation brought about positive behavioral changes and improved scholarly class discussions. Four of the other five studies, involving laboratory school pupils were innovations towards better skills in spoken and written English (Jacalne-1: Jacalne-2; Jacalne-3:) and improved level of reading comprehension level (Bachiller). Tried out textbooks and strategies (i.e., phonetic analysis, spelling contract) were employed which successfully gained considerable pupil improvement along these learning aspects. The other case study involving laboratory school pupils focused on the talent development program which brought structure to an otherwise routinary showcasing of talents during school programs (Samson). Apart from improved personality development utilizing talents, certain work values were also enhanced among pupils and among student teachers who collaborated in this innovation. The study conducted in St. Mary's University High School Department (Mateo) showed the increase of class time allotment for English, Math, and Science and the provision of additional courses of study in the 3 subject areas which are over and above the requirements stipulated in the prescribed DECS secondary level curriculum. The rich preparation along these subject areas has enabled students to garner awards, have college placement in prestigious universities and gain comparative ease during their freshman year in college.

In Part C, inadequate financial resources, institutional changes, and the recognition of parents' involvement inspired innovations towards managing available resources for the sake of preserving quality teacher education. Linkages with the school's own elementary school with the knowledge and acceptance of parents, pupils, and school staff provided a purely on-campus student teaching experience (Dañocup). Moreover, institutional changes brought about by budget limitations (Ginete-1) or changes in course offerings (Ginete-2) were shown to have been handled well, as evidenced in the continuity of teacher-related programs needed in the vicinity (Ginete-3).

Part D case studies focused on non-traditional enrichment strategies aimed at enhancing student teachers' capability for research and instructional delivery. Student teachers were challenged to experience theory in action and documented these through action researches (Nagtalon). Furthermore, the creativity of student teachers to motivate pupils and students for active learning was developed through the use of contemporary teaching techniques which generally followed the principle of "learning by doing" (Jacalne). In the third case study, commitment to teaching was fostered through community immersion, a practice inspired by the defunct program - Youth Civic Action Program (Orencia). The fourth case is a summary report of best practices in selected HEIs

in Region 4 (Badajos). These best practices were viewed according to their unique implementation of: (a) student selectivity measures; and (b) teacher education internship (which covered curriculum and supervision of student teaching). The fifth case highlights an innovative assessment technique through the use of the student's portfolio which is one form of authentic assessment instead of employing traditional assessment methods (Mateo). The sixth case looks into Leyte Normal University's multi-grade class technology (Jadloc). This innovation is the University's response to address access and equity to education as a right and privilege of school children, especially for those displaced on the available lockstep system of schooling. Its main objective centers on producing preservice teachers whose competence in handling multi-grade classes helps perpetuate this new class technology and to ensure education for all.

IV. HIGHLIGHTS OF RECOMMENDATIONS

A. Policy Recommendations

1. A policy to redefine the functions of the existing laboratory schools of teacher training institutions. The laboratory schools should be used not only as a site for student teaching but also, and more importantly, as a ***center for teaching and learning***. Among others, the laboratory schools should be used as:

   a. *Demonstration sites* for testing and implementing new instructional methodologies;

   b. *Research sites* for determining the effectiveness of intervention programs in education not only at the classroom level but also on a school level;

   c. *Observation sites* for studying the Filipino children's learning systems;

   d. *Try-out sites* for curricular innovations;

   e. *Centers for materials development;* and

   f. *Professional Development Centers* for teachers in the field.

   This recommendation has been principally based on two major findings of the study. First, the survey has indeed shown that laboratory schools, by and large, exist primarily and solely for student teaching only, with relatively low ratings obtained for how well the other practices and functions a laboratory school by its nature should be performing. Secondly, the findings of the case studies of best practices in laboratory schools evidently illustrate the fact that a laboratory school can perform other significant functions that can undoubtedly support the goals of teacher education programs in general, and enhance the student teaching program in particular.

   Student teaching may still be considered as a major function of a laboratory school but it should be a site for the student teachers to see and experience research in action, the evolution and testing of innovations, and an available and fertile field for knowledge and product generation. These roles, if assumed by laboratory schools, can in fact develop the *creative, critical, flexible, informed and productive teacher,* the qualities which should punctuate the graduates of teacher education programs.

   Inherent in this rationalization policy is a mechanism for monitoring and evaluating the activities of the laboratory schools along these functions.

2. An additional policy guideline in the selection of a COETE should be the availability of a laboratory school or a partner school that performs the newly defined functions.

   The identification and maintenance of a COE in teacher education must consider the availability of a laboratory school or a partner school which is performing the aforecited functions for the institution. It goes without saying that

CHED must continue lending logistical assistance to the centers to carry these functions out. The COETE, on the other hand, as one of its responsibilities, must share its resources with the other TEIs in the region so their laboratory schools or partner schools may be assisted to perform similar functions.

3. Accreditation of teacher education programs should recognize the status of its laboratory school. A teacher education program, for it to be given recognition for a higher category or accreditation level (i.e., Level 3), must maintain a laboratory school (on-campus or off-campus) that exhibits capabilities to perform the newly defined functions.

4. A policy to encourage each TEI to undertake a situational analysis in order to make a decision on the type of student teaching program their institution should adopt. The program should be able to provide the *greatest* exposure to expected teaching and non-teaching experiences to the *greatest* number of student teachers with the *greatest* effectiveness.

There are findings in the student teaching survey that alarmingly revealed program, regional, and institutional variance in the way the present student teaching program provide the expected experiences for student teachers. Significant numbers from their ranks have reported not having been given adequate exposure and not having accomplished many activities that purport to develop the teacher competencies intended for pre-service programs. Corollary to this, a seeming advantage of off campus work in providing more experiences to student teachers than their on-campus work has also been suggested by the data. Thus, one can consider an option where the provision of actual field experience is prolonged or an option where integrating early field experiences prior to student teaching becomes obligatory.

What follow are possible student teaching program options to provide the structural and curricular mechanism:

Alternative Student Teaching Program Options

a. **Total Field Immersion (TFI) Option:** (For TEIs with or without laboratory schools)

Total Field Immersion (TFI) Option

Option 1: TFI with Differentiated Assignment		
One quarter off-campus for directed observation and participation	One quarter off-campus for actual teaching	
Option 2: TFI with Early Field Experiences		
Early field experiences required in all professional courses Year 2 to Year 3	Observation and directed classroom participation: One quarter-Year 4	Actual teaching experiences: One quarter Year 4
Option 3: TFI in Year 5		
This will be for 5-year teacher education program		

Conditions for Total Field Immersion Option:

- TEI has a pool of cooperating schools that has been selected following a set of criteria to include the school's willingness to assume responsibility.
- TEI establishes a partnership agreement with the cooperating schools setting terms of reference defining the roles and expectations of the TEI and the partner schools.

b. **Status Quo Option:** (For TEIs which would opt to maintain their laboratory school but will have to perform the other functions earlier defined)

Conditions for Status Quo Option:

- TEI has a laboratory school that can adequately implement the student teaching program.
- Its laboratory school serves as a center for teaching and learning performing the newly defined roles.
- TEI has a pool of cooperating schools that has been selected following a set of criteria to include the school's willingness to assume responsibility.
- The laboratory school must only maintain one class for each elementary grade level for those with BEE programs and one class for each secondary year level for those with BSE programs.

b. Status Quo Option

Option 1: Status Quo with Differentiated Assignment		
One quarter On-Campus work	One quarter Off--Campus work	
Option 2: Status Quo with Early Field Experiences		
Early field experiences required in professional courses - **Year 2 and Year 3**	One quarter On-Campus in the laboratory school **Year 4**	One quarter Off-Campus in the field **Year 4**

5. A policy to standardize the student teaching program following a standardized inventory of student teaching competencies for any type of student teaching program (i.e., on/off campus or on-campus only or off-campus only).

6. A policy for the provision of appropriate mechanism and resources for better implementation of the Student Teaching Program:

   a. Review the workload of the student teaching faculty

   b. Institute a financial and merit incentives system for cooperating schools

   c. Maintain a realistic supervising instructor-student teacher ratio

   d. Standardize the criteria for selecting partner schools /cooperating schools

      While there may be existing guidelines in the selection of cooperating schools (CSs), the following are suggested:

      - CSs must be high performing schools as determined by the division or regional office.
      - CSs must be known for their strong programs in teaching the curricular subjects (e.g. science program, math program, social studies program). This is significant especially for the student teachers of secondary programs who have their specialization or majorship.
      - Willingness of the principal to assume the role as the manager of the partner school.
      - Other factors like proximity to the sending TEI may be considered but the first two criteria must be given priority.

   e. Set up a faculty development program

   f. Provide budget for the student teaching program

7. A policy to encourage and integrate outreach programs in the STP of TEIs and to specifically define the nature of these programs.

8. Development of a training package for the student teaching faculty (college supervisors, supervising instructors, and cooperating teachers).

   The training package should include the following:

   a. Foundational Aspects

   (1) The Rationale for the Student Teaching Program. Tradition in the discipline of teacher education considers student teaching as a requisite component of the pre-service program and is, in fact, considered the most important single factor contributing to teacher preparation. Hence, the role of STP should not be assumed, or worse, taken for granted but rather be discussed or expressed. From the data gathered, it can be inferred that there is a need to clearly define and re-think the assumptions that underlie such tradition.

   The rationale for STP should consider the role it plays not only within the teacher education program but also within the overall function of the TEI as an institution of higher learning, i.e., that it has to contribute to the four major functions of instruction, research, extension and production.

   (2) Roles of Implementing Institutions. Data have shown that the terms of reference between TEI and CSs in managing and implementing STP

were not always as defined and usually not as formalized, as they should be. Hence, there is a need to institutionalize STP within the systems of the TEIs and DepEd to improve coordination between them in the delivery of the program. This means clearly defining the objectives of STP, clarifying the terms of reference for the sending institutions and the receiving CSs, and defining the spheres of accountability and responsibility.

b. Management of the Student Teaching Program

(1) Inventory of Student Teaching Competencies. As earlier explicated, the student teaching faculty, to include both the supervising instructors and the cooperating teachers, should be made aware of the inventory of student teaching competencies and at the same time, the appropriate methodologies to develop them.

(2) Roles of Supervising Instructors and Cooperating Teachers. With the shift in the way student teaching should be viewed as well as the newly defined functions of the laboratory schools, the need to expand and redefine the roles of the Supervising Instructors and Cooperating Teachers *vis-à-vis* the student teachers has been strongly felt. In addition to performing the role of the "comptroller and master teacher", both the Supervising Instructors and Cooperating Teachers together with the Student Teachers must do inquiry or reflective analysis of practices in the field. This is the playing field where the university and the schools, the theory and practice, would meet. What is specifically recommended is a shift from "apprenticeship" model to "cooperative" model or partnership model of relationship between and among the Supervising Instructors, the Cooperating Teachers together with the Student Teachers.

(3) Development of Professional Skills and Knowledge of STP Faculty. Both the Supervising Instructors and the Cooperating Teachers are perceived to be generally competent by the student teachers. However, the Cooperating Teachers have obtained relatively low ratings in certain areas, thus the need for upgrading their professional skills and knowledge, which are pertinent to student teaching. Some suggested topics are:

- Theories/principles behind teaching methodologies
- How to discuss professional topics with Student Teachers
- How to conduct micro-teaching sessions
- How to hold lecture/ demonstration lessons for student teachers
- How to conduct pre-assessment of student teachers' needs
- How to do reflective analysis of lessons
- How to give feedback to student teachers
- Alternative and non-traditional approaches in student teaching

- Peer coaching – experienced teachers acting as mentors and role models
- Participatory methods of teaching and learning
- Multiple interactions
- Classroom-based research (action research)

B. Research Recommendations

1. Develop and validate a pre-assessment mechanism to diagnose the needs of students prior to student teaching.

2. Define and validate the competencies that student teachers are expected to develop from on- and off-campus student teaching and view STP as a two-phased course operating as a continuum.

3. Determine the level of accomplishments of student teachers who are fielded out without prior on-campus work through actual observation. This should further validate the finding that no marked differences exist between the performance of student teachers in *on-off campus* program and *off campus-only* programs.

4. Identify the early field experiences needed by teacher education students that can serve as antecedents to effective student teaching. This will be necessary to prepare the students before sending them to do actual teaching in the field.

5. Conduct research to determine the possible stages in the development of an effective student teacher. This would explain why good student teachers can emerge even with or without on-campus practicum.

6. Conduct case studies of successful student teachers to identify the factors that can hasten the development of competent student teachers.

7. Involve student teachers in carrying out collaborative classroom-based research with either their critic teachers or their cooperating teachers. This would strengthen the other functions of the laboratory schools and at the same time nurture the culture of research among the student teachers.

8. Identify the most appropriate incentive package for cooperating schools and identify the factors that will determine its appropriateness.

9. Conduct formative evaluation studies of the alternative student teaching program options through case studies to determine the conditions that best suit each option.

10. Conduct case studies of effective teachers who have not undergone any student teaching program to determine the possible alternative factors that can replace the program.

REFERENCES

Aribuabo, C. P. 1992. Development of an instrument to evaluate the student teaching programs in selected state universities. University of the Philippines, unpublished dissertation.

Brinkerhoff, R. et al. 1983. Program evaluation: A practitioner's guide for trainers and evaluators (Sourcebook). The Hague: Kluwer-Nijhoff Publishing.

Clemena, Rose Marie S. 1999. Teaching the teachers: Innovative in-service training programs in the E-9 countries. ***Tanglaw***, 7:1.

Commission on Higher Education. Memorandum Order No. 4, s.1996.

Commission on Higher Education Memorandum Order No. 8, s.1996.

Commission on Higher Education Memorandum Order No. 21 s.1997.

Dressel, Paul. 1985. Handbook of academic evaluation. New York: Jossey-Bass Publishers.

Amadenia D. 1990. The student teaching programs of seven selected schools in two cities of Region IX, SY 1988-89. Ozamiz City : Misamis University, unpublished doctoral dissertation.

Guyton, E. and J. McIntyre. 1990. Student teaching and school experiences. In: Shulman L.S. (ed.) *Handbook of Research in Teaching Education.*

Katz, L.G. and J. D. Raths. 1990. A framework for research on teacher education programs. In: Tisher, R.P. and M.F. Wideen (eds.). *Research in Teacher Education: International Perspectives.* London: The Falmer Press.

Klinzing, H.G. 1990. Research in teacher education in West Gernmany. In: Tisher, R.P. and M.F. Wideen (eds.). *Research in Teacher Education: International Perspectives.* London: The Falmer Press.

Lanier, J.E. and J.W. Little. 1986. Research on teacher education. In: Wittrock (ed.). *Handbook of Research on Teaching.* Chicago: Rand McNally College Publishing Company.

Leonardo, A.O. 1994. The student teaching programs of teacher-training institutions in the Division of Misamis Occidental and Ozamiz City, SY 1993-1994. Ozamiz City: Misamis University, unpublished doctoral dissertation.

Leus, M. 1993. An evaluation of the pre-service elementary teacher education program at the Philippine Normal University: A source reference for curriculum improvement. Centro Escolar University, unpublished doctoral dissertation.

Navarro, R.L., Z. Villaescusa, R.G. Santos. 1994. Study of pre-service elementary teacher training. Bureau of Higher Education and Philippine Association for Teacher Education.

Paano, T.P. 1994. An evaluation of the student teaching program of the Philippine Normal University. Philippine Normal University, unpublished doctoral dissertation.

Punsalan, T.G. 1994. The values education program as perceived by values education teachers in 8 Regions of the country. ***SIYASIK***, 1:1.

Shulman, L.S. 1990. Handbook of research in teacher education in Japan. In: Tisher, R.P. and M.F. Wideen (eds.). *Research in Teacher Education: International Perspectives.* London: The Falmer Press.

Tisher, R.P. and M.F. Wideen (eds). 1990. *Research in Teacher Education: International Perspectives.* London: The Falmer Press.

Uvas, V.B. 1990. The structural context of social awareness: A case study. In: Worthen, B. and J. Sanders. *Educational Evaluation.* New York: Longman, Research Series No. 16.

A FILIPINO MODEL OF TEACHING EXPERTISE IN HIGHER EDUCATION

FLORDELIZA C. REYES, Ph.D.

ABSTRACT

This is a theory-building research designed to develop a model of teaching expertise in the context of higher education in the Philippines. A purposive sample of 69 expert teachers in private and state colleges and universities across regions in the country was covered by the study. Data were gathered through ethnographic classroom observations and videotaping of the experts as they conducted classes in their respective home institutions, as well as through face-to-face interviews and survey questionnaires.

Qualitative and quantitative content analyses of the gathered data and information provided a portrait of the expert teachers in terms of personal qualities and professional backgrounds, brain dominance, educational philosophies, and classroom teaching practices and behaviors. A model of teaching expertise culled from the classroom ethnographies and videotaped lessons of the experts is the study's major contribution to the extant research literature on teaching.

I. INTRODUCTION

Quality education is first and foremost a function of instruction because in the hands of uncommitted and ineffective teachers, even the best-designed curriculum is doomed to fail. While it is true that some students can learn in spite of the teacher, it cannot be denied that the quality of the outputs of education is a function, to a great extent, of instruction and of students' interactions with their teachers.

Educational institutions that have distinguished themselves for excellence take pride in a cadre of expert teachers who view teaching as a service oriented mission, an opportunity and a privilege for sharing their expertise and humane qualities wholly and unconditionally. These are teachers who empower learners to achieve the goals of education - teachers whose personal traits, attributes, and teaching practices have inspired a great expanse of theoretical and empirical literature for almost a century.

From the early 1900s to the late 50s, research on teaching focused on teachers' effectiveness. Studies were generally concentrated on the identification of traits and attributes most and least preferred of teachers by students, teacher educators, and school administrators. However, in the 60s and the 70s, researchers realized that studies on teaching effectiveness could not be confined to the narrow dimension of teacher traits or attributes. It did not identify the best teaching practices, and instead produced the erroneous impression that teachers are born. Consequently, the attention of researchers shifted to the identification of classroom teaching practices that differentiated effective from ineffective teachers. Frequencies of occurrence of teaching practices (e.g., observing wait-time in questioning, giving feedback, using praise) were averaged across observations and correlated with teaching outcomes, usually measured by students' scores in standardized tests. These so-called "process-product" studies on teaching dominated the literature for several years, reaching its peak in the late 60s to the early

70s (Shulman 1992). However, just like the earlier investigations on teaching effectiveness, the limitations of this type of research became apparent. After reviewing the research literature on teaching effectiveness, which spanned almost two decades, Shulman (in Brandt 1992, p.20) concluded: "the image of teaching found in process-product literature was quite narrow." In the same vein, other researchers acknowledged that tests were inadequate for measuring learning outcomes and that process-product researches did not provide the "more subtle points that distinguish the most outstanding teachers" (Brophy 1992, p. 5). Inevitably, enthusiasm in process-product studies waned; and a reorientation of studies on teaching followed.

The attention of researchers shifted from quantitative investigations of possible relationships between teaching practices and students' academic achievement, to qualitative analysis and documentation of teaching particular subjects and topics (Brophy 1992; Elmore 1992; Prawat 1992; Shulman 1992). This view was shared by other educational researchers who proposed the intertwining of responsibility and effectiveness as a criterion for research on teaching, particularly on expert teaching (Oser, Dick, & Patry 1992; Shavelson 1992).

Expert teaching is effective and responsible teaching (Berliner 1992). Teaching is effective, according to him, if it meets some criteria or standards of performance, usually in terms of students' academic achievement. It is responsible if it is based on mutual respect between the teachers and the learners, and if it enables the learners to become active, responsible participants and "co-creators" of learning.

Salomon (1992) describes responsible teaching in terms of the following observable teaching practices: (a) proper carrying out of the teacher's role as an orchestrator, catering to different students; (b) assuming responsibility for the learning process and outcomes, while at the same time judiciously shifting learning responsibility to students; and (c) serious consideration, selection, and design, as contrasted with mindless adoption, of instructional means, activities, materials, tasks, and the like in the light of normative and moral criteria.

Certain attributes have been ascribed to expert teachers. They place a high premium on the development of student thinking and understanding (Eisner 1992). They work beyond what is ordinarily required of a teacher; "willing to work the extra mile and go the extra mile" in their desire to be the best teacher they can be (Ready, in Woolfolk 1998, p. 21). They intuitively use what works; experience very few interruptions or delays, "turn students' confusion into understanding", "improvise explanations and create new examples on the spot" (Greeno 1986; Woolfolk 1995). Expert teachers have also been described as possessing subject matter expertise, classroom management expertise, instructional expertise and diagnostic expertise (Weinert, Helmke & Schrader 1992).

Subject matter expertise refers to content mastery and the organization of content-specific knowledge that facilitates effective instruction (Berliner 1986; Grossman, Wilson & Shulman 1989; Leinhardt & Smith 1985; Shulman 1987; Tamir 1988; Weinert, Helmke & Schrader);

Classroom management expertise is defined in terms of maintenance of high levels of on-task learning in the classroom, prevention or speedy elimination of learning disruptions, and creation of a learning environment conducive to learning (Berliner 1986; Doyle 1986; Evertson 1989; Weinert, Helmke & Schrader);

Instructional expertise refers to implicit and explicit teachers' knowledge of different teaching strategies and methods to attain instructional objectives and skills that result in well-organized, competent, and dynamic teaching (Weinert, Helmke, & Schrader);

Lastly, *diagnostic expertise* refers to teacher's knowledge of class and

individual needs and goals, abilities, achievement levels, motives, personality attributes, and emotions, which influence instruction and learning (Clark & Peterson 1986; Leindhart 1983; Schrader 1989 in Weinert, Helmke & Schrader 1992).

Compared with teaching effectiveness research, relatively fewer studies have been done on teaching expertise. Two such studies were separately conducted by Eisner (1992) and Rollett (1992). Eisner visited the classrooms of two third-grade teachers who were reputed experts, and attributed their expertise to their "affectionate" interactions with the learners, and to their efforts in developing pupil responsibility and seriousness in learning. On the other hand, Rollet compared experienced and reputed excellent teachers in three cities: New York, London and Vienna. Just like Eisner's exemplary teacher respondents, Rollet's dozens of exemplary teachers were concerned not only with the cognitive development of students, but with their affective development as well. Both researchers concluded that expert teachers are effective, as measured by attainment of curriculum goals, and learner-centered.

Another study on teaching expertise was conducted by Rowles (1991) among 40 secondary teachers in one large school district in British Columbia. Based on content analysis of the participants' explicit and implicit descriptions of their teaching, he concluded that paying attention to what was implicit in teacher talk could yield new insights about expert teaching practice.

The aforecited studies were all descriptive in nature. None of those dealt on theory building, an under researched area in the field of education. As noted by Beauchamp (1981, p.3) "educators have been concerned with empirical data of all kinds, but they have been unable to make use of the conceptual processes of science in the development of theories". He surmised that this might be attributed to their lack of interest and capability in doing theory-building research.

A theory building research on teaching, developed by Lundgren (in Beauchamp 1981), had 3 components: frame factors (goals and content of the curriculum), teaching process, and learning outcomes. He studied the effects of the frame factors on the teaching process and on the resulting learning outcomes. In the local setting, Reyes (1998) explored the development of a teaching-learning theory based on an integrative review of brain research, mostly consisting of doctoral dissertations. In the area of educational management, Batocabe (1998) proposed a model of effective management of diocesan schools in Lucena, based on a qualitative analysis of commonalities among administrators of effective school, which were not found among administrators of ineffective schools.

Model building is relatively an unpopular research option especially among educational researchers, hence, the present study may inspire replications and related studies among teacher experts in other settings, thereby contributing to the limited empirical literature in this field. Furthermore, in the words of Shulman (1992, p.14), "Teaching is and has always been at the center of all education and educational reform"; thus, any research that focuses on teaching is significant, especially if it provides an empirical base that can guide policy actions concerning teachers.

The present study was designed to identify the components of teaching expertise based on selected teacher-related factors and conditions, which were perceived by expert Filipino teachers as having contributed the most to their success in teaching. Teacher-related factors were limited to personal and professional variables, such as age, gender, marital status, brain dominance, first career choice, academic performance in school, educational background and field of expertise, length of teaching experience, and educational philosophy.

The choice of teaching experience was prompted by fragmentary evidence and anecdotal records which indicate that teachers require at least 5 years of teaching experience in order to acquire teaching

expertise (Berliner 1992). According to Berliner, even if not all experienced teachers are experts, it is unlikely for many teachers to attain expertise without extensive teaching experience. The average length of teaching experience of the local expert teacher participants was determined in the present study to find out if it would be one of the descriptive characteristics of expert Filipino college teachers.

The choice of educational philosophy, on the other hand, was inspired by Wiles and Bondi (1994) who believe that the wide range of differences among teachers, especially with regard to the selection of teaching strategies and their behavior towards students can be explained by differences in their educational philosophies. Would the expert teachers be inclined towards the more flexible or unstructured educational philosophies that are centered on the needs of society and of the learners or, would they tend to favor the more structured or traditional philosophies?

Another factor that may possibly influence the way a teacher handles the teaching-learning process is his or her brain hemisphericity. A person may be left-brained (i.e., analytical, logical, rational, structured, serious/formal), right-brained (imaginative, intuitive, unstructured, playful/humorous) or mixed-brained (the ideal). A mixed-brained person can easily shift gears from left-brained to right-brained information processing modes at will. Would it be likely therefore for expert teachers to be mixed-brained? This explains the inclusion of this variable in the present investigation.

Another variable of interest in the study, relative to the profile of expert teachers, was their educational background. Were they products of teacher-training institutions? Was teaching their first career choice? Differently stated, could a person become an expert teacher even if he or she did not have a formal training in teaching and did not initially intend or wish to become a teacher? Were they academic achievers during their schooling, which would refute the thinking of some Filipino parents that teaching is for those who are lacking in intelligence? Did they actively participate in non-academic pursuits such as extra-curricular activities, athletics, and student organizations?

From another perspective, would there be preponderance of male or of female expert teachers; of single or of married expert teachers?

The ideas and concepts that guided the conduct of the present study are summarized and schematically presented in Figure 1. It presents the input data, the data analysis, and the expected results or outcomes of the analysis.

II. THE PROBLEM

This study was primarily aimed at the development of a Filipino model of teaching expertise in higher education to guide policy making concerning teachers.

Specifically, the study was designed to answer the following problems:

1. What is the profile of expert teachers in Philippine higher education with regard to selected personal and professional variables?

2. Based on the profile and the self-reports of the expert teachers, what factors contribute to the attainment of teaching expertise?

3. Based on qualitative and quantitative content analysis of ethnographic classroom observations and videotaped lessons of reputed expert teachers, what model of teaching expertise may be developed in the context of Philippine higher education?

4. What are the implications of the study for policy making concerning teacher preparation, testing, development, promotion, retention, and tenure?

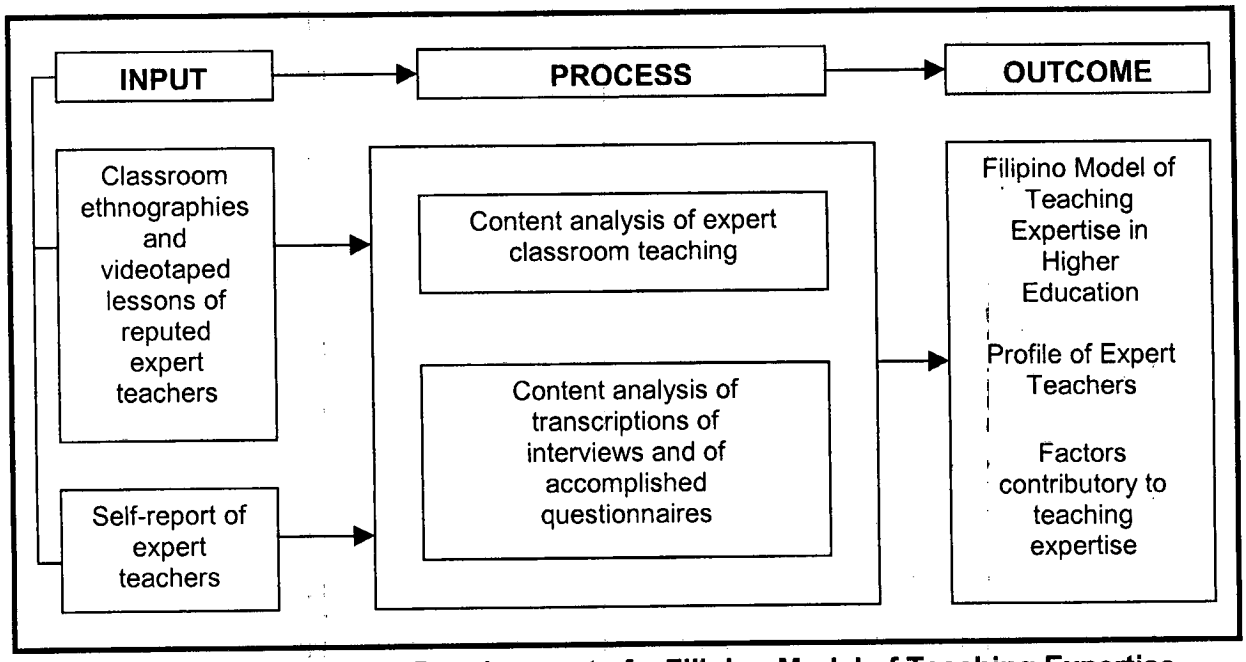


Figure 1. Paradigm on the Development of a Filipino Model of Teaching Expertise in Higher Education

III. METHOD

A purposive sample of 69 reputed expert teachers from 40 higher educational institutions distributed across the country (with the exception of Regions IV and VIII) participated in the study. Twenty-eight of these teachers were Metrobank awardees, 32 were teaching courses in Level 3 accredited programs, and another 9 were from Centers of Excellence (COEs).

Of the 40 participant schools, 28 were private and 12 were government-owned. Only five (12.5%) were located in the rural areas.

Multiple techniques, i.e., face-to-face interviews, use of survey questionnaires, videotaping of classes, class observations, and classroom ethnography were employed for gathering and cross validating data. Classroom ethnography is a descriptive approach that involves making "detailed observations in teachers' classes" (Woolfolk 1998).

Three survey instruments were used in the study, to wit: (a) the Knowing Yourself - Right or Left as adapted by Reyes (1994) for Filipino respondents to determine brain dominance; (b) the Philosophy Preference Assessment of Wiles and Bondi (1994) to determine a person's educational beliefs, assumptions, and convictions relative to 5 major philosophies: Perennialism, Idealism, Realism, Experimentalism, and Existentialism; and (c) a researcher-made survey questionnaire for expert teachers.

IV. PROCEDURE

The researcher and four field researchers (tertiary-level school administrators whose functions included classroom observations and teacher evaluation) conducted interviews and ethnographic observations of the participant teachers. The videotapes of the classes of the teacher participants, taken by professional video technicians, served to validate the classroom ethnographies.

Scheduled class observations and videotaping ranged from 1 hour for Monday-Wednesday-Friday classes, 1.5 hours for Tuesday-Thursday classes, and 3 hours for once-a-week classes. In most cases, the class observer and the video technicians would visit the class of an expert teacher twice. During the first session, the technician would pretend videotaping the class, to familiarize the students with the process, before the actual taping on the second class meeting. However, due to time constraint, especially for classes that met for three hours once a week and, in isolated cases, as requested by participants, class observation and videotaping were simultaneously done during only one class session. That the presence of a field researcher and at least one technician could have affected the students' classroom behavior and performance is acknowledged as a possible limitation of the study.

Before or after the class observations, the field researchers conducted unstructured interviews of teachers to gather more in-depth information related to the open-ended items of the questionnaire. The transcriptions of these interviews; the accomplished survey forms; the classroom ethnographies supplemented by audiotapes, and videotapes, together with verbatim transcriptions of teacher-student verbal interactions, were content analyzed in the light of the purpose of the study.

V. RESULTS

Profile of the Expert Teachers

The oldest participant was 79 years old, while the youngest was 23. It is worth noting that a teacher can earn recognition as an expert at the early part of his or her career. This indicates that some are born teachers. However, this is more of an exception rather than the rule because the median age of the sample was 50 and the majority (82.6%) were over 40. Moreover, one-fifth of the experts were in the 60 to 79-age bracket. One significant inference that can be deduced from these data is that the teaching performance of expert teachers does not deteriorate with age. This information lends support to the practice of extending the services of excellent teachers beyond retirement age.

Of the 69 teachers, only 24 (including a nun and a priest) were single. This indicates that having a family is not a hindrance to success in teaching. In fact, self-reports of the married expert teachers affirmed that having understanding and supportive spouses and children contributed to their success in teaching.

The experts initially did not want to become teachers. After graduating from high school, only 26 actually opted for a teaching career. The rest would have been researchers, journalists, lawyers, engineers, doctors, nurses, TV hosts, priests or pastors had their early career plans materialized. Based on these findings, it may be inferred that an initial liking for teaching may be contributory, but not essential to the attainment of teaching expertise. In contrast, all of Adam's veteran outstanding teachers really wanted to become teachers long before they went into teaching.

An intriguing finding is that only 10 of the participants were graduates of teacher-training institutions. Stated differently, 85.5 % of the expert teachers did not have a formal undergraduate education and training in teaching. This leads us to ask, "If teachers can attain expertise in their work without benefit of studying in a teacher training institution, what difference then do such institutions make, in preparing future teachers for a successful teaching career?"

Another significant finding is that no one among the expert teachers who went through teacher training institutions attributed his or her attainment of outstanding teaching performance to his/her undergraduate education. One question that may be posed therefore is, "Can in-service training and other professional activities pursued by teachers in the long run, provide the same preparation that teacher education programs offer?" Or, "What is the true worth of such programs?"

If an undergraduate program in education is not a prerequisite to successful teaching, what about scholastic performance or, participation in co-curricular activities during college? During their undergraduate years, 58 of the expert teachers were academic achievers. Of this group, 33 were among the top performers, although they did not make it to the Dean's list, and 25 were either consistent honor students or, Dean's listers. On the other hand, only 11 were average performers. These data suggest a possible relationship between academic achievement and teaching performance. It does not mean though that an average college student who wishes to go into teaching will not succeed, as verified in the study. The fact remains, however, that the high achievers far outnumbered the average performers in the sample of expert teachers, and that no one among them was below average during schooling. This finding runs counter to the thinking of most Filipino parents that teaching is the right choice for low performing children. It also negates the impression that bright teachers, especially those who graduated with honors, cannot be as patient as their less intelligent peers.

The lengths of teaching experience of the participants varied from 2 years to 47 years, with a median of 25 years. This finding lends support to the thinking of Berliner (1992) and Adam (1992) that extensive practice is a prerequisite to teaching expertise.

More than half of the participants had doctoral degrees, and another 37.6% completed master's programs. Only three had not started graduate schooling, one of whom was a certified public accountant.

That 88.3% of the participants had at least a master's degree is a significant finding, considering that only a small percentage of college teachers in the Philippines have graduate degrees. Gonzalez (1992) wrote, "Our so-called college faculty are not qualified ... only 25% have graduate degrees and teach at a level that does not go beyond secondary school when we judge them by international standards" (p. 2). As a whole therefore the participant expert teachers are an exceptional group. More important, the finding implies that graduate education is one factor that can possibly explain teaching expertise in Philippine higher education.

More than one-third of the participants completed graduate programs either in education, educational administration, educational technology, or technician education (36%). The rest were either master's or doctoral degrees holders in applied and natural sciences (15%); nursing, public health, or medicine (6%); political and social science, or economics (6%); psychology, guidance, or counseling (5%); philosophy (3%); and agriculture (3%).

Aside from education, most of those graduate programs have a teaching component. Fifty-five or 80% of the participants either completed or, were enrolled in those programs. Such graduate programs are likely to benefit students who are engaged in teaching because of the opportunities for sharing research and work experiences in the field. This could be one precursor of excellent teaching, especially among the expert teachers who did not undergo a formal training in teaching at the undergraduate level.

About 61.7% of the experts espoused progressive philosophies, compared with 19.6% who were traditionalists. The rest were eclectics. In general, they were inclined to view the teacher as a guide or facilitator of learning; the students as active participants in the teaching-learning process, and education as a means of developing the learners holistically and of improving society.

Most of the participants (78.3%) were mixed-brained. This explains their flexibility in the use of analytical and global teaching techniques and facility in catering to different learning styles of their students. The rest were left-brained. Most of the left-brained expert teachers were in the fields of science, mathematics, language, literature, philosophy, research, nursing, and agriculture. The left-brained expert teachers generally preferred strategies that required inductive analysis, critical thinking, and logical reasoning. This is

because left-brained individuals process information analytically, logically, and sequentially. They pay attention to details and specific information from which deductions can be made.

When viewed in relation to educational philosophy, the left-brained teachers generally seemed to be more inclined towards the more traditional and structured philosophy, Perennialism. In contrast, the mixed-brained teachers, as a whole, espoused the more progressive and less structured, Experimentalism. Furthermore, there were more Eclectics among the mixed-brained participants than among those who were left-brained. These findings imply the possible existence of a relationship between brain dominance and educational philosophy. However, statistical analysis made in the present study failed to establish this relationship, which may be partially attributed to the relatively homogeneous composition of the participants as regards the variables of interest.

Factors Contributory to Teaching Expertise

The majority of the respondents attributed their success to their love and concern for the youth, patience, perseverance, and being understanding: perceptions which were verified in the videotaped lessons. They also attributed their success in teaching to encouraging and supportive school administrators (69.6%), engagement in professional development activities (53.6%); favorable work environments with provisions for reasonable workloads, faculty development, collegial interactions, and release of creativity (52.2%), and supportive family members (44.9%) friends, colleagues, and confidantes (26.1%).

Having teacher role models was also cited by 62.3% as contributory to their success in teaching. It is interesting to note that a big percentage of the expert teachers had as their role models, former mentors at the tertiary level. This finding highlights the importance of exposing prospective teachers to excellent teaching during their undergraduate years.

Based on the results of content analysis of the videotaped lessons and classroom ethnographies of the expert teachers, expert teaching in Philippine higher education has two components or dimensions: effective teaching and responsible teaching. Expert teaching refers to instructional practices and behaviors aimed at the attainment of educational objectives that promote academic achievement (effective teaching) and the development of desirable attitudes and values among the students (responsible teaching). *In the absence of either effective or responsible teaching, there can be no expert teaching. Expert teaching is concerned with the holistic development of the learner.*

Sub-domains of Teaching Expertise

Expert teaching is comprised of six sub-domains. Briefly, these broad, generic dimensions of expertise are, as follows:

Subject matter expertise. This refers to a thorough mastery of course content and knowledge of how best to organize such content to facilitate learning. It includes knowledge of recent developments in the field, of the relationship between course content and allied or related disciplines, and of clear, practical and interesting examples and applications that facilitate learning.

The expert teachers covered by the study give lectures without reading notes, and answer students' questions knowingly and convincingly. Their expertise in their field gives them a high level of self-confidence, such that they can accept an oversight or error without loss of confidence. They are highly credible to the learners.

They organize course content in a form that makes students see how different ideas, concepts, and principles are meaningfully related. They have on hand concrete, practical, and interesting examples or illustrations that clarify abstract ideas, relate theory with practice or, show applications to life problems.

They can easily relate particular lessons or topics with those in another course/discipline whenever called for. This enables students to view and appreciate the course in relation to other fields. They cite recent developments or updated information related to course content, and share what authors (aside from authors of the textbook being used by the class) and other experts say about particular topics covered by the course.

Classroom management expertise. This is characterized by effective and efficient management of class time and maintenance of students' on-task behavior relative to the instructional objectives.

In the classrooms of expert teachers, routine activities are done with ease and within the shortest time possible. They see to it that all needed instructional materials and equipment are functional and ready for use before the start of their classes.

They manage their time productively, relative to their instructional plan, and students are made conscious of the value of time, especially during team/group activities. They provide smooth transitions from the previous to the new lesson, and from one class activity to another, so as not to confuse the students.

Students taught by the participant expert teachers do not experience idle moments or boredom that can lead to behavior or discipline problems. Moreover, they are made aware of course requirements, acceptable and unacceptable class behavior, and standards of desired performance. These practices prevent the occurrence of class disruptions.

Instructional expertise. This is descriptive of instructional clarity and teachers' functional knowledge of varied instructional methods and strategies.

The expert teachers make learning interesting, easy, and meaningful, through the use of varied teaching strategies; student groupings (i.e., large/whole class, team/group, dyad); and judicious use of appropriate instructional materials and equipment that serve to clarify concepts and facilitate learning.

They demonstrate instructional clarity, the ability to simplify and clearly present learning content in a form that can best be understood by the learners. They see to it that students gain a holistic view of the course, and see the relationships between learning activities and course objectives.

Diagnostic expertise. This refers to the teacher's knowledge of students' abilities, interests, and achievement levels; anticipation or awareness of misconceptions that students are likely to have, and sensitivity to students' learning difficulties; coupled with skills in responding positively and immediately to such problems.

The teacher experts can identify particular student/s who cannot cope with the lesson, while addressing the whole class. They encourage students, whom they sense are experiencing problems or difficulties, to raise their questions. They check on students' understanding through the latter's nonverbal language (e.g., facial expressions), through direct questions intended for that purpose, or through some other means. They can anticipate learning problems or difficulties, as well as misconceptions that students are likely to have. They provide immediate remediation or clarification in response to identified learning difficulties or misconceptions.

Relational expertise. This refers to a teacher's human relation skills in the classroom that serve to encourage student participation and risk-taking in class activities, establish rapport with the class, and enhance students' self-esteem and self-confidence.

Relational expertise enables a teacher to provide a pleasant learning environment characterized by mutual trust and respect. Expert teachers do not make threats, intimidate, ridicule, or embarrass students. Instead, they manifest genuine concern and caring for the students. They call students by their names, which sends the message that they know each student personally and that

each one is important. They communicate explicitly or implicitly, their belief in the students' capability to assume responsibility for their own learning. They skillfully use classroom humor to make students feel at ease and enjoy learning. Because Filipinos are by nature warm and friendly as a people, relational expertise comes out strongly as a sub-domain of teaching expertise.

Communication expertise. This refers to the skillful and expressive use of verbal and nonverbal language that arouses and maintains students' interest and attention. Expert teachers observe clarity in giving lectures and instructions, and in framing questions. They provide for two-way communication, characterized by attentive listening, and openness to students' questions and opinions. Their skillful use of language facilitates interactive and participative classroom discussions.

Their oral communication is characterized by good diction, articulation, and fluency of expression; expressiveness and clear language; a pleasant voice quality, and variations in pitch, intonation, volume, and rate of speech that serve to sustain students' attention. They are also skillful in the use of nonverbal language. Their expressive facial expressions, hand and arm gestures, and whole body movement greatly help in driving home a point. They are their best visual aid, whether intentionally or unintentionally.

The Pyramidal Model of Teaching Expertise

The study also revealed core teacher behaviors, practices, and attributes which are *common* to all the participant expert teachers. As such, all expert teachers may be expected to demonstrate or manifest these *"essentials"* or requisites; and one who is lacking or deficient in these aspects cannot be considered an expert.

Although all expert teachers can be expected to manifest the essentials of teaching expertise, they vary in the extent with which they demonstrate additional teaching practices, behaviors, and personal attributes that further enhance their teaching performance. Their comfort levels in observing those elements in classroom teaching spell out the subtle yet discernible differences in their "levels" of expertise. These differences have corresponding observable effects on the interest, attention, and engagement of the students in the classroom learning activities, and on the teachers' rapport with the class.

The following observations were common to all of the expert teachers: content mastery, instructional clarity, interest and enthusiasm, non-threatening disposition, provision of a psychologically safe learning environment, high rapport with students, efficient handling of routine activities and time management, provision for two-way communication, sensitivity to students' anticipation of probable learning problems or misconceptions, and absence of class disruptions. These were referred to in the emergent model as the core classroom teaching behaviors and practices "essential" to the attainment of teaching excellence.

The Essentials of Teaching Expertise

Content mastery. All expert teachers have a very thorough knowledge of subject matter. They know the most appropriate entry point in introducing a concept, skill, or information, the best sequencing of subject matter, and the breadth and depth of content that can be covered in one class session. They know specifically at what points references to past topics or to related topics in other disciplines or courses should be made to facilitate understanding or, to broaden students' insights/perspectives. They have a lot of concrete, practical, and interesting examples and/or applications to clarify abstract ideas, concepts or, theories.

Instructional clarity. All of the experts communicate their understanding of content to their students clearly, in the simplest way possible. This instructional clarity facilitates learning and prevents the occurrence of misinterpretations and confusion on the part of the learners. Expert teachers present learning content to the level of understanding

of the learners. Their explanations, interpretations, and directions are clear, easy to follow, direct to the point.

Interest and enthusiasm. All expert teachers are interested in what they are teaching, in the teaching act itself, and in interacting with their students. They teach with a contagious enthusiasm that arouses students' interest and attention and prevents boredom from creeping in.

Nonthreatening disposition. All expert teachers project a pleasant, nonthreatening disposition. They address their students by name, communicate concern, and treat them with respect. These personal attributes help promote a psychologically safe environment where students are not afraid to take risks. Also, expert teachers are non-intimidating and patient, and they do not mind repeating or giving additional examples and explanations, as needed.

Absence of class disruptions. Classes of expert teachers do not experience any disruption during the learning process. Their class activities go on smoothly without delays that can be caused intentionally by bored, disinterested or, misbehaving students.

The Enhancers

Over and above the six essentials or requisites for expert teaching are the "enhancers," which have corresponding observable effects on the interest, attention, and engagement of the students in the classroom learning activities and on the teachers' rapport with the class. Together with the percentages of experts who demonstrate them in their classroom teaching, these enhancers have been identified as: maintenance of students' on-task behavior (91.4%); use of varied instructional strategies (89.9%); excellent oral communication skills (88.4%); expressive body language (88.2%); ability to develop students' responsibility for learning (84.2%); learner-centeredness (84.1%); use of varied instructional equipment and materials (82.6%); magnetism and charisma (76.8%); ability to make learning pleasant and enjoyable (65.2%); values integration (62.3%); affectionate interactions with students (60.9%); and sense of humor (39.1%).

Maintenance of students' on-task behavior. The expert teachers keep their students highly participative and attentive during lectures and class discussions, and serious and quiet during seatwork activities or experiments.

Use of varied teaching strategies. Although an expert teacher can sustain students' interest and attention through an interesting and meaningful lecture or through a well-conducted lecture-recitation, the use of varied teaching strategies tends to engage students more actively in the learning process. A teacher does not have to use a variety of teaching methods and strategies to be an expert, but doing so can further enhance teaching expertise.

Excellent oral communications skills. All expert teachers express themselves clearly, but some do so more expertly than the rest. The former are highly articulate, fluent, and concise. They have good voice quality (pleasant, well-modulated, clear). They vary their tempo or rate of speech, intonation, and voice volume to stress important points during their oral presentations. Their facility and expressiveness in oral communication help arouse and sustain students' attention. They have the gift of language, and their students appear to admire them for this.

Expressive body language. The expert teachers are very expressive in driving home a point through their voice, facial expressions, arm gestures, and whole body movement.

Ability to develop students' responsibility for learning. Expert teachers express, either explicitly or implicitly, their belief in the learners' capability to learn. Although they assume the primary responsibility to effect learning through well-planned and well-organized learning activities, they purposely and judiciously shift to the learners, the responsibility for the learning process. They are also good listeners and are sensitive to students' learning difficulties or problems.

Learner-centeredness. Although a teacher can attain teaching expertise with the use of teacher-centered and subject-centered instructional methods and strategies, it helps to be learner-centered in teaching. Some expert teachers prefer teaching strategies that actively engage students in the learning process. They refrain from spoon feeding students with information. Rather, they employ learner-centered methods and strategies most of which involve group or cooperative learning that provides opportunities for the development of personal and group discoveries and insights. They judiciously employ teaching strategies in consideration of the ability and maturity levels, needs, and interests of the learners. They use their skills in questioning and in providing illustrations, examples or at most, prompts to guide students in coming up with a generalization, rule, or conclusion by themselves.

Use of varied instructional equipment/ materials. It would suffice for an expert teacher to solely use the chalkboard as an instructional material. However, some experts use additional instructional equipment and materials to clarify concepts, enrich or strengthen their lecture, stimulate thinking, motivate student participation and application of learned concepts, or test students' understanding. These practices further enhance teaching expertise.

Magnetism/charisma. This is not essential, but is contributory to teaching expertise. Some expert teachers exude a certain magnetism or charisma which is much stronger than any stimulus that may distract students' attention. They are very articulate and expressive in driving home a point through facial expressions, hand and arm gestures, voice inflection, and body movements. They are their best "audio-visual aids". The manner with which they deliver an input lecture or explain something; pose a question and wait for an answer; respond to a student's answer or query; carry themselves, speak, move, and use body language to communicate, all make the difference. They are spontaneous; they exude charm. Without any deliberate or conscious effort, they keep students interested and fascinated, and perhaps mesmerized, but definitely attentive and highly participative. They attract students' attention and sustain interest, just by being themselves.

Knack for making learning pleasant and enjoyable. Some expert teachers conduct their classes seriously, albeit in a non-threatening manner. However, other experts go one step further tc make learning pleasant and enjoyable instead of being dour and boring. Their happy disposition and well-planned, interesting, exciting learner-centered activities bring about this learning situation. In their classes, students learn and "play" at the same time.

Values integration. The integration of values in the lessons is another practice that further enhances teaching expertise. Some experts introduce values in their lessons either as planned (e.g., deducing values from the lesson) or unplanned (i.e., when the opportunity presents itself). These teachers are as much concerned with the affective as with the intellectual growth and development of their students.

Affectionate interactions with students. Some experts treat students as "unique individuals" instead of "numbers" that comprise a class. They give each student a feeling of importance, of being appreciated. These teachers are able to communicate such attention and interest without effort, and unintentionally. It appears to be something natural to them, a part of their person. They call students by their names, prod them when needed, smile at or assure them when they are unsure of themselves or of their answers. They are caring and concerned, providing immediate help to those who experience learning difficulties. They teach with a "personal touch."

Classroom humor. Some expert teachers have a strong sense of classroom humor. They have the knack for injecting pun, jokes, or funny remarks, but always, in relation to the lesson. Their classroom humor eases the tension or pressure on students caused by complex or difficult lessons. They make

learning not only pleasant and enjoyable; they make it fun.

In view of the decrease in the percentages of experts who manifested the *enhancers* in their classroom teaching, a schematic presentation of the resulting model takes the form of a pyramid, with the base representing those common to all of the experts and the apex, those which occurred the least. However, the pyramid is not suggestive of any hierarchical interpretation; rather, it merely serves to delineate practices, behaviors, and attributes which are essential, from those that further enhance, or are contributory to, expert teaching. A combination of the essentials and of the enhancers spells out the ultimate in teaching expertise in tertiary education in the country (Figure 2).

Although the study was conducted at the tertiary level, the emergent model of teaching expertise yielded classroom practices and behavior that are applicable to other curriculum levels. Following are the implications of the findings of the study, particularly of the derived model of teaching expertise, for teacher preparation, testing, and development, and for decisions concerning faculty promotion, merit pay, retention, and tenure.

Teacher preparation. That the majority of the teacher experts were not products of teacher-training institutions implies that such institutions do not necessarily have an edge over other HEIs in terms of preparing graduates for a successful teaching career. This points to the need to improve the curricular and instructional programs of teacher-training institutions.

The study indicates that oral communication skills and expressive body language greatly contribute to teaching expertise, along with dynamism, charisma and magnetism. In view of this, teacher education programs should include a required course in acting and expressive communication. The course should provide training in emphatic oral delivery (i.e., voice projection, use of pauses for emphasis, vocal variation in pitch, tempo, and volume), meaningful facial expressions, gestures, and movement.

Prospective teachers should be fluent in the medium of instruction and should be lively, enthusiastic, and dynamic. Boring, colorless teachers who speak in monotones cannot arouse, much more sustain students' interest and attention. A teacher should be his or her best audio-visual aid.

Teacher education programs should provide lessons that will enable prospective teachers to clarify a personal educational philosophy that will later serve to focus their future educational efforts as practitioners. Hand in hand with provisions for intellectual growth, education students should have as many opportunities as possible for value clarification. Due emphasis should be given to their spiritual and moral development so that they can become role models for their future students.

Most of the expert teachers in the study are mixed-brained who are adept in the use of both left-brained (analytical) and right-brained (global) techniques of teaching. In this light, curriculum programs should provide training on brain integration and include lessons on creativity in the curriculum. More important, students should be encouraged to be imaginative and to employ different teaching techniques and instructional materials during their practicum. Thus, even if they are left-brained, they will be familiar with the use of different strategies and audio-visual stimuli in teaching.

In addition, any effort to revise the curricular program for teacher education students should consider the manifestations of expert teaching as inputs. Mere knowledge and understanding of what makes for expert teaching will not be enough. Theoretical and conceptual knowledge should be accompanied by actual applications, especially during internship or practice teaching.

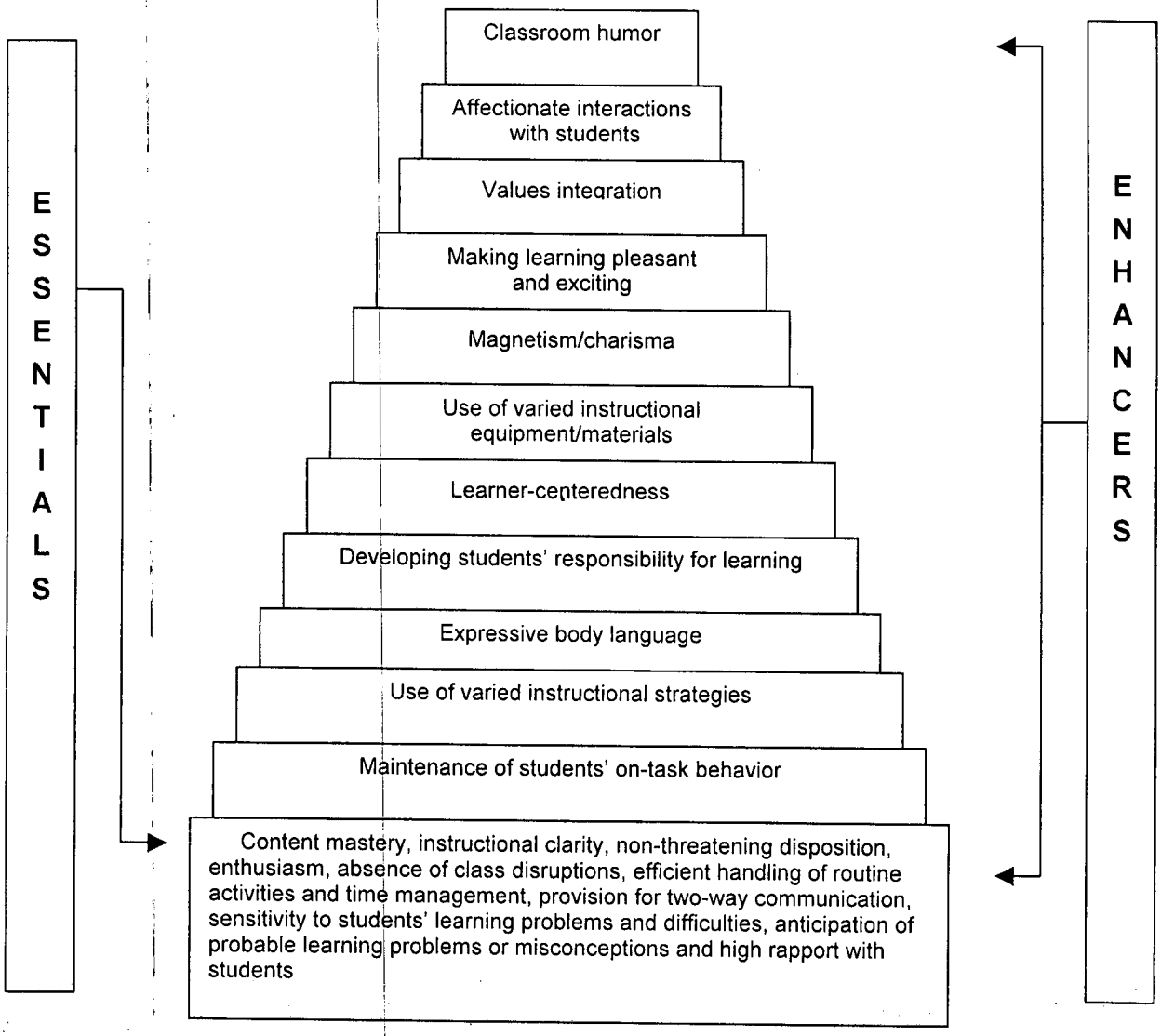


Figure 2. A Pyramidal Model of Teaching Expertise in Philippine Higher Education

The study shows the long-lasting influence of exemplary teacher role models on novice teachers; hence, education students should be exposed to the best teachers. Ineffective teachers who have lost their zest and commitment for teaching have no place in teacher-training institutions.

Responsible learning should be exacted from the students. Teachers should refrain from giving straight lectures entirely lifted from textbooks, and from employing spoon-feeding techniques that suppress students' self-expression, exploration, independent thinking, creativity, and discovery. Instead, extensive opportunities for independent learning should be provided, because such is the demand of the teaching profession. Education students should also have an interest in professional readings and a passion for continuous learning. Professional readings should be part of course requirements, especially in foundation and major courses.

Teacher testing. Professional board examinations for teachers should be reviewed

and improved in the light of the emerging model of teaching expertise. Professional board examinations for teachers should be competency-based, grounded on empirical research on teaching expertise. Such tests can include semi-projective test items in the form of sentence completion items wherein possible responses could be anticipated, coded, and weighted. The test may also include critical-incident items that can assess the soundness or appropriateness of examinees' choices, when confronted with hypothetical situational classroom problems or dilemmas based on actual cases. Also, possibilities of adopting additional or alternative authentic evaluation techniques such as performance-based and portfolio assessments (which will include, among others, videotapes and formal classroom observations by critic/supervising teachers of the examinees' classroom teaching) should be explored.

Teacher development. Teacher development programs should consider the Model in conducting a faculty needs assessment and in designing a faculty development program tailor-suited to identified needs. In addition, classroom observation guides should be reviewed in the light of the findings on teaching expertise. Subsequently, post-observation conferences should focus on items that contribute to effective and responsible teaching.

Expert teachers should be encouraged to write memoirs of their teaching career, particularly of their problems as beginning teachers, and of how they overcame stumbling blocks. Making such professional reading materials and videotaped lessons of expert teachers readily accessible to the faculty may help inspire future teachers.

A scheme to share expert teachers under an expert-teachers exchange program may be put in place. Expert teachers may be invited to give lectures and demonstration lessons to faculty, and may also be tapped as instructional supervisors, or mentors of new teachers. Their presence and their services will be very helpful especially to new teachers and to those who are experiencing difficulty or, have lost their zest, in teaching.

Decisions concerning faculty promotion, merit pay, retention, and tenure. HEIs are continually in the process of developing or improving tools that can guide teacher selection, merit pay, promotion, and retention. For screening teacher applicants, an interview guide patterned after the model of teaching expertise developed in the study may be used. The data-gathering instruments used in the study (brain test, educational philosophy assessment form, applicable portions of the questionnaire for expert teachers) may be employed to identify applicants whose educational philosophy, brain dominance, and personal and professional profile meet or come closest to the expectations of the school. The teaching practices and behaviors characteristic of expert teaching should be factored in making decisions concerning faculty promotion, merit pay, retention, and permanency. For this purpose, an evaluation instrument anchored on the proposed model should be developed.

Expert teachers can be role models and a source of inspiration for their students and colleagues. Hence, they should not be pulled out from teaching to assume full-time administrative positions. Moreover, considering that they are valuable human resources of educational institutions, their services should be extended, past retirement age, so long as they are willing, and their health so permits.

Future research. The study does not make any pretentious claim about the generalizability of the model. As is always the case in theory-building research, a theory or model should be tested or verified, through replications across time and geographical settings. Thus, there is a need to verify the model of expertise proposed in the study. For this purpose, replications may be conducted at other curriculum levels and in other geographical settings. Similarities in findings can expand the external validity of the present model, while differences can delineate aspects of teaching expertise specific to particular curriculum levels and contexts. Both

will extend the literature on expert teaching in Philippine schools.

Model building is relatively an unpopular research option especially among educational researchers. Hence, the present study may inspire replications and related studies among teacher experts in other settings, thereby contributing to the limited empirical literature in this field. Furthermore, in the words of Shulman (1992, p. 14), "Teaching is and has always been at the center of all education and educational reform" thus, any research that focuses on teaching is significant, especially if it provides an empirical base that can guide policy actions concerning teachers.

REFERENCES:

Adams, S.K. 1992. The ethnographic study of outstanding veteran elementary teachers. *Dissertation Abstracts International*, 53-12,193A.

Alexander, R. 1996. In search of good primary practice. In: Woods, P. (ed.). *Contemporary issues in teaching and learning*. London: Routledge, 57-72.

Batocabe, R. T. 1998. Tungo sa pagbubuo ng modelo ng pangangasiwa ng mga paaralang pandiyosesis ng Lucena (Towards a Model of Management of Diocesan Schools Lucena). *Unpublished dissertation*, De La Salle University, Manila.

Beauchamp, G. A. 1981. ***Curriculum theory***. Itasca, Illinois: Peacock.

Berliner, D. C. 1986. In pursuit of the expert pedagogue. ***Educational Researcher***, 15 (7): 5-13.

Berliner, D. C. 1992. The nature of expertise in teaching. In: Oser, F.K., A. Dick, and J. Patry. (eds.), ***Effective and Responsible Teaching***. San Francisco: Jossey-Bass, 227-248.

Brandt, R. 1992. On research on teaching: A conversation with Lee Shulman. ***School Leadership***, 49 (7): 14-19.

Brophy, J. 1992. Probing the subtleties of subject-matter teaching. ***Educational Leadership***, 49 (7): 4-8.

Brophy, J. and T. L. Good. 1986. Teacher behavior and student achievement. In: Wittrock, M. (ed.). ***The third handbook of research on teaching.*** New York: Macmillan, 328-375.

Clark, C. M. and P. L. Peterson. 1986. Teachers' thought processes. In: Wittrock, M. C. (ed.). ***Handbook of research in teaching*** (3rd ed.). New York: Macmillan.

Doyle, W. 1986. Classroom organization and management. In: Wittrock, M. C. (ed.). ***Handbook of research in teaching*** (3rded.). New York: Macmillan.

Dunn, K. and R. Dunn. 1987. Dispelling outmoded beliefs about student learning. ***Educational Leadership***, 44 (6): 55-63.

Eisner, E. W. 1992. What a professor learned in the third grade. In: Oser, F. K., A. Dick, and J. Patry. (eds.). ***Effective and responsible teaching.*** San Francisco: Jossey-Bass, 261-277.

Elmore, R. 1992. Why restructuring alone won't improve teaching. ***Educational Leadership***, 49 (7): 44-48.

Evertson, C.M. and E.T. Emer. 1983. Effective management at the beginning of the year in junior high classes. ***Journal of Educational Psychology***, 74 (4): 485-498.

Galton, M. 1989. ***Teaching in Primary School***. London: David Fulton Publishers.

Gonzalez, A. 1992. Development imperatives for education. ***Tanglaw.*** DLSU Press, 1 (1): 1-6.

Goodlad, J. I., R. Soder and K.A. Sirotnik (eds.). 1990. ***The moral dimensions of teaching***. San Francisco: Jossey-Bass.

Grossman, P. L., 1990. ***The making of a teacher: teacher knowledge and teacher education***. New York: Teachers' College Press.

Heath, R. and M. Nielsen. 1974. The research basis for performance-based teacher evaluation. ***Review of Educational Research***, 44: 463-484.

Jegede, O., M. Taplin and S. Chan. 2000. Trainee teachers' perceptions of their knowledge about expert teaching. ***Educational Research***, 42 (3): 287-308.

Leindhart, G. and J. Greeno. 1986. The cognitive skill of teaching. ***Journal of Educational Psychology***, 78: 75-95.

Leindhart, G. and D. A. Smith. 1985. Expertise in mathematics instruction: Subject matter knowledge. ***Journal of Educational Psychology***, 77 (3): 247-271.

Leindhart, G. 1983. Novice and expert knowledge of individual students' achievement. ***Educational Psychologist***, 8: 165-179.

McGaw, B., J. L. Wardrop, and M. Bunda. 1972. Classroom observation schemes: Where are the error? ***American Educational Research Journal***, 9: 13-27.

McIlrath, D. A., and W. G. Huitt. 1995. The teaching-learning process: A discussion of models. Valdosta, GA: Valdosta State University. Retrieved July 23, 2002 from *http://chiron.valdosta.edu/whuitt/files/modeltch.html*.

McLaughlin, M. 1993. Promising practices and future directions for special education. ***News Digest***. National Information Center for Children and Youth with Disabilities (NICCYD). Retrieved July 22, 2002 from *http://www.childpsychologist.com/outcofme/promising.html*.

Mitzel, H. 1982. ***Encyclopedia of Educational Research*** (5th ed.). New York: Macmillan.

Nava, F. J. G. 1999. Effective teaching behaviors. In: *Proc. International Conference on Teacher Education*, The Hongkong Institute of Education.

Oser, F. K., A. Dick and J. Patry. (eds.). *Effective and responsible teaching*. San Francisco: Jossey-Bass, 3-13.

Peterson, P. L. and M. A. Comeaux . 1989. Assessing the teacher as a reflective professional: New perspectives on teacher evaluation. In: Woolfolk. A. (ed.). *Research perspectives on the graduate preparation of teachers.* New Jersey: Prentice Hall, 132-152.

Prawat, R.S. 1992. Beyond effective teaching. ***Educational Leadership***, 49 (7):9-13.

Reyes, F. C. (1998). Towards a teaching-learning theory based on brain research. Unpublished manuscript.

Reyes, F. C. (1994). Brain research: Implications for instructional improvement. ***Tanglaw***. DLSU College of Education, 2 (2): 15-24.

Rollett, B. A. 1992. How do expert teachers view themselves? In: Oser, F. K. , A. Dick, and J. Patry. (eds.), *Effective and responsible teaching.* San Francisco: Jossey-Bass, 278-290.

Rosenshine, B. 1986. Synthesis of research on explicit teaching. ***Educational Leadership***, 43: 60-69.

Rosenshine, B. and D. C. Berliner. 1978. Academic engaged time. ***British Journal of Teacher Education***, 4: 3-16.

Salomon, G. 1992. The changing role of the teacher: From information transmitter to orchestrator of learning. In: Oser, F. K., A.

Dick, and J. Patry. (eds.). ***Effective and responsible teaching***. San Francisco: Jossey-Bass, (35-49).

Shavelson, R. J. 1992. New roles for teachers and students. In: Oser, F. K., A. Dick, and J. Patry. (eds.). ***Effective and responsible teaching***. San Francisco: Jossey-Bass, 31-34.

Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. **Harvard Educational Review**, 57 (1): 1-22.

Shulman, L. S. 1992. Research on teaching: A historical and personal perspective. In: Oser, F. K , A. Dick, and J. Patry. (eds.). ***Effective and responsible teaching***. San Francisco: Jossey-Bass, 14-29.

Shulman, L. S. 1987. Knowledge and teaching: Foundations of the new reform. ***Harvard Educational Review***, 57 (1): 1-22.

Shulman, L. S. 1986. Paradigms and research programs in the study of teaching. In: Wittrock, M. C. (ed.). *Handbook of research in teaching 3rd ed.* New York: Macmillan, 1-36.

Sirotnik, K. 1983. What you see is what you get – Constancy, persistency, and mediocrity in classrooms. ***Harvard Educational Review,*** 53 (1): 16-31.

Tamir, P. 1988. Subject matter and related pedagogical knowledge in teacher education. ***Teaching and Teacher Education***, 4: 99-110.

Tom, A. 1984. ***Teaching as a moral craft***. New York: Longman.

Troman, G. 1996. Models of a 'good' teacher: defining and redefining teacher quality. In: Woods, P. (ed.). *Contemporary issues in teaching and learning*. London: Routledge, 20-37.

Weinert, F. E., A. Helmke, and F. Schrader. 1992. Research on the model teacher and the teaching model. In: Oser, F. K , A. Dick, and J. Patry. (eds.). *Effective and responsible teaching* San Francisco: Jossey-Bass, 249-260.

Wiles, J. and J. Bondi. 1994. *Curriculum development: A guide to practice* (4th ed.). New York: Merrill.

Wood, P. (ed). 1996. *Contemporary issues in teaching and learning*. Canada: Routledge.

Woodfolk, A. E. 1995. ***Educational Psychology,*** 6th ed. Boston: Allyn & Bacon.

Woodfolk, A. E. 1998. ***Educational Psychology,*** 7h ed. Boston: Allyn & Bacon.

CENTERS OF EXCELLENCE IN TEACHER EDUCATION: HOW MUCH HAVE THEY CONTRIBUTED TO THE TEACHER FORCE?

MILAGROS D. IBE, Ph.D.

ABSTRACT

This paper provides an assessment of the Centers of Excellence (COEs) by looking into the performance of their graduates in the Licensure Examination for Teachers (LET) secondary level. The sample consisted of 4,470 examinees from the 18 COEs and 452 from 3 Centers of Development (CODs). Drawn from the Professional Regulation Commission (PRC), the data were collated by the Education Statistics Task Force from the passing percentages of the institutions and the transmuted scores of the examinees. These are transmuted on the basis of the mean raw score and the cut-off score set by the Board of Teachers.

Findings revealed that the top 4 institutions and the 3 lowest institutions are consistent in their ranking based on the 2 ranking systems used. This indicates the relative performance of COEs with one another.

Altogether, the 18 COEs fielded 4,470 examinees in the 1999 LET-Secondary. Only 2,514 or 56% passed. On the whole, therefore, the COEs performed better than the general view of teacher education institutions in the country.

Among the 3 CODs the examinees' average passing rate is 38%, led by those from Central Luzon State University (42%). One of the three, however, registered only a 17% passing rate.

The title "Center of Excellence" for 3 of the 18 institutions needs to be reviewed because of their mediocre performance compared to the other 15. Also needing a review is the performance of the 3 CODs. There could be many other colleges and universities that merit the distinct title of Center of Excellence or Center of Development.

I. INTRODUCTION

In 1994, eighteen Centers of Excellence (COEs) for Teacher Education were selected on the basis of criteria identified by the Commission on Higher Education (CHED) Panel for Teacher Education. At least one COE was selected from each region; but where no institution adequately met the criteria set, a college or university was identified as a Center of Development for Teacher Education in the region. Three such Centers were identified.

The 21 institutions were envisioned to lead the way and set the standard for other teacher education institutions, particularly those within their influence in their regions.

The COEs were given funds for scholarships and for upgrading laboratory and library facilities and equipment. The Centers were also given access to development funds.

To what extent have the COEs met the expected upgrading of the standard of teacher education? More specifically, to what extent have they produced competent teachers, not just through the scholarship funds granted to them, but also by sustaining their stature as quality teacher education institutions?

This paper sought to assess the COEs by looking into the performance of their graduates in the Licensure Examination for Teachers (Secondary).

II. PROCEDURE

The 1999 examinees were taken as a sample because that year marked the 5th year of the 21 institutions' selection as Centers of Excellence. It was assumed that the examinees of 1999 would already include the first graduates of the scholarship programs in English, Science and Mathematics.

The sample consisted of 4,470 examinees from the 18 COEs and 452 from the 3 CODs.

The data on the performance of examinees were drawn from the Professional Regulation Commission (PRC). The data were collated by the Education Statistics Task Force from the passing percentages of the institutions and the transmuted scores of the examinees.

Raw scores are kept confidential by the PRC; only transmuted scores are released. These are transmuted on the basis of the mean raw score and the cut-off score set by the Board of Teachers. The cut-off score identified is equated to 75, and all scores above and below the cut-off are correspondingly transmuted.

Passing the LET for secondary teachers is based on scores on three tests, with these corresponding percentage weights.

General Education (GE) test	20%
Professional Education (PE) test	30%
Major/Specialization test	50%

Each of the three tests consists of 150 to 200 items, taken in two sittings – one half-day for GE and PE, and another half-day for the major or specialization. To pass the LET, the examinee should have a general average of 75 from the three tests, and no grade lower than 60 in any test.

III. FINDINGS

The performance in professional licensure examination of the study is shown in Table 1.

Based on the percentage of passers from each of the 18 COEs, Saint Louis University has the highest percentage (85%), followed by Philippine Normal University (82%). Xavier University and West Visayas State University ranked third (80%) and fourth (79%), respectively; Saint Mary's University and Ateneo de Davao University came next. While both had the same percentage passing (77%), the former's performance is much better considering that it had almost four times as many examinees as the latter. These 5 universities topped the COEs. The rest trailed behind. The 5 lowest performing are: Aquinas University (28%), Mariano Marcos State University (30%), Western Mindanao State University (30%), Palawan State University (34%), and Mindanao State University–Marawi (34%). All 5 had passing percentages lower than the national passing percentage of 37%.

1. General Education

The mean transmuted ratings in the General Education (GE) and Professional Education (PE) tests are shown in Table 2.

Table 1. Performance of Examinees in Licensure Examination by COE/D

COEs/CODs	Region	No. of Examinees	No. of Passers	Percent Passed
COEs				
1. Aquinas University	V	71	20	28%
2. Ateneo de Davao University	XI	39	30	77%
3. Bicol University	V	674	282	42%
4. Leyte Normal University	VIII	418	162	39%
5. Mariano Marcos State University	I	111	33	30%
6. Mindanao State Univ.- Marawi	XII	284	100	35%
7. Notre Dame of Marbel University	XI	218	97	44%
8. Palawan State University	IV	186	63	34%
9. Philippine Normal University	NCR	730	601	82%
10. Saint Louis University	CAR	301	256	85%
11. Saint Mary's Univ. - Bayombong	II	131	101	77%
12. Saint Paul University	II	112	66	59%
13. Silliman University	VII	62	46	74%
14. University of San Carlos	VII	108	80	74%
15. University of San Jose - Recoletos	VII	128	74	58%
16. West Visayas State University	VI	416	328	79%
17. Western Mindanao State University	IX	421	127	30%
18. Xavier University	X	60	48	80%
Sub-total		4,470	2,514	56%
CODs				
19. Central Luzon State University	III	241	110	46%
20. Notre Dame of Jolo College	IX	47	8	17%
21. San Nicolas College	CARAGA	164	53	32%
Sub-total		452	171	38%
Total		**4,922**	**2,685**	**55%**

Table 2. Mean Transmuted Ratings and Standard Deviations of Marks of Examinees from Centers of Excellence in Teacher Education in the 1999 LET: General Education and Professional Education Tests

COEs/CODs	No. of Examinees	General Educ.		Professional Educ.	
		Mean	S.D.	Mean	S.D.
COEs					
1. Aquinas University	71	71.0	6.6	65.2	10.7
2. Ateneo de Davao University	39	76.7	6.5	77.1	6.8
3. Bicol University	674	71.3	6.8	67.4	9.8
4. Leyte Normal University	418	70.2	8.8	67.5	9.8
5. Mariano Marcos State University	111	68.3	9.0	64.1	10.2
6. Mindanao State Univ.-Marawi	284	67.7	10.3	65.3	11.5
7. Notre Dame of Marbel University	218	72.3	6.2	69.7	8.4
8. Palawan State University	186	70.0	7.2	66.1	9.9
9. Philippine Normal University	730	76.2	5.2	75.5	6.4
10. Saint Louis University	301	76.5	4.7	76.2	6.2
11. Saint Mary's Univ. - Bayombong	131	75.0	5.6	74.5	7.1
12. Saint Paul University	112	71.9	7.6	72.1	8.4
13. Silliman University	62	74.6	6.2	73.1	8.9
14. University of San Carlos	108	74.7	6.7	74.2	8.0
15. University of San Jose-Recoletos	128	73.0	6.6	71.6	8.5
16. West Visayas State University	416	75.5	4.6	74.3	6.6
17. Western Mindanao State University	421	68.2	9.0	66.0	9.8
18. Xavier University	60	76.8	5.4	76.9	6.1
Sub-total	***4,470***	***72.6***	***7.7***	***70.5***	***9.6***
CODs					
19. Central Luzon State University	241	71.6	7.3	67.9	10.2
20. Notre Dame of Jolo College	47	64.8	10.3	60.7	10.4
21. San Nicolas College	164	68.9	8.2	66.2	9.5
Sub-total	***452***	***69.9***	***8.2***	***66.5***	***10.2***
Total	**4,922**	**72.3**	**7.8**	**70.2**	**9.7**

The pass rating in the examination is 75. Individual ratings can be much higher or lower than 75, depending on the standard deviation (SD). The SD indicates how far from the mean the scores tend to cluster.

Of the 18 COEs, the 5 which had mean ratings higher than 75 in GE are Saint Louis University (76.5); Ateneo de Davao (76.7); Philippine Normal University (76.2); Xavier University (76.8); and West Visayas State University (75.5). These mean ratings bear out in part their having the highest passing percentages.

The 3 lowest mean GE ratings are those of Mindanao State University–Marawi (67.7), Mariano Marcos State University (68.3) and Western Mindanao State University (68.2). The GE carries a 20-percent weight in the overall rating in the LET; hence, the mean ratings correlate high with the passing percentages shown earlier.

2. Professional Education

In the PE test, the highest average transmuted ratings are those of Ateneo de Davao University (77.1); Xavier University (76.9); Saint Louis University (76.2); and Philippine Normal University (75.5). On the other hand, the 5 lowest average ratings are those of Aquinas University (65.2); Western Mindanao State University (66.0); Palawan State University (66.1); Mindanao State University (65.3); and Mariano Marcos State University (64.1).

Overall, the mean ratings in PE are lower than those in GE, indicating that the former test is more difficult for the examinees than the latter. The PE test carries a 30-percent weight in reckoning the overall rating of LET examinees.

The examinees from the CODs fared poorly in the PE. All their mean ratings are below 70. However, the large SDs (9.5 to 10.4) indicate that some examinees scored in the high 80s in PE. As shown in Table 1, only about 2 in every 5 COD examinees (38%) passed the LET; hence, more examinees from the CODs failed compared to those who passed.

The PE and GE ratings have a combined weight of 50% in reckoning who pass the LET.

3. Performance by Field of Specialization

Performance analysis was confined to these 6 areas of specialization, namely: Mathematics, Science, English, Filipino, Social Studies, and Values Education. Performance ratings in the other specialization tests, i.e., PEHM, Home Economics, Industrial Arts, Agriculture, and Fisheries, were not analyzed because not all the 18 COEs and 3 CODs had examinees in these areas.

English and Filipino. Table 3A shows the performance statistics from examinees who were applying to be certified as teachers of English and Filipino.

The highest mean transmuted scores in English are those from Ateneo de Davao (76.6), Silliman University (76.2), and Philippine Normal University (75.8). The universities and colleges which had 50 or more examinees are known to have Bachelor in Secondary Education programs, major in English. The others have such a program too, but perhaps with fewer graduates. High percentages passing among the English examinees are shown by Xavier University (86%), University of San Carlos (85%), Silliman University (100%), West Visayas State University (76%), Philippine Normal University (93%), and Ateneo de Davao University (100%). On the other hand, low percentages of passers are shown by Aquinas (11%), Notre Dame of Jolo (29%), and Western Mindanao State University (33%).

Mathematics and Science. Table 3B shows the means and SDs of transmuted rating in Mathematics and Science of the 18 COEs. The highest mean transmuted ratings in Mathematics are those from Saint Louis University and Philippine Normal University (81.5 and 80, respectively). Although the mean from Mariano Marcos State University

Table 3A. Mean Ratings and SDs of Examinees from COEs and CODs in the 1999 LET: English and Filipino

COEs/CODs	English				Filipino			
	N	P	Mean	S.D.	N	P	Mean	S.D.
COEs								
1. Aquinas University	9	1	65.0	7.1	10	3	70.2	7.2
2. Ateneo de Davao University	10	10	76.6	1.0	1	0	75.0	0.0
3. Bicol University	50	34	71.6	7.6	18	10	73.2	7.3
4. Leyte Normal University	24	16	72.2	5.9	68	21	73.2	8.2
5. Mariano Marcos State University								
6. Mindanao State Univ.- Marawi	43	20	68.0	9.6	45	4	62.9	9.5
7. Notre Dame of Marbel University	30	14	68.9	8.1	19	9	68.2	11.7
8. Palawan State University	25	11	70.5	7.5	24	5	68.2	8.6
9. Philippine Normal University	55	51	75.8	2.8	40	34	77.6	6.1
10. Saint Louis University	56	39	73.8	6.1	21	18	78.6	4.0
11. Saint Mary's Univ. - Bayombong	20	17	73.7	7.0	13	10	75.2	7.7
12. Saint Paul University	21	16	74.2	6.3	14	8	71.9	9.3
13. Silliman University	6	6	76.2	1.5	2	1	71.5	5.0
14. University of San Carlos	14	12	74.2	4.5	4	3	72.3	8.3
15. University of San Jose – Recoletos	20	9	70.5	6.4	10	6	72.7	5.8
16. West Visayas State University	69	60	74.5	4.9	26	22	79.8	3.9
17. Western Mindanao State University	69	23	66.4	11.2	33	10	65.7	15.6
18. Xavier University	14	12	74.1	4.8	3	0	70.0	4.4
Sub-total	***535***	***361***	***71.8***	***7.8***	***351***	***164***	***71.2***	***10.1***
CODs								
19. Central Luzon State University	15	12	74.2	4.0	28	12	74.9	5.6
20. Notre Dame of Jolo College	7	2	64.9	12.0	18	3	68.1	8.9
21. San Nicolas College	42	13	63.3	10.5	12	3	70.8	7.6
Sub-total	***64***	***27***	***66.0***	***10.5***	***58***	***18***	***71.9***	***7.7***
Total	**599**	**388**	**71.2**	**8.3**	**409**	**182**	**71.3**	**9.8**

Table 3B. Mean Ratings and SDs of Examinees from COEs and CODs in the 1999 LET: Mathematics and Science

COEs/CODs	Mathematics				Science			
	N	P	Mean	S.D.	N	P	Mean	S.D.
COEs								
1. Aquinas University	8	4	70.1	11.5	15	3	63.2	10.0
2. Ateneo de Davao University	4	6	74.9	10.8	9	8	77.3	6.4
3. Bicol University	29	24	78.0	6.0	79	55	73.4	7.5
4. Leyte Normal University	36	22	73.3	10.0	64	42	74.3	8.0
5. Mariano Marcos State University	1	1	83.0	0.0	22	19	77.7	4.5
6. Mindanao State Univ.-Marawi	47	17	69.0	12.4	25	21	76.7	7.4
7. Notre Dame of Marbel University	35	14	66.5	13.2	36	15	66.3	11.6
8. Palawan State University	17	12	71.1	10.6	19	13	72.3	9.2
9. Philippine Normal University	74	38	80.2	6.6	230	186	76.0	7.7
10. Saint Louis University	30	28	81.5	5.0	90	78	76.2	6.7
11. Saint Mary's Univ. – Bayombong	11	9	77.6	8.9	34	24	71.6	11.7
12. Saint Paul University	17	13	72.4	11.0	10	8	77.7	2.3
13. Silliman University	8	7	77.8	10.1	7	6	78.3	9.2
14. University of San Carlos	21	18	49.0	7.1	8	7	78.0	16.6
15. University of San Jose – Recoletos	29	22	74.0	8.4	19	8	67.7	10.0
16. West Visayas State University	17	15	76.9	8.2	97	89	77.3	5.8
17. Western Mindanao State University	23	10	72.2	10.8	65	28	69.6	12.2
18. Xavier University	6	5	78.7	2.2	12	11	78.1	4.8
Sub-total	***417***	***295***	***75.0***	***10.2***	***831***	***621***	***74.4***	***8.9***
CODs								
19. Central Luzon State University	12	10	77.9	7.0	41	26	70.7	11.2
20. Notre Dame of Jolo College	9	1	64.0	16.3	6	4	62.8	8.8
21. San Nicolas College	29	9	62.5	12.6	16	8	69.2	7.0
Sub-total	***50***	***20***	***66.5***	***13.8***	***63***	***35***	***69.6***	***10.2***
Total	**467**	**315**	**74.0**	**11.0**	**894**	**656**	**74.1**	**9.1**

Table 3C. Number and Percent Passed Among COE and COD Examinees in the 1999 LET-Secondary: English, Mathematics and Science

COEs/CODs	English			Mathematics			Science		
	N	P	%	N	P	%	N	P	%
COEs									
1. Aquinas University	9	1	11	8	4	50	15	3	20
2. Ateneo de Davao University	10	10	100	4	6	75	9	8	89
3. Bicol University	50	34	68	29	24	83	79	55	70
4. Leyte Normal University	24	16	67	36	22	61	64	42	66
5. Mariano Marcos State University				1	1	100	22	19	86
6. Mindanao State Univ.- Marawi	43	20	47	47	17	36	25	21	84
7. Notre Dame of Marbel University	30	14	47	35	14	40	36	15	42
8. Palawan State University	25	11	44	17	12	71	19	13	68
9. Philippine Normal University	55	51	93	74	38	92	230	186	81
10. Saint Louis University	56	39	88	30	28	93	90	78	87
11. Saint Mary's Univ. - Bayombong	20	17	85	11	9	82	34	24	71
12. Saint Paul University	21	16	76	17	13	76	10	8	80
13. Silliman University	6	6	100	8	7	88	7	6	86
14. University of San Carlos	14	12	86	21	18	86	8	7	88
15. University of San Jose - Recoletos	20	9	45	29	22	76	19	8	42
16. West Visayas State University	69	60	87	17	15	88	97	89	92
17. Western Mindanao State University	69	23	33	23	10	43	65	28	51
18. Xavier University	14	12	86	6	5	83	12	11	92
Sub-total	***535***	***361***	***67***	***417***	***295***	***71***	***831***	***621***	***75***
CODs									
19. Central Luzon State University	15	12	80	12	10	83	41	26	63
20. Notre Dame of Jolo College	7	2	29	9	1	11	6	4	17
21. San Nicolas College	42	13	31	29	9	31	16	8	50
Sub-total	***64***	***27***	***42***	***50***	***20***	***40***	***63***	***35***	***56***
Total	**599**	**388**	**65**	**467**	**315**	**67**	**894**	**656**	**73**

Table 3D. Mean Ratings and SDs of Examinees from COEs and CODs in the 1999 LET: Social Studies and Values Education

COEs/CODs	Social Studies				Values Education			
	N	P	Mean	S.D.	N	P	Mean	S.D.
COEs								
1. Aquinas University	12	3	65.4	15.1	1	0	65.0	0.0
2. Ateneo de Davao University	7	3	71.1	10.9	3	2	73.0	16.4
3. Bicol University	38	22	71.3	9.3	47	21	67.7	9.7
4. Leyte Normal University	104	27	65.4	9.7	18	3	63.3	17.7
5. Mariano Marcos State University	3	2	79.0	3.6				
6. Mindanao State Univ.- Marawi	33	15	64.4	13.2	19	3	60.6	13.0
7. Notre Dame of Marbel University	30	11	68.7	9.3	25	16	71.4	10.2
8. Palawan State University	35	8	67.8	11.1	18	4	64.3	7.4
9. Philippine Normal University	135	118	77.6	5.9	51	43	75.1	5.5
10. Saint Louis University	50	43	76.6	5.9	11	10	78.2	3.8
11. Saint Mary's Univ. - Bayombong	12	12	77.6	4.1	15	12	75.3	6.3
12. Saint Paul University	22	12	72.6	10.6	2	1	66.0	12.7
13. Silliman University	7	4	72.3	3.4	6	6	76.0	1.6
14. University of San Carlos	7	6	77.7	9.6	5	20	74.8	6.1
15. University of San Jose - Recoletos	19	10	69.8	12.1	9	4	67.6	9.9
16. West Visayas State University	26	22	77.2	7.2	30	25	74.4	7.4
17. Western Mindanao State University	21	8	62.9	12.4	30	6	63.9	9.6
18. Xavier University	13	11	75.9	5.5	8	6	74.4	9.2
Sub-total	***594***	***337***	***71.3***	***10.6***	***318***	***182***	***70.2***	***10.4***
CODs								
19. Central Luzon State University					8	2	66.8	7.6
20. Notre Dame of Jolo College	7	1	61.4	11.6				
21. San Nicolas College	15	6	68.7	11.1				
Sub-total	***22***	***7***	***66.4***	***11.5***	***8***	***2***	***66.8***	***7.6***
Total	**616**	**344**	**71.2**	**10.7**	**326**	**184**	**70.1**	**10.3**

Table 3E. Number and Percent Passed Among COE and COD Examinees in the 1999 LET - Secondary: Filipino, Social Studies and Values Education

COEs/CODs	Filipino			Social Studies			Values Education		
	N	P	%	N	P	%	N	P	%
COEs									
1. Aquinas University	10	3	30	12	3	25	1	0	0
2. Ateneo de Davao University	1	0	0	7	3	43	3	2	67
3. Bicol University	18	10	56	38	22	58	47	21	45
4. Leyte Normal University	68	21	31	104	27	26	18	3	17
5. Mariano Marcos State University				3	2	67			
6. Mindanao State Univ.- Marawi	45	4	9	33	15	45	19	3	16
7. Notre Dame of Marbel University	19	9	47	30	11	37	25	16	64
8. Palawan State University	24	5	21	35	8	23	18	4	22
9. Philippine Normal University	40	34	85	135	118	87	51	43	84
10. Saint Louis University	21	18	86	50	43	86	11	10	91
11. Saint Mary's Univ. - Bayombong	13	10	77	12	12	100	15	12	80
12. Saint Paul University	14	8	57	22	12	55	2	1	50
13. Silliman University	2	1	50	7	4	57	6	6	100
14. University of San Carlos	4	3	75	7	6	86	5	20	80
15. University of San Jose - Recoletos	10	6	60	19	10	53	9	4	44
16. West Visayas State University	26	22	85	26	22	85	30	25	83
17. Western Mindanao State University	33	10	30	21	8	20	30	6	20
18. Xavier University	3	0	0	13	11	85	8	6	75
Sub-total	***351***	***164***	***47***	***594***	***337***	***57***	***318***	***182***	***57***
CODs									
19. Central Luzon State University	28	12	43				8	2	25
20. Notre Dame of Jolo College	18	3	17	7	1	14			
21. San Nicolas College	12	3	25	15	6	40			
Sub-total	***58***	***18***	***31***	***22***	***7***	***32***	***8***	***2***	***25***
Total	**409**	**182**	**44**	**616**	**344**	**56**	**326**	**184**	**56**

Table 4. Percentage Passing by Specialization

Specialization	Number of Examinees	Number of Passers	Percent Passing
English	535	361	67%
Mathematics	417	295	71%
Science	831	621	75%
Filipino	351	164	47%
Social Studies	594	357	57%
Values Education	318	182	57%

Table 5. Comparison of Ranks Based on Transmuted Ratings of Examinees in the 1999 LET by Subject Specialization

College/University	RANK IN								Ave. Rank	Final Rank
	English	Filipino	Math	Science	Social Studies	Values Educ.	G.E.	P.E.		
1. Aquinas University	17	12	16	18	15.5	13	13	17	15.18	16
2. Ateneo de Davao University	1	5	10	6.5	11	8	2	1	5.56	6
3. Bicol University	11	6.5	6	12	10	10	12	13	10.06	10
4. Leyte Normal University	10	6.5	12	11	15.5	16	14	12	12.12	13
5. Mariano Marcos State University				4.5	1		16	18	10.12	11
6. Mindanao State Univ.- Marawi	15	17	17	8	17	17	18	16	15.62	17
7. Notre Dame of Marbel University	14	14.5	18	17	13	9	10	11	13.31	14
8. Palawan State University	12.5	14.5	15	13	14	14	15	14	14.00	15
9. Philippine Normal University	3	3	3	10	3.5	4	4	4	4.31	2
10. Saint Louis University	8	2	2	9	6	1	3	3	4.25	1
11. Saint Mary's Univ. - Bayombong	9	4	8	14	3.5	3	6	5	6.56	8
12. Saint Paul University	5.5	10	13	4.5	8	12	11	9	9.12	9
13. Silliman University	2	11	7	1	9	2	8	8	6.00	7
14. University of San Carlos	5.5	9	4	3	2	5	7	7	5.31	3
15. University of San Jose - Recoletos	12.5	8	11	16	12	11	9	10	11.19	12
16. West Visayas State University	4	1	9	6.5	5	6.5	5	69	5.37	4
17. Western Mindanao State University	16	16	14	15	18	15	17	15	15.78	18
18. Xavier University	7	13	5	2	7	6.5	1	2	5.41	5
19. Central Luzon State University	1	1	1	1		1	1	1		
20. Notre Dame of Jolo College	2	3	2	3	2		3	3		
21. San Nicolas College	3	2	3	2	1		2	2		

(MMSU) is higher (83.0), it cannot be compared to the two because MMSU had only 1 examinee. All but two of the other mean ratings are in the 70s; five are higher than 75.0. The two exceptions are from Mindanao State University and Notre Dame of Marbel University (66.5). Among the 3 CODs, the mean rating of Central Luzon State University was the highest (77.9). The other two had very low mean ratings (64.0 and 62.5).

The 21 institutions together produced a total of 315 passers in the Mathematics examination. The SDs are large; they suggest that the transmuted ratings range from the low 60s to the 90s.

The percentages passing the Mathematics test range from 50% to 100% in 15 of the 18 COEs (Table 3C). The 3 exceptions are Mindanao State University (36%), Notre Dame of Marbel University (40%), and Western Mindanao State University (43%). Overall, the passing percentages from the COEs in Mathematics are almost all higher than the national average passing percentage in the LET (37%).

In science (Table 3B), nine of the 18 COEs had mean transmuted ratings higher than 75.0. However, none were higher than 78.3. Four COEs had mean ratings lower than 70.0. Thus the mean rating in Science (74.4) is lower than the mean in Mathematics (75.0). With the 3 CODs, the 21 institutions together produced 656 passers or examinees who qualified as Science teachers.

Social Studies and Values Education. Table 3D shows the means and SDs of transmuted ratings in Social Studies and Values Education. The mean ratings in Social Studies range from 62.9 (Western Mindanao State University) to 79.0 (Mariano Marcos State University). The overall mean is 71.3. Only 337 passed among examinees in the 18 COEs.

Only 182 passed the test out of 318 examinees from the COEs in values education. The mean transmuted ratings ranged from 63.3 (Leyte Normal University) to 78.2 (Saint Louis University).

4. Percentage Passing the Specialization Tests

Table 4 presents the overall numbers and percentages passing the specialization tests from the 18 COEs.

The percentages passing decrease when the 3 CODs' examinees are included because the latter generally have lower ratings than those from the COEs.

Based on the percentage passing, it appears that the COEs perform best in Science, Mathematics, and English. These are the subject areas where the Centers were identified to be lead institutions and for which they were given scholarship and development funds by CHED.

The specific percentages passing from each COE for each subject are given in Tables 3C and 3E. Table 5 gives the ranking of the COEs based on the mean transmuted ratings, while Table 6 compares the rankings based on passing percentage. The intent of Tables 5 and 6 is to determine the consistency of the performance of the institutions across the different specialization subjects, and in the GE and PE tests.

5. Comparative Performance of the COEs

Based on the average of its ranks in the 8 tests (6 specializations plus GE and PE), Saint Louis University ranked highest, followed by Philippine Normal University. Third rank went to the University of San Carlos and 4th rank went to West Visayas State University. Xavier University ranked 5th and Ateneo de Davao University, 6th.

The last ranks are quite obvious, Western Mindanao State University almost consistently ranked among the 3 lowest in each specialization. The same is observed of Mindanao State University, while Aquinas

Table 6. Ranking of COEs Based on Percent of Examinees Passed in Specialization Tests in the 1999 LET

College/University	Ranking Based on Percent Passed						
	English	Filipino	Math	Science	Social Studies	Values Educ.	Final Rank
1. Aquinas University	17	12.5	15	18	16	17	18
2. Ateneo de Davao University	1.5	16.5	12	3	13	8	9
3. Bicol University	10	8	7.5	12	8	11	10.5
4. Leyte Normal University	11	11	14	14	15	15	14
5. Mariano Marcos State University			1	6.5	7		7
6. Mindanao State Univ.- Marawi	12.5	15	18	8	12	16	15
7. Notre Dame of Marbel University	12.5	10	17	16.5	14	9	13
8. Palawan State University	15	14	13	13	17	13	16
9. Philippine Normal University	3	2.5	3	9	2	3	2
10. Saint Louis University	4	1	2	5	3.5	2	1
11. Saint Mary's Univ. - Bayombong	8	4	9	11	1	5.5	6
12. Saint Paul University	9	7	10.5	10	10	10	10.5
13. Silliman University	1.5	9	4.5	6.5	9	1	5
14. University of San Carlos	6.5	5	6	4	3.5	5.5	4
15. University of San Jose - Recoletos	14	6	10.5	16.5	11	12	12
16. West Visayas State University	5	2.5	4.5	1.5	5.5	4	3
17. Western Mindanao State University	16	12.5	16	15	18	14	17
18. Xavier University	6.5	16.5	7.5	1.5	5.5	7	8

University also trailing behind, ranked better in 3 of the 8 subjects. Palawan State University almost consistently ranked within the 13th and 14th ranks. The ranking varied across specializations, implying that no COE rated consistently very highly in all the specializations.

The COEs, with the exception of 3, are performing much better than the general run of teacher education institutions. Moreover, the majority of them are turning out moderate numbers of teachers of Science, Mathematics, and English than most other teacher training institutions.

There is no agreement between the two rankings. This is understandable. The ranking in Table 5 is based on mean transmuted ratings while Table 6 is based on percentage of examinees who pass the specialization (after computing the average rating using the GE and PE tests with the rating on the specialization test). Moreover, the statistics in Table 6 are very dependent on the number of examinees. When the number is small, percentages can be very erratic. The more credible ranking is that based on the mean ratings, although these are only transmuted ratings.

Despite the low overall agreement between the two sets of final ranks, the top ranking four institutions are consistent in the two tables, confirming the relative performance of COEs with one another. This is also the case for the three lowest ranking institutions.

VI. CONCLUDING STATEMENT

Most of the COEs are producing better-trained teachers especially in Science, Mathematics, and English. In all the subject specializations analyzed, the performance scores are higher than those from the general run of teacher education institutions in the country.

AN IN-DEPTH STUDY OF THE COLLEGE/UNIVERSITY-INDUSTRY LINKAGE IN THE PHILIPPINES

DIVINA M. EDRALIN, Ph.D.

ABSTRACT

The general purpose of this study was to determine the appropriate linkage and manpower matching strategies that must be adopted by colleges and universities, and by the Commission on Higher Education (CHED), to respond to the needs of industry and improve the quality of graduates of higher education institutions (HEIs), considering the schools' student job training, consultancy, and research and development programs. Using descriptive, comparative, and evaluative research designs, a nationwide survey of 198 colleges and universities and 810 establishments from the country's 16 regions was conducted. A total of 956 key informants from the HEIs and 877 respondents from the establishments answered the survey questionnaire. Both descriptive and non-parametric statistics were used to analyze the data.

The study's results and findings showed that there is a congruency between the knowledge schools claimed to give their students and the knowledge expected by establishments from graduates. In terms of skills, however, there is non-congruency in the perceptions of academe and industry. Schools said that developing technical skills of the students particular to their field of specialization was most important, followed by basic academic and information technology skills, social or group skills, problem solving skills, and machine and equipment operation skills. The establishments, however, gave more premium to basic academic skills, followed by information technology skills, technical skills particular to the field of specialization, social or group, machine and equipment operation, and problem solving skills. In terms of the schools' assessment of their graduates' knowledge, values, and skills as compared to the establishments' assessment of the same, statistical analysis revealed a significant difference between the ratings of schools and the ratings of the establishments in all areas regardless of the type of school and status of accreditation. Statistical analysis also showed a significant difference between the average rating given by schools on the level of knowledge, values, and skills of on-the-job trainees and students and the average rating given by establishments. A significant difference between the assessments of the schools and the establishments concerning the extent of effectiveness of the on-the-job training program was also noted.

I. INTRODUCTION

Education is the process of transmitting values, attitudes, behavior, norms, and mores of society to the individual members of society. It is also the social process of transmitting cognitive knowledge and technical skills that are needed in society and for the individual to function effectively and live a meaningful life. The acquisition of these competencies significantly contributes to increased productivity and better human interrelationships in the workplace, and ultimately contributes to the process of

economic development and society's stability. Education, therefore, becomes a requisite for the survival of human beings (McClelan 1976) and the continued existence of society.

Tullao (1999) considers the process of education as an efficient social mechanism in establishing a modern nation considering that a significant component is the training of skilled manpower, which is one of the ingredients of a flourishing economy. This is the reason why societies in different parts of the world have invested a considerable amount of resources to plan and implement a formal system of education that will educate and train their people towards passing on its culture and achieving social and economic development (Carnoy 1977).

While education and training could be provided not only by schools but also by government, employers, and other private organizations, the task of providing education falls largely on the shoulder of educational institutions, largely because of societal expectations. Rubin (1977) states that most people believe that an integral part of the schools' responsibility is to equip their clients to enable them to make it in the social order, and to facilitate entry into a job. Higher education institutions, in particular, are expected not only to produce skilled manpower but educated citizens with skills, adaptability and flexibility "to respond in a rapidly changing technological, political, social and economic environment" (Jennings 1997).

Alcala (1997) mentioned how both the World Bank and UNESCO "stress the importance of linking higher education with economic development" and "prescribe that universities adapt to a competitive market situation as well as to the resulting complex demands in the social and cultural spheres." This is echoed in the Philippine National Development Plan (PNDP 1998), which envisions that, through education, workers readily adapt to sophisticated tasks that emerge from technological progress; managers instill teamwork and industrial discipline; entrepreneurs learn to assume and properly diversify even the uninsurable risks; scientists, engineers, and technicians raise constantly the level of technology and productivity in the use of all production inputs, which stabilizes prices and allows continuous improvements in living standards.

Higher Education in the Philippines

Higher education in the Philippines has been the topic of numerous studies, among which is the one conducted by the Congressional Commission on Education (EDCOM), which was formed by the Philippine Congress in 1991. Tasked to review and assess all the levels of the educational system, the EDCOM issued a report outlining the problems of the system and prescribed numerous recommendations for reform. The EDCOM Report showed that higher education was characterized by: (a) large enrolment; (b) imbalanced distribution; (c) underinvestment and poor quality; (d) a mismatch between programs and graduates, and between employment and society needs; and (e) a limited and an underdeveloped graduate education.

One of the major recommendations of the EDCOM Report was to restructure the huge education bureaucracy. In 1994, two laws were enacted: (a) Republic Act No. 7722 creating the Commission on Higher Education (CHED); and (b) Republic Act No. 7796 creating the Technical Education and Skills Development Authority (TESDA). As a result, the Department of Education, Culture and Sports (DECS), now Department Education (DepEd), focuses only on the administration, supervision and regulation of elementary and secondary education. TESDA, an agency attached to the Department of Labor and Employment (DOLE), oversees post-secondary technical and vocational education. CHED is responsible for system governance and policy guidance over all public and private higher education institutions as well as degree- granting programs in all post-secondary educational institutions.

Pursuant to the Higher Education Act, the CHED is mandated to pursue the following goals: (a) promote quality education; (b) take appropriate steps to ensure that education

shall be accessible to all; and (c) ensure and protect academic freedom for the continuing intellectual growth, the advancement of learning and research, the development of responsible and effective leadership, the education of high level professionals, and the enrichment of the country's historical and cultural heritage.

Since the establishment of CHED in 1994, several inroads have been made in higher education in the Philippines. Access to higher education, for example, improved significantly from SY 1990-1991 to SY 1996-1997 as evidenced by: (a) higher enrolment levels; (b) the proliferation of higher education institutions all over the country; (c) the expansion of scholarship grants and other forms of assistance to deserving students; and (d) higher participation rates. Efforts have likewise been intensified to lift the quality of undergraduate and graduate education, with the ultimate aim of reaching international standards. In recent years, the CHED has embarked on several measures to address the issue of quality and relevance of education offered by higher education institutions. These initiatives include the strengthening of accreditation programs, international benchmarking, and the formation of the Centers of Excellence (COEs) and Centers of Development (CODs).

Efforts, so far, have resulted in marginal improvements in terms of educational qualifications of faculty. In SY 1994-1995, only 25.62% of faculty had earned master's degrees, and only 6.83% held doctorates (Fapenet 1999). Two years after, faculty with doctoral degrees increased to 7.39%, while those with master's degrees reached 25.68%.

Not surprisingly, most universities in the Philippines have neglected research. With about a thousand degree-granting institutions at the tertiary level, very few universities conduct any extensive research. It is difficult for universities to devote time and effort in serious research when a large portion of their faculty only hold bachelor's degrees, and facilities for research are inadequate, if not absent.

Research Objectives

The general purpose of this study was to determine the appropriate linkage and manpower matching strategies that must be adopted by colleges and universities, and by CHED, to respond to the needs of industry and improve the quality of graduates of higher education institutions, considering the schools' student job training, consultancy, and research and development programs.

The research specifically aimed to:

1. determine the degree of mismatch between graduates of the colleges and universities and the expectations and needs of the industry based on knowledge, values, and skills competencies;

2. identify the factors that contribute to the mismatch of schools, graduates, and the needs and expectations of the industry;

3. review the present dynamics of the college and university-industry linkage with regard to student job training;

4. analyze the current system of consultancy, research and development partnerships; and

5. present recommendations to solve the problems of mismatch between graduates' competencies and needs of the industry, and to improve the student job training and school-industry linkage.

II. THEORETICAL AND CONCEPTUAL FRAMEWORK

The study derived its conceptual framework from several theories. Listed below are the theories that were used as a basis for identifying, classifying and rating the knowledge, values, and skills of graduates of higher education institutions (HEIs) to determine the degree of mismatch between the perceived levels of competencies of these graduates and the expectations of industry:

- The Taxonomy of Educational Objectives of Bloom (1956), which says that education aims to develop the individual's cognitive, affective, and psychomotor skills at various levels, which the curriculum must integrate in the formulation of its objectives and designing of the scope and sequence of the subject matter (Figure 1).

- The Concept of Competence of McBer (1978), which defines competence as the generic knowledge, skill, trait, self-schema and motive causally related to effective and/or outstanding performance in a job (Figure 2).

- Hall and Jones' (1976) definition of competency, which is the "acquired intellectual, attitudinal, and motor capabilities derived from a specified role and setting, and stated in terms of performance as a broad composite or domain of behavior and which is, in effect, an integration or synthesis of behavioral objectives as well as some elements of covert behavior".

- The Values Categories of Rucker (as quoted by Gilchrist 1974), namely: (a) affection, which is fulfilled by human transactions of emotional warmth, intimacy, and support in love, congeniality, and friendship; (b) respect, which is fulfilled by human transactions recognizing admirable uniqueness and individuality in a context of mutual identity; (c) skill, which is fulfilled by human transactions that develop talents to the limits of their potential; (d) understanding, which is fulfilled by human transactions that stimulate each person to find his own truth in every issue while gaining understanding of social norms and the significant events of human history; (e) power and influence, which is fulfilled by human transactions in which each person will participate in making decisions that concern him and will exert informal influence according to his talents and responsibilities; (f) goods and services, which is fulfilled by human transactions providing facilities, materials, and services to promote excellent conditions of living; (g) well-being, which is fulfilled by human transactions that foster the physical and mental health of each person; and (h) responsibility, which is fulfilled by human transactions that share experiences enabling the person to develop a sense of ethics and integrity in his behavior within the broad limits of his social context.

To review the dynamics of industry-academe linkage with regard to student training, and to assess the effectiveness of the on-the-job training program undertaken by student trainees, the following theories provided some useful elements in the conceptual framework:

- The Dual System as an Educational Entity of Meunch (1983), which states that, in reality, there is no clear division between practical training in the firm and theoretical training at the vocational school, and that when the firm and the school work together, there is a "dual" system that constitutes an educational entity.

- The Model for Evaluating Training Programs of Kirkpatrick (1959), which provided a model for evaluating training programs.

Based on the different models considered, Figure 3 presents a schematic diagram showing the framework that enabled the investigation of the variables of the dynamics and effectiveness of the college and university-industry linkage.

To assess the effectiveness of the industry-academe linkage with regard to student training, consultancy, and research and development partnerships, an adapted version of Stoner's Model of an Operations System was utilized to classify elements according to Inputs, Outputs, Conversion or Transformation Process, and the External Environment, enabling the researcher to determine areas of strengths and weaknesses. This model was used to

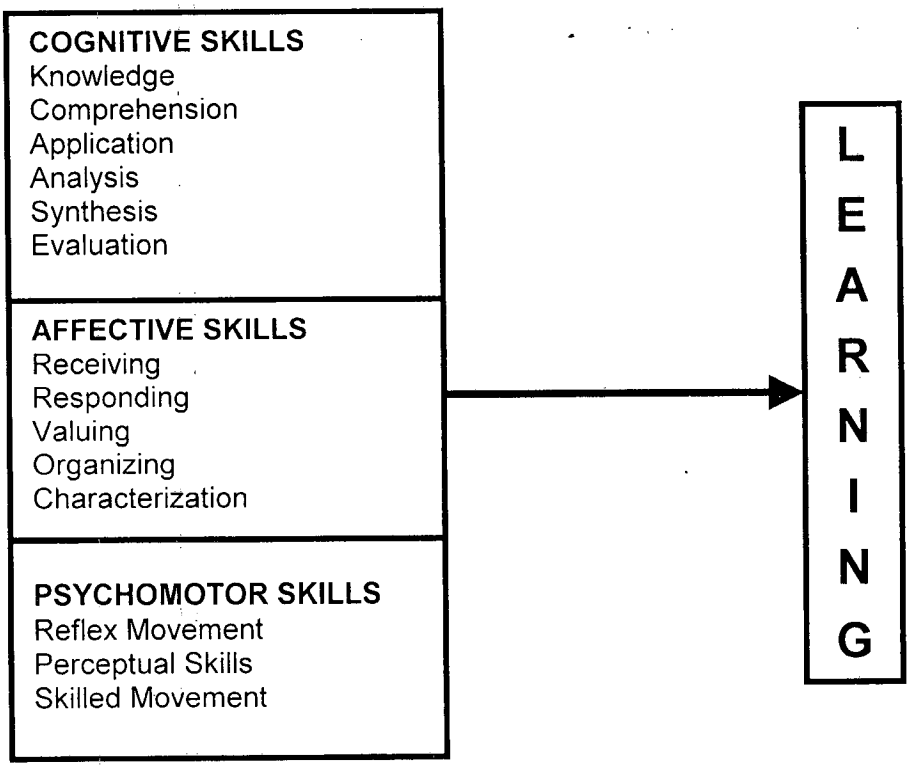


Figure 1. Taxonomy of Education

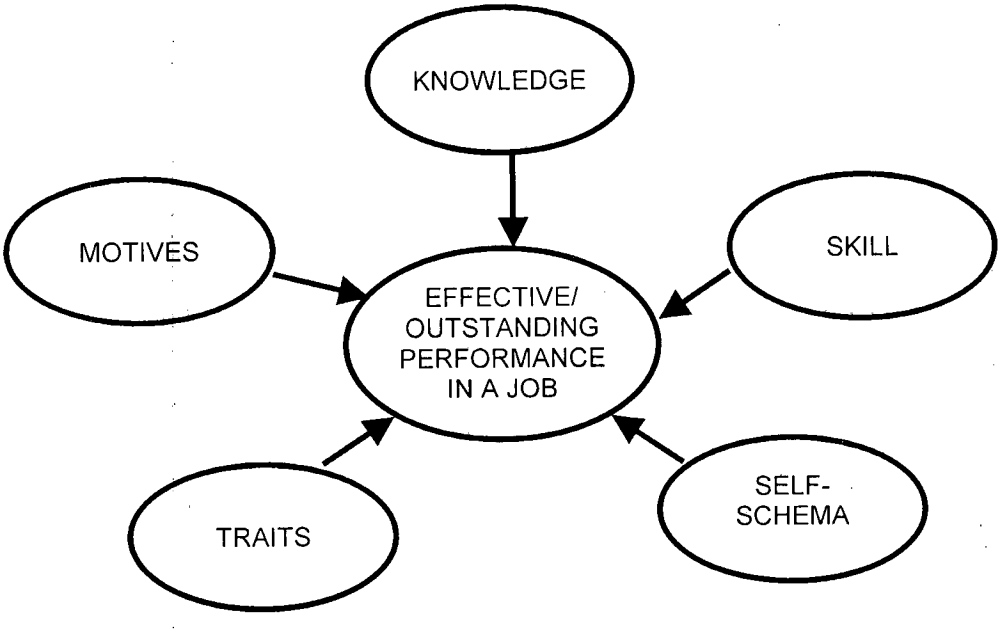


Figure 2. Concept of Competence

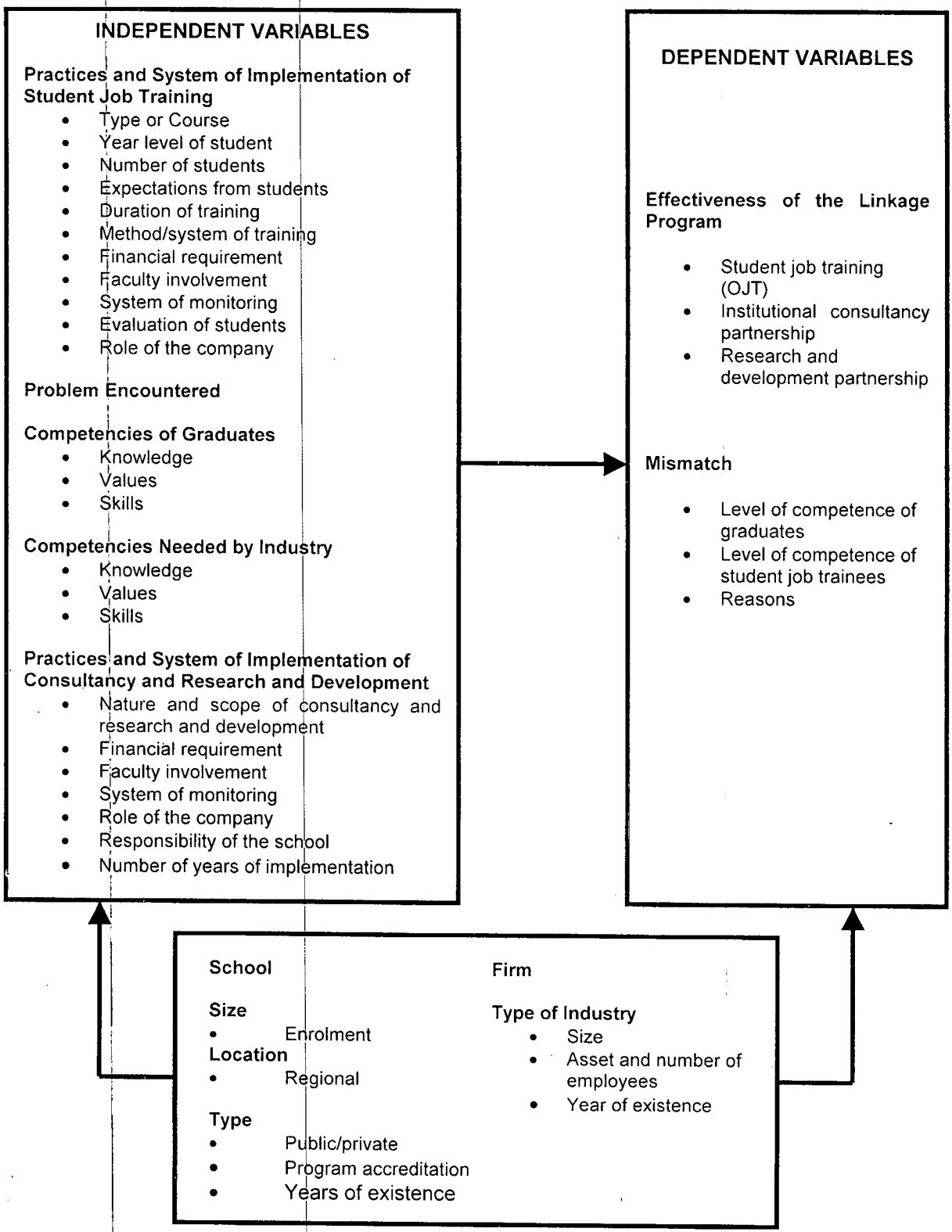


Figure 3. Operational Framework Showing the Variables of the Study

analyze the problems of the linkages, and recommend viable solutions (Figure 4).

III. RESEARCH DESIGN AND METHODOLOGY

Using descriptive, comparative, and evaluative research designs, a nationwide survey of 198 colleges and universities and 810 establishments from the country's 16 regions was conducted. A total of 956 key informants from the HEIs and 877 respondents from the establishments answered the survey questionnaire. Both descriptive and non-parametric statistics were used to analyze the data.

The descriptive design focused on explaining the profile of the respondent schools and firms, identifying the knowledge, values, and skills competencies inculcated by the schools to their graduates and the industry's expectations and needs from the graduates based on the same competencies, determining the degree of mismatch between graduates of the schools and industry expectations and identifying factors that contribute to this mismatch.

On the other hand, the evaluative design was used for reviewing the present dynamics of the college and university-industry linkages (i.e., student job training, research and development programs, and consultancy), which included practices of the program, system of operation, problems encountered in the implementation of the program, and the extent of its effectiveness as perceived by the schools and the companies involved in the program.

Finally, the comparative design covered the aspect of verifying significant differences in the perception of the schools about their graduates' level of competencies versus the responses of those firms where their graduates are placed. The effectiveness ratings of the schools were compared to the effectiveness ratings of the firms with regard to student job training, research and development partnerships, and consultancy linkages.

Schools were chosen from the January 1997 Directory of Higher Education Institutions in the Philippines of CHED, using the following sample size computation (n = 988, with 90% confidence level and margin of error equal to 0.05). Schools classified as COEs and CODs were purposively included in the sample; other schools were selected through stratified random sampling, using the regions as the basis for stratification.

Business establishments, on the other hand, were purposively selected based on the conditions that: (a) these firms have existing linkages with the sample schools in the implementation of their student job training and/or research and development programs; and (b) the schools indicated that some of their graduates were absorbed by these companies.

IV. FINDINGS

Competencies of Graduates

A congruency exists between the knowledge schools claimed to give their students and the knowledge expected by establishments from graduates. This is indicated by the similarity in the list of knowledge areas identified by establishments with the contents of the courses enumerated in the catalogues, brochures, and syllabi of the schools. It should be emphasized that this congruency does not refer to how the schools or the companies rate the level of knowledge of graduates in these subjects or knowledge areas.

The top ten specific values the schools claimed to develop in their students are honesty, commitment, hard work and industry, promptness and punctuality, competence, integration, productivity, reliability and dependability, quality of work, and responsibility.

The top ten specific values expected by establishments, on the other hand, are honesty, commitment, hard work and industry,

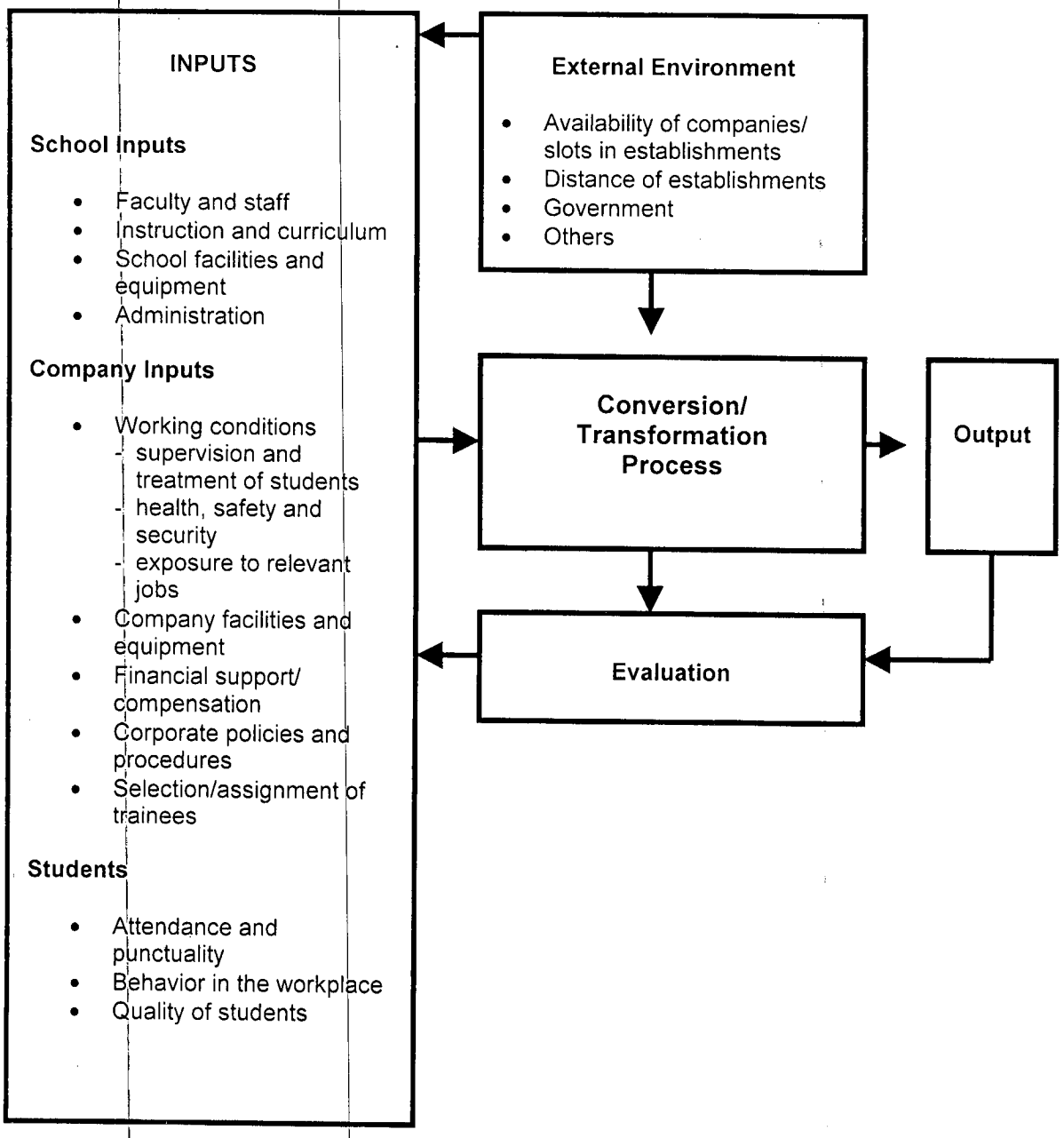


Figure 4. Operational Framework for the Analysis of the Study

competence, promptness and punctuality, integration, courtesy, respect for the rights of others, patience, and initiative.

The list of values shows a general congruence between the expectations of the establishments and what the schools deem to be important. Again, this congruence does not refer to how the schools or the companies rate the graduates in terms of how they practice these values in the school or in the workplace.

In terms of skills, however, there is non-congruency in the perceptions of academe and industry. Schools said that developing technical skills of the students particular to their field of specialization was most important, followed by basic academic skills (e.g., written and oral communication, and computational and mathematical skills), and information technology skills (e.g., programming, use of statistical tools, use of computer programs). Ranked fourth was social or group skills; fifth was problem solving skills; and sixth was machine and equipment operation skills.

The establishments, however, gave more premium to basic academic skills, followed by information technology skills. Technical skills particular to the field of specialization only came in third in terms of the firms' priority. Ranked fourth was social or group skills; fifth was machine and equipment operation skills; and sixth was problem solving skills.

In terms of the schools' assessment of their graduates' knowledge, values, and skills as compared to the establishments' assessment of the same, statistical analysis revealed a significant difference between the ratings of schools and the ratings of the establishments in all areas regardless of the type of school and status of accreditation (Table 1).

The reasons most frequently mentioned for the mismatch of knowledge are:

1. the outdated content of the curriculum that needs to catch up with the requirements of industry;
2. the lack of qualification of faculty and their inadequate preparation to teach; and
3. the students' socio-economic and educational background, particularly their poor foundation in basic education, and the differences in values and attitudes due to varying family and cultural backgrounds.

The reasons most frequently mentioned for the mismatch of values are:

1. the students' socio-economic and educational background; and
2. the inadequate instruction and outdated curriculum.

The mismatch on skills, on the other hand, was attributed to:

1. the inadequate implementation of student job training program policies and practices;
2. the limited time spent in the company for practicum;
3. the inadequate or unavailable school facilities and equipment; and
4. the inadequate instruction and outdated curriculum.

Competencies of On-the-Job Trainees

Statistical analysis showed a significant difference between the average rating given by schools on the level of knowledge, values, and skills of On-the-Job Training (OJT) students and the average rating given by establishments. The schools' ratings are invariably higher than the industry's ratings (Table 2).

The reasons most frequently cited for the mismatch are the following:

1. student job training practices, such as the limited time of exposure of students in the

Table 1. Comparison of Assessment of Schools on Knowledge, Values, and Skills of Graduates as Compared to the Assessment of Establishments (by Type of School and Status of Accreditation)

School Characteristic	Mean Rating on Knowledge (5 is highest)	Mean Rating on Values (5 is highest)	Mean Rating on Skills (5 is highest)
A. By status of accreditation			
1. Accredited			
Schools' assessment	3.85	3.95	3.81
Firms' assessment	3.52	3.68	3.48
2. Not Accredited			
Schools' assessment	3.80	3.91	3.75
Firms' assessment	3.53	3.62	3.50
B. By type of school			
1. Private			
Schools' assessment	3.77	3.91	3.75
Firms' assessment	3.51	3.67	3.46
2. Public			
Schools' assessment	3.86	3.93	3.80
Firms' assessment	3.56	3.57	3.56
OVERALL			
Schools' assessment	3.82	3.92	3.97
Firms' assessment	3.53	3.64	3.50

workplace, the very limited number of companies where students can do OJT, and the insufficient time given to develop skills in the workplace; and

2. outdated curriculum, particularly the lack of applicability of theories learned in school to the requirements of the workplace.

There was also a significant difference between the assessments of the schools and the establishments concerning the extent of effectiveness of the on-the-job training program.

Problems Encountered with On-the-Job Training Program

The problems most frequently mentioned by school administrators regarding the on-the-job training program were attributed to the establishments' hosting their students. These involved the working conditions of the trainees, particularly: (1) the supervision and treatment received by students in the workplace; (2) the kind of work done by the

Table 2. Comparison of Assessment of Schools on Knowledge, Values, and Skills of Student Trainees as Compared to the Assessment of Establishments (by Type of School and Status of Accreditation)

School Characteristic	Mean Rating on Knowledge (5 is highest)	Mean Rating .on Values (5 is highest)	Mean Rating on Skills (5 is highest)
A. By status of accreditation			
1. Accredited			
Schools' assessment	3.92	4.10	3.83
Firms' assessment	3.62	3.44	3.59
2. Not Accredited			
Schools' assessment	3.83	3.94	3.75
Firms' assessment	3.60	3.32	3.49
B. By type of school			
1. Private			
Schools' assessment	3.86	3.98	3.74
Firms' assessment	3.59	3.33	3.54
2. Public			
Schools' assessment	3.85	3.99	3.85
Firms' assessment	3.65	3.42	3.47
OVERALL			
Schools' assessment	3.86	3.99	3.78
Firms' assessment	3.61	3.36	3.52

students; and (3) the health, safety, and security of students. School administrators involved in the OJT program also lamented that: (4) only limited slots are available to students due to the limited number of companies in their community; (5) many companies are very selective in taking in trainees; and (6) some establishments are too far from the school.

The schools also echoed the concern of the establishments regarding (7) the absences and tardiness of the students; (8) the behavior of students in the workplace; and (9) the quality of students sent to companies to undergo their OJT. The school administrators recognized, though, that many students face (10) financial constraints, making it difficult for them to complete their OJT because of the expenses involved.

School administrators also acknowledged that some problems are rooted in (11) the quality of instruction of the school; (12) the schedule and duration of the OJT; (13) the supervision and monitoring of the OJT program; (14) the lack of coordination between the company and the school; and (15) the lack of support given by the school to the OJT program.

On the other hand, the most frequently mentioned problems encountered by establishments regarding OJT program

involve the following: (1) attitude and behavior of students, particularly absences and tardiness; and (2) schedule and duration of the OJT. The establishments also observed the following: (3) inadequate supervision and monitoring of the OJT program by the school; (4) lack of coordination, i.e., no common plan, between the company and the school; and (5) lack of preparation or orientation of students before their OJT. The aforementioned could be partly attributed to (6) the schools' failure to provide quality instruction; and (7) the schools' failure to expose students to facilities and equipment needed to develop their skills. The companies, however, admitted certain shortcomings on their part, such as (8) their inability to assign personnel that could handle the training of students; (9) their inability to expose students to relevant jobs; (10) the lack of financial support and compensation; and (11) inadequate training facilities.

Suggestions to Improve the On-the-Job Training Program

The schools' suggestions to improve the OJT program include the following: (1) closer relationship with establishments; (2) provision of more resources for OJT; (3) stricter supervision and monitoring of the OJT program; (4) rationalization of the schedule and duration of OJT; (5) updating the curriculum; (6) provision of adequate school facilities and equipment; and (7) improvement of the quality of the faculty and staff. In terms of company inputs, the schools suggested (8) accommodation of more students; (9) clear corporate policies and procedures; (10) financial support and compensation for students; (11) better work exposure, i.e., not limited to clerical work and menial jobs, for students; and (12) better supervision and treatment of students.

Representatives from establishments, however, said that HEIs should: (1) Implement stricter supervision and monitoring of the OJT program; (2) foster closer relationships with establishments hosting the students; (3) rationalize the schedule and duration of the OJT; (4) improve the quality of instruction; (5) improve and update the curriculum; (6) provide adequate facilities and equipment for the students' use; (7) prepare the students for the OJT; and (8) have clear-cut guidelines on the implementation of OJT. For their part, the establishments acknowledged the need to provide students with (9) financial incentives; and (10) more exposure on the job.

Problems Encountered Concerning Research and Development Partnerships

Several problem areas surfaced in the examination of research and development (R & D) partnerships of HEIs with industry. These have something to do with:

1. Administrative and financial support of partner agencies, particularly the bureaucratic requirements and processes (e.g., red tape in the evaluation of proposals, project delays, limited budget, etc.;

2. Problems concerning faculty and staff, particularly lack of full-time researchers, scientists, and experts in statistics, and lack of faculty involvement due to teaching loads, lack of faculty with research skills and experience;

3. Lack of administrative and financial support from the school; and

4. Problems concerning the supervision and implementation of projects by the school.

Suggestions to Develop Research and Development Partnerships

Among the suggestions given to develop R & D partnerships are:

1. Provision of financial incentives to faculty researches;

2. Provision of deloading for faculty who are involved in research;

3. Research exposure and training for faculty;

4. Improvement of laboratory and equipment; and

5. Simplification of required liquidation procedures.

Discussion of Findings

Competencies of graduates. Results of this study indicate that there is a mismatch between the level of competencies gained by graduates of HEIs and the expectations of industry. This is clearly shown by the significant differences in the ratings given by the schools to their graduates and the ratings given by the establishments to the same.

This becomes even more glaring when superimposed against the finding that the knowledge that establishments expect from graduates of HEIs is consistent with what the schools claim to have inculcated in their graduates through the different foundation courses, professional and allied courses. Moreover, the specific values that schools and establishments deemed important generally correspond.

Respondents readily lament the failure of HEIs to update curricula and teaching methods even as industry moves at a faster pace in the development and adoption of new ideas, methods and practices. In fact, even EDCOM (1993) concluded that the failure of tertiary education to keep up with the shift in skills demand of new industries and technology has resulted in a training gap between the actual attributes of new graduates and the expectations of employers.

This study offers some evidence that supports the argument that the reason for the mismatch is that academe has been 'left behind' by industry. This holds true in predominantly urban areas where modern industries are concentrated and where business establishments have greater access to new technology. In fact, statistics show that in regions that are largely urban (e.g., NCR, Regions IV and VI) there is a significant difference between the ratings given by schools and establishments as to the level of knowledge, values, and skills of graduates. Conversely, in the less-developed regions (e.g., Regions VIII, X and ARMM), where economic activity is largely driven by government and small and medium-scale enterprises, there is no significant difference between the ratings of schools and those of the establishments.

However, this could be interpreted to mean that schools and firms in certain areas have simply lowered their expectations. In ARMM, for example, establishments gave HEI graduates an average overall rating of 3.06, the lowest among all regions. The schools, however, also gave their graduates an average overall rating of 3.19, likewise the lowest among all regions. This resulted in a very small difference in their ratings. The same holds true for Regions VIII and X where both the schools and the firms gave almost similar ratings to their graduates. Is this because the schools in the areas have a more realistic appreciation of the quality of their students and of the quality of instruction they offer?

Another factor that could have contributed to the mismatch is the emphasis given by schools in developing technical skills particular to the field of specialization, which is only third in the priorities of industry. Establishments stressed the need to develop the basic skills (e.g., written and oral communication, computational and mathematical skills), which they often observe to be inadequately developed among graduates. Given the advances in technology, technical skills would easily be outdated while the basic skills remain useful.

Despite the mismatch, however, people should not lose sight of the fact that the establishments gave the graduates of HEIs a better than satisfactory rating in the three competencies: 3.53 for knowledge, 3.64 for values, and 3.50 for skills. In certain industries, in fact, the ratings given by establishments were particularly high. In the Water, Gas and Electricity sector, the ratings were: 3.89 for knowledge; 3.95 for values, and 3.93 for skills. In the manufacturing sector, the ratings were: 3.78 for knowledge: 3.66 for values, and 3.73 for skills. On a per region

basis, establishments in certain areas assessed graduates quite favorably. Across competencies, the regions that gave the highest ratings were: Region XII - 3.82; NCR - 3.78; Region X - 3.77; Region XI – 3.69; and Region VII - 3.64. These figures indicate that industry perceives the competencies of these graduates to be more than adequate to fulfill their operational needs.

Instead of issuing a blanket indictment on the Philippine educational system, concerned parties and other interested observers should pay tribute to the resiliency of the country's HEIs (mostly private schools) which continue to provide educational service and produce graduates needed by industry despite the numerous constraints and challenges they face.

Student job training linkages. As with the competencies of graduates, there are significant differences in the ratings given by schools and the ratings given by establishments to student trainees.

Again the knowledge areas identified by establishments correspond to the knowledge supposedly included in the curricular programs of HEIs. The establishments, however, have a much lower expectation from student trainees, expecting them to have basic comprehension needed to fulfill mostly clerical and menial tasks during their practicum. Establishments, in fact, expect students to have basic academic skills (e.g., written and oral communication, computational and mathematical skills) rather than specific technical skills which they rarely employ in their practicum unless they belong to the Medicine and health-related programs, and Maritime programs. The values expected by establishments and those the schools claim to inculcate in their students are generally similar. The mismatch lies in the difference between the ratings given by the schools compared to the ratings given by the companies as to the extent students have imbibed these values.

A close look at the system of implementation of the OJT program will reveal a multitude of interrelated problems that could have contributed to this mismatch. Establishments, for one, have often encountered problems concerning the attendance, functionality and behavior of students. These could be traced to, among others: conflicts in the schedules of the OJT and regular classes, inadequate supervision and monitoring of the OJT by the school, the distance of the establishments, as well as the financial difficulties of students undergoing OJT. These underlying problems manifest themselves in the absenteeism and tardiness of students, and often times in their ability to perform the tasks expected of them in the workplace; thus, the relatively unfavorable ratings given by their host establishments.

Another important contributory factor are the shortcomings in the OJT program policies and practices. The lack of written guidelines leads to the haphazard implementation of the OJT, which is also affected by the failure of the school to channel adequate resources to the program. In particular, the OJT programs are characterized by limited duration of exposure of the students in the workplace, the limited skills which are developed in students, and inadequate extent and depth of exposure given to the students at the firm level or in the community areas. These seem to explain why the students and graduates' skills competency was rated lowest, compared to values and knowledge, by both the schools and firms.

Many of the problems encountered concerning the OJT, however, could be traced to the absence of a formal linkage between the schools and the firms, and the lack of clear guidelines in the implementation of the OJT. The situation leads to a hazy understanding of the purpose and mechanics of the OJT both on the part of the school and the company. The lack of formal linkage means that expectations of both the school and the company and their responsibilities toward each other are not explicitly stated. Therefore, the company is usually left in the dark as to the desired outcome of the OJT (i.e., knowledge and skills to be developed in the students), and does not know what its responsibilities are towards the students. As it is, many companies feel that their main

responsibility is simply to accommodate the students until they complete their required number of hours, without regard to the volume and nature of tasks given to the students.

Other causes of the mismatch are the school facilities and equipment that are either lacking, not available, or not "high tech"; the lack of qualified faculty; and lax policies on student admission and retention by schools which rely mainly on tuition for their continued existence. The mismatch can be further traced to students' poor socio-economic and educational (elementary and secondary) background. Most students, particularly in the rural areas, come from lower income groups. Many of them can only afford to enroll in state colleges and universities, or in private institutions that charge low tuition and other school fees. Only the more privileged students could afford to enroll in more expensive private institutions that are acknowledged to offer a higher quality of education.

Many companies, especially in smaller localities, are forced to accept trainees just to maintain good relations with the school and the community, even if said companies are not equipped to provide the right kind of training. Insofar as the OJT programs are concerned, the availability of firms that could accommodate the large number of student trainees in a locality is largely dependent on the economic condition of the community. Poorer communities, especially those in the rural areas, have few industries, and consequently few private firms. Many of these establishments are small-scale and do not have complex operations that will provide the students enough training opportunities, much less the work exposure they desire. Consequently, many schools in the rural areas send their students to companies in nearby towns or even to the more developed cities. Those who could not afford to leave their localities turn to government for their OJT.

Research and development linkages. In terms of research, the limited number of institutions engaged in research linkages can obviously be traced to the lack of research capability of majority of higher education institutions. Universities and colleges in the country have neglected research due to the private character of education and the tremendous demand for higher education which places high priority on teaching.

The large public education institutions, specifically state universities and colleges (SUCs), have an advantage because unlike private HEIs, they are not dependent on tuition and fees for funding. Although majority of SUCs spend approximately 5% of their budgets on research, the private HEIs spend even less (Tullao 1993). Public educational institutions are mandated and funded by government to engage in research activities, usually in cooperation with local and national government units and agencies. Since the funds for these research projects come from public sources, these projects should also serve to benefit the public, often through the development of the local community. This explains why a considerable number of the projects lean toward agriculture and public administration-related areas of study. As a whole, there is very little demand since there are only a handful of local establishments that seek out research partnerships with HEIs. They often have their own research and development departments and/or tie-ups with supplier firms involved in very specialized and technical research.

The nature and scope of research projects are often limited to non-technical/non-specialized areas because local HEIs still need to develop their expertise and build their resources in more specialized and technical fields while the local industries have not found the value of assisting these schools as a form of investment for future collaborative efforts that can benefit both parties in the long run.

In relation to the discussion of privately-funded research linkages, it can be observed that there are two different cultures which interact in the collaboration between universities and industry. While HEIs have societal missions of education, research and services that enable university researchers to pursue research agenda with open-ended goals and freely publish results, the focus of

industry is to meet customer needs in a way that maximizes profit to stockholders. Thus, industry research and development collaborations tend to be driven by the profit objective and characterized by limited publication to protect the competitive position of the funding establishment.

Private institutions also face the challenge of developing their own research capability depending solely on tuition fees and grants. The overwhelming concern for financial viability of private HEIs inhibits these institutions from investing in human resource development and technology for research. This explains the intermittent research development initiatives and weak support structures in HEIs. Very few universities conduct any research; only those institutions that have built economies of scale have proven to be reliable partners in research. These select colleges and universities are characterized by large enrolment and a wide variety of academic programs, and have very qualified faculty. In most cases, it is difficult for HEIs to conduct any form of serious research when a large portion of their faculty hold only baccalaureate degrees, and facilities for research are inadequate, if not absent. These findings support Bernardo's (1997) study on research on higher education. Higher education in the Philippines falls short in terms of advancing knowledge through research work and applying new knowledge for improving the quality of human life and responding effectively to changing societal needs and conditions as set forth in Sec. 23 of B.P. 232.

Consultancy linkages. With regard to consultancy linkages, the very limited number of HEIs with institutional consultancy partnership reflects the lack of capability of the academe to meet industry needs, as well as, the preference of establishments for seeking assistance from professional consultancy firms. Majority of educational institutions do not have an adequate pool of faculty who possess the training and industry experience to engage in consultancy work. In terms of physical resources, educational institutions have either outmoded or dilapidated laboratories and equipment, which, in turn, further hinder the faculty from developing their expertise. More importantly, no coherent institutional programs or systems are in place that aim to support the advancement of consultancy partnerships in most of the HEIs that participated in the study.

On the side of industry, establishments already have their own consultants who come either from their head office or affiliated organizations. If ever they need external assistance, they usually source from professional consultancy firms which have developed their specialization and industry experience. Establishments who do opt for academe-based consultancy likewise balk at the fees of the large schools, although they do not have any choice since only these large universities are capable of providing quality consultancy services.

The problems most frequently cited by institutions engaged in consultancy linkages - the lack of administrative and financial support and the preference of faculty to provide consultancy services in their personal capacity, are closely related. The main reasons why establishments and faculty shy away from institutional linkages are the added cost and bureaucracy. If a consultancy project is coursed through the university, the school places additional charges, such as overhead and management fees, which are often passed on to the client-establishment. Some faculty also consider institutional linkages cumbersome because of the paperwork and organizational requirements that need to be accomplished.

Similar to R & D partnerships, consultancy suffers from a lack of administrative and financial support. Also, policies on consultancy activities are either totally nonexistent or are unclear which only serve to hinder the development of consultancy linkages. In certain cases, administration hesitates to encourage the faculty to do consultancy work, fearing that the few, competent teachers will be pirated by industry. As cited earlier, the consultancy activities are mainly in infrastructure development and livelihood projects for the local community. In fact, consultancy

partnerships occur often in the form of extension services so that the personnel involved do not receive any compensation for their services. The nature and scope of institutional linkages are limited mainly because of the lack of specialization and industry experience of HEIs in providing the highly technical and specialized requirements of establishments.

V. STRATEGY RECOMMENDATIONS

For Philippine industries to achieve greater productivity and be able to compete in the global environment the country must have adequate human resources in terms of volume and quality. It is, therefore, important to address the current mismatch between the knowledge and skills of graduates produced by the education sector and the requirements of industry. It is also essential to strengthen the linkage of academe and industry to improve the relevance and responsiveness of academic programs offered by the country's HEIs. These goals could be achieved through the following strategy recommendations:

1. Formulation of an integrated HRD framework

The government (to be led by CHED and DOLE), in consultation with representatives from both academe and industry (to be represented by their associations), must work on the formulation and operationalization of a unified framework on human resource development. This will enable the government to determine priority areas in providing support for efforts meant to upgrade the country's human resources. This framework will also provide concerned sectors a clearer understanding of the role played by academe-industry linkages in raising the quality of human resources needed by industry to cope with rapid advancements in technology and stronger competitive pressures. Moreover, it will provide a holistic perspective in dealing with issues concerning the country's human resources as it faces the challenges of globalization.

2. Formulation of an integrated research and development framework

The government must also work on the formulation and operationalization of a unified framework meant to encourage and strengthen research and development efforts in the country. Studies have shown that there is a strong correlation between a country's level of spending on R & D (as a percentage of its GNP) and its overall level of development.

Through this unified framework, government can identify research and development needs of various industries in their quest for global competitiveness. These R & D needs could then become priority areas for research that could be undertaken by higher education institutions through the Zonal Research Centers (ZRC) or COEs. Funding support could come not only from the government but also from industry associations, companies, and private funding institutions.

3. Needs identification and assessment

It is important to identify the specific needs of industry for professional and technical workers. These will be used as inputs for improving the curricula and for the development of new academic programs. Efforts should also be made to determine the research needs of companies, which could take the form of technical studies, industry studies, product or service development, and marketing plans, among others. These, in turn, could be used as inputs in developing the research capabilities of higher education institutions in the area. Needs assessment can be done through regular surveys and interviews by the academe-industry councils.

4. Multi-faceted strategies to strengthen HEIs

The success of academe-industry linkages depends largely on the capability of HEIs to provide and manage resources involved in the different partnership activities. HEIs, for example, can only undertake

research projects for, or provide consultancy services to, companies, if they have the faculty who could handle these projects competently and the necessary equipment in their laboratories. To achieve this level of competency, HEIs should embark on an intensive human resource development program for both faculty and administrators, improve their physical facilities, and strengthen their network with various stakeholders such as their alumni and other schools. Government should also provide financing support to augment the limited resources of HEIs.

- **Faculty development.** Schools should strictly require their faculty to pursue graduate studies to upgrade their qualifications. In addition, schools should undertake intensive faculty development programs that should include the following: (a) teaching and research fellowships; (b) exchange programs; (c) funding for seminars, workshops and conferences; and (d) apprenticeship in industry. It is also important to implement a comprehensive teacher - training program both at the undergraduate and graduate levels.

  By the same token, faculty members must be offered an attractive compensation package. Their minimum wage must be higher than those of employees from the other industries in the area. To serve as effective motivator, compensation should be given using the following criteria: (a) qualifications and skills of the faculty, i.e., those with graduate degrees; (b) teaching performance; (c) research output; and (d) hardships and hazards experienced on the job.

- **Management development.** Many of the problems of HEIs could be traced to the inefficient and ineffective utilization of existing resources. To solve this problem, it is essential for administrators of HEIs to be exposed to, and trained on, the various aspects of educational management. School must undertake a management development program, hand-in-hand with their efforts on faculty development. Recognizing the critical role of administrators, the school should offer them a generous compensation package and sufficient deloading from their teaching load. A pool of faculty members, who are identified as potential administrators, could be developed as educational managers by sending them to graduate school or to specialized management courses.

- **Utilization of Information Technology.** This could enhance the efficiency of both teaching methods and administrative practices. IT has given rise to new methods of teaching and learning such as computer-aided instructions, electronic classes, simulations, computer games, and distance education. Through Internet, both faculty and students could do research more quickly, and could access a wealth of information from various sources across the globe, a benefit that could partly offset limited library holdings. Also, the Internet allows faculty members to share resources and exchange notes with each other.

- **Improvement of physical facilities and equipment.** Schools should allocate a percentage of their budget for the improvement of instructional materials, and the upgrading and maintenance of their physical facilities, particularly their library, laboratories, and research centers. This budget could be augmented by other funding sources such as alumni, donor companies, and government.

- **Stronger networks.** Colleges and universities should strengthen their linkages with their various stakeholders, including: (a) alumni; (b) industry; (c) other schools; and (d) government. Alumni groups or associations could provide the school with funding support for various development projects, and serve as a constant source of resource persons or consultants for various activities of the school. Industry could provide the school with feedback regarding the latest trends in the world of work, and could also be a source of part-

time teachers or even funds for certain projects.

Inter-school linkages or consortia will enable the member schools to share valuable resources. For example, schools could pool their resources to augment library holdings of one school in a particular discipline, and the library holdings of another school in another discipline. These libraries could then be open for use to faculty and students of the schools belonging to the consortium. These consortia could also be the channels through which government could provide financial support in purchasing equipment. Selected laboratory equipment, for example, could be housed in one of the member schools, then made available to other member schools. This way, funds allotted for physical facilities improvement are utilized efficiently.

- **Active tripartite cooperation.** Academe, industry, and government must work closely together in the spirit of interdependence and mutual interest. Cooperation could take the form of academe-industry councils for specific disciplines. These councils could be convened at the provincial or zonal levels. The council should have representatives from the schools (preferably administrators from the relevant disciplines), the concerned professional and industry associations, companies in the locality, and selected government agencies. Among its functions could be to: (a) provide feedback concerning the schools' curricula; (b) provide feedback concerning the implementation of the OJT; (c) identify the human resource (HR) needs of industry based on technological developments, labor markets trends, and other economic factors; (d) discuss issues concerning the quality of human resources in the locality; (e) come up with strategies to improve these human resources; and (f) facilitate the funding of projects meant to improve the training of human resources.

Companies have two options in dealing with the problem of mismatch. They could utilize either the non-participative approach, or the participatory approach.

Under the non-participative approach, industry fully accepts the deficiencies of new graduates and seeks to address these without the involvement of the education sector. These approaches include:

- **Corporate training program.** Companies can use this as a means of "retooling" new graduates.

- **Corporate colleges.** Companies could establish a formal school to address the training needs of new graduates and the continuing educational needs of experienced staff. These schools should have formal curricula and training standards.

- **External intermediate schools.** Companies can send new graduates to external intermediate schools that specialize in developing specific skills like computer skills, personality development, and communication skills.

Using the participatory approach, the industry recognizes its role in strengthening the capability of schools to educate students. These approaches include:

- **Direct donations.** Companies can give donations to schools in the form of scholarships, professorial chairs, equipment, and other facilities.

- **Train-in-the-students.** Companies can provide schools in their communities the following: (a) experienced staff who could conduct special courses; (b) opportunities for students to visit their offices and plants; and/or (c) provide slots for OJT.

- **Train-the-teachers.** Companies can provide the following services to schools in their communities: (a) training of teachers on the use of modern teaching techniques; and (b) immersion programs

for selected teachers by assigning them to specific jobs in the firm.

- **Materials development.** Companies can offer their facilities to design, develop and produce high quality training materials that schools can use in teaching specified topics.

- **Curriculum development.** Companies should be involved, with schools in their community, in developing curriculum that will address their needs. The inputs of companies would be very valuable in making the curriculum more relevant. This cooperative activity could be done through academe-industry councils or through direct coordination with the schools.

- **Adopt-a-school.** This approach does not only require close cooperation between a school and a company. Under this arrangement, the corporation is given specific responsibilities and corresponding rights in planning and implementing short-term and long-term educational change. The premise is that the company has the unique expertise to provide this kind of assistance and would therefore contribute immensely to improving the school's ability to provide educational service.

5. Financial support from government

Given the limited resources of government, it should rationalize the allocation of funds to make it more efficient. This can be done through the following:

- **Channeling resources to secondary education.** Secondary education has been thought to be the weakest link in the educational chain. The quality of graduates produced by the country's high schools invariably affects the quality of students at the tertiary level. Channeling resources to secondary education is therefore meant to bridge the quality gap, thereby improving the quality of students in higher education institutions.

- **Streamlining SUCs and other HEIs based on academic merit.** The opening of more SUCs has put a strain on the limited resources of government. Funds have been dispersed to a great number of colleges and universities, resulting in inefficient use of government resources and limited impact of public funding on higher education. Streamlining SUCs would mean imposing a moratorium in the creation and conversion of SUCs particularly in areas that are adequately serviced by private HEIs.

  Private institutions, on the other hand, should be closely monitored in terms of the quality of education they provide. Those that fail to produce graduates who could pass Professional Licensure examinations should be penalized accordingly through the closing down of the concerned programs.

- **Socialized tuition scheme.** Recognizing that higher education provides relatively higher returns to the individual rather than to society, and that not all students in SUCs are financially disadvantaged, a socialized scheme of charging tuition should be developed so that richer students shoulder a bigger percentage of the cost of their education, allowing the government to channel funds for scholarships for poorer students.

- **LGU participation in funding of HEIs.** To ease the financial burden of the national government, local government units (LGUs) could make it their priority to participate or have an equity in financing education, either through scholarships or through investments in school laboratories and other equipment or facilities.

- **Voucher system.** This could serve as an alternative to funding SUCs. Instead of creating new SUCs that require heavy investments in acquiring land, setting up buildings and purchasing equipment, the government can set aside funds to

finance, through a voucher system, the education of students who enroll in the private school of their choice.

- **Deregulation of tuition and fees.** Private schools with excellent track record in developing their curricular programs and in producing quality graduates should be allowed to determine their tuition and fees without government control. This will enable private institutions to generate enough funds to pay their faculty and to build up their facilities and equipment.

- **Scholarships for selected courses.** The government should increase scholarships and tuition fee subsidies to students who pursue courses that have high social rates of return which generate positive externalities (e.g. physical sciences).

6. Identification of key results areas

CHED should clearly identify key result areas (KRAs) against which HEIs should be evaluated. These could be used as indicators of a school's quality and its effectiveness in delivering educational service. Aggregate data could be utilized by CHED in determining areas that require intervention or support.

These KRAs could be expressed in terms of school inputs and school outputs.

School inputs could be measured in terms of the following: (a) percentage of budget allocated for faculty development; (b) percentage of budget allocated for physical facilities improvement; (c) percentage of budget allotted for investments in information technology; and (d) percentage of budget allocated for research activities.

School outputs could be measured in terms of the following: (a) passing percentage in board examinations; (b) percentage of faculty with graduate degrees; (c) research output of faculty and (d) profitability—return on investment, return on assets, and return on equity.

7. Accreditation of Schools

CHED should strongly urge schools to have themselves accredited for the purpose of improving their academic programs, physical facilities, and other services. Accreditation criteria, however, should include the school's ability to interface with industry and respond to their needs.

8. Publication of key information about HEIs

CHED should make it a point to publish in several national or regional newspapers key information that the public should know about HEIs to aid them in making decisions about which schools to patronize. CHED could publish the following information, among others: (a) tuition rates; and (b) qualifications of faculty - percentage of faculty with graduate degrees and where the degrees were earned. CHED, in coordination with the PRC, should also publish the track record of schools in the different board examinations. The publication of these information ensures accountability on both the part of CHED and the different HEIs - a very strong motivator to improve the quality of education, and an effective deterrent to mediocrity and inefficiency.

The information drive should utilize other existing channels of communication as well. Key information about HEIs should be sent to all high schools in the country through the CHED regional offices or with the help of DepEd. These could also be regularly posted on the Internet through the CHED and DepEd web pages.

9. Police power for CHED

The ability of CHED to ensure the quality of education among HEIs depends largely on its regulatory powers and its ability to impose penalties on schools that do not perform up to par. A law should be passed to give CHED adequate police powers to exercise its regulatory functions effectively and to ensure that adequate resources are channeled for this purpose. Placing SUCs under the jurisdiction of CHED should also be strongly considered.

VI. OPERATIONAL RECOMMENDATIONS

Based on the results of the study the following operational recommendations may be considered for the following areas: On-the-job training, research and development, and consultancy, which are directed to specific sectors, namely (a) government, (b) higher educational institutions, and (c) industry.

On-the-job- training

These recommendations are specifically meant to make the OJT program a more effective means of developing the knowledge, attitudes, values, and skills of students, and of cementing the relationship of academe and industry.

Recommendations for government. Actions to be taken by government to strengthen the OJT program must be those that have strong impact and widespread benefits to the parties concerned. These are, as follows:

1. **Funding for schools.** The government, through CHED, can provide direct funding to both private and public HEIs, for the purpose of purchasing needed modern equipment and of improving physical facilities. This can be channeled through the COEs program or through the setting up of Zonal/Regional Training Centers for Apprenticeship.

2. **Incentives to companies.** To entice more companies to participate more actively in on-the-job training programs, the government should give incentives to companies that provide training to students. This could take the form of tax deductions, using a pre-approved formula. Companies that provide excellent on-the-job training could also be given recognition by the CHED as "OJT-friendly school" and be given the corresponding incentives for such.

3. **General guidelines.** To ensure that minimum OJT requirements are met, the CHED, with the participation of school and industry, should formulate and disseminate general guidelines regarding the implementation of the OJT. These guidelines should contain, among others, the following information: the rationale for the OJT, affiliation fees, roles and responsibilities of schools, roles and responsibilities of participating firms, guidelines concerning the health, safety, and security of students on the workplace, and the setting up of functional academe-industry councils.

4. **Minimum competency requirements.** In consultation with the schools and professional associations, CHED must come up with a list of requisite knowledge, values, and skills that should be gained by students when they undergo the traditional OJT. These requisites could be determined for every program or field of specialization. Companies and schools will then be evaluated according to their success in reaching these goals.

5. **National Center for Student Training.** Since the number of establishments that can accommodate the number of students taking their OJT is limited, the government can set up a National Center for Student Training, one that is partly funded by private firms and associations. The purpose of this training center (which should have a branch each in Luzon, Visayas, and Mindanao) is to develop the technical knowledge and skills of students coming from different parts of the country by providing training given by practitioners from industry. These training centers will contain state-of-the-art equipment utilized in various disciplines.

6. **Stricter supervision and regulation of schools and academic programs.** CHED should closely monitor schools through regular visits and spot checking of schools with OJT programs. Based on the guidelines that will be used, schools that cannot meet the requirements should

be closed, or their permit for that program should be cancelled.

Recommendations for schools. Actions to be taken by schools to strengthen the OJT program must focus on the following: (a) formalization of the OJT program; (b) allocation of budget and provision of adequate resources for the OJT; (c) development of formal evaluation and feedback system; (d) stronger networking efforts; and (e) identifying alternatives for the traditional OJT.

1. **Formalization of the OJT program.** Schools should implement OJT program systematically, using very clear objectives. This could be achieved by requiring schools to have an OJT manual that contains the following information, among others: (a) rationale; (b) learning objectives and expectations - knowledge, values, and skills; (c) roles and responsibilities of the school; (d) roles and responsibilities of company; (e) duties and responsibilities of students; (f) duties and responsibilities of faculty coordinator or adviser; (g) orientation of students; (h) OJT requirements; (i) grading system; (j) evaluation process; and (k) grievance procedures.

2. **Allocation of budget and provision of adequate resources.** Schools should allocate adequate resources to ensure the success of the program, i.e., budget for transportation expenses, honorarium of faculty coordinator or adviser, supplies, and meeting expenses. A separate budget for the OJT program can come from the tuition and fees paid by the students for the semester or school term.

3. **Balancing faculty responsibilities.** Faculty members should be given enough time to perform both their functions as teachers and as practicum advisers. This means: (a) deloading to enable them to supervise students and visit the companies as well give them time for graduates studies; and (b) providing them training in practicum advising.

4. **Development of formal evaluation and feedback system.** This system is needed to ensure the effective implementation of the program and its various processes. To be evaluated will be: (a) the students - for their performance at work; (b) the company - for its ability to provide effective training; and (c) the school - for its ability to provide supervision and support to the students. The results of the evaluation and feedback system must be used to constantly improve the program.

5. **Stronger networking efforts.** Networking efforts should be undertaken for the purpose of getting feedback regarding the curriculum and the quality of graduates produced by schools. To get feedback regarding the curriculum, the school could establish links with professional and industry associations, alumni associations, other schools offering similar programs, and companies.

6. **Scheduling and duration of OJT.** Schools could come up with schedules that will minimize the conflict between schoolwork and OJT. Schools that can afford to do so should provide for students to undertake their OJT on a full-time basis. Others could fix their schedules in such a way that students get to work in the company on a continuous basis. Perhaps academic load could be scheduled every Tuesday and Thursday, while OJT can be scheduled every Monday, Wednesday, and Friday.

7. **Identifying programs that will lend themselves to the traditional OJT.** Given the limited number of companies that could accommodate student-trainees in certain areas of the country, schools must examine the rationale for requiring the traditional OJT for all degree programs. Perhaps, only the most qualified students should be sent for OJT so that companies would also benefit from the arrangement. Likewise, only selected programs should continue to implement the traditional OJT. Possible criteria to determine whether the program lends

itself to the traditional OJT are as follows: (a) skills needed to perform the job well require actual hands-on; (b) required equipment and facilities are not available in school; and (c) need for continuous, longer contact time on the job.

8. **Inclusion of other types of organizations as OJT sites.** Schools could encourage students to undergo on-the-job training not only in business organizations, but also in government, the church, labor unions, non-government organizations (NGO), industrial and professional associations, cooperatives, and other civic groups (civil societies).

9. **Alternatives to OJT.** Considering the limited number of participating companies, coming up with alternatives to the traditional OJT has become a practical matter. The alternative activities must still meet the objective of developing the students' skills through hands-on experience. Alternatives could take the form of action research such as feasibility studies, business plan, product or service development, market plan, industry studies, policy research, case studies, and technical studies.

Recommendations for establishments. Actions that could be undertaken by companies include the following:

1. **Training Plan.** The HRD unit or the company unit responsible for supervising the OJT students should develop a training program or plan for these students to ensure that the OJT objectives of the school are achieved. This training program or plan, which could be developed in collaboration with the school, should contain the following: (a) roles and responsibilities of the company and its involved departments, (b) duties and responsibilities of students; (c) guidelines on health, safety, and security; (d) policies on attendance and punctuality; (e) knowledge, values, and skills to be developed in students; (f) schedule of activities; and (g) evaluation of students, among others.

2. **Recruitment and selection.** Companies can treat the OJT as a means of getting potential workers or employees. They can, therefore, integrate it as part of their recruitment and selection programs.

3. **Providing allowance to students.** Companies must follow the guidelines of the DOLE regarding the compensation for students. Companies can allot a certain budget to cover the compensation to be given to student-trainees. To justify the compensation, they can be more selective in taking in trainees and could assign very specific tasks to be performed, or outputs to be delivered by the trainees.

4. **Feedback system.** The company should make it a point to provide the students with feedback regarding their performance so that the students benefit from the experience.

5. **Support to schools.** Companies that have the financial means should provide support to the schools in their localities as part of their social responsibility. They could donate funds for the improvement of physical facilities, or they could make their personnel and managers available as part-time teachers or as resource persons for the activities of the schools.

Research and Consultancy

Since the state of research and development, as well as consultancy, in higher education institutions leaves much to be desired, it is important to build the capabilities of HEIs first before formal research and consultancy linkages between academe and industry can be actively pursued.

Recommendations for government. Among the steps that could be undertaken by government are the following:

1. **Research and development framework.** As mentioned earlier, the government can utilize this framework to strengthen

research and development efforts in the country. It can also use this as a guide for selecting institutions that could be centers of research, and for providing financial support.

2. **Centers of research.** The government, through CHED, should identify HEIs that could be developed as research centers for particular disciplines and for particular regions. Funding could be channeled to these institutions for the purpose of strengthening their research capabilities. Other schools could instead be developed as strong teaching institutions, not necessarily actively involved in research. Being selective allows the government (CHED) to focus its effort on a manageable number of institutions, thereby, increasing the chances of success.

3. **Funding for HEIs.** Government should provide funding support to HEIs which are strengthening their research capabilities. It could take the form of funding for laboratories or for faculty development programs of schools. Funding could go to selected colleges or universities in every region - HEIs that could become centers of research in the area.

4. **Key results areas.** CHED could require research output of faculty as one of the areas that could be used to evaluate the quality and relevance of education.

Recommendations for schools. Actions that must be undertaken to strengthen research and consultancy in higher education institutions are the following.

1. **Research agenda for schools.** All HEIs should be required to prepare a medium-term research agenda that shall serve as a guide for developing their research capabilities. The agenda shall differ according to existing resources available to schools. The research agenda must contain, among others, the following: (a) research-capability building efforts and their corresponding budgets; (b) list of possible research areas that could be pursued by faculty; (c) incentives system for research; (d) faculty development efforts; and (e) potential funding sources. Schools that are not identified as Centers of Research could focus their efforts on applied research such as materials development instead of basic research activities.

2. **Faculty development efforts.** These could take the form of graduate studies that would focus on producing certain research outputs. Courses offered at the graduate school should be designed to develop the research skills of faculty in various areas. Faculty members should also be sent to special training courses on research.

3. **Incentive system for research.** Faculty members should be given incentives for their research outputs. A certain budget could be allotted to compensate faculty that succeed in getting their research published in both in-house or external publications.

4. **Internal research fund.** Schools should allocate a budget for research projects to be undertaken by faculty in the different colleges or departments. Among the research projects that could be initially undertaken are materials development projects that will aid classroom instruction. It is essential for schools to provide internal funding until it produces enough research output that will establish the individual reputation of faculty - a requisite for getting external funding.

5. **Operationalization of research center.** Effective management of the research efforts of the school requires the operationalization of a college or university research center, which should be manned by at least two personnel: a research director or coordinator and a research staff. Among the functions of this research center are to: (a) handle the research development efforts of the school; (b) administer the incentive system for research; and (c) publish the

academic journal or discussion/working paper.

Recommendations for establishments. Establishments, for their part, can undertake the following steps to strengthen research partnerships:

1. **Support to schools.** Companies should provide support to schools in terms of improving equipment and physical facilities. Companies could, in fact, invest on equipment that could be housed in the school of their choice. The school, in turn, can provide research services to the donor company.

2. **Use of equipment.** In certain areas, companies can make their equipment and facilities available to faculty of schools for their research activities that could be connected to the needs of the company. This way, the school does not have to invest in very expensive equipment.

3. **Resource persons.** Companies can provide expertise by allowing their experts to serve as resource persons to schools.

In conclusion, efforts to strengthen the linkage of academe and industry will prosper with the cooperation of representatives of HEIs, business and relevant government agencies, but only with a clear framework that spells out the specific roles to be played by each sector and that provides focus for actions intended to develop the human resources of the country.

BIBLIOGRAPHY

Basil Blackwell Ltd. 1994. Published by Blackwell Publishers. Cambridge, MA (www.iupui.edu/it/stratdir/tf8part3.html.)

Beck, U. 1986. ***Risikogesellschaft***. Frankfurt A.M.: Suhrkamp.

Bernas, B.M. Sr. O.S.B. 1988. Education as agent of social change: A national illusion. ***Philippine Journal of Education***, 67:247-249.

Bonnaccorsi, A., and A. Piccalugat. 1994. A theoretical framework for the evaluation of university-industry relationships. ***R&D Management***, 24(3).

Deckinger, E.L., J. M. Brink, H. Katzenstein and L. H. Primavera. 1989. How can advertising teachers better prepare students for entry-level advertising agency jobs? ***Journal of Advertising Research***, 29(6):37-46.

Edralin, D. 1992. The recruitment and hiring process of companies employing La Salle graduates. Manila: DLSU URCO, unpublished manuscript.

_____. 1999. Continuing professional/ technical education in the Philippines. CBE Working Paper Series. Series 1999-05. College of Business and Economics-Center for Business and Economics Research and Development.

_____. 1999. Market access issues and development of business services. DLSU-Manila: College of Business and Economics.

Gaedeke, R.M., D.H. Tootelian and B.F. Schaffer. 1983. Employers want motivated communicators for entry level marketing positions: Survey. Marketing News.

Garcia, D. 1973. ***Curriculum theory and application***. Quezon City: Alemar Publishers.

Gilchrist, R., and B. Roberts. 1974. ***Curriculum development: a humanized systems approach***. California : Fearon Publishers.

Gonzalez, A. 1998. The special role of the University-belt institutions of higher learning in Philippine tertiary education. ***Tanglaw***, 6(1):58-66.

Harvey, L., S. Moon and V. Geall. 1997. Graduates' work: Organizational change of students' attributes. Birmingham:

University of Central England, Centre for Research into Quality.

Internship Programs.com, Inc. 2000. www.internshipprograms.com/asp/Articles/article2.asp

Irigo-Barcelo, . T. 1990. The university: structure, function and role in the educational system. ***Unitas***, 63:399-411.

Kivinen, O. and R. Rinne. 1993. Educational qualifications and the labour market: A Scandinavian perspective. ***Higher Education and Industry***, 7(3):111-118.

Lauterborn, R. 1987. "Should advertising be taught?" ***Advertising Age***.

Morrow, A. 1982. Chair, schools council, national board of employment, education and training, in assessing and reporting student competencies for education, training and work: Directions for the 1990s. Australian Curriculum Studies Association, Workshop Report No. 3

Nugrapha, M. G. B. 1997. An evaluation of the skills/ competencies taught in business schools vis-à-vis those expected by business. Manila: *GSB Business Review*, 1(1):64-73.

Scott, J.D. and N.T. Frontczak. 1996. Ad executives grade new grads: The final exam that counts. ***Journal of Advertising Research***, 40-47.

Sycip, W. 1998. What companies can do for management education. ***World Executive Digest***.

Taba, H. 1962. ***Curriculum development: Theory and practice***. Garcourt, Brace and World, Inc.

Taylor, A. Education for industrial and 'Postindustrial' Purposes. ***Educational Policy***, 11(1):3-40.

Teichler, U. 1991. Towards a highly educated society. ***Higher Education Policy***, 4(4):11-20.

Toffler, A. 1980. ***The Third Wave***. New York: William Morrow and Company Inc.

Torralba, T. 1990. The role of the academe in research: A restatement of goals and objectives. ***Unitas***, 63: 412-420.

Tullao, T.S. Jr. 1999. Human resource master plan for higher education. Unpublished work.

Valisno, M. 1996. Making education work.

THE SUPPLY OF AND DEMAND FOR HIGHER EDUCATION GRADUATES IN THE PHILIPPINES

JULIET P. DAGUAY, Ph.D.
and
ROBERTO N. PADUA, Ph.D.
Mindanao Polytechnic State College

ABSTRACT

This study dealt with the supply-demand situation of graduates in five clusters of disciplines namely: Engineering/Technology, Agriculture/Fisheries, Sciences and Mathematics, Business and Commerce and Information Technology. It aimed to determine the magnitude, flow and quality of graduates, and gaps between the supply of and demand for graduates from higher education institutions. In order to validate the observations made on the national level data, catchment area analyses were done on selected economic zones, namely: Greater Cebu Economic Zone (GCEZ) for the Visayas; and Cagayan-Iligan Industrial Corridor (CIIC) for Mindanao. The results of the analyses revealed that the major producers of graduates were clusters of disciplines that had low rejection rates in admission and high retention rates. Specifically, It was found that Business and Commerce graduates outnumbered graduates in Engineering, Agriculture, Information Technology and Sciences. Consequently, there was a severe surplus in Business and Commerce graduates, as well as in selected Engineering courses. Due to the limited job prospects for new graduates in all five disciplines in the catchment areas analyzed, graduates are forced to accept jobs that are unrelated to their academic training.

I. INTRODUCTION

The Philippine higher education system is considered one of the most extensive in the world. It consists of 1,287 private colleges and universities and 110 state-funded tertiary institutions, excluding the count for local community colleges and universities (CHED, MIS Bulletin 1996). With such a huge system of higher education providers, it is expected that the labor market will be flooded with expectant graduates wishing to join the labor force every year.

A snap-shot of the supply-demand situation of graduates in higher education in the Philippines can be gleaned from the World Bank-funded project on teacher education graduates in the country conducted between 1992 to 1995 by the Department of Education, Culture and Sports (DECS) (Padua et al. 1995). For teacher education courses, the study revealed that of approximately 150,000 test takers in the licensure examination for teachers (PBET), only one-third or 50,000 passed. Of those who passed the examination, only a maximum of 15,000 teachers or roughly 30% got into the teaching profession. These figures indicate that: (a) about 100,000 graduates of teacher education courses are unable to get a teaching job for lack of appropriate licensure credentials; and (b) about 35,000 eligible teachers are not in the teaching force, even if they are qualified, for lack of teaching positions in the country every year. These findings bring to the fore two basic issues on the supply of and demand for higher education graduates. The first

issue is on the quality of graduates (in the case of teacher education, as indicated by the passing rate in licensure examinations). The other issue is on the labor market demand for these graduates.

Analyzing the supply-demand situation of higher education graduates is a complicated undertaking. A host of factors need to be considered and several questions to be raised. For instance, is there indeed an oversupply of qualified teachers in the basic education system? While the figures generated by the World Bank study (1995) tend to indicate that this is true, the reality in the field shows otherwise. The annual ceiling imposed by the Department of Budget and Management (DBM) on the number of teaching items given to DECS is an "artificial demand" which may or may not respond to the actual need in the field. Likewise, the quality of the supply of teachers cannot be measured by the results of licensure tests alone but on other considerations as well, like: (a) the quality of the teacher education institutions (TEI) that produced these graduates; and (b) the quality of student inputs into the teacher education programs, among others.

This paper dwells on the supply-demand situation of higher education graduates in the following fields or disciplines: (a) Engineering and Technology; (b) Science and Mathematics; (c) Business and Commerce; (d) Agriculture and Fisheries; and (e) Information Technology. For its analysis, the study focused on the magnitude, flow and gaps between the supply of and demand for graduates from higher education institutions based on past enrollment and employment trends in the disciplines considered.

II. ANALYTICAL DESIGN AND FRAMEWORK

The analytical design and framework of the study follows the World Bank-recommended 'stock flow' analysis on labor market information systems (World Bank 1990).

1. Supply of Graduates

The supply of graduates comes from two sources: (a) new graduates in the labor market, and (b) old graduates who have not found placement yet in the labor market (stocks). In the case of courses with licensure examinations, such as, Engineering and Accountancy, the new inputs consist of those who have successfully passed the licensure examinations. The supply equation is therefore given by:

(1) $S(t) = N(t) + O(t)$, $t=1,2,3,....$

where:
- $S(t)$ = supply at time t,
- $N(t)$ = new graduates at time t,
- $O(t)$ = stocks of graduates waiting for job at time t.

Moreover, the stocks of "graduates in waiting", O(t), can be deduced from the equation:

(2) $O(t) = S(t-1) - D(t-1)$

where:
- $S(t-1)$ = supply of graduates at time t-1,
- $D(t-1)$ = number of graduates absorbed at time t-1

The analytical framework requires knowledge of the magnitude of graduates at any given time t. These data can be obtained from the Commission on Higher Education (CHED), Management Information System Division.

2. Demand for the Graduates

The demand for the graduates of higher education institutions, D(t), at any time t is obtained from the equation:

(3) $D(t) = L(t) + A(t)$, $t = 1,2,3,....$

where:
- $D(t)$ = number of graduates demanded at time t,
- $L(t)$ = labor force at time t,
- $A(t)$ = crude attrition rate at time t.

The crude attrition rate or the rate of labor force turnover due to retirement and other cases is obtained from individual industries and establishments. At the national level, the demand for graduates is assumed to be equal to the number of workers in the labor force. The data needed for this analysis is obtained from the Bureau of Labor and Employment Statistics (BLES 1998).

The supply and demand equations provided in Equations (1) and (3) will not be able to capture some essential characteristics of the dynamics of the labor market. For instance, the number of self-employed graduates or underemployed graduates and the processes that led to the production of the observed number of graduates per year are either not available or could not be deduced from the information available at CHED.

The present study made use of the "catchment area" analysis to respond to the issues raised in the preceding paragraph. Catchment area analysis (CAA) was recommended by the World Bank study in 1993 (World Bank Primer 1993) as a means to capture finer details of the dynamics of supply and demand in a smaller zone of the country.

3. Catchment Area Analysis

Two catchment areas were considered for the study, namely: the Greater Cebu Economic Zone (GCEZ) and the Cagayan-Iligan Industrial Corridor (CIIC). For each zone, detailed analysis of both the supply and demand conditions were made. For instance, observations were recorded on the major producers of graduates in each zone taking careful note of the following: (a) admission requirements of the schools; (b) faculty qualifications; (c) level of accreditation of the programs under consideration; (d) general assessment of the survival rates per program; and (e) wherever applicable, an analysis of the performance in board examinations. These information, taken together, provided an indication on the quality of the higher education graduates in the selected zones.

Analysis of the demand for these graduates was similarly made in greater detail. The list of industrial establishments obtained from the Department of Trade and Industry (DTI) was used as the basis for a 20% stratified random sampling. The stratification factor used was the size of the establishment: large, medium and small, where the size of the establishment is determined by the number of workers, as follows: (a) more than 500 = large; (b) 200 to 500 = medium; and (c) below 200 = small.

For each individual establishment visited, the Human Resource Managers were interviewed to generate information on: (a) the manpower requirements of the industries and establishments relative to the discipline considered; (b) the hiring preferences as to the schools where these workers came from; (c) the turnover rates of the labor force; and (d) the establishments' hiring policies and salary scales.

III. SUPPLY-DEMAND FOR HIGHER EDUCATION GRADUATES: THE PHILIPPINE CASE

A national level analysis of the supply of and demand for higher education graduates in the disciplines provides the following:

1. Supply of Graduates

The latest enrollment figures obtained from CHED as of AY 1998-1999 revealed a total enrollment of 2,245,108 at the tertiary level. Table 1 shows the distribution of the enrollment across the different disciplines.

Enrollment in Business and Commerce courses accounted for over 30% of the total higher education enrollment (707,040); Engineering and Technology, the second largest group, accounted for a little less than 14%; Information Technology and Computer Science, a relatively new field of study, constituted 8.07%; Agriculture and Fisheries enrollment registered roughly 3%. Courses in Science and Mathematics were not so popular

Table 1. Enrollment in Higher Education, AY 1998-1999

	Cluster	Enrollment	Percentage
1.	Business and Commerce	707,040	31.49
2.	Engineering and Technology	313,920	13.98
3.	Teacher Education	289,886	12.91
4.	Science and Mathematics	25,685	1.14
5.	Information Technology/CS	181,238	8.07
6.	Health and Related Areas	204,610	9.11
7.	Humanities and Social Sciences	61,200	2.73
8.	Law and Jurisprudence	15,373	0.69
9.	Agriculture and Fisheries	78,806	3.51
10.	Other (Maritime, Criminology, Fine Arts, Religion and Theology, etc.)	367,330	16.37
	TOTAL	**2,245,008**	**100.00**

as evidenced by their enrollment levels which accounted for only a little over 1% (25,685).

In the Philippines, course preferences are often closely tied up with perceived job opportunities and the glamour associated with a particular course. For instance, the popularity of Business and Commerce courses among students may be related to the fact that the business world is perceived to offer a lot of job opportunities coupled with the students' perception of the glamour of the corporate ladder. Role models for successful businessmen in the Philippines abound, while very few successful Filipino scientists, technologists, engineers, or agriculturists can be identified to serve as positive role models for the students. More significantly, Information Technology has been noted as a fast-growing preference among students, despite its being a relatively new field of study, owing perhaps to the well-publicized success story of Bill Gates and the Microsoft.

From a policy point of view, if the intent of CHED is to attract more students in the Sciences, Agriculture and Fisheries, then a well-directed advocacy campaign coupled with a massive information drive about these disciplines need to be undertaken.

The student enrollment figures in higher education show the preferences of Filipino students for the courses that they would pursue. On the other hand, the number of graduates from the various higher education courses indicates how much the higher education sector is producing. Table 2 presents the number of graduates from the different disciplines for AY 1998-1999.

For academic year 1998-1999, total number of graduates was registered at 328,120. Consistent with the enrollment figures, Business and Commerce courses contributed close to 30% or 96,665 graduates; Engineering and Technology courses, 12%; Information Technology, Agriculture and Fisheries courses accounted for about 11%. Graduates of the Science courses accounted for 1.16%.

These figures have significant implications to the nation. If the graduates for the academic year were equally spread across the regions of the country, the figures would tend to indicate that only about 250 Science and Mathematics graduates, about 2,500 Engineers, and 1,000 Agriculturists would be available in each region. However, the disaggregated data from CHED-MIS (AY 1998-1999) for the academic year show that 20% of the graduates come from schools in

Table 2. Graduates from the Different Disciplines, AY 1998-1999

	Cluster	Graduates	Percentage
1.	Business and Commerce	96,665	29.46
2.	Engineering and Technology	38,919	11.86
3.	Teacher Education	45,545	13.88
4.	Science and Mathematics	3,791	1.16
5.	Information Technology/CS	19,494	5.94
6.	Health and Related Areas	47,483	14.47
7.	Humanities and Social Sciences	11,590	3.53
8.	Law and Jurisprudence	2,206	0.67
9.	Agriculture and Fisheries	15,633	4.76
10.	Other (Maritime, Criminology, Fine Arts, Religion and Theology, etc.)	46,794	14.27
	TOTAL	**328,120**	**100.00**

NCR, which means that even less graduates are available in the other regions of the country. Are these enough to supply the regional needs for high level manpower? This question is discussed in the next subsection on the demand for the graduates.

Meanwhile, there are other equally interesting questions that may be posed in relation to the country's production of higher education graduates. For instance, how fast is the country's higher education sector expanding? How efficient is the sector in producing the desired outputs?

Data obtained from CHED and DECS (1992-1999) show that the higher education enrollment is expanding at the rate of about 2.4% per year. This is consistent with the census data on population growth which is also expanding at the rate of about 2.0% per annum. The expansion in higher education enrollment is partly the reason for the rapid increase in the number of higher education institutions (HEIs) over the past decade. For instance, there were only 403 TEIs in 1993, while over 550 TEIs are now available (CHED 1996). The response to the increasing trend in enrollment need not be the establishment of more colleges and universities; rather, the expansion by existing HEIs of their scope of services to the students.

More crucial than the increasing trend in enrollment is the issue on the efficiency of the system in producing graduates as measured by the survival rates at the tertiary level. The crude survival rate estimate used in this study considered the number of graduates for year *n* divided by the number of enrollment in year *n-4* for a four-year degree program, or *n-5* for a five-year degree program. Thus, for example, the number of 1996 graduates were divided by the enrollment in 1992 per program. Using this procedure, the average survival rate over the years 1996, 1997, 1998 and 1999 and across the different disciplines was estimated to reach 20% (with a range between 10% to 30%).

The calculated figures indicate a very high mortality rate of about 80%, i.e., 80% of those who enroll will not be able to graduate on time. Such inefficiency in the system can be traced to many factors but perhaps, mainly due to the lax admission requirements of the schools and financial reasons on the part of the students.

In sum, the higher education system enrolls a relatively large number of students

(2,245,000 in AY 1998-1999) and graduates only about 20% (range 10% to 30%) of them. Moreover, the supply of graduates seems to be concentrated in a few courses, mainly in Business and Commerce (30%) and Teacher Education (14%) with very few graduates in the Sciences. The uneven distribution of both the inputs to higher education and the corresponding outputs characterize a higher education system that seems to respond to perceived market externalities, e.g., perceived job opportunities and glamour, rather than to the actual development needs of the nation, e.g., development of agriculture, fisheries and the sciences.

2. Demand for the Graduates

The country's labor market represents the single most important demand center for the higher education graduates. The BLES (1998) estimates that the percentage of workers and work positions requiring higher education degrees is only about 7.20% of the total labor force.

In the absence of a detailed demand data on a national scale, the demand figures were inferred from the information provided by BLES (1998) on the labor market. Equation (3) for the computation of the demand at time t was therefore modified as follows:

(4) $D(t) = L(t) - L(t-1)$, $t = 1,2,3,...$

where:

D(t) = demand at time t,
L(t) = labor market figure at time t for a particular sector,
L(t-1) = labor market figure at time t-1 for a particular sector.

Eight sectors are identified in the BLES (1998) data set. A matching was done between the manpower requirement of each sector and the higher education degrees needed for these sectors. Table 3 shows the demand for higher education graduates by the 8 economic sectors of the country.

Positive demands were noted in almost all sectors except for the mining and quarrying sector which continues to decline in terms of its manpower requirements. The Wholesale/Retail, Financing, and Insurance/Real Estate sectors which require Business and Commerce graduates, constitute the greatest bulk of demand for higher education graduate. For instance, from 1995 onwards, these two sectors combined require more than 40,000 new workers. The fact that positive demands were noted in almost all sectors should have been heralded as "good news" by the higher education providers. Table 4, however, shows that the supply of new gradates exceeds the demand for them.

The supply figures utilized in the computations for Table 4 were based on the following assumptions.

(a) Forty (40%) percent of the current year's graduates are absorbed by the labor force. Forty (40%) percent will find jobs in the succeeding year; and 20% in the year after. This is based on the BLES (1998) survey of an average waiting time of about 1 1/2 years.

(b) Current year's graduates plus 60% of the previous year's graduates and 20% of the graduates a year before that equals the pool of current supply of graduates.

These assumptions are quite conservative and are open to discussions. However, sensitivity analysis was conducted by changing the percentage of absorption to the labor force from 40% to 80% in increments of 10%. The analysis corroborated the following findings:

- Supply of graduates generally exceeds the demand for them except in the manufacturing sector which requires graduates of Mechanical Engineering and Information Technology;

- In the manufacturing sector, deficits in the supply continue to increase over the years despite the increase in the

Table 3. Demand for Higher Education Graduates

Sector	Higher Education Degrees Needed	Year						
		1990	1991	1992	1993	1994	1995	1996
Agriculture/ Fisheries	Agriculture/ Fisheries	20,160	10,900	32,775	27,495	17,520	20,155	18,125
Mining/ Quarrying	Mining Engineering	-2,808	1,100	525	-1,495	-2,880	-580	-450
Manufacturing	Mechanical Eng'g Infotech	-5,760	13,800	11,175	7,015	9,240	11,310	12,200
Electricity, Gas/H2O	Electrical Eng'g	-144	900	600	1,265	1,200	290	790
Wholesale and Retail	Business/ Commerce	2,592	5,100	3,225	5,635	9,240	16,530	16,000
Construction	Civil Eng'g	5,400	6,300	8,350	14,605	13,920	35,960	35,000
Transportation/ Communication	Electronics Eng'g, Infotech	1,800	4,500	4,650	10,005	12,240	12,325	12,700
Financing, Insurance, Real State	Business/ Commerce	2,664	3,000	1,575	6,785	1,560	6,525	6,500

production of graduates in Information Technology;

- A sector which also emerges as promising destination for more graduates in Electronics Engineering and Information Technology is the Communication and Transportation sector; and

- Very clearly, the country is in great surplus of Business and Commerce graduates.

IV. CATCHMENT AREA ANALYSIS

The dynamics of the supply of and demand for higher education graduates were examined in greater detail in the two catchment areas, namely: CIIC and GCEZ.

Cagayan-Iligan Industrial Corridor

The Cagayan-Iligan Industrial Corridor (CIIC) comprises the cities of Cagayan de Oro, Iligan and parts of Bukidnon province. In this economic zone, the higher education institutions examined were those having annual enrollment of at least 2,000 students. In the city of Cagayan de Oro, these institutions were Xavier University, Liceo de Cagayan University, Cagayan Capitol College, Cagayan de Oro College and Mindanao Polytechnic State College. In Iligan City, the institutions included were Mindanao State University-Iligan Institute of Technology, Iligan Capitol College, St. Michael's College and St. Peter's College. In the province of Bukidnon, Central Mindanao University and Bukidnon State College were included.

Table 4. Deficits and Surpluses of Higher Education Supply

Sector	Higher Education Degrees Needed	Year					
		1991	1992	1993	1994	1995	1996
Agriculture/ Fisheries	Agriculture/ Fisheries	12,491	-11,082	-17,189	3,193	5,147	5,250
Mining/ Quarrying	Mining Engineering	2,409	1,782	3,171	-1,498	-580	215
Manufacturing	Mechanical Engineering, Infotech	-6,782	-4,443	-3,307	-4,952	-5,004	-6,100
Electricity, Gas/H2O	Electrical Engineering	13,135	13,589	11,763	7,078	7,986	6,800
Wholesale and Retail	Business/ Commerce	49,838	48,892	42,459	46,759	29,240	24,280
Transportation/ Communication	Electronics Engineering, Infotech	6,553	7,306	6,585	-1,090	-5,921	-6,125
Financing, Insurance, Real State	Business/ Commerce	81,007	81,438	78,811	79,458	81,274	78,274

Relevant data on the demand for graduates were gathered from selected industries grouped according to size of employment and type of industry. The respondent-establishments comprise over 60% of the targeted industries found in the CIIC.

Supply of Graduates in the CIIC. As of AY 1998-1999, the total higher education enrollment in the various programs of the schools posted a gross figure of 23,856 which is about 1% of the national totals. The Engineering and Technology disciplines, being the most diverse fields, posted the highest share of this enrollment (42.96%), followed by Business and Commerce (33.90%). Science and Mathematics courses were least preferred with only 7.28% of the total enrollment. The combined total enrollment of Communications and Information Technology courses accounted for 18.4%.

With these enrollment figures in the schools at the CIIC, the researchers conducted an on site observation of the processes that take place in producing the graduates who, eventually, will become the labor market supply. In all the schools

observed, certain admission requirements were noted. However, the admission standards varied significantly. In Xavier University, for instance, the acceptance rate for first year applicants was only 25 to 30% of the total number of aspirants. In other private schools, the acceptance rates were quite high ranging from 60 to 80%. This is to be expected of private schools that are mainly tuition-dependent.

An almost open-admission policy needs to be reinforced by selective-retention criteria in these schools. As observed, however, schools that were very stringent in their admission policies were the same schools that imposed strict selective retention standards. In contrast, schools that admitted almost every applicant did not have strict selective retention criteria.

Selective retention of students can only be successfully imposed if the schools have qualified faculty. According to CHED, a master's degree in the discipline is required for all those teaching in college. None of the schools have complied with this requirement fully. More qualified faculty were noted in the schools that did impose strictly the selective-retention policy. These retention/selection processes eventually lead to the production of graduates in these schools. As of AY 1998-1999, only 2,791 graduates were produced by the major higher education providers mentioned broken down as follows: Business and Commerce, 1,196; Engineering and Technology, 1,041; Agriculture and Fisheries, 324; Science and Mathematics, 145; and Information Technology, 85. Unfortunately, about 60% of the Business/Commerce graduates were produced by the school whose admission and retention policies were quite lax. More than 50% of the Engineering and Technology graduates were produced by the three schools whose standards were considered very good within the zone as evidenced by their high rejection rates in admission (ranging from 60% to 80% rejection rates).

Demand for Higher Education Graduates in the CIIC. A survey of the 28 large establishments, 42 medium-sized establishments and 63 small-sized establishments in the CIIC revealed the following information:

- During the last five years, the industries in the CIIC absorbed only 3.76% of the total 3,964 graduates in all Engineering disciplines. More than 96%, therefore, had to look for jobs outside of the CIIC particularly in Cebu and the National Capital Region. Surpluses in the supply of Engineers in all fields of specialization were noted.

- Graduates in Agriculture and Fisheries courses look for jobs in the Food and Beverage industries, e.g., Del Monte Philippines Inc., Nestle Philippines or in Agri-based industries, e.g., Philippine Resins Inc., a prawn producer. Considering these industries as possible demand centers, data revealed that despite the fact that only 324 graduates in Agriculture/Fisheries were produced in AY 1998-1999, only 4 were actually absorbed by the industries. In the past five years, a surplus of 1,276 Agriculture graduates is noted. With an industrial absorption rate of less than 1%, graduates of Agriculture courses often become self-employed farmers or look for jobs that are not related to Agriculture.

- Most of the research departments of the industrial establishments in the CIIC are not functional. Consequently, of the 597 Science graduates over the last five years, only 91 found jobs in the establishments of CIIC, for an average absorption rate of 15.24%. Of those who found jobs, more than half are placed in colleges and universities as Science instructors.

- The situation in the field of Business and Commerce is more dismal. Over the last five years, of the 4,526 graduates in the discipline, only 165 found jobs in the CIIC establishments, or about 3.65% absorption rate in the labor force. This

situation reflects the scenario at the national level.

- The only upside in the demand for graduates is noted in Information Technology. Over the last decade, surplus in the supply of graduates registered a minimal level of 9 per year. However, trends indicate an average annual demand of about 17 new graduates which means that in the next five years, deficits in the supply of Information Technology graduates will be experienced in the CIIC zone.

In summary, the national scenario in the supply-demand situation for higher education graduates was made evident at the CIIC area. In all disciplines, supply of graduates exceeded the demand except in Information Technology wherein projections tend to indicate greater demand for graduates in this field in the next five years.

As a digression, the real dynamics of the labor market in the CIIC were examined. In particular, the relative price elasticity of demand in this market was studied to ascertain the fate of those who were not absorbed in the industrial establishments considered in the study.

Since the formal job markets for the graduates provided little opportunity for employment, many graduates, particularly in Business and Commerce, end up accepting jobs in business establishments as cashiers, salesgirls/boys or packers and are receiving salaries not commensurate to their qualifications. Thus, it can be surmised that massive underemployment exists.

An attempt was made to follow up the graduates of Engineering and Technology for AY 1998-1999 and AY 2000-2001 to determine how the graduates fared in their job search. The follow-up study revealed that a year after graduation, more than 85% of the Engineering graduates were not gainfully employed. Of those employed, the greater number (4.13%) ended up being sales representatives, or were working abroad (3.36%). The zone's labor market is simply not ready to absorb the number of graduates being produced by the schools in this area.

The Greater Cebu Economic Zone

The Greater Cebu Economic Zone (GCEZ) is composed of the cities of Cebu, Mactan, Mandaue and Tagbilaran. The zone is host to more than 500 business establishments concentrated at the Mactan Export Processing Zone. The major higher education providers in the zone are located in the cities of Cebu and Tagbilaran. Fifteen colleges and universities in the zone were visited by the research team.

Supply of Graduates in the GCEZ. The non-sectarian schools were the prime suppliers of the volume of student population. The average annual college population in Cebu is in excess of 130,000 and more than 20,000 graduate from college annually for an estimated survival rate of 15.38%. For this study, the Business and Commerce cluster posted the highest percentage of supply (59.60%), followed by Information Technology (16.74%), Sciences and Mathematics (15.63%) and Engineering and Technology (7.22%). Agriculture and Fisheries had the lowest share (0.82%).

In all the schools observed by the researchers through an on-site visit, certain admission requirements were noted. The College Entrance Examination, Grade Point Average in High School, together with I.Q. and Aptitude were common requirements among the higher education institutions for entry into tertiary education. The admission standards still varied significantly among the HEIs. In some private schools, the acceptance rates were quite high ranging from 60 to 80% compared to other schools which posted 25 to 30% acceptance rates for new applicants. These variations in the acceptance rates of the schools in this zone may very well imply that the quality of student inputs also differed significantly among schools.

Further scrutiny of the institutional processes revealed that the schools with very stringent admission policies also had stringent

retention requirements. Further, those with stringent retention policies had better faculty profile. Schools in this category contributed less to the volume of graduates in this zone. As of AY 1998-1999, Business and Commerce showed a remarkable volume of 6,020 aggregate graduates. Engineering and Technology followed closely with 4,321. Continuous decline in the number of graduates in Agriculture and Fisheries was noted, dipping as low as 160. Information Technology graduates showed robust signs of growth. From a mere 10 graduates in the base year (AY 1992-1993) there were 2,900 graduates in AY 1998-1999.

It must also be noted that the overall percentages in the Licensure Examination results were significantly low in both national and regional levels (34.3% and 44%, respectively). The lowest among the disciplines was Accountancy (15.36%, national; 11.23%, regional). The figures indicate excessive supply of graduates who did not pass the board examinations.

Demand for Higher Education Graduates in GCEZ. The magnitude of graduates from the 5 clusters of disciplines in a span of 10 years was 56,122 (stock of manpower supply). The magnitude of flow was 1,056. The surplus of stock was 55,066. For the Engineering courses, the average surplus was 6,837.37 (a shortage of job openings). For the Technology courses, the magnitude of graduates was 217 and the flow was 115 or an excess of 102 maximum. For Business and Commerce, the average surplus of stock was 9,628.33.

These figures indicate significant situation in the catchment area. It is evident that for the 5 clusters of disciplines, the 10-year stock surplus of 55,066 (or an average excess of about 551 graduates per annum) is beyond the capacity of the local labor market to absorb. Moreover, 17% of these surpluses are graduates of Business and Commerce courses (9,628 stock surplus) and 12% are Engineering graduates (6,837 stock surplus). Despite the fact that Business and Commerce graduates contributed immensely to the stock surplus, the schools continued to expand their enrollment in this discipline at a rate of about 3% per annum, thus further aggravating the supply-demand imbalance.

IV. CONCLUSIONS AND RECOMMENDATIONS

The delicate balance between the supply of and demand for higher education graduates in the Philippines in selected disciplines has been examined in this study. The examination generated information that would be useful to higher education policy makers in charting the course of the country's higher education system.

The analysis performed on the national level data for the supply of graduates and the corresponding data on market demand for them is admittedly a rough approximation of the realities in the field. Nonetheless, the detailed "catchment area" analysis served to capture the finer details of the dynamics of the supply-demand situation in strategic parts of the country. Consequently, a clearer picture of the supply-demand phenomenon is established.

Among the salient findings of the study are:

- On the supply side, the country's higher education enrollment expands at a rate of about 2.4% per annum while graduates from colleges and universities increase at about the same rate (between 1.80% to 2.4%) every year. Unlike the usual economic supply-demand situation, the situation in the labor market for higher education graduates shows that the "suppliers" continue to increase production regardless of the market demand for their products.

- Of the 5 disciplines studied, Business and Commerce graduates consistently outnumbered graduates in Engineering, Agriculture, Information Technology and the Sciences.

- Catchment-area analysis of the colleges and universities where these graduates came from revealed that the major producers of graduates were precisely those that had low rejection rates in admission and high retention rates. Moreover, only the well-established colleges and universities adhered to the CHED standards for faculty qualifications. All these have some implications on the quality of graduates being turned out by the higher education providers.

- On the demand side, the country's labor market is unable to absorb the volume of graduates being produced by the colleges and universities. In particular, severe surpluses of graduates in Business and Commerce and selected Engineering courses are noted. Even Food and Beverages and Agri-based establishments cannot absorb the Agriculture/Fisheries graduates, an indication that surpluses in these disciplines exist. The only upside on the demand side is the fact that demand for Information Technology experts continue to rise along with experts in Electronics and Communications Engineering.

- Due to the limited job prospects for new graduates in 5 disciplines in the catchment areas studied, graduates are forced to accept jobs that are unrelated to their academic training. The situation has led to the phenomenon of severe underemployment, at least in the two catchment areas analyzed.

On the basis of these findings, the study concludes that:

- The production of graduates in the 5 disciplines considered seems unresponsive to labor market demands. Colleges and universities offer courses that are popular among the students with little or no regard to the demands of the end-users.

- Due to the massive surpluses in the supply of Business and Commerce graduates, further production of student-graduates in this field will saturate the labor market to the point that most of the graduates will be either unemployed or underemployed. What little job opportunities may arise in the future for these students will be mostly reserved for graduates of schools with established national credibility.

- Certain specializations in Engineering have no tenable local market value. These include specializations in Mining, Electrical and Civil Engineering. Since data tend to indicate open opportunities for computer-literate graduates, these specializations will most probably resuscitate if enhanced through information technology-based approaches in the conduct of these courses.

- Employment opportunities for Agriculture and Fisheries graduates are not enough even if the demands by industries and government agencies were combined now or in the foreseeable future. Thus, graduates of these programs are expected to be entrepreneurial.

- Industrial establishments have not yet placed emphasis on Research and Development in their business ventures. Thus, even if the supply of Science graduates is relatively low, the demand for Science graduates by industrial establishments is still less than the supply provided. Multinationals locate their Research Divisions abroad while local industries do not have Science laboratories. In the foreseeable future, Science graduates will continue to find employment in the academe.

- Prospects for Information Technology experts continue to be bright. The local labor market is quite receptive to these graduates and even if the local labor market is saturated, the international labor arena provides a wide window of job opportunities for these graduates.

In the light of these conclusions, the study forwards the following policy recommendations:

- For CHED to strictly require a **Labor Market Survey** in conjunction with the usual feasibility study requirements for schools to open new programs. The **Labor Market Survey** will at least provide an indication of the employability of the graduates of the new programs.

- For CHED to institute a Business and Commerce Upgrading Project similar to that done to Maritime Schools. Standards need to be upgraded and schools will have to comply strictly with these standards. This recommendation, if accepted, will slow down the massive turnout of Business and Commerce graduates.

- For CHED to upgrade the Engineering courses through the infusion of more IT-based approaches to make them more relevant to the needs of the times.

- For the CHED Regional Offices to institute the establishment of a closer industry-academe linkage, perhaps, in the spirit of the Dual Training Law. This will ensure sensitivity of the supply to the requirements of industries or establishments in active hiring. Likewise, this recommendation will sensitize the local industries to the need for establishing scientific research laboratories to make them competitive at the same time, providing appropriate placements in the country for science graduates.

- Detailed and finer supply–demand study needs to be undertaken per discipline. Such studies could be undertaken once every 5 years by CHED.

- Finally, an annual **Job Advisory** should be initiated by CHED, in coordination with BLES.

REFERENCES:

Government Documents and Books:

BLES. 1998. Bureau of Labor and Employment Statistics.

CHED. 1996-1997-1998-1999. Statistical Bulletin.

CHED.1997 Directory of Higher Education in the Philippines.

CHED 1995 CMO Policies and Standards.

DOLE-BLES. 1995. Employment Hours and Survey, Manila.

DOLE-BLES. 1998. Labor market Monitor, Quarterly Monitoring Report, Region 10.

EDCOM Report. 1992.

NSCB. 1998. Philippine Statistical Yearbook.

NSO. 1995. Demographic Yearbook.

POEA. 1998. Overseas Employment Statistics 1982-1998.

PRC-CHED. 1999. A Statistical Report on the Performance of Schools in various Licensure Examinations.

World Bank 1990. Primer on Supply-Demand Analysis.

Brinkerhoff, David B. et al. ***Essentials of Sociology*** 3rd ed. Texas: Business Publications, Inc.

Padua, Roberto et al. 1995. The Demand for and Supply of Basic Education Teachers in the Philippines. Manila: BHE-DECS.

GRADUATE TRACER STUDY

ADRIANO A. ARCELO, Ph.D.

ABSTRACT

The study assessed the employability of the graduates of higher education institutions (HEIs). Specifically, it (a) assessed the quality and relevance of HEIs' curricular program; (b) identified variables that enhance employability; (c) evaluated innovative academic programs that have shown high level of employability; and (d) generated data on graduates for inclusion in CHED's Higher Education Management Information System.

The respondents of the study consisted of 6,701 graduates for SY 1994-1995 from 653 schools.

The study found that the following curricular programs had a relatively high level of employability: optometry, foreign service, computer engineering, electronics and communication engineering, computer science, accounting and industrial engineering. On the other hand, law, architecture, commerce (non-accounting) and chemical engineering had the most number of unemployed graduates.

In terms of socio-economic variables, the study found that graduates who would most probably get employed were: male, married, with high self-rating, products of the University of the Philippines, De La Salle University or Ateneo de Manila University. Primary reasons for unemployment were: not finding a job commensurate to one's academic preparation, lack of prestige of the graduate's alma mater, and lack of interest in getting a job.

On the matter of the job-education fit, graduates of dentistry, commerce, language, engineering and medicine found jobs for which their academic programs prepared them. On the other hand, graduates of home economics and liberal arts programs had the least job-education fit. But where there was a mismatch between academic qualifications and job requirements, economics and mass communications graduates exhibited greater flexibility and experienced less difficulty in finding a job.

I. INTRODUCTION

Education today must go beyond the academic realm. It must focus on providing the skills, knowledge and values that enable graduates to contribute meaningfully to accelerate economic, political, spiritual and social development and thus enhance their role in society as responsible and productive citizens. The enhancement of education's well-rounded function in economic growth, will, in turn, redound to the generation of more funds for the development of the education system. It is in this light that the study delved into the relationship between education and the labor market.

The study is based on the objectives of tertiary education, namely:

1. To provide a general educational program that will assist each individual to develop his potential as a human being, enhance the quality of citizen participation in the basic functions of society, and promote a sense of national identity, cultural

2. consciousness, moral integrity and spiritual vigor in every student;

3. To train the nation's manpower in the skills required for national development, and to instill and foster the appropriate and relevant attitudes, skills and knowledge to enable each individual to become a useful, productive and gainfully employed member of society;

4. To develop and maintain the integrity of the professions or disciplines that will provide leadership for the nation; and

5. To advance the frontiers of knowledge through research work, and apply the technology gained for improving the quality of human life and responding effectively to changing societal needs and conditions.

The relationship between education and development, as contained in the foregoing objectives of tertiary education, was the subject of two publications entitled: "Higher Education" and "Labor Market Study in the Philippines", popularly known as HELMS Reports I and II done in 1995 and 1997, respectively. These reports have been extensively cited in various academic journals and utilized in the formulation of education policies, the provision of academic and career guidance for college-bound students, and the conduct of other researches.

II. CONCEPTUAL FRAMEWORK

In determining the employability of graduates of higher educational institutions (HEIs), the phenomena of employment and unemployment are taken into consideration. Factors include assessment of college education; type of college education; age; sex; civil status; spouse's education, employment and income; parents' education, employment and income; and own early education (Figure 1). For the phenomenon of employment, the recruitment method and the waiting period are also considered, including other factors, such as sector, type of occupation, income, satisfaction and relevance to training background that can affect graduates' decisions to accept work. For the phenomenon of unemployment, lack of job openings, college and type of education, personal connections and unsatisfactory offers are considered (Figure 2). In assessing each of these factors, direct focus may be given to that aspect which can help lessen the gap between the pursuit of higher education and employment opportunities that the latter can offer, as well as the mismatch between the degree attained and the requirements of the job. Academic offerings as well as proper training in preparing graduates for the world of employment can also be assessed. If the main objective of colleges and universities is to facilitate their students' transition from the academe to the world of work, studies like this can show how effective the school's programs are and find other reasons why employment may be delayed after graduation. The labor market and government policies on employment can also be assessed to determine whether the education institutions are meeting the needs of both employers and employees.

If sufficient data were presented and include all possible factors that may affect employment and unemployment, the number of college graduates not being able to find jobs may be reduced. Incentives and assistance may be given especially to those who belong to lower income, employment and education groups. Students may also be given proper guidance on how to find the jobs that may best suit their degree and capability. Focusing on each factor that may affect these phenomena can help increase productivity which would benefit the country in the end. The framework therefore attempts to exhaust all possible areas that can affect the employability of the graduates.

III. OBJECTIVES

The study assessed the employability of the graduates of HEIs. More specifically, it:

1. Assessed the quality and relevance of HEIs' curricular programs;

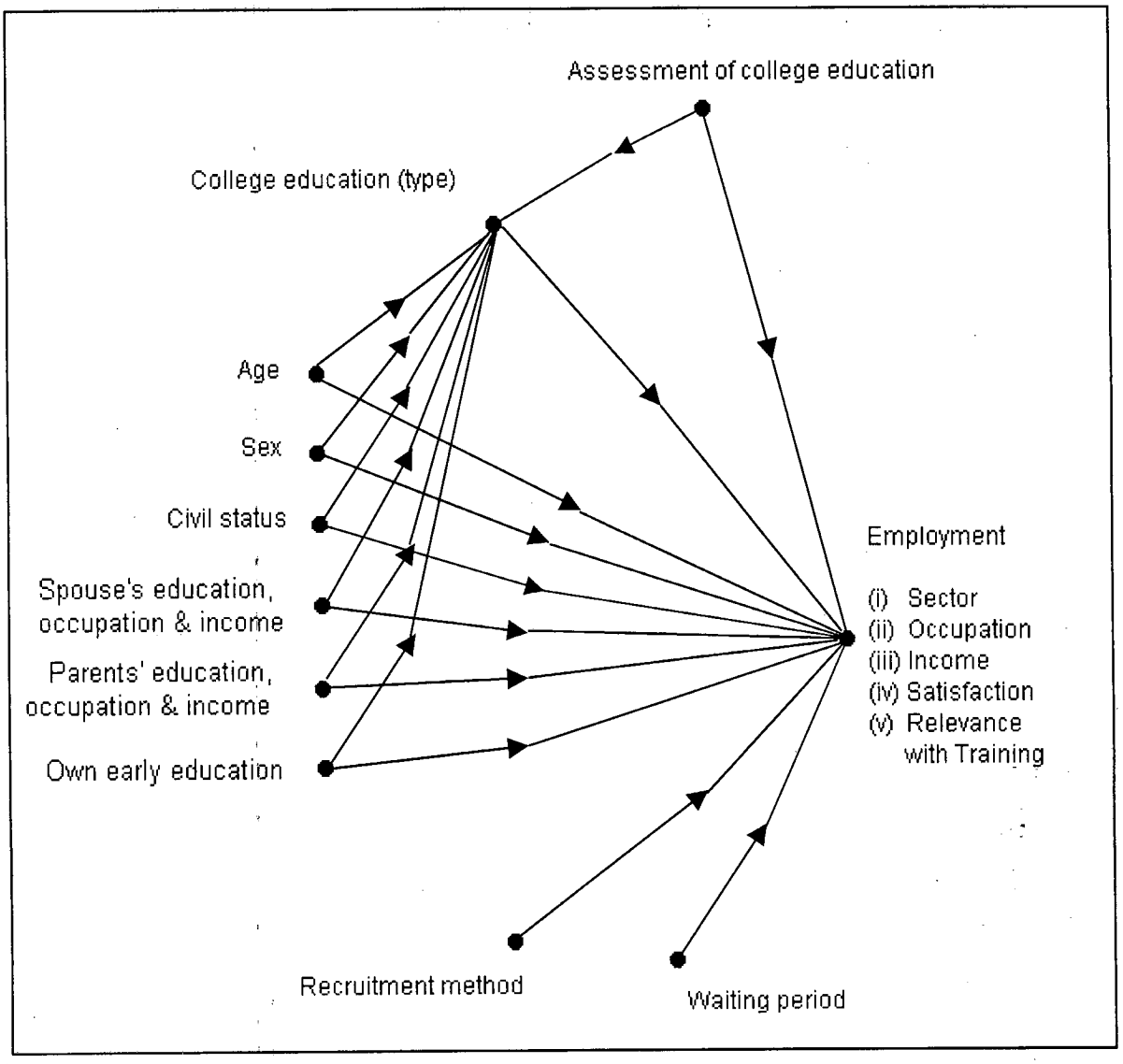


Figure 1. Phenomenon of Employment

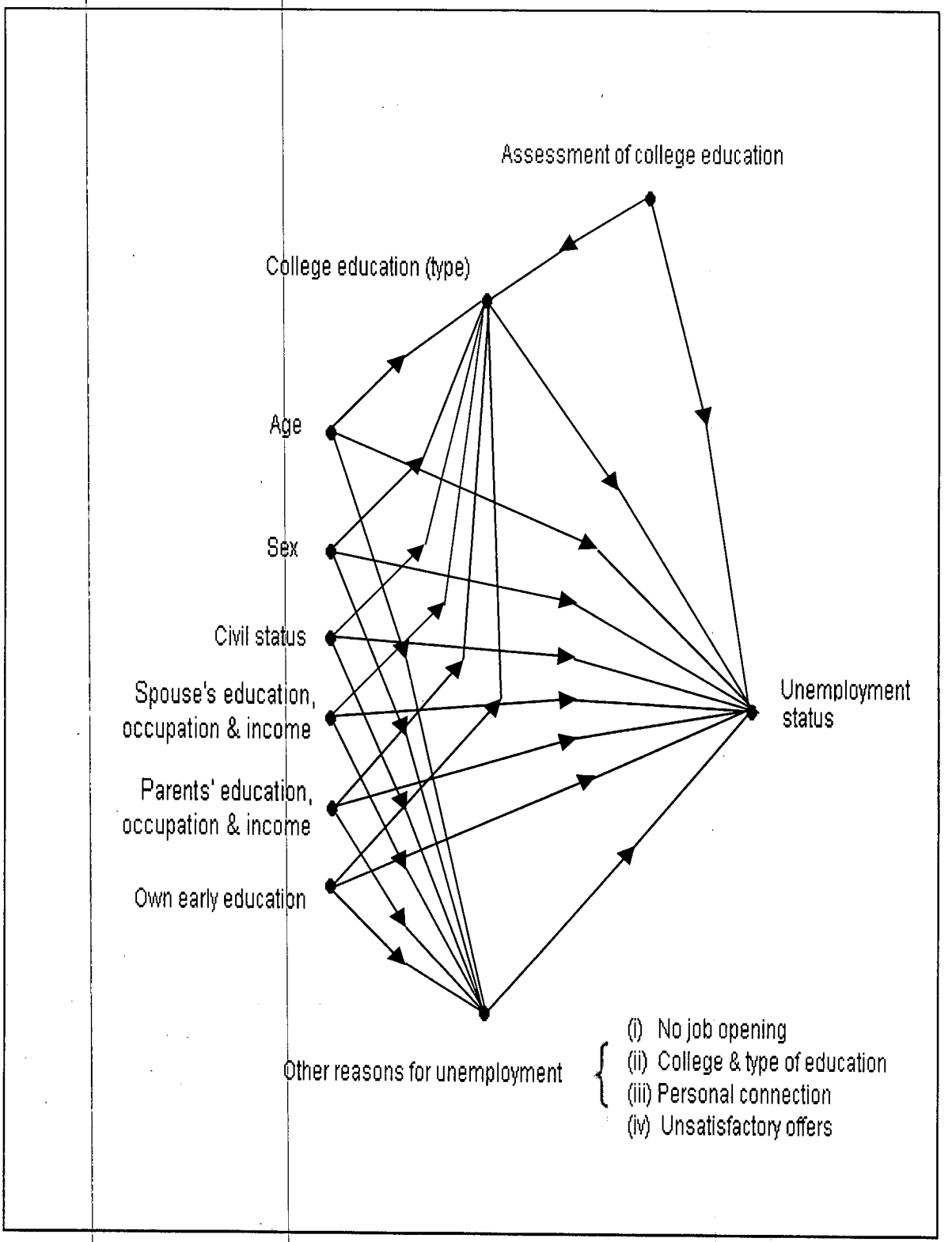


Figure 2. Phenomenon of Unemployment

2. Identified the variables that enhance employability such as socioeconomic variable, academic and school-related factors;

3. Evaluated innovative academic offerings that have shown high level of employability; and

4. Generated data on graduates for inclusion in CHED's Higher Education Management Information System (HEMIS) and other empirical data to substantiate policy decisions beneficial to HEIs and the higher education sector.

To attain the above-mentioned objectives, the following variables were analyzed:

1. Distribution of graduates of tertiary level according to age, sex, degree program, source of funds, parental education, occupation and income, spouse's education, occupation and income, and early education;

2. Factors influencing graduates' employability:

   a. Personal factors: age, sex, civil status, parental education, occupation and income, and spouse's education and income;

   b. Academic factors: higher educational attainment, degree program finished, other training, college performance, and sources of funding;

   c. Employment factors: nature of job taken, starting pay, waiting period, job satisfaction, relevance of training to job;

   d. Unemployment factors: no job available, no satisfactory job offer, lack of personal connections; and

   e. School-related factors: quality of education, high school and institutional affiliation and school typology.

3. Employment status of graduates of various fields of specialization considering the length of waiting period, starting pay, nature of the job taken, relevance of job to training, mobility and job satisfaction;

4. University and education institution's academic offering in relation to curriculum and institutional linkages; and

5. Labor market behavior relative to those who completed more than 10 years of schooling,

IV. METHODOLOGY

A. Sample and Sampling Technique

The respondents of the study were the graduates numbering 155,638 of tertiary levels of education from 1,237 colleges and universities in the Philippines during SY 1994-95.

Out of 1,237 colleges and universities, only 653 schools or 52.79% submitted their lists of graduates. The largest percentage retrieval of lists was from Region 6 with 63 schools, representing 69% of the total number of schools in the region, while the smallest was from ARMM with six schools or 32% retrieval rate.

Table 1 shows the population frames of graduates by degree programs as summarized in column 1. The fourth column shows the required sample size (ss) for each program based on the table for sample size for random selection of finite populations (Buzar and Mootgart, 1988, p. 156-157). Of the total 16,424 required samples (n), 40.80% or 6,701 graduates responded to the study.

Two sets of questionnaires were developed to obtain the data necessary for the study. The first questionnaire was used to survey employed college graduates, while the

Table 1. Population and Sample Frames of 1995 Graduates by Degree Programs

Degree Categorization	Population (N)	Required Sample (n)	Respondents (Sample Size-ss)	Percentage (ss/n x 100)
1. Engineering				
Aeronautics	561	231	15	6.49
Architecture	1,005	273	83	30.40
Chemical Engineering	833	268	91	33.96
Civil Engineering	3,091	437	163	37.30
Computer Engineering	1,300	323	58	17.96
Electronics & Comm. Engineering	1,994	364	133	36.54
Electrical Engineering	2,059	352	109	30.97
Industrial Engineering	1,666	368	100	27.17
Marine Engineering	4,067	532	114	21.43
Mechanical Engineering	2,810	416	112	26.92
Other Engineering Courses	1,789	346	77	22.25
Sub-Total	***21,175***	***3,910***	***1,055***	***26.98***
2. Health Allied Courses				
Medical Technology	23,324	445	190	42.70
Medicine	1,758	352	78	22.16
Nursing	16,510	1115	639	57.31
Physical Therapy	633	232	61	26.29
Other Health-Related Courses	535	212	9	4.25
Sub-Total	***42,760***	***2,356***	***977***	***41.47***
3. Commerce				
Accounting	7,960	664	418	62.95
Computer Science	4,831	470	288	61.28
Economics	1,161	305	116	38.03
Non-Accounting	21,925	1,368	962	70.32
Sub-Total	***35,877***	***2,807***	***1,784***	***63.56***
4. Sciences				
Natural Science	2,026	343	182	53.06
Nautical Science	8,118	1,200	258	21.50
Mathematics	536	222	78	35.14
Physical Science	641	236	55	23.31
Sub-Total	***11,321***	***2,001***	***573***	***28.64***
5. Social Science				
Fine Arts	440	138	99	71.74
Humanities	6,825	676	247	36.54
Social Science	3,621	472	274	58.05
Mass Communication	1,461	325	112	34.46
Sub-Total	***12,347***	***1,611***	***732***	***45.44***
6. Law				
Law	895	265	73	27.55
Criminology	1,574	315	89	28.25
Sub-Total	***2,469***	***580***	***162***	***27.93***

Table 1. Population and Sample Frames of 1995 Graduates by Degree Programs *(continued)*

Degree Categorization	Population (N)	Required Sample (n)	Respondents (Sample Size-ss)	Percentage (ss/n x 100)
7. Nutrition				
Home Economics	279	125	18	14.40
Nutrition & Dietetics	458	155	53	34.19
Sub-Total	***737***	***280***	***71***	***25.36***
8. Other Degrees				
Agriculture	3,796	490	185	37.76
Dentistry	735	191	88	46.07
Fisheries	299	128	32	25.00
Foreign Service	218	112	52	46.43
Optometry	267	109	18	16.51
Pharmacy	1,392	340	87	25.59
Teacher Education	21,866	1,328	852	64.16
Theology	193	103	9	8.74
Veterinary Medicine	186	78	24	30.77
Sub-Total	***28,952***	***2,879***	***1,347***	***46.79***
Grand Total	**155,638**	**16,424**	**6,701**	**40.80**

other was for the unemployed college graduates. The questionnaires consisted of structured or close-ended and unstructured or open-ended questions.

The questionnaires were pre-tested and content validated.

To determine the variables that explain the employment status of graduates, the logistic model was followed. The model uses a non-linear maximum likelihood method to identify the variables that significantly affect the probability that a graduate will find employment.

B. Findings

1. Socio-economic Profile of Graduates

The 1997 survey of 1995 graduates revealed the predominance of female graduates accounting for 61.32% of the total number of graduates surveyed. The greater proportion of female is a reflection of greater female enrollment in higher education. Percentage-wise, more female graduates of 1995 were unemployed (18.09%) compared to the unemployed male graduates (12.25%). Unemployment data at the national level show that unemployment among females was higher than among males (Table 2).

Unmarried respondents registered a higher unemployment rate of 23.94% compared to 6.18% for married graduates at the time of the survey. Similarly, singles accounted for the highest percentage of employed graduates at 57.17%. Widowed respondents had the lowest unemployment level at 0.03%. Those who were separated had a level of much higher unemployment at 0.19%. Total percentage of unemployed graduates was registered at 30.34% (Table 3).

Table 2. Distribution of Respondents by Gender and Employment Status

Gender	Employed		Unemployed		Total	
	f	%	f	%	f	%
Male	1,771	26.43	821	12.25	2,592	38.68
Female	2,897	43.23	1,212	18.09	4,109	61.32
Total	**4,668**	**69.66**	**2,033**	**30.34**	**6,701**	**100.00**

Table 3. Distribution of Respondents by Civil Status and Employment Status

Civil Status	Employed		Unemployed		Total	
	f	%	f	%	f	%
Single	3,831	57.17	1,604	23.94	5,435	81.11
Married	813	12.13	414	6.18	1,227	18.31
Separated	17	0.25	13	0.19	30	0.45
Widowed	7	0.10	2	0.03	9	0.13
Total	**4,668**	**69.66**	**2,033**	**30.34**	**6,701**	**100.00**

2. Employment of Graduates

Employment is heavily influenced by a person's capabilities. In gauging the capability of graduates, self-rating was used in the survey, with 1.3% of the graduates rating themselves "excellent"; 28.4%, "above average"; 67.6%, "average"; 1.9%, "below average"; and 0.1%, "poor". Table 4 shows the percentage distribution of employed and unemployed graduates categorized according to their self-ratings. Specifically, among those employed graduates were 1.1% with excellent performance, 22.6% with above average performance, and 44.3% with average performance in college.

Academic self-rating had some variations across typology of colleges and universities. Among the graduates of the De La Salle University, there was a high self-rating of "excellent" at 1.78%. Next cluster of graduates who rated themselves high were the graduates of University of the Philippines, and other private non-sectarian schools (Table 5).

Additional results of the survey are as follows:

- Job search after graduation ranged from less than six months to more than 24 months, or an average of 4.2 months (Table 6);
- Graduates with the shortest waiting periods came from the University of the Philippines (1.82 months), De La Salle University (2.42 months), and Ateneo de Manila University (2.91 months) (Table 7);
- Mean period of job search was shortest for medicine graduates (1.87 months), longest for criminology graduates (8.67 months), and fast average (4.2 months) for graduates of Electrical Engineering,

Table 4. Assessment of 1995 Graduates College Performance

College Performance	Employed		Unemployed		Total	
	f	%	f	%	f	%
Poor	7	0.1			7	0.1
Below Average	73	1.1	57	0.9	130	1.9
Average	2,966	44.3	1,561	23.3	4,527	67.6
Above Average	1,517	22.6	387	5.8	1,904	28.4
Excellent	74	1.1	12	0.2	86	1.3
No Answer	31	0.5	16	0.2	47	0.7
Total	**4,668**	**69.7**	**2,033**	**30.3**	**6,701**	**100.0**

Table 5. Distribution of Employed 1995 Graduate Respondents by Type of School and by College Performance Assessment

Type of School	Employed													
	Poor		Below Ave		Average		Above Ave		Excellent		No Answer		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Univ. of the Philippines	0	0.00	2	1.71	74	63.25	38	32.48	2	1.71	1	0.85	117	100.00
Other State Universities	0	0.00	12	1.81	421	63.60	215	32.48	10	1.51	4	0.60	662	100.00
De La Salle University	0	0.00	3	1.78	107	63.31	55	32.54	3	1.78	1	0.59	169	100.00
Ateneo De Manila	0	0.00	1	1.49	43	64.18	22	32.84	1	1.49	0	0.00	67	100.00
Other Private Sectarian	4	0.25	23	1.44	1014	63.53	519	32.52	25	1.57	11	0.69	1596	100.00
Private Non-Sectarian	3	0.15	32	1.56	1307	63.54	668	32.47	33	1.60	14	0.68	2057	100.00
Total	**7**	**0.15**	**73**	**1.56**	**2966**	**63.54**	**1517**	**32.50**	**74**	**1.59**	**31**	**0.66**	**4668**	**100.00**

Table 6. Job Search after Graduation

Search Period	*N*	*%*
Below 6 months	2,546	54.54
6-11 months	395	8.46
12-17 months	667	14.29
18-24 months	218	4.67
More than 24 months	50	1.07
No Answer	792	16.97
Total	***4,668***	***100.00***

Table 7. Mean Period of Job Search After Actively Looking for a Job by Type of School

Type of School	n	Mean (in months)	Standard Deviation	No Answer	Total
University of the Philippines	50	1.8	2.26	67	117
De La Salle University	85	2.4	3.26	84	169
Ateneo De Manila	38	2.9	4.48	29	67
Other Private Sectarian	954	3.9	5.32	642	1,596
Non-Profit/Foundation	105	6.2	6.28	0	105
Private Non-Sectarian	1,015	4.4	5.49	937	1,952
Other State Universities	299	5.3	7.01	346	645
Local Colleges & Universities	17	4.5	6.72	0	17
Total	***2,563***	***4.3***	***5.60***	***2105***	***4,668***

Medical Technology and Social Sciences (Table 8);

- Reasons for long job search mentioned by respondents include:

  a. non-availability of job opportunities;
  b. job offers having no opportunity for advancement;
  c. no information on vacancies;
  d. working conditions not satisfactory;
  e. low salary offered; and
  f. work site far from home (Table 9);

- As to the occupation of graduates, teachers, priests, nuns, pastors and religious workers comprised the largest group at 16% (Table 10);

- The private education sector supplies majority of qualified manpower, even at the higher-level occupational classifications covering administrative, executive and managerial workers as well as professional, technical and related workers (Table 11);

- Graduates of the academically elite institutions, such as the University of the Philippines, De La Salle University and Ateneo de Manila University, however, registered a proportionate share in the lower occupational categories (Table 12).

3. Unemployment of Graduates

Paramount reasons for not finding a job cited by unemployed 1995 graduates were: not finding a job commensurate to one's academic preparation, lack of prestige of the graduate's alma mater, and lack of interest in getting a job (Table 13).

Among the unemployed, the following courses had the most number of unemployed: Law (20.55%); Architecture (20.48%); Commerce (non-accounting) (20.48%); and Chemical Engineering (19.78%) (Table14).

Graduates of academically elite institutions, specifically Ateneo De Manila University (0.21%), University of the Philippines (0.46%) and De La Salle University (0.54%) registered the lowest level of unemployment (Table 15).

4. The Problem of Job-Education Mismatch

In general, there was better job-education fit in the following academic programs: Dentistry, Commerce, Language, Engineering

Table 8. Mean Period of Job Search After Actively Looking for Work by Degree

Degrees	Respondents Who Answered	Mean (in months)	Standard Deviation	Respondents Who Did Not Answer	Total Respondents
Medicine	35	1.87	3.40	19	54
Chemical Engineering	52	2.40	2.93	11	63
Veterinary Medicine	10	2.43	3.51	7	17
Optometry	13	2.48	3.80	0	13
Law	41	2.53	4.55	10	51
Physical Therapy	36	2.82	3.62	6	42
Computer Engineering	32	2.87	4.97	8	40
Architecture	40	2.98	4.50	18	58
Computer Science	128	3.12	4.19	73	201
Accounting	184	3.30	50.20	107	291
Physical Science	22	3.31	3.82	16	38
Mathematics	24	3.36	3.97	30	54
Mass Communication	48	3.40	4.05	30	78
Non-Accounting	376	3.53	4.76	294	670
Natural Science	76	3.59	4.69	51	127
Humanities	87	3.64	4.29	85	172
Dentistry	36	3.65	5.34	25	61
Civil Engineering	67	3.71	4.32	47	114
Mechanical Engineering	51	3.73	4.04	27	78
Pharmacy	40	3.78	4.71	21	61
Fine Arts	44	3.93	4.95	25	69
Electrical Engineering	76	4.14	4.86	0	76
Medical Technology	69	4.25	4.70	63	132
Social Science	101	4.36	5.22	90	191
Foreign Service	33	4.64	5.89	3	36

Table 8. Mean Period of Job Search After Actively Looking for Work by Degree *(continued)*

Degrees	Respondents Who Answered	Mean (in months)	Standard Deviation	Respondents Who Did Not Answer	Total Respondents
Economics	41	4.71	7.64	40	81
Fisheries	11	4.91	4.23	11	22
Industrial Engineering	39	5.13	7.15	31	70
Elect. & Comm. Engineering	52	5.16	6.05	41	93
Nursing	208	5.32	6.86	237	445
Teacher Education	266	5.64	6.84	328	594
Agriculture	59	5.68	7.25	70	129
Nutrition and Dietetics	12	7.27	8.61	25	37
Nautical Science	50	7.93	6.39	130	180
Other Engineering Courses	24	7.96	8.49	30	54
Marine Engineering	25	8.42	7.10	54	79
Criminology	28	8.67	8.12	34	62
Aeronautics	0	0	0	10	10
Home Economics	0	0	0	13	13
Theology	0	0	0	6	6
Other Health Related Courses	0	0	0	6	6
Total	***2,536***			***2,132***	***4,668***

Table 9. Reasons for Long Job Search

Reasons	Waiting Period
No job opportunities	3.12
Job offer has no opportunity for advancement	3.1
No information on vacancies	3.03
Work conditions not satisfactory	2.84
Salary offer too low	2.72
Job too far from home	2.56

Table 10 . Occupation of Graduates

Occupations	N	%
I. Professional, Technical and Related Workers	***2,041***	***43.72***
Scientists: Chemists, Physicists, Natural Scientists	18	0.39
Architects, Engineers, Actuarians, etc.	383	8.20
Health Professionals: Doctors, Dentists, Nurses, Midwives, Pharmacists, Veterinarians	505	10.82
Artists, Performers, Musicians	37	0.79
Accountants, Auditors	169	3.62
Teachers, Priest, Nuns/Sisters, Pastors, Religious Workers	746	15.98
Social Scientists: Economists, Sociologists, etc.	53	1.14
Computer Engineers, Computer Programmers, System Analysts	130	2.78
Lawyers	26	0.56
II. Administrative, Executive, Managerial Workers	***534***	***11.44***
Senators, Congressmen, Government Agency Directors, Administrators, Executives	64	1.37
Managers	187	4.01
Supervisors, Officers	261	5.59
Journalists, Writers, Broadcast/Media Workers	22	0.47
III. Clerical and Related Workers	***1,225***	***26.24***
Secretary, Bookkeepers, Cashier, Bank Teller	683	14.63
Computer Operator, Data Encoder	98	2.10
Transport and Communications Clerks, Messengers, Operators, Utility/Maintenance Workers	444	9.51
IV. Sales	***437***	***9.36***
Wholesale/Retail Mangers/Supervisors, Marketing	233	4.99
Salesmen, Purchasing Agents, Buyers	127	2.72
Insurance Agents, Real State Agents/Salesmen, Business Services Officers	77	1.65
V. Service	***146***	***3.13***
Waiters/Waitresses, Caterers, Hotel Workers	33	0.71
Policemen, Soldiers, Firemen, Security Guard	76	1.63
Entertainers	10	0.21
Flight Stewards/Stewardesses, Airline Workers	22	0.47
Domestic Workers	5	0.11
VI. Agriculture	***17***	***0.36***
Farmers, Agricultural Workers, Plantation Workers	17	0.36
VII. Production, Transport, Mining, Construction	***222***	***4.76***
Production Workers, Factory Workers	34	0.73
Construction Workers	9	0.19
Drivers, Mechanics	27	0.58
Seamen, Marine Transport	73	1.56
Machine Operators, Technicians	46	0.99
Electricians	33	0.71
VIII. Employee/Government Employee	***12***	***0.26***
IX. No Answer	***34***	***0.73***
TOTAL	**4,668**	**100.00**

Table 11. Occupational Classification of Employed Graduates by Classification of School

Occupational Classification	Public		Private		Total	
	f	%	f	%	f	%
Professional, Technical and Related Workers	341	7.31	1,700	36.42	2,041	43.72
Administrative, Executive, Managerial Workers	89	1.91	445	9.53	534	11.44
Clerical and Related Workers	204	4.37	1,021	21.87	1,225	26.24
Sales	73	1.56	364	7.80	437	9.36
Service	24	0.51	122	2.61	146	3.13
Agriculture	3	0.06	14	0.30	17	0.36
Production, Transport, Mining, Construction	37	0.79	185	3.96	222	4.76
Employee/Government Employee	2	0.04	10	0.21	12	0.26
No Answer	6	0.13	28	0.60	34	0.73
Total	**779**	**16.69**	**3,889**	**83.31**	**4,668**	**100.00**

Table 12. Occupational Classification of Employed Graduates by Type of School

Occupational Classification	University of the Philippines		Other SUCs		De La Salle University		Ateneo de Manila University		Other Private Sectarian		Private Non-Sectarian		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Professional, Technical and Related Workers	51	1.10	289	6.20	74	1.58	29	0.63	698	14.95	899	19.27	2,041	43.72
Administrative, Executive, Managerial Workers	13	0.29	76	1.62	19	0.41	8	0.16	183	3.91	235	5.04	534	11.44
Clerical and Related Workers	31	0.66	174	3.72	44	0.95	18	0.38	419	8.97	540	11.56	1,225	26.24
Sales	11	0.23	62	1.33	16	0.34	6	0.13	149	3.20	193	4.13	437	9.36
Service	4	0.08	21	0.44	5	0.11	2	0.04	50	1.07	64	1.38	146	3.13
Agriculture	0	0.01	2	0.05	1	0.01	0	0.01	6	0.12	7	0.16	17	0.36
Production, Transport, Mining, Construction	6	0.12	31	0.67	8	0.17	3	0.07	76	1.63	98	2.10	222	4.76
Employee/Government Employee	0	0.01	2	0.04	0	0.01	0	0.00	4	0.09	5	0.11	12	0.26
No Answer	1	0.02	5	0.10	1	0.03	0	0.01	12	0.25	15	0.32	34	0.73
Total	**117**	**2.51**	**662**	**14.18**	**169**	**3.62**	**67**	**1.44**	**1,596**	**34.19**	**2,057**	**44.07**	**4,668**	**100.00**

Table13. Reasons for Unemployment

Reasons	*%*	*Rank*
No job opening in field of specialization	10.87	1
Lack of professional eligibility requirements (board exam, etc.)	10.69	2
No interest in getting a job	10.56	3
Starting pay is low	10.51	4
College where I studied is not prestigious	10.23	5
Family situation prevents me from working	9.28	6
No connection in getting a job	9.60	7
No job opening for anyone	9.56	8
Inadequate experience	9.10	9
No job opening within the vicinity of my residence	9.07	10
Total	***100.00***	

Table 14. Academic Programs in Terms of Unemployment Status of Graduates

Programs	*%*
Optometry	5.56
Foreign Service	13.46
Computer Engineering	13.79
Electronics and Communication Engineering	18.05
Computer Science	18.06
Accounting	18.18
Industrial Engineering	19.00
Chemical Engineering	19.78
Commerce (Non-Accounting)	20.48
Architecture	20.48
Law	20.55

Tabel 15. Employment Status of Graduates

Type of School	Employed		Unemployed		Total	
	No.	%	No.	%	No.	%
University of the Philippines	117	1.75	31	0.46	148	2.21
Other State Universities	662	9.88	400	5.97	1,062	15.85
De La Salle University	169	2.52	36	0.54	205	3.06
Ateneo de Manila University	67	1.00	14	0.21	81	1.21
Other Private Sectarian	1,596	23.82	502	7.49	2,098	31.31
Private Non-Sectarian	2,057	30.70	1,050	15.67	3,107	46.37
Total	**4,668**	**69.66**	**2,033**	**30.34**	**6,701**	**100.00**

and Medicine (Table 16). On the other hand, academic programs with the least job-education fit were home economics and other liberal arts programs (Table 17).

Academic programs that exhibited greater flexibility in fitting into various jobs available in the labor market were commerce and business administration where graduates were employed in jobs requiring computer literacy, economics, engineering, mass communication, and teacher education, which also showed flexibility in meeting the requirements of various jobs. It was specifically observed that teacher education graduates were employed in jobs requiring academic preparation in agriculture, economics, fisheries, home economics, and language.

V. CONCLUSIONS

Based on the findings of the tracer study, the following conclusions may be drawn:

1. Inadequacy of Employment Opportunities

The information gathered from the survey respondents indicated that the slow pace of economic development in the Philippines and the government's inadequate employment generation program are two of the major reasons for unemployment in the Philippines.

2. The Problem of Mismatch

The tracer study indicated that achieving a perfect match between academic degrees and the requirements of a job is close to impossible. For one, academic programs are not homogeneous. Neither is there a homogeneous need among the various jobs available in the labor market. Thus, college degrees should prepare graduates for various requirements in the world of work. Such preparation could be enhanced by a strong general education program which allows for greater flexibility in responding to the changing demands of the world of work. Moreover, the many innovative changes brought about by advances in technology and telecommunications dictate the need for graduates who are characterized by the following qualities: flexibility; creativity; the ability to contribute to innovation; an aptitude for lifelong learning; versatility in terms of generic skills which cut across different disciplines; and literacy in areas of knowledge which form the basis for various professional skills; for instance, in the area of new technologies. There are obvious reasons for this emerging trend:

First, it is generally assumed that specialized professional knowledge becomes more quickly obsolete than in the past. This is one of the major reasons why the concept of lifelong learning and lifelong professional education has been gaining currency;

Second, there is no clear demarcation line in terms of knowledge derived from different disciplines in a growing number of professions and positions within companies;

Third, with the greater access to higher education and the dynamic changes in the socio-economic scenario, there is bound to be a mismatch between the skills of the graduates and the demands of the business and industry sector. Flexible and generally educated persons are expected to be able to handle the friction that may arise from the lack of congruence between their academic background and the requirements of the workplace, and to adjust more easily to certain job assignments which are not anticipated. At the same time, however, employers today tend to put a premium on a type of competence which does not fit the generalist versus specialist dimensions. Another set of skills is required which are usually referred to as targeted general competencies such as problem-solving abilities. This means that graduates are expected to be able to transfer their competencies from the school to the company; they should be able to apply the theories learned in the classroom to the actual workplace.

Table 16. Academic Programs with High Percentage of Employment in a Job Consistent to Academic Preparation

Academic Program Completed	*Percentage Employed in a Job Consistent with Academic Preparation*
Dentistry	65.71
Commerce	63.86
Language	60.87
Engineering	59.90
Medicine	57.53
Nautical Science	48.36
Veterinary Medicine	43.48
Marine Engineering	42.86
Architecture	42.45
Teacher Education	41.92
Nursing	40.99
Law	39.38

Table 17. Academic Programs with Low Percentage of Employment in a Job Consistent to Academic Preparation

Academic Program Completed	*Percentage of Graduates Employed Consistent with Academic Preparation*
Home Economics	13.10
Music	14.08
Economics	17.33
Foreign Service	19.49
Humanities	19.69
Physical Science	20.28
Fisheries	21.13
Nutrition and Dietetics	21.43
Mathematics	22.93
Agriculture	25.84
Fine Arts	29.22
Social Sciences	29.28
Physical Therapy	30.14
Medical Technology	37.76
Computer Science	38.46

3. The Need for a Quality Assurance Program

As shown in the tracer study, it pays to be a graduate of academically elite institutions, such as the University of the Philippines, Ateneo de Manila University, and De La Salle University. While it is not possible for all graduates to be homogeneous in terms of quality, there has to be some means of determining the minimum acceptable quality for the outcomes of higher education, so that the country may be able to compete in the global market.

4. The Dominant Role of the Private Education Sector

The tracer study indicated that the magnitude of the contribution of the private education sector in the production of the country's highly qualified manpower has always been impressive, estimated to be way above 80% of those who have joined the work force. This constitutes the dominant role of the private education sector in the delivery of educational services to the country's citizenry.

VI. RECOMMENDATIONS

In view of the findings of the study and the conclusions that were drawn, the following are recommended for the overall improvement of the higher education sector in the country:

1. Creation of Employment Opportunities

The solution to the problem of unemployment in the Philippines may be found in an improved economy. The government would have to pump-prime the economy and create new jobs in order to increase employment opportunities in the labor market.

2. Establishment of stronger linkages between the academe and the business and industry sector

There is a need to forge stronger linkages between HEIs and the world of work, toward fostering greater communication and cooperation between these two sectors, as a means of improving education and employment opportunities for graduates. The following are two compelling reasons for establishing these strong linkages:

First, it is very difficult to identify the future tasks of graduates and the competencies that will be expected of them. Instead of expecting companies to set up a blueprint of qualification requirements, it is better to have constant communication between schools and companies to ensure the right signals.

Second, school administrators admit that they cannot prepare students well for the world of work within the framework of purely class instruction. Thus, experiential learning is viewed as a powerful instrument in supplementing cognitive processes of learning which are clearly separated from the world of work.

In order to forge stronger linkages between universities and the world of work, the following strategies are advocated: the involvement of practitioners in the development of the curricula; the participation of the business and industry sector in decision-making within the academe through memberships in the schools' board of trustees; part-time teaching stints of practitioners; the internships of students prior to or during their course of study; the involvement of students in research projects sponsored by companies; and the cooperation of business executives in career counseling of students and the job placement of graduates.

While recommending this close cooperation between the academe and the business and industry sector, however, the findings and conclusions of the tracer study indicate that higher education institutions should see to it that, in their attempt to structure instruction towards the immediate needs of companies, they should not lose sight of their major function of fostering critical

thinking to prepare their graduates for future indeterminate tasks, and to empower them to make meaningful intellectual contributions to their employers and to the society, in general.

3. Institutionalization of a Quality Assurance Program

In order to improve the employability of their graduates, education institutions would have to develop the minimum academic standards of acceptable quality, so that their graduates would be at least on equal footing with the graduates of other schools when competing for jobs in the labor market. The tracer study shows very clearly the competitive edge of graduates of so-called academically elite educational institutions, such as the University of the Philippines, Ateneo de Manila University and De La Salle University, over the graduates of other schools. A quality benchmark that will approximate the standards of these elite schools would have to be defined. Further, all HEIs should be provided with financial support as incentive for their compliance to the minimum academic standards of acceptable quality.

Another way to improve the quality of education and, consequently, improve the graduates' chances of landing a job, is accreditation. As shown in the tracer study, the accreditation status of HEIs has a significant impact on or relationship to the employability of graduates. All colleges and universities should, therefore, be enjoined to participate in the accreditation process.

To expedite the attainment of world-class quality in higher education, colleges and universities should be encouraged to pursue quality assurance programs on a holistic basis, which would be global in scope but local in focus to reflect regional diversity and the unique features of the community being served. The thrust of the quality assurance program should be the development of students and the public being served; thus, enhancing the contribution of higher education to the development of the country.

4. Enactment of Supportive Legislation for the Private Education Sector

Since private HEIs are making a bigger contribution to the production of the country's manpower resources, they should be given recognition and support through the passage of legislation that would give them greater leeway in the development of their curricula, instead of the enactment of destructive proposals in Congress that violate their right to academic freedom. In general, private HEIs should be allowed to grow and flourish, consistent with their right to academic freedom as enshrined in the Philippine Constitution, for it is only with the exercise of full autonomy that these institutions would be able to enhance their role in the development of the country.

ABOUT THE AUTHORS

Dr. Estefania S. de Guzman holds a Ph.D. degree in Education from the University of the Philippines in Diliman with a specialized training in Research and Evaluation. She is, at present, the Vice-President for Academic Affairs of the Philippine Normal University. Dr. de Guzman has written a number of technical papers, reports and articles on education issues and concerns.

Dr. Flordeliza C. Reyes obtained the Ph.D. degree in Educational Management, M.S. in Mathematics Education, and B.S. Education major in Mathematics (*cum laude*) degrees from Centro Escolar University-Manila. She is a full-time professor in the graduate programs of the Educational Leadership and Management Department of the College of Education, De La Salle University-Manila where she teaches applied statistics, research and educational management courses. Dr. Reyes has authored several books in education, the most recent of which are *Statistics for Beginners, Applied Basic Statistics and Curriculum Engineering: A Guidebook for Educators and School Managers,* and *Unveiling Teaching Expertise*, published in 2001 and 2002, respectively.

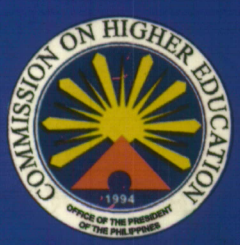
Dr. Milagros D. Ibe is a holder of the M.A. Ed. degree (Curriculum) from the University of the Philippines, Diliman; M.A. and Ph. D. degrees in Mathematics and Mathematics Education, respectively, from the University of Toronto, Canada through a fellowship under the Colombo Plan. She is, at present, connected with various institutions in different capacities, to wit: as Consultant to the Professional Regulation Commission, as Faculty of the UP Open University, as Professor Emeritus of the University of the Philippines in Diliman, and as Dean of Graduate School of Miriam College in Quezon City. Dr. Ibe has received awards for outstanding performance, including Outstanding Educator Award of the Metrobank Foundation, Outstanding Teacher Award of the National Research Council of the Philippines (NRCP) and Outstanding Educator of the Philippine Association for Teacher Education (PAFTE).

Dr. Divina E. Edralin is a product of De La Salle University where she earned the Ph.D. degree in Management. She is a Full Professor and Director of the Center for Business and Economics Research and Development of the same university.

Dr. Roberto N. Padua holds a bachelor's degree from the Philippine Normal University where he graduated *summa cum laude*. He earned the M.S. and Ph. D. degrees in Mathematical Sciences (Statistics) as a Fullbright-Hays scholar from Clemson University in South Carolina, USA. Dr. Padua is a former Commissioner of CHED (Oversight for Research) and, at present, the Vice-President for External Affairs of the Mindanao Polytechnic State College in Cagayan de Oro City. He is also the Director of CHED Zonal Research Center for Regions X and XI.

Dr. Juliet D. Daguay is a graduate of the Mindanao Polytechnic State College (MPSC) where she earned the Ph. D. degree in Educational Planning and Management. She is, at present, the Vice President for Academic Affairs and the Dean of the Graduate School of MPSC.

Dr. Adriano A. Arcelo obtained his Doctor of Education degree from the Macquire University, Sydney, Australia through a fellowship under the Ford Foundation. He took his post-graduate studies at Liverpool University, England; urban and regional planning at the University of London; B.S. in Commerce (*magna cum laude*) at the Far Eastern University and B.S. Economics at Brandies University in Massachusetts, USA, as Wien International Scholar. Dr. Arcelo worked for the government as presidential assistant on economic affairs, as DECS Undersecretary, and as member of the advisory board of CHED. He was one of the pioneers of the Fund for Assistance to Private Education (FAPE) and retired in 1999 as president of FAPE and after serving the government for 30 years. Dr. Arcelo has been a consultant of Asian Development Bank, World Bank, UNDP, UNESCO and Regional Institute of Higher Education. From 1997 to 2000, Dr. Arcelo was in the advisory board of the International Institute for Educational Planning, Paris, France. He has numerous publications, both here and abroad, the most recent of which are *Financial Management in Education, School Planning, Accounting Manual for Private Educational Institutions; Higher Education and Labour Market in the Philippines;* and *Career and Employment Opportunities: The Philippine Experience* and *In Pursuit of Continuing Excellence in Higher Education Through Accreditation.*



Higher Education Research Papers
COMMISSION ON HIGHER EDUCATION
DAP Bldg., San Miguel Ave., Ortigas Center, Pasig City