Patubas

INTERDISCIPLINARY RESEARCH JOURNAL
CENTRAL PHILIPPINE UNIVERSITY RESEARCH CENTER

Patubas

Patubas is an Ilonggo word for "product" or "fruit". It is a fitting description for this pioneering interdisciplinary research journal which is indeed a product or fruit of our labors as researchers or the "seekers" of truth in its varied dimensions.

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PREFACE

_" The true lover of knowledge naturally strives for truth, and is not content
with common opinion, but soars with undimmed and unwearied
passion till he grasps the essential nature of things "_ – **Plato**

As one of the main functions of a university, research is somewhat neglected by many. Faculty members would rather take teaching overload than go into research. There are of course underlying reasons for such a prevalent academic attitude among teachers. Some years ago, this educational pursuit was not given due importance until the university-wide research agenda was institutionalized with the establishment of a Center and appointment of personnel and a committee in-charge of this program. Incentives were improved to encourage faculty and staff to engage in research.

The first issue of _"PATUBAS"_, the Interdisciplinary Research Journal came out last year with contributions from eight academic units of the university. This second issue features nine articles which we hope will contribute to the understanding of the various issues/concerns dealt with in the investigative studies. Hopefully, the information contained therein can also help in the instructional activities going on in the university.

We commend the authors of the articles for their work, giving encouragement and serving as examples to many who have not yet imbibed the culture of research. We also congratulate Director Randy Anthony V. Pabulayan and the Research and Publication Committees for coming up with this second issue of _"PATUBAS"_.

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VP for Academic Affairs

DESIGN AND EVALUATION OF A DRUM-TYPE RICE HULL CARBONIZER AND THE MANUALLY-OPERATED BRIQUETTE MOLDER FOR BIOCOAL FUEL PRODUCTION AND FOR AGRICULTURAL APPLICATIONS

By Alexis T. Belonio, PAE, MS

ABSTRACT

A drum-type rice hull carbonizer and a manually-operated briquette molder were designed and evaluated at the Department of Agricultural Engineering, Central Philippine University (CPU), Iloilo City from June 1999 to April 2000. The carbonizer was made of salvage petrol-drum opened at the top where rice hull is loaded for carbonization. A steel cover with T-chimney was provided to serve as exhaust for burned gases. A 2 1/2-in. electric blower was provided for the carbonizer to supply air necessary for combustion. The briquette molder, on the other hand, is made of steel pipe having a diameter of 15.5 cm and a height of 13.5 cm. Twelve pieces of 2-cm diameter shafting were distributed centrally in the molder cylinder to create holes on the briquette necessary for proper combustion. Results showed that the carbonizer has a loading capacity of 22.5 to 33.75 kg of rice hull per batch. Carbonization time ranged from 43 to 65 minutes. The percentage CRH produced per load is 30.7% and an average of 16 pieces biocoal fuel is produced per load in the carbonizer. Physical properties of CRH produced from the carbonizer were found out to be of higher water holding capacity, with 3.49 to 3.72 times of the original weight. Each biocoal fuel weighs about 484.5 to 531.1 g and has a heating value of 2,407.7 kcal/kg. The fuel can be ignited within 2 to 5 minutes and sustain a burning time of 45 to 65 minutes. No significant effect was observed when using CRH as soil conditioner for growing radish. However, the use of CRH as feed supplement for Cobb broilers showed that birds fed with commercial feeds mixed with 5% CRH significantly increased their feed consumption which resulted in an increase in their live weight gain. Cost analysis showed that for an investment cost of P5,700.00 and with a capacity to produce 128 pieces of biocoal fuel per day, the cost to produce a piece of biocoal fuel is P1.80. At a selling price of P3.00 per piece and at an operating period of 8 hours per day, 20 days per month, and 10 months per year, the return on investment is 539 percent. Payback period is 1.85 months and the benefit-cost ratio is 0.65.

INTRODUCTION

Background

The cost of fuel for domestic cooking keeps on increasing at a fast rate. This can be attributed to the limited supply of wood and wood charcoal in the market as a result of continued cutting of trees.

According to Beagle (1978), conversion of plentiful supply of organic solid wastes into a clean energy form provides an opportunity to expand the energy source while reducing the pollution associated with waste disposal. Also, Erickson and Prior (1990) noted that the briquetting of agro-residues is one of a number of ways wherein the disposal of huge volume of agricultural waste can be solved by converting it into a useful product such as fuel and for other agricultural uses.

Basically, rice hull is a by-product of milling rice. It is primarily used in the Philippines as heat source for domestic cooking as well as for drying (Waddle, 1985).

According to Yamashita and Hao (1978), rice hull is about 18 to 20 percent of rough rice by weight. Kaupp (1984) found out that rice hull has a bulk density ranging from 100 to 110 kg/m3. It can be pyrolized at a temperature of 250-500 (C and produced carbonized char of about 32%. To completely burn rice hull, an air requirement of 4.7 kilogram of air per kilogram of hull is necessary. They further added that rice hull can be converted to carbonized form through gasification using an optimum equivalence ratio of 0.32 of the stoichiometric air.

At the International Rice Research Institute, Jeon, et. al. (1986) designed a cylindrical rice hull carbonizer using brick materials for the production of carbonized rice hull. The char collected from the carbonizer were briquetted using soil as binder and were used as source of heat for direct-fired dryers. The design and construction of a biocoal plant were carried out by Belonio and Paranpan (1995) in Barotac Nuevo for Tamasak Multipurpose Cooperative. They found out that the plant can produce biocoal fuel at a rate of 700 to 900 biocoal tablets per day. Test of the performance of the fuel showed that it can provide sufficient heat for cooking for a typical size family and can be produced at a cost of about P1.46 per piece.

In Indonesia, studies conducted on the use of CRH on various crops (Fagi, 1989) showed that the grain and root yield of corn and soybean were improved with the use of CRH as compared with the control samples. Some of the characteristics of CRH as enumerated by Fagi are as follows: (a) it has lots of micropores which

increases the capacity to hold water, gas, nutrient, and microorganism in the soil; (b) it can improve soil acidity due to its weak alkali characteristics; (c) it can improve soil physical properties such as air ventilation and soil temperature; (d) it can replenish soil nutrient such as salicylic acid, carbon, iron, and potassium; and (e) it can accelerate root penetration of crops in the soil.

Another study was conducted in Japan by scattering CRH in the amount of 300 to 400 kg per acre before plowing. It was found out that a 10 to 20 percent increase in rice yield was observed for the field with scattered CRH than for the fields tilled with conventional method. Also, mixing the soil with 50 to 100 percent CRH can produce 20 to 30 more cucumber during harvest period of 30 days as compared with those of the control samples. Moreover, animals fed with 10 percent CRH can improve animal digestibility (Kansai Corporation).

Rice hull, which is an agrowaste material, is very much abundant in the Philippines. Annually, about 1100 to 1600 metric tons of rice hull is produced in the country. A kilogram of rice hull contains 3000 kilocalories of heat and can be further increased if it is carbonized. In other countries like Japan and Indonesia, CRH is used not only for heat production but also for agricultural applications such as soil conditioner and feed supplement for farm animals.

In 1987, the CPU College of Agriculture, Department of Agricultural Engineering has embarked on its research and development effort to improve technologies utilizing rice hull as fuel. Rice hull stoves, ranging from single to multiple burners, were designed and tested. The process of converting rice hull to a carbonized form was also carried out to develop a biocoal fuel for domestic cooking. Since there is a growing demand for alternative fuel sources and a massive campaign in the use of indigenous material sources to increase production while reducing cost, there is a need to explore and develop a technology that will utilize rice hull. A low-cost rice hull carbonizer having a dual purpose to produce CRH for biocoal fuel as well as for agricultural applications would be an alternative technology that would generate income for less privileged households or farmers in rural community. Converting agrowaste rice hulling to a usable product would be one of the several noble solutions to counteract energy shortage and waste pollution problem while uplifting the living status of rural people.

Objectives of the Study

The general objective of the study is to design and evaluate a drum-type rice hull carbonizer and a manually operated briquette molder for biocoal fuel production and for agricultural applications.

The specific objectives are:

1. To design a low-cost rice hull carbonizer and a briquette molder appropriate for rural household or farmer's use;
2. To evaluate the performance of the carbonizer and briquette molder and test their products produced as fuel for cooking, as soil conditioner, and as supplement for animal feed; and
3. To make a cost-return analysis of operating the carbonizer and the briquette molder for biocoal fuel production.

Time and Place of the Study

This study was conducted at the Department of Agricultural Engineering, College of Agriculture, Central Philippine University, Iloilo City from June 1999 to April 2000.

METHODOLOGY

Design and Fabrication

The rice hull carbonizer and the briquette molder were designed at the Department of Agricultural Engineering, College of Agriculture, Central Philippine University, Iloilo City. In the design, the criteria considered were the loading capacity, cost, and ease of maintenance. The machines were fabricated in a backyard welding shop at Lapaz, Iloilo City employing a local welder.

Performance Evaluation of the Machines

The carbonizer was tested according to the amount of rice hull consumed, amount of carbonized rice hull produced, and operating time per load. On the other hand, the briquette molder was tested according to the number of pieces of biocoal fuel produced per unit time, ease of molding, as well as the quality of briquette molded.

Testing of CRH for Domestic Cooking and Agricultural Applications

The CRH produced from the carbonizer were tested based on the physical as well as thermal properties. Physical properties such as the bulk density, angle of repose, angle of friction, and the water holding capacity were determined during the conduct of the study. Other physical properties of the biocoal fuel produced as volume, weight, density, thickness, and diameter were also evaluated. Proximate analyses of fuel were also determined during the test.

In testing CRH as soil conditioner, samples of it was used in growing radish at a rate of 1 to 4 kg per meter square. The number of functional leaves, plant height, root length and diameter, and yield were determined during the study. Separate experiment using CRH as feed supplement for Cobb broiler was also conducted. Commercial feeds mixed with CRH at 5, 10, 15 percent levels were tested on the effect on the feed consumption rate and the live weight gain of the birds.

Instrumentation

In measuring the weight of rice hull sample and carbonized rice hull produced, a 10-kg Fuji Weighing Scale was used in the study. Operating time was determined using a DT stopwatch. Physical properties of rice hull char and briquetted fuel were determined using Ohaus Triple Beam Balance. Measurements of the diameter and length of samples of radish were also recorded with the use of the Venier caliper. The amount of feed consumed and the live gain weight of Cobb broilers were also taken with the 10-kg weighing scale.

RESULTS AND DISCUSSIONS

Design Description of the Machines

Figure 1 shows the design of the rice hull carbonizer. As shown, the machine consists of the following major components: (a) the carbonizing chamber, (b) the cover and the chimney, (c) the blower and the air pipe, and (d) the support frame.

The carbonizing chamber is made of a salvage 200-liter capacity petrol drum. The top of the drum is completely opened for ease of loading and unloading of the rice hull. Twelve (12) air holes made of 3/4-in. diameter BI pipes were provided on the surface wall of the drum to provide airflow during carbonization. These pipes were installed equidistant with each other to uniformly supply the needed air. A cover and a 2-in. diameter T-chimney was provided on top of the drum to act as smoke stock and to create necessary suction of air during carbonization. At the base of the drum is a 2-in. diameter air pipe to distribute combustion air delivered by the electric blower. In order to facilitate the discharge of CRH, the drum is elevated so that it can be tilted for char disposal.

Figure 2 shows the briquette molder. As shown, the briquette molder has a diameter of 15.5 cm and a height of 13.5 cm. It is made of 6-in. diameter schedule 40 BI pipe. Inside the molder are 12 pieces of shafting having a diameter of 3/4 in. necessary to create holes for proper combustion of biocoal fuel. The molder is support· d by three (3) BI pipe legs to elevate it and at the same time to provide ease of removing the molded fuel.

Performance of the Machines

Table 1 shows the results of the tests on ricehull carbonizer. Test run conducted on April 2, 2000 showed that 22.5 kilogram of rice hull was completely carbonized in the carbonizer within 43 minutes yielding about 6.75 kg of carbonized rice hull. In the test conducted on April 28, 2000 23.25 kg rice hull was carbonized in the carbonizer within 45 minutes yielding about 8.25 kilogram char. Similarly, the test conducted on May 4, 2000 showed that 33.75 kilogram rice hull was completely carbonized in the carbonizer within 63 minutes yielding 9.19 kilogram char. Based on the results of the three tests, the computed capacity of the carbonizer in Table 2 ranged from 51 to 53 kilogram per minute while the computed percentage CRH produced ranged from 2 7.2 to 35.0 percent. It was also observed that in operating the carbonizer, one person is enough to do the loading and firing of rice hull.

In molding operation, results in Table 3 showed that two persons can do the molding of biocoal fuel for an average of two minutes per piece of fuel. This includes loading, manual pressing by pounding with mallet, and removal of molded briquette by the use of a counter press.

(a)

(b)

Figure 1. Pictorial View of the Machines: (a) The Drum-Type Rice Hull Carbonizer and (b) The Manually-Operated Briquette Molder.

(a)   (b)
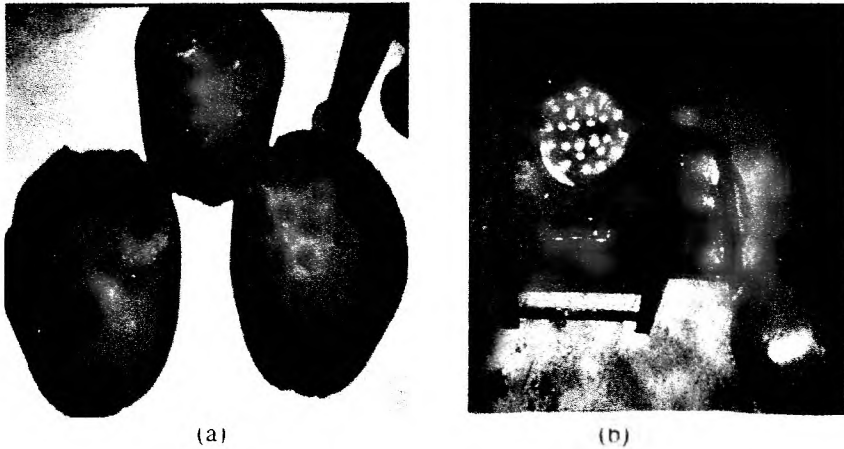
Figure 2. The Pictorial View of Biocoal Fuel: (a) Fuel Samples, and
(b) Burning Biocoal Fuel in the Stove.

Table 1. Results of Testing of the Drum-Type Ricehull Carbonizer Conducted During the Months of April and May, 2000.*

Test Run	Weight of Rice Hull (kg)	Carbonization Time (min)	Weight of Carbonized Rice Hull Produced (kg)
April 25, 2000	22.50	43	6.75
April 28, 2000	23.25	45	8.25
May 4, 2000	33.75	63	9.19

* Separate tests showed that it requires 7 to 10 days to finish carbonization and burning of rice hull.

Table 2. Computed Capacity and the Percentage CRH Produced in the Carbonizer.

Replication	Carbonizer Capacity (kg/hr)	Percentage CRH Produced (%)
1	31.2	30.0
2	30.6	35.0
3	31.8	27.2
Ave	31.2	30.7

Table 3. Molding Time of Blended CRH Biocoal in the Briquette Molder.

Replication	Weight of CRH* (kg)	No. of Pieces of Biocoal Fuel Produced	Total Molding Time (min)	Molding Time per CRH Biocoal Fuel (min)
1	6.93	13	26	2.00
2	8.21	16	19	1.19
3	9.64	19	36	1.89
Ave	8.26	16	27	1.69

* Weight of moisture and gelatinized starch included.

Product Performance

As shown in Table 4, the bulk density of CRH at loose condition is at an average of 371.0 kg/m3. After it was ground, the CRH obtained an average bulk density of 855.3 kg/m3. Measurement of the angle of repose of CRH range from 40 to 50 degrees from the horizontal while the angle of friction is at the average of 30 to 32 degrees. On the other hand, test on the water holding capacity showed that when CRH is dipped in the water, it has a capacity to hold moisture of about 3.49 to 3.72 times of its original weight. In table 5, the biocoal fuel showed that each piece weighs about 484.5 to 531.1 grams. The average volume was computed to be 1509.5 cm3 . The average diameter of the fuel is 15.5 cm while the thickness is 8 cm. Proximate analysis showed that the biocoal fuel have an average moisture content of 6.6%, volatile matter content of 25.3%, ash of 39.83%, sulfur of 0.064%, and a fixed carbon of 39.15%. The heating value of the fuel is 2407.7 kcal/kg. It can be ignited within 2.5 minutes using 8 burning pieces of paper. Total operating time to completely burn the fuel ranges from 45 to 65 minutes sufficient enough to carry out one cooking operation for a typical family.

Results of the tests presented in Table 6 that used different levels of carbonized rice hull (1 to 4 kg/m2) as soil conditioner on radish showed that there is no significant results obtained on the number of functional leaves, plant height, average root length and diameter, percentage marketable and non-marketable root and yield as compared with control samples. Utilizing CRH as feed supplement for broilers as presented in Table 7 showed that birds fed with commercial feeds mixed with 5 to 15 percent CRH has a significantly higher feed consumption and gain in live weight per bird as compared with the control birds which were fed pure commercial feeds. Birds fed with 5 percent CRH were significantly lower in feed efficiency per bird as compared with other treatments.

Operating and Cost-Return Analyses

The investment requirement to fabricate the drum-type carbonizer is P2,700.00 and the manually operated briquette molder is P2,500.00. While other materials needed to prepare the gelatinized starch is P500.00. As shown in Table 8, the fixed costs which include depreciation, interest on investment, repair and maintenance, and insurance total to P7.77 per day. On the other hand, the variable cost per day is P223.56. This includes the cost of the starch for 10 g per briquette at P9.00 per kg, electricity cost of the blower at 0.176 kW operating for 8 hours at a cost of P5.00 per kW, the cost of fuel in preparing a gelatinized starch at a cost of P5.00 per preparation, and the cost of labor for two persons at P100.00 per person, at 8 hours working period per day. With the capacity of producing 128 briquettes per day, the cost of producing a piece of briquette is P1.80.

Cost-return analysis in Table 9 showed that considering a selling price of P3.00 per briquette and operating the machines in 20 days per month and for 10 months in one year, the net income that can be derived in one year is P30,720.00. The computed return of investment is 539% while the payback period is 1.85 months. The benefit cost ratio is 0.65.

Table 4. Physical Properties of CRH

Bulk Density	
Loose	371.0 kg/m³
Ground	855.33 kg/m³
Angle of Repose	40 - 50 degrees
Angle of Friction	30 - 32 degrees
Water Holding Capacity	3.49 - 3.72

Table 5. Physical and Thermal Properties of Biocoal Fuel

Weight per Fuel	484.5 - 531.1 g
Volume of Fuel	1509.5 cm³
Diameter of Fuel	15.5 cm
Thickness of Fuel	8 cm
No. of Holes	12
Hole Diameter	2 cm
Moisture Content	6.6%
Volatile Matter	25.53%
Ash	39.84%
Sulfur Content	0.064%
Fixed Carbon	39.15%
Heating Value	2407.7 kcal/kg
Ignition Time	2 - 5 min
Burning Time	45 - 65 min
Time to boil 2 liters of water	21 - 35 min

Table 6. Results of Test Conducted Using Different Levels of CRH on the Growth of Radish

CRH Level (kg/m^2)	No. of Functional Leaves	Plant Height at Harvest (cm)	Root Length (cm)	Root Diameter (cm)	Yield (kg/plot)
0	13.87	22.98	20.51	4.03	8.01
1	14.07	22.45	22.22	4.06	8.02
2	13.67	22.09	21.92	4.01	7.94
3	13.70	21.73	20.49	3.96	7.89
4	13.57	21.79	20.14	3.82	7.82

Note: Results of ANOVA showed no significant difference among treatment means at 5% level of significance.

Table 7. Results of Test Using CRH as Feed Supplement for Cobb Broilers

Amount of Char Used	Feed Consumption (kg/bird)	Live Weight Gain (kg/bird)	Feed Efficiency per Bird	Calculated Return
0	2.77[b]	1.38[b]	2.00[b]	34.94
5	2.98[a]	1.61[a]	1.85[b]	51.83
10	3.03[a]	1.52[a]	2.00[b]	46.84
15	3.15[a]	1.43[b]	2.22[a]	37.22

Note: *a* and *b* denote significant differences among treatment means at 5% level.

Table 8. Operating Cost Analysis Producing Biocoal Fuel Using the Drum-Type Carbonizer and the Manually Operated Briquette Molder

Investment Cost (IC)	
Carbonizer	P 2,700.00
Briquette Molder	2,500.00
Others (pan, cooking pot)	500.00
Total	P5,700.00
Fixed Cost	
Depreciation 1/	P2.07/day
Interest on Investment 2/	3.75/day
Repair and Maintenance 3/	1.56 /day
Insurance 4/	0.46/day
Total	P7.77/day
Variable Cost	
Starch 5/	P11.52/day
Electricity 6/	7.04/day
Fuel for cooking 7/	5.00/day
Labor 8/	200.00/day
Total	P223.56/day
Total Cost	P231.34/day
Capacity 9/	128 pieces/day
Production Cost	P1.80/piece

1/ Straight line at 10% salvage vale and life span of 7 years
2/ 24% of the IC
3/ 10% of IC
4/ 3% of IC
5/ 10 g of starch per briquette @ P9.00/kg starch
6/ 0.176 kW, 8 hours per day operation @ P5.00/kw-hr
7/ P5.00 wood fuel per day for cooking gelatinized starch
8/ 16 biocoal tablets per load, 8 loads per day operation

Table 9. Cost Return Analysis of Producing Biocoal Fuel Using the Drum-Type Rice Hull Carbonizer and the Manually Operated Briquette Molder

Investment Cost	P5,700.00
Fixed Cost per Year	P2,838.60
Variable Cost per Year	P44,712.00
Total Operating Cost per Year	P47,550.60
Net Income per Year	P30,720.00
Return on Investment	539%
Payback Period	1.85 months
Benefit Cost Ratio	0.65

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the study, the following are concluded:

The rice hull carbonizer is a simple and low-cost technology for converting rice hull carbonized form. It can sufficiently carbonize rice hull at the capacity that can be handled by individual rural household.

The briquette molder can be manually operated with ease of producing biocoal fuel.

The CRH produced was found to have good physical and thermal properties. It can be used to produce biocoal fuel for domestic use and has high water holding capacity suitable for retaining moisture necessary for crop growth. It is also suitable as feed supplement for growing Cobb broilers.

To further improve the rice hull carbonizer, it is recommended that the exhaust fumes produced from the carbonizer which is harmful to the environment must be utilized for cooking gelatinized starch as well as for drying biocoal fuel. Testing of CRH using other crops and livestock should be explored.

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FACTORS ASSOCIATED WITH TARDINESS OF NON-TEACHING PERSONNEL OF CENTRAL PHILIPPINE UNIVERSITY

By Jessica B. Chin, MBA

ABSTRACT

The study aimed to determine the factors associated with tardiness such as: age, sex, civil status, income, nature of work, household size, educational attainment and length of service of the non-teaching personnel of Central Philippine University in the School Year 2001-2002. The study used the descriptive method and data gathered were analyzed using the Statistical Package for Social Science software. For descriptive purposes, percentages, means, and other measures of central tendency were used. Cramer's V, Pearson R, and Gamma coefficient of association was utilized for relational analysis. It was found out that sex, monthly income, nature of work, marital status, and educational attainment are related to the frequency of tardiness incurred by the non-teaching personnel of Central Philippine University.

INTRODUCTION

Background and Rationale

CPU's Vision says, "A university committed to Exemplary Christian Education for Life (EXCEL) and responsive to the needs of the total person and the world" and the mission of Central Philippine University is to carry out a program of spiritual, intellectual, moral, scientific, technological, and cultural training, and allied studies under influences which strengthen Christian faith, build up character and promote scholarship, research and community service. (CPU Staff Manual, 2002)

To fulfill the vision and mission of the university, every employee should be an example in words and in deeds so that others can be won to Christ by his/her influence. The faculty and the staff of Central Philippine University play an important role in the lives of the students enrolled in the University and the community it serves. Having competent personnel is not enough to satisfy the needs of the students, but having personnel who are committed to their jobs and have the right

kind of attitude like reporting to work on time would make a lot of difference. According to the Bible, in James 2:18 "Someone will say, 'You have faith, and I have works.' Show me your faith without your works and I will show you my faith by my works." Employees of Central Philippine University should be a light to the world. Matt.5:16 says, "Let your light so shine before men, that they may see your good works and glorify your Father in heaven".

An employee who is habitually late can have a demoralizing effect on other employees who come for work on time. Habitual lateness can be considered as an infectious disease. Soon many employees may exhibit tardiness. Individuals who are not satisfied or happy at work—that is, who find little reinforcement in their jobs—will tend to miss work or show up late occasionally.

Objectives of the Study

The study was conducted to determine the factors associated with tardiness of the non-teaching personnel of Central Philippine University.

Specifically, the study aims to:

1. to describe the CPU non-teaching personnel in terms of age, sex, civil status, length of service, educational attainment, income, household size, and nature of work;
2. to determine the extent of tardiness among the non-teaching personnel of Central Philippine University; and
3. to find out if frequency of tardiness of the non-teaching personnel of Central Philippine University is related to age, sex, civil status, length of service, educational attainment, income, household size, number of children, and nature of work.

Independent Variables   **Dependent Variable**

Age
Sex
Civil Status
Income
Nature of Work   **Frequency of**
Household Size   **Tardiness**
Educational
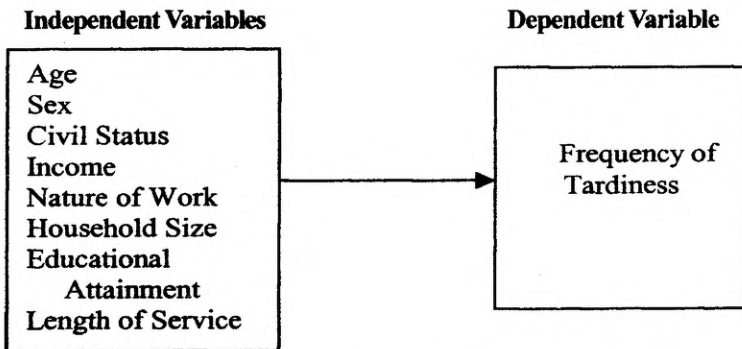   Attainment
Length of Service

Figure 1. Paradigm of the study.

METHODOLOGY

The researcher used a one-shot survey design and a descriptive method in the study. With official permission from the President of Central Philippine University, a structured survey questionnaire was distributed to the target respondents, the 152 non-teaching personnel of CPU.

Data of the Personnel Office on the frequency of tardiness of the non-teaching personnel of Central Philippine University was also used.

Data processing was done using the Statistical Packages for the Social Sciences (SPSS) software. Since the study is descriptive, data analysis include descriptions using percentages, means, and other measures of central tendency. To determine the existence and degrees of relationships between variables Cramer's V, Gamma, and Pearson R were used.

MAJOR FINDINGS

Socio Economic Profile of Central Philippine University Non-teaching Personnel

Table 1 shows the recoded ages of non-teaching personnel of Central Philippine University. More than half (58 percent) of the non-teaching personnel of Central Philippine University were at least 41 years old and the rest (42 percent) were 40 years of age or younger. On the average the non-teaching personnel of Central Philippine University is 42.39 years of age.

Majority (60 percent) of the non-teaching personnel of Central Philippine University belong to a household with 4 to 7 members while more than one fourth (30 percent) have 1 to 3 members. One in every ten (10 percent) has a household size of 8 or more. The data also reveal that less than half (45 percent) of the respondents have 1 to 3 children, while about a third (33 percent) were either single or married couples who has no children. Less than one fourth (22 percent) of the respondents have 4 or more children.

The data also show that the majority (71 percent) of the non-teaching personnel are receiving five thousand to ten thousand pesos per month while only a little less than three in every ten (29 percent) were receiving ten thousand one or more per month.

More than half (59 percent) of the non-teaching personnel of Central Philippine University were female while the rest (41 percent) were male. Majority (64 percent) were married, a considerable portion (31 percent) are single and a very small percentage (5 percent) are widows.

Table 2 reveals almost half (46 percent) of all the non-teaching personnel at Central Philippine University have finished a college education. More than one-fourth (27 percent) have either earned some post graduate units or have finished a graduate degree. One in every ten (10 percent) have finished high school and a very minimal percentage have had some high school education or had graduated from the elementary (3 percent and 5 percent, respectively).

Shown in Table 3 is the number of years that non-teaching personnel of Central Philippine University have served the university. The table reveals that less than half (45 percent) have served the university for a maximum of ten years. Fifteen percent (15 percent) have served the university for 11 to 20 years; thirty two percent (32 percent) from 21 to 30 and only eight percent (8 percent) have served the university for thirty and more years.

Table 1. Distribution of Central Philippine University Non-Teaching
Personnel According to Age (N = 152)

Age	F	%
21-30	33	21.0
31-40	32	21.0
41-50	44	29.0
51-60	36	24.0
61 & above	7.	5.
Total	152	100.0
No. of Household Members	F	%
1-3	45	30.0
4-7	91	60.0
8 & above	16	10
Total	152	100.0
No. of Children	f	%
0	50	33
1-3	68	45
4 & above	34	22
Total	152	100.0
Monthly Income	f	%
5,000-10.000	107	71.0
10,001-15,000	45	29.0
Total	152	100.0
Sex	F	%
Male	63	41
Female	89	59
Total	152	100.0
Marital Status	F	%
Single	47	31
Married	97	64
Widow	8	5
Total	152	100.0

Table 2. Distribution of Central Philippine University Non-Teaching Personnel According to Educational Attainment (N = 152)

Educational Attainment	f	%
Elementary Graduate	8	5
Some High School	5	3
High Graduate	15	10
Some College	13	9
College Graduate	70	46
Some Post Graduate	33	22
Post Graduate	8	5
Total	152	100.0

Table 3. Distribution of Central Philippine University Non-Teaching Personnel According to the Number of Years of Service in the University (N = 152)

Length of Service	f	%
1-10 years	68	45
11-20 years	22	15
21-30 years	49	32
30 and above	13	8
Total	152	100.0

Based on the records of the Personnel Office, as shown in Table 4, there were one third (34 percent) answered that they were rarely late and there were a few (9 percent) who admitted that they were always late in reporting to work. But there were those (24 percent) who have never been late in reporting to work.

Table 4. Distribution of Central Philippine University Non-Teaching Personnel According to the Number of Times They had been Late in Reporting to Work (N = 152)

Number of Times Late	f	%
Never	37	24
Rarely (1-25)	51	34
Sometimes (26-50)	23	15
Often (51-75)	27	18
Always (76 & above)	14	9
Total	152	100.0

Shown in Table 5 is the relationship between the number of children and the number of times the non-teaching personnel had been late in reporting to work.

Less than half (35 percent) of the employees who have the most number of children reportedly have never been late in reporting for work, majority (41percent) of them were also rarely late in reporting to work. Majority of those who answered that they were always late in reporting to work were those who have no children. The data show a trend that those with fewer children tend to incur more cases of tardiness compared to those with more children.

Table 5. Distribution of Central Philippine University Non-Teaching Personnel According to Number of Children and Number of Times They Had Been Late in Reporting to Work (N = 152)

| How often been late | Number of Children | | | | | | | |
| | 0 | | 1-3 | | 4 & above | | Total | |
	f	%	F	%	f	%	f	%
Never	7	14	18	27	12	35	37	24
Rarely (1-25)	16	32	21	31	14	41	51	34
Sometimes (26-50)	10	20	9	13	4	12	23	15
Often (51-75)	11	22	13	19	3	9	27	18
Always (76 & above)	6	12	7	10	1	3	14	9
Total	50	100.0	68	100.0	30	100.0	152	100.0

R= -0.270

Table 6 shows the relationship between sex and the number of times a non-teaching personnel of Central Philippine University had been late in reporting to work.

More than half (52 percent) of the male non-teaching personnel were never late while some (36%) were rarely late in reporting to work. While only very few (5 percent) of the female non-teaching personnel were never late in reporting to work. The trend shows that females tend to incur more incidence of tardiness compared with men. Using the Cramer's V to test the association between sex and the number of times a non-teaching personnel had been late in reporting to work, the value of 0.627 is significant. This means that sex is highly associated with the number of times a non-teaching personnel had been late in reporting to work.

Table 6. Distribution of Central Philippine University Non-Teaching Personnel According to Sex and the Number of Times They Had Been Late in Reporting to Work (N = 152)

| How often been late | Sex | | | | | |
| | Male | | Female | | Total | |
	f	%	f	%	f	%
Never	33	52	4	5	37	24
Rarely (1-25)	23	36	28	32	51	34
Sometimes (26-50)	3	5	20	23	23	15
Often (51-75)	3	5	24	27	27	18
Always (76 & above)	1	2	13	15	14	9
Total	63	100.0	89	100.0	152	100.0

Cramer's v = 0.627   significant at 0.05 level

The relationship between monthly income and the number of times a non-teaching personnel of Central Philippine University had been late in reporting to work is shown in Table 7.

Majority (34 percent) of the non-teaching personnel who were receiving a monthly salary of 10,000 thousand pesos or less were never late in reporting to work while in contrast, a very minimal percentage (2 percent) of the employees who are receiving more than ten thousand answered that he/she was never late in reporting to work. But let us also note that less than half (40 percent)of those who were receiving a salary of more than ten thousand were rarely late in reporting to work. This shows that those who belong to the higher income bracket tend to report to work late more often as compared with those who belong to the lower income bracket. This proves that salary, wages, benefits and the like are not the only motivators that will encourage an employee to improve his/her performance. When Gamma was used to test the relationship between monthly income and the number of times a non-teaching personnel had been late in reporting to work. , a value of 0.438 was obtained. This implies a significant association between the two variables.

Table 7. Distriution of Central Philippine University Non-Teaching Personnel According to Monthly Income and the Number of Times They Had Been Late in Reporting to Work (N = 152)

| How often been late | Monthly Income | | | | | |
| | 5,000 – 10,000 | | 10,001 – 15,000 | | Total | |
	f	%	f	%	f	%
Never	36	34	1	2	37	24
Rarely (1-25)	33	31	18	40	51	34
Sometimes (26-50)	15	14	8	18	23	15
Often (51-75)	13	12	14	31	27	18
Always (76 & above)	10	9	4	4	14	9
Total	107	100.0	45	100.0	152	100.0

Gamma = .438

Shown in Table 8 is the relationship between nature of work and the number of times the non-teaching personnel of Central Philippine University had been late in reporting to work.

All (100 percent) all of the non-teaching personnel assigned to maintenance were either never or rarely late in reporting to work while more than half (53 percent) of the non-teaching personnel assigned to non-academic offices were either often or always late in reporting to work. None of those assigned in the academic offices was always tardy. Based on the Cramer's V value of 0.431, the variables were correlated with each other.

Table 8. Distribution of Central Philippine University Non-Teaching Personnel According to Nature of Work and the Number of Times They Had Been Late in Reporting for Work (N = 152)

| How often been late | Nature of Work | | | | | | | |
| | Non Academic | | Academic | | Maintenance | | Total | |
	f	%	f	%	f	%	f	%
Never	8	9	1	5	28	65	37	24
Rarely (1-25)	30	35	6	27	15	35	51	34
Sometimes (26-50)	14	16	9	41			23	16
Often (51-75)	21	24	6	27			27	18
Always (76 & above)	14	16					14	9
Total	87	100.0	22	100.0	43	100.0	152	100.0

Cramer's V = .431

The relationship between educational attainments and the number of times the non-teaching personnel of Central Philippine University had been late in reporting to work is shown in Table 9.

Majority (63 percent) of the non-teaching personnel who were elementary graduates were never late and the rest (37 percent) were rarely late in reporting to work. About half (39 percent) of the total non-teaching personnel who were college graduates were rarely late. Those who have taken some post graduate subjects have the highest percentage (21 percent) of those who answered that they were often late and the same percentage (21 percent) of those who have answered that they are always late in reporting to work. When Gamma was used to test the relationship between the two variables, a value of 0.599 was obtained. This implies that there is significant association between educational attainment and the number of times a non-teaching personnel had been late in reporting to work. The findings shows that non-teaching personnel with lower educational attainment reports to work early as compared to those with higher educational attainment.

Table 9. Distribution of Central Philippine University Non-Teaching Personnel According to Educational Attainment and the Number of Times They Had Been Late in Reporting for Work

How often been late	Elem Grad		Some HS		HS Grad		Some College		College Grad		Some Post Grad		Post Grad		Total	
	f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
Never	6	75.0	2	40.0	5	33.0	6	46.0	6	9.0	13	39.0	1	13.0	26	17
Rarely 1-5	2	25.0	6	60.0	9	60.0	6	46.0	31	44.0	16	48.0	4	50.0	68	45
Often 6-20							1	8.0	31	44.0	4	13.0	2	.24	50	33
Always everyday					1	.07			2	3.0			1	.13	8	5
Total	8	100.0	5	100.0	15	100.0	13	100.0	70	100.0	33	100.0	8	100.0	152	100.0

Gamma = .599

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Non-teaching personnel of Central Philippine University has an average age of 42.39 years of age. Majority of them have four to seven members of the family living with them. About one third (30 percent) have 1-3 children. Less than half have 1 to 3 children, while about a third were either single or married but has no children. Majority were receiving five thousand to ten thousand pesos per month. Although female members were slightly more than male members, there were nearly equal proportions of both sexes.

As to nature of work, a little more than half work in the non-academic offices, while the rest were distributed to academic offices and maintenance More than half were married, majority have attended college education and have served the university for less than twenty years.

Based on the records of the Personnel Office, 51 employees were recorded to be late for not more than twenty five times for the last six months, more than a third were never late and a very minimal percentage was always late for the last six months. Almost all of the non-teaching personnel in the 61 and above age group were rarely late in reporting to work followed by the 51 – 60 age group (41 percent). None of the employees that belong to the oldest bracket were always late. This shows that the older ones have stronger value for promptness as compared to the younger ones.

It is interesting to know that majority of those who belong to the biggest household size were rarely late and those who have the most number of children were never late in reporting to work The female personnel tend to incur more incidence of tardiness compared with men.

Majority of the non-teaching personnel who were receiving a monthly salary of 10,000 thousand pesos or less were never and were rarely late in reporting to work. This shows that those who belong to the higher income bracket tend to report to work late more often as compared with those who belong to the lower income bracket.

Majority of the non-teaching personnel assigned to maintenance were never late in reporting to work. While all those who were always late in reporting to work were assigned to non-academic offices.

Most of the non-teaching personnel who were not able to graduate in college were never late in reporting to work. Educational attainment was substantially associated with the number of times a non-teaching personnel had been late in reporting to work.

The longer an employee had stayed with the university, the less likely that he/she will be tardy in reporting to work.

RECOMMENDATIONS

In view of the findings and conclusions, the following were recommended.

1. Review and examine the current written guidelines on employee tardiness and check if an existing policy needs revision, improvement or be reinforced.

2. Employees should be aware of the implementation if there will be any changes in the guidelines. Every employee should have a copy.

3. Guidelines on tardiness and other work ethics should be part of new employee orientation. These should stress that tardiness will not be tolerated.

4. Trainings or seminars on the importance of promptness must be conducted on a regular basis.

5. Promptness in reporting for work should have a bigger weight in performance evaluation.

6. Supervisors and employees should always be reminded of their responsibilities.

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The Holy BIBLE

ADMISSION REQUIREMENTS AS PREDICTORS OF ACADEMIC PERFORMANCE OF CENTRAL PHILIPPINE UNIVERSITY DEVELOPMENT HIGH SCHOOL (CPUDHS) FRESHMEN

By Jessica M. Gargantiel, MAEd

ABSTRACT

The purpose of this study was to determine the predictive ability of admission requirements on academic performance of the CPUDHS freshmen in 1999-2001. Admission requirements include: Grade VI Final Grade in English, Mathematics, Science and General Average, SCAT– English and Mathematics, and Reading Comprehension. Results showed that Grade VI General Average and Reading Comprehension are the best predictors of First Year Weighted Average. Grade VI General Average and SCAT- Mathematics are the best predictors of First Year Final Grade in Mathematics. Non-significant predictors of First Year Final Grade in English were Grade VI Final Grade in Mathematics and Science, while SCAT-English and Grade VI Final Grade in English and Science did not significantly predict First Year Final Grade in Science.

INTRODUCTION

Background and Rationale

With the passage of Republic Act No. 6655 in 1988 mandating a free secondary education, our public as well as private schools will be hard put to cope with the constant growth rate. Selection for admission and ranking will be more difficult because the increase in the sheer number of applicants is paralleled by growth in the number of highly qualified candidates. Thus, measures used as bases of admission and ranking should be reasonably accurate in predicting students' future academic performance.

Admission test scores from the School and College Ability Tests Form B-Verbal (SCAT- English) and Quantitative (SCAT- Mathematics), Reading Comprehension, and Essay are the sole bases of screening, selecting, and ranking of incoming freshmen students in CPUDHS. As to whether or not these measures of admission are substantial predictors of freshmen academic performance, no recent study has yet been conducted. To give high credibility to the admission tests as well as to other admission requirements there should be continuing research about their usefulness in the prediction of academic performance.

Objectives of the Study

This study was conducted to determine the predictive ability of admission requirements on academic performance of Central Philippine University Development High School freshmen in 1999-2001.

Specifically the study determined:
1. the background characteristics of students in terms of sex, type of elementary school graduated from, and school location;
2. whether their performance in the admission requirements which include Grade VI General Average, Grade VI Final Grade in English, Grade VI Final Grade in Mathematics, and Grade VI Final Grade in Science, School and College Ability Tests Form B- Verbal (SCAT- English) and Quantitative (SCAT-Mathematics), and Reading Comprehension vary when they are grouped according to sex, type of elementary school graduated from, and school location;
3. whether there is a significant relationship between each of the indicators of admission requirements and academic performance; and,
4. which of the admission requirements could best predict academic performance.

Theoretical and Conceptual Framework

An approach to describe the ways the social perceiver uses information to generate causal explanations for some action, event, or outcome is through Attribution theory. Attribution theory focuses on the way the individual makes causal attribution for achievement. Causal analysis and understanding serve the basic functions of predicting future events and trying to control them (Zimbardo, 1992). Two general questions that Heider (1952 cited in Zimbardo, 1992) believed are part of most attributional analysis are whether the cause of the behavior is found in the person (internal causality) or the situation (external causality), and who is responsible for the outcomes. Applying Heider's attributional analysis, a student's admission test scores, Grade VI General Average and Grade VI Final Grade in core subjects are assumed to be affected by his personal self (internal causality) while type of elementary school graduated from and school location may also be affected by many outside factors (external causality). In this study, the academic performance which is the dependent variable, is the assumed caused behavior or the outcome and the admission requirements as well as sex, type of school graduated from, and school location which are the independent and antecedent variables respectively, are the assumed causal determinants. The interplay of the three key variables in the study is shown in Figure 1.

Antecedent Variables	Independent Variables	Dependent Variables

Background Characteristics	Admission Requirements	Academic Performance
* Sex * Type of Elementary School Graduated From * School Location	* School and College Ability Test - Verbal **(SCAT- English)** * School and College Ability Test - Quantitative **(SCAT- Math)** * School Location * Reading Comprehension Grade VI Final Grade in English * Grade VI Final Grade in Mathematics * Grade VI Final Grade in Science * Grade VI General Ave.	* First Year High School Final Grade in English * First Year High School Final Grade in Mathematics * First Year High School Final Grade in Science * First Year High School Weighted Average

Figure 1. Schematic Presentation of Variables

Hypotheses of the Study

1. Students differ in their Grade VI General Average; Grade VI Final Grade in English; Grade VI Final Grade in Mathematics; Grade VI Final Grade in Science; SCAT-English; SCAT- Mathematics and Reading Comprehension when they are grouped according to sex, type of elementary school graduated from and school location.
2. Each of the indicators of admission requirements is significantly related to academic performance.
3. All the admission requirements in the CPUDHS could best predict academic performance.

METHODOLOGY

This correlational study utilized the stratified proportional sampling (Vockell, 1983) to randomly select 280 high school freshmen who enrolled at the CPUDHS in 1999-2001. The Statistical Package for the Social Sciences (SPSS) for Windows was used for the statistical analysis of this study. Analysis was done in three levels: 1. the descriptive analysis; 2.the correlational analysis; and 3. the regression analysis. Percentage distribution and frequencies were used to describe the background characteristics in the first level of analysis. The means and standard deviations of the scores and ratings in the admission requirements and the first year high school grades were computed. The t-test, F-test, and Scheffe test were used to describe the difference between means of the different admission requirement variables according to the background characteristics.

Correlational analysis using the zero-order and partial correlation was used in the second level of analysis. Pearson's Product Moment Coefficient was used to determine the coefficient of correlation.

The third level of analysis made use of the step-wise regression analysis to determine the independent variable(s) that could best predict academic performance.

MAJOR FINDINGS

There were slightly more females (53.9 percent) than males (46.1) among the high school freshmen enrolled in 1999-2001. About six out of ten students graduated from private elementary schools that are mostly located (71.1 percent) within the city proper (Table 1).

Table 1. Percentage distribution of CPUDHS Freshmen by Sex, Type of Elementary School Graduated From and School Location

Background Characteristics	School Year							
	1999 - 2000		2000 - 2001		2001 - 2002		Total	
	f	%	f	%	F	%	f	%
A. Sex								
Male	42	44.7	43	48.3	44	45.5	129	46.1
Female	52	55.3	46	51.7	53	54.6	151	53.9
Total	94	33.6	89	31.8	97	34.6	280	100.0
B. Elem. Sch. Type								
Public	30	31.9	37	41.6	39	40.2	106	37.9
Private	64	68	52	58.4	58	59.8	174	62.1
Total	94	33.6	89	31.8	97	34.6	280	100.0
C. School Location								
Rural	20	21.3	27	30.3	34	35.1	181	28.9
Urban	74	78 7	62	69.07	63	64.9	199	71.1
Total	94	33.6	89	31.8	97	34.6	280	100.0

As shown in Table 2, the CPUDHS female freshmen obtained significantly higher mean performance in their Grade VI Final Grade in English, Science, and General Average than the male freshmen.

Table 2. Mean Distribution of Students' Performance in Admission Requirements
 According to Sex

Admission	Male		Female		t	Sig. level
Requirements	Mean	SD	Mean	SD		
SCAT- English	23.97	7.83	24.79	7.25	0.84	0.361
SCAT - Math	20.61	7.7	21.97	7.64	2.17	0.142
Reading Comp.	33.71	9.9	35.51	7.38	3.01	0.084
English (Gr. VI)	84.47	4.68	87.21	4.38	25.49	0.000*
Math (Gr. VI)	83.90	4.679	85.04	5.10	3.72	0.055
Science (Gr. VI)	84.40	4.36	86.34	5.11	11.56	0.001*
Gen. Ave. (Gr. VI)	84.90	3.60	87.04	3.77	23.36	0.000*

*significant at the 0.05 level

Students from rural-public elementary schools got significantly higher means in their Grade VI General Average and Grade VI Final Grade in Mathematics and Science than those from urban-public and urban-private elementary schools. Students from urban-private elementary schools on the other hand, had significantly higher mean score in SCAT- English than those from urban-public and rural-public. This is supported by the F-ratio of 8.438 which is significant at 0.05 level. Moreover, they (urban-private students) also had a significantly higher mean score in SCAT-Mathematics than those from urban-public schools as implied by the F-ratio of 4.094 which is significant at 0.05 level (Table 3).

Table 3. Mean Distribution of Students' Performance in Admission Requirements as to
School Location and Type of Elementary School Graduated From

School Type & Location	Mean Performance in Grade VI				Mean in SCAT:		Mean in Reading Comp.
	English	Math	Science	Gen. Ave.	Eng.	Math	
Urban - Public	84.97	83.66	84.90	85.46	21.71	18.42	32.75
Urban - Private	85.61	83.64	84.53	85.39	26.33	22.56	35.75
Rural - Public	87.23	86.77	87.58	87.70	21.69	20.57	33.17
Rural - Private	87.11	86.41	87.24	87.53	24.63	21.85	35.63
F-ratio	2.930	7.630	7.080	6.976	8.438	4.094	2.294
Significance level	0.034*	0.000*	0.000*	0.000*	0.000*	0.007*	0.078

*significant at the 0.05 level

When none of the independent variables were partialled out or controlled (zero-order), all the correlations between each of the independent variables and each of the indicators of academic performance are significant and positive. However, when the other six independent variables were partialled out, the correlations show very slight relationship between variables (Tables 4-7). Although some of the partial correlations may be statistically significant, they may have limited meaning when used in this study since the correlations which were generated show very slight relationship between variables.

Table 4. Simple Correlations Between Independent Variables and First Year Final Grade in English

Independent Variables	r	Sig. level	Partial r	Sig. level
English (Gr. VI)	0.686	0.000**	0.1887	0.002*
Math (Gr. VI)	0.577	0.000**	-0.0498	0.412
Science (Gr. VI)	0.622	0.000**	0.0074	0.903
Gen. Ave. (Gr. VI)	0.692	0.000**	0.1243	0.040*
SCAT - English	0.610	0.000**	0.2650	0.000*
SCAT - Mathematics	0.581	0.000**	0.2187	0.000*
Reading Comprehension	0.539	0.000**	0.1494	0.013*

* Correlation is significant at the 0.01 level (2-tailed)
* Partial correlation is significant at 0.05 level

Table 5. Simple Correlations Between Independent Variables and First Year Final Grade in Mathematics

Independent Variables	r	Sig.	Partial r	Sig.
English (Gr. VI)	0.578	0.000*	.1286	0.033*
Math (Gr. VI)	0.556	0.000*	.0408	0.501
Science ((Gr. VI)	0.560	0.000*	.0926	0.126
Gen. Ave. (GR.VI)	0.598	0.000*	.0919	0.753
SCAT - English	0.421	0.000*	.0059	.922
SCAT - Mathematics	0.569	0.000*	.3283	.000*
Reading Comprehension	0.368	0.000*	.0436	.472

* Correlation is significant at the 0.01 level (2-tailed)
* Partial correlation is significant at 0.05 level

Table 6. Simple Correlations Between Independent Variables First Year and Final Grade in Science

Independent Variables	r	Sig.	Partial r	Sig.
Grade VI				
English	0.611	0.000*	0.0769	.205
Math	0.500	0.000*	- 0.1341	.026*
Science	0.581	0.000*	0.0488	0.421
Gen. Ave.	0.641	0.000*	0.1801	0.003*
SCAT - English	0.427	0.000*	0.0421	0.488
SCAT - Mathematics	0.444	0.000*	0.1492	0.013*
Reading Comprehension	0.451	0.000*	0.1489	0.014*

* Correlation is significant at the 0.01 level (2-tailed)
* Partial correlation is significant at 0.05 level

Table 7. Simple Correlations Between Independent Variables and First Year
Weighted Average

Independent Variables	r (zero-order)	Sig.	Partial r (sixth-order)	Sig.
English (Gr. VI)	0.429	0.000*	0.0368	0.544
Math (Math)	0.369	0.000*	-0.0446	0.462
Science (Gr. VI)	0.419	0.000*	0.0370	0.542
Gen. Ave. (Gr. VI)	0.458	0.000*	0.0939	0.121
SCAT - English	0.304	0.000*	0.0310	0. 609
SCAT - Mathematics	0.292	0.000*	0.0420	0.489
Reading Comp.	0.341	0.000*	0.1205	0.046*

* Correlation is significant at the 0.01 level (2-tailed)
* Partial correlation is significant at 0.05 level

Results of the step-wise regression analysis show that Grade VI General
Average, SCAT- English and Mathematics, Grade VI Final Grade in English and
Reading comprehension are the independent variables that could best predict
students' First Year Final Grade in English (Table 8). It was also found out that
Grade VI General Average and SCAT- Mathematics could best predict students'
First Year Final Grade in Mathematics (Table 9). Grade VI General Average, Reading
Comprehension, SCAT- Mathematics, and Grade VI Final Grade in Mathematics are
variables that could best predict students' First Year Final Grade in Science.
However, Grade VI Final Grade in Mathematics is a significantly negative predictor
(Table 10). Grade VI General Average, and Reading Comprehension, on the other
hand, could best predict students' First Year Weighted Average (Table 11).

Table 8. Step-wise Regression Model Summary of Independent Variables on First Year Final Grade in English

Model	R	R^2	Adjusted R^2	Std. Error
1*	0.692[a]	0.478	0.476	3.656
2*	0.778[b]	0.605	0.602	3.186
3*	0.789[c]	0.623	0.619	3.118
4*	0.799[d]	0.638	0.633	3.063
5*	0.804[e]	0.646	0.640	3.033

  a Predictors: (Constant), Grade VI Ave.
  b Predictors: (Constant), Grade VI Ave., SCAT- Eng.
  c Predictors: (Constant), Grade VI Ave., SCAT- Eng., SCAT- Math
  d Predictors: (Constant), Grade VI Ave., SCAT- Eng., SCAT- Math, Grade VI Final Grade in Eng.
  e Predictors: (Constant), Grade VI Ave., SCAT- Eng., SCAT- Math, Grade VI Final Grade in English, Reading Comp.
  * significant at the 0.05 level

Table 9. Step-wise Regression Model Summary of Independent Variables on First Year Final Grade in Mathematics

Model	R	R^2	Adjusted R^2	Std. Error
1*	0.598[a]	0.358	0.356	4.023
2*	0.682[b]	0.466	0.462	3.676

a Predictors: (Constant), Grade VI General Average
b Predictors: (Constant), Grade VI General Average, SCAT – Mathematics
* significant at the 0.05 level

Table 10. Step-wise Regression Model Summary of Independent Variables on First Year Final Grade in Science

Model	R	R^2	Adjusted R^2	Std. Error
1*	0.641[a]	0.411	0.409	3.798
2*	0.668[b]	0.447	0.443	3.690
3*	0.678[c]	0.460	0.454	3.652
4*	0.688[d]	0.473	0.465	3.613

a. Predictors: (Constant), Grade VI General Average
b. Predictors: (Constant), Grade VI General Average, Reading Comprehension
c. Predictors: (Constant), Grade VI General Average, Reading Comprehension, SCAT- Mathematics
d. Predictors: (Constant), Grade VI General Average, Reading Comprehension, SCAT- Mathematics and Grade VI Final Grade in Mathematics (Beta coefficient is – 0.225)
* significant at the 0.05 level

Table 11. Step-wise Regression Model Summary of Independent Variables on First Year Final Weighted Average

Model	R	R^2	Adjusted R^2	Std. Error
1*	0.458[a]	0.210	0.207	5.882
2*	0.483[b]	0.234	0.222	5.803

a Predictors: (Constant), Grade VI General Average
b Predictors: (Constant), Grade VI General Average, and Reading Comprehension
* significant at the 0.05 level

CONCLUSIONS AND RECOMMENDATIONS

On the basis of the findings of this study, the following conclusions were drawn:

1. The three background characteristics namely, sex, type of elementary school graduated from, and school location, may affect the CPUDHS freshmen performance in the admission test areas and Grade VI Grades.

2. Grade VI General Average and Reading Comprehension are the best predictors of First Year Weighted Average.

3. Grade VI General Average, SCAT- English and Mathematics, Grade VI Final Grade in English, and Reading Comprehension are the best predictors of students' First Year Final Grade in English.

4. Grade VI General Average and SCAT- Mathematics are the best predictors of students' First Year Final Grade in Mathematics.

5. Grade VI General Average, Reading Comprehension, SCAT- Mathematics and Grade VI Final Grade in Mathematics are the best predictors of students' First Year Final Grade in Science, however, Grade VI Final Grade in Mathematics is a significantly negative predictor.

Based on the major findings and conclusions, the following recommendations are presented:

1. Since students' ratings in Grade VI General Average and Reading Comprehension are the best predictors of First Year Weighted Average, it is important that the CPUDHS raises the cut-off for Grade VI General Average and Reading Comprehension for freshmen admission to the high school department.

2. Students' ratings in the admission test areas, Grade VI Final Grade in English, Grade VI General Average and Reading Comprehension could be used as predictors of their First Year Final Grade in English.

3. Freshman students' ratings in SCAT- Mathematics and Grade VI General Average could be used as predictors of their First Year Final Grade in Mathematics.

4. Freshman students' ratings in Grade VI General Average, Reading Comprehension, SCAT- Mathematics and Grade VI Final Grade in Mathematics could be used as predictors of their First Year Final Grade in Science. It should be noted however. that the higher the students' grades are in Grade VI Final Grade in Mathematics, the lower are their grades in First Year Final Grade in Science.

5. Other variables not considered in the study should be explored such as personality, values, study habits, and attitudes.

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THE EFFECT OF PEER TUTORIMG ON THE PERFORMANCE OF FRESHMEN SSSTUDENTS IN COLLEGE ALGEBRA

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ABSTRACT

The study was conducted to determine the effect of peer tutoring on the performance in College Algebra of freshmen college students of Central Philippine University, Iloilo City. The study sought to find out whether freshmen college students taking Algebra exposed to peer tutoring method perform better than those who are under the usual lecture method. It further determined whether or not performance of students varies according to sex and the type of high school the student graduated from. The study also determined whether or not there is correlation between a) fourth year high school Math grades and Math placement examination scores, b) fourth year high school Math grades and final grades obtained in College Algebra, c) Math placement examination scores and final grades obtained in College Algebra, d) Math placement examination scores and posttests. The results of the study showed that there was a significant difference in the performance of freshmen students control group and the experimental group based on the mean final grades in Algebra and pretest posttest results. About 95 percent of the experimental group obtained passing grade in College Algebra while only 80 percent of the control group got passing marks.

INTRODUCTION

Background and Rationale of the Study

Mathematics as a tool of almost all subjects in college is a requirement to obtain a Bachelor's Degree as indicated in the curriculum approved by the Commission on Higher Education. The government and organizations of mathematics teachers work hand-in-hand to help develop a better performance of the students in mathematics. As per result of tests given in the local, regional and national levels, mathematics is a subject which shows very poor performance of the students. Central Philippine University (CPU) sees this problem especially among college freshmen students. Based from the Mathematics and Physics Department records, 32 percent of the students enrolled in Math 5 in two school years (1996-1998) did not get a passing grade. Of the 68 percent of students who passed the course, more than half got a grade of 3.0, the lowest passing mark.

The alarming information of poor performance in Mathematics of college freshmen students made the researchers decide to conduct a study on peer tutoring as a teaching strategy to be incorporated with the usual routine of the teaching-learning process. The selection of peer tutoring as a teaching method was based upon what psychologists have stated that a peer has a strong influence to an individual. The researchers' observation attests to that fact.

Objectives

In general, this study was conducted to determine the effect of peer tutoring on the performance in College Algebra of freshmen college students of Central Philippine University, Iloilo City.

Specifically, the study aimed to determine the following:

1. Whether or not the freshmen students taking College Algebra exposed to peer tutoring program would obtain better grades and posttest scores than those who were taught using the traditional method, or a teacher-centered class;
2. Whether or not the effect of peer tutoring varies according to sex and to the type of high school the student graduated from; and
3. Whether or not there is correlation between a) fourth year high school Math grades and Math placement examination scores, b) fourth year high school Math grades and final grades obtained in College Algebra c) Math placement examination scores and final grades obtained in College Algebra d) Math placement examination scores and posttests.

Significance of the study

The results of this investigation can benefit primarily Central Philippine University and the country as a whole. The CPU administration can use the results of this study in planning for innovation, which may be implemented in the instruction. Teachers may use peer tutoring as a teaching style to help students improve their grades. Lastly, this study then can help other schools, which encounter the same problem of poor performance in College Algebra.

Theoretical Framework

This research on Peer-Tutoring as a teacher strategy is anchored on the insights of Piaget's theory. Jean Piaget was a leading proponent of the Cognitive Development Theory (Morris, 1982). He saw all behaviors in terms of a person's adaptation to the environment. In his theory, he discusses thought as a psychological activity involving mental operations from their origin in infancy until they become internalized, reversible, and co-ordinated into lawful groupings of operations during adolescence. He distinguished four main stages in the development of operational thinking and in concept formation as follows:

1. The sensory-motor period (birth to 2 years)
2. Pre-operational thought (2 to 7 years)
3. Concrete operation (7 to 11 years)
4. Prepositional or formal operations (11 to 17 years), during which the students become capable of logical thinking with abstraction, that is, with the "possible" as well as the "here and now".

Since many variables such as intelligence, experiences, and culture may affect the age at which a given stage of development can be observed in a particular child, the ages assigned by Piaget to the emergence of various stages are suggestive only. The sequence of the stages does not, however, vary (Laycock, 1960).

When an individual reaches one of these stages of development, he is said to be in a state of intellectual equilibrium. When a person discovers he can no longer assimilate experiences with his accommodative skills of the existing level, he begins to adjust. This reorganization is called dis-equilibrium and brings about a move to another level.

Through active participation, a person progresses from one stage to another, while he grows older. Progress is achieved through the continued adaptation of the individual to changes in the environment as he assimilates many new

experiences and accommodates his action and thought processes. The environment of a person could be people, which start from his mother and other members of the family. As he matures and goes to school, his environment becomes wider and mostly those whom he always goes with are his peers. Piaget observed that throughout their school years, children rely on their peers as an important source of information and many use peers as standards by which they measure themselves.

Conceptual Framework

The fourth stage according to Piaget's Theory, the formal operations period (1 to 17 years), is practically the adolescent years when peer pressure is greatly felt. Our freshmen college students are mostly in their adolescence. At this stage we expect them to manipulate and understand abstract concepts, and algebra is always presented as an abstract subject. Since freshmen students are in their adolescence, it is important for them to share common fears and anxieties to help each other become more independent, and to cope with changes that occur at this stage. It is therefore in this context that we proceed to conduct this study. The assumed flow of relationship between variables is illustrated in Figure 1.
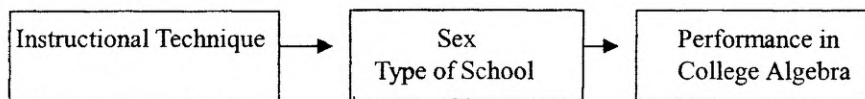
Instructional Technique	→	Sex Type of School	→	Performance in College Algebra

Figure 1. Assumed Flow of Relationship between the Two Variables

Hypotheses

With the theoretical and conceptual frameworks in mind, the researchers tested the following hypotheses:

1. There is no significant difference between (a) the pretest and posttest mean scores of both the control and the experiment group, (b) the post test mean scores of the two groups, and (c) the mean final grade in College Algebra of the two groups.
2. Performance in College Algebra does not vary with sex and type of high school the students graduated from.
3. There is no correlation between (a) senior high school math grades and placement examination scores, (b) senior high school math grades and final grade in college algebra, (c) math placement examination scores and final grade in College Algebra and (d) math placement examination score and post test scores.

METHODOLOGY

In the second semester of SY 1998-1999, the CPU Math and Physics Department materialized over twenty sections of College Algebra of 50 students each. Systematic sampling design was used to choose 50 out of 150 students enrolled in 9-10 am classes. A separate section was created for the 50 samples of this group. Using three criteria such as sex, senior high school math grade, and math placement results, artificial twins were taken from 150 students enrolled in 10-11 am College Algebra. The samples were again grouped in another section. Since there was a difficulty in producing exactly fifty twins, the researchers ended up to only 43 pairs, 36 females, and seven males in each group. The two sections were both handled by one of the researchers to eliminate teacher factor.

Experimental Design

A 40-item pretest equivalent to 68 points constructed by the researchers was administered to both control and experimental groups. Coverage and test items included were discussed with fellow algebra professors for validity. The same test was conducted as posttest a week before the end of the semester. In a span of three months, seven topics were covered. The topics were basic concepts, polynomials, fractions, radicals and complex numbers, exponents, linear and quadratics equations, and worded problem application.

Traditional method, which includes lecture, note taking, and presentation of examples, seatwork, board work, and homework exercises, were used with the control group. The experimental group was taught with a combination of teacher's lecture and peer tutoring for seatwork and homework exercises. Peer tutors were chosen from the top 20 percent of the class based on the pretest result. The class for one hour is divided into the following activities with corresponding time allotment: 5 minutes for recap, 30 minutes for presentation of the new lesson, 15 minutes for peer tutoring seatwork and 10 minutes for synthesis. More student interaction was allowed in the experimental group.

Similar constructed tests were given to both groups on the same date and used as basis for the performance of the students and their final grades. Students were given the usual number of quizzes and long examination in a semester.

Statistical Procedure

All data gathered needed for the study were encoded in the computer and were processed using the statistical software Statistical Package for the Social Sciences (SPSS) For the analysis, the study used the following statistical techniques: frequencies and percentages for proportion of students by college, sex, and type of

high school where students graduated; means, standard deviation, and t-value for significance of difference between groups in the different variables; and Pearson product-moment correlation for degree of interrelationship between senior high school math grades and placement examination scores, the students' fourth year high school math grade and college algebra grade, math placement exam results, and college algebra grade, and results of posttest and college algebra grade.

RESULTS AND DISCUSSION

Results of the study revealed that there is no significant difference in the mean scores of the experimental and control groups in the pretest and posttest indicating a comparable performance of students in the two groups. However, there is a significant difference in the final College Algebra grade with students in the experimental groups generally getting better grades than those in the control group (Table 1). This implies that peer tutoring as a strategy significantly helped in improving the performance of freshmen students in College Algebra.

Table 1. Comparison of the Difference Between Posttest Mean Scores and Mean Final Grade in College Algebra in the Control and Experimental Group

Groups and Measurement used	Control		Experimental		t-value
	Mean	SD	Mean	SD	
Pretest Scores	17.30	6.83	19.58	8.42	1.28
Posttest Scores	26.26	9.08	28.47	9.39	0.87
Final Grade in College Algebra	3.22	1.0	2.73	0.65	2.88*

* Significant at the 0.05 level of probability

As shown in Table 2, although the male students in the control group obtained a higher mean posttest score than the male students in the experimental group, the difference was not significant. There was also no significant difference in the final grades obtained by the students in the experimental and control groups at the end of the semester. This implies that peer tutoring did not make any significant improvement in the performance of male students.

Results of the study further revealed that the difference in the mean posttest scores of the female students in the experimental and control group was not significant. Again, this means that there was no significant difference in the performance of the female students who were taught under the traditional method and those who were exposed to peer tutoring (Table 2). There was, however, a significant difference in the performance of female students in terms of final grades obtained at the end of the semester. This implies that peer tutoring significantly improved the grade of female students in college algebra.

Table 2. Comparisons of the Mean Scores in the Posttest and the Mean Final Grades of Male and Female Students of the Control and Experimental Group

Group and Measurement Used	Control Group		Experimental Group		Mean Difference		t-value	
	Posttest	Final Grades	Posttest	Final Grades	Posttest	Final Grades	Posttest	Final Grades
Male								
Mean	31.00	2.61	25.14	2.79	5.86	0.18	0.90	0.70
SD	11.09	0.54	9.49	0.39				
Female								
Mean	25.44	3.33	28.61	2.72	3.17	0.61	1.45	2.93*
SD	8.53	1.04	2.72	0.70				

*Significant at the 0.05 level of probability

Shown in Table 3 is the performance of students when grouped according to the type of high school they have graduated from. For those who graduated from private schools, results of the study revealed that there was no significant difference in the posttest scores of the students in the experimental group and the posttest scores of students in the control group. This means that in terms of posttest scores, the performance of students who graduated from private schools were practically the same regardless of the method of teaching used. In terms of mean final grades, however, results revealed that there is a significant difference in the mean final grades of the students in the control group and the mean final grades of the students in the experimental group.

When it comes to the performance of students who came from public schools, results revealed that there is no significant difference in the mean posttest scores of the students in the experimental and control group (Table 3). Results also show that although the mean final grade of students in the experimental group is higher than the mean final grade of students in the control group, the difference is not significant.

Table 3. Comparison of the Mean Scores in the Posttest and the Mean Final Grades of the Private and Public School Graduates of the Control and Experimental Groups

Group and Measurement Used	Control Group		Experimental Group		Mean Difference		t-value	
	Posttest	Final Grades	Posttest	Final Grades	Posttest	Final Grades	Posttest	Final Grades
Private School								
Mean	27.4	3.18	29.5	2.56	2.1	0.62	0.47	2.53*
SD	9.95	1.03	9.42	0.43				
Public School								
Mean	25.43	3.25	26.78	2.87	1.35	0.38	0.46	1.33
SD	8.37	1.00	9.39	0.78				

*Significant at the 0.05 level of probability

The summary of correlation coefficient shown in Table 4 revealed that fourth year high school mathematics grades and math placement examination scores for control group have slightly positive correlation while the experimental group has substantial positive correlation. In the case of fourth year high school math grades and final grades in College Algebra, both control and experimental groups obtained a substantial positive correlation. Substantial positive correlation was also obtained from both control and experimental groups between math placement examination scores and final grades in College Algebra and also between math placement examination scores and posttest scores.

Table 4. Summary of Correlation Analyses Between Specified Variables.

Variables	Control Group		Experimental Group		Combined	
	r	r^2	r	r^2	r	r^2
4th year HS Math Grade and Math Placement Exam	0.34	11.56	0.55	30.25	0.46	21.16
4th year HS Math Grade and Algebra Final Grade	0.68	42.64	0.63	39.69	0.66	43.56
Math Placement Exam and Algebra Final Grade	0.57	32.49	0.46	21.16	0.51	26.01
Algebra Final Grade and Posttest Score	0.68	46.24	0.51	26.01	0.59	34.81

Results further showed that 46.24 percent (control group) and 39.69 percent (experimental group) of the variations in College Algebra final grade can be explained by the linear function of the fourth year high school math grade. On the other hand, only 32.49 percent (control group) and 21.16 percent (experimental group) of the variations in College Algebra final grade can be explained by the linear function of math placement exam scores.

CONCLUSIONS AND RECOMMENDATION

Based on the findings of this study, the following conclusions are drawn:

1. Exposure to peer tutoring technique improves students' performance and helped minimize failures.
2. Peer tutoring helped bridge the gap in the performance among students.
3. The male students' performance in College Algebra are not affected by the way they were taught, whether the usual type or peer tutoring strategy, however, the girls when aided by peer tutors can obtain better final grades than without peer tutors.
4. Both the usual teaching method and the employment of peer tutoring were as effective as each other in helping the students improve their performance in College Algebra whether they come from public schools or private schools.
5. Results of this study disproved the popular notion that private school graduates are better prepared academically than the public school graduates since no significant difference was found in the performance of private and public schools graduates in both posttest and final grades.
6. There is a substantial indication that the higher the math grade the students obtained in his senior high school year, the higher the Mathematics Placement Exam score is expected to be obtained and the better final grade the student will get in College Algebra. Likewise, the higher the placement exam score that the student gets at the beginning of the semester, the higher posttest score and final grade will he get at the end of the semester.

After considering the results of the study, the following are recommended:

1. Math teachers must be sensitive to meet the needs of the students and apply different teaching strategies like peer tutoring. A variation of strategies in an hour class must be used to break boredom.

2. Math teachers should train and supervise peer tutors and if possible, be present during peer tutoring sessions.
3. Students must study in groups to help each other and a peer tutor must be among them.
4. Further studies must be conducted on using peer tutoring to develop values and self-concept of the students, and attitude of students toward mathematics. Moreover, explore other techniques that will help students perform better in mathematics.

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CALLA LESSON PLAN MODEL: TOWARD THE DEVELOPMENT OF ACADEMIC LANGUAGE SKILLS AND LEARNING STRATEGIES OF ESL AND BILINGUAL STUDENTS IN THE ELEMENTARY AND SECONDARY LEVEL

By Anita U. Illenberger, Ed.D

ABSTRACT

The main purpose of the study is to describe Cognitive Academic Language Learning Approach (CALLA) as an instructional system designed to develop academic language skills in English of students in the elementary and secondary level. It is also the aim of the study to develop content-based lesson plans using CALLA lesson planning technique.

The study is divided into two parts. Part I consists of the rationale and objectives of the study of CALLA, review of studies conducted on language and cognition, learning strategies and academic performance, analysis of academic difficulties of English as Second Language (ESL) and Bilingual learners in language and content-based classes, and comprehensive discussion of the components of CALLA. Part II is an overview of the CALLA lesson planning strategy and a compilation of the content based lesson plans covering different subject areas such as; Science, Mathematics, Language Arts, Social Studies, Values Education, Literature, Grammar, Reading and Writing. The study highlighted research findings on the aspects of language as a complex cognitive skill and its implication to language instruction. Analysis of these findings revealed that ESL and Bilingual students in mainstream classes encountered many difficulties because of differences between the type of language used for ordinary social conversation and the type of language used for academic purposes and the fact that these language skills take considerably longer to develop than social language skills.

INTRODUCTION

Many English as Second Language (ESL) teachers have realized that General English Proficiency is not all that students need in order to succeed in mainstream courses. Students need the academic language which demands the ability to understand and generate the complex syntax of Standard English in formal and written expression (Chamot & O'Malley, 1994).

The thesis upon which this study is built runs parallel with Cummins' (1981) suggestions that cognitive academic language proficiency is necessary in order for students to use language for higher level thinking skills, rather than use language exclusively for interpersonal communication or conversation. On this basis, this research paper addresses the need to study a pedagogical approach which is grounded on research and provides guidance for academic language instruction.

Objectives of the Study

The purpose of this paper is to make a descriptive study of the Cognitive Academic Language Approach (CALLA).Specifically, the study aims to:

1. identify and discuss the different academic difficulties encountered by ESL/ bilingual students;
2. analyze the components of CALLA and its theoretical bases; and
3. develop lesson plan models that can be utilized to improve the academic competence of the students.

RESEARCH FRAMEWORK

As a qualitative study, this paper utilizes research studies made on CALLA and gives critical analysis of data on the theoretical development in cognitive learning. The lesson plan models are designed using CALLA lesson planning techniques.

The theoretical framework of the study is focused on language learning as a cognitive skill. CALLA is based on a theory that implies language as a complex cognitive skill, similar in many respects to other complex cognitive skills such as reading for comprehension, writing, and problem solving in mathematics. The theory indicates that learning a language has more in common with learning any other complex cognitive skill than it does with learning fact, isolated pieces of information, or even meaningful texts. It is considered, therefore, that many of the techniques that classroom teachers use in teaching other complex skills will apply directly to teaching the ESL/ Bilingual learners. The basic theories that the study explored are on the interaction between language and cognition, the direct parallelism between learning strategies and cognition process, and the cognitive approach to learning that helps develop students' learning strategies and skills to enhance academic performance.

Paradigm of CALLA Variables

CALLA Lesson Plan   Communicative
                                                     Competence
                                                        and
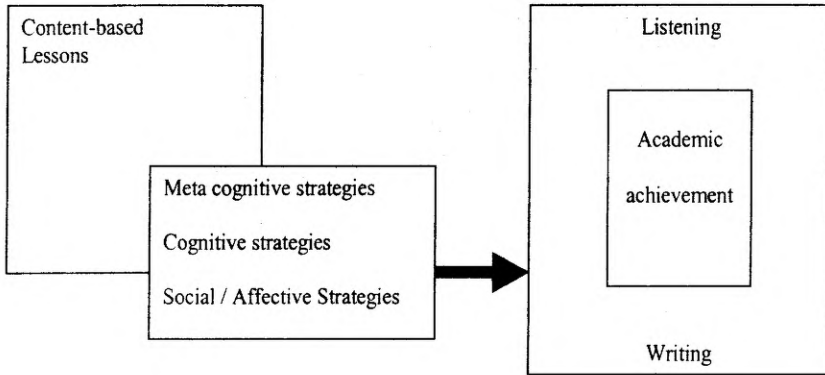   Academic
                                                     Achievement

Figure 1. The integration of the content-based lessons and learning strategies

ANALYSIS AND DISCUSSION

Language as Cognitive Skill and Its Implications to Language Instruction

There are four aspects of complex cognitive skills, namely: cognitive skills that consist of procedures, performance that takes several years, feedback that is necessary for language learning, and transfer of complex skill which is difficult. Hence, this implies that language instruction should consider the use of authentic content-related materials, peer evaluation, and cooperative learning for immediate feedback, and inclusion of four language skills (listening, speaking, reading, and writing) in every content area.

Academic Difficulties of ESL/Bilingual Students in Language and Content-Based Classes

ESL/Bilingual students' common problems are in language acquisition process. There are two language acquisition processes which involve mental activities to be able to communicate. Transfer and generalization are directly related to the general cognitive mechanisms that individuals use in any type of learning. Transfer is most noticeable when learners use rules from their first language that are not applicable to the second. Generalization is the process observed when young children begin to acquire concepts and put labels to them and transfer them to learn the second language. In second language acquisition, the term overgeneralization is more frequently used and refers to situations in which the learner incorrectly generalizes a rule to cases when it does not apply. In this case, difficulty occurs when first language affects a second.

Another problem that comes in the way of second language learning is interference. The idea that early learning, such as learning a native language, interferes with latter learning, such as a second language, is a pro-active interference. This interference is a confusion resulting from the same or similar schema or script used in a different occasion. Many terms in a second language cannot be translated directly into first language, and attempts to form cognates interfere with understanding rather than facilitate comprehension.

CALLA as an Instructional System

Cognitive Academic Language Learning Approach aims to enrich the language the students may use for academic communication while furthering their ability to comprehend the language and discourse of different subject areas. It is a framework for teaching academic language skills and learning strategies that can help English language learners succeed in content areas. It is intended to supply added support in English language development for ESL/Bilingual students, and not to replace mainstream content instruction (Rico & Weed, 1995). The three components of the CALLA model, namely; 1) content-subject areas, 2) language development, and 3) learning strategy instruction are integrated into an instructional system which teaches ESL students how to use the language and learning strategies that they need for success in academic areas of the curriculum.

Reasons for the advocacy of these instructions are the following:
- Mentally active learners are better learners.
- Strategies can be taught.
- Learning strategies transfer to new tasks.
- Academic language learning is more effective with learning strategies.

Teaching ESL students to use conscious learning will accomplish three important goals; learning language, learning through language, and learning to learn. Adopted together with the instructions are the following general rules in selecting the strategies of learning (Chamot & O'Malley 1994, p.64):

- The curriculum determines the strategy.
- Start with a small number of strategies.
- Use tasks of moderate difficulty.
- Choose strategies with strong empirical support.
- Use strategies that apply to different content domains.

Moreover, the study identified the three major types of learning strategies used by the students. These are the *metacognitive strategies* (decision making, organizational planning, self monitoring, self evaluation), *cognitive strategies* (sourcing information, organizing data, taking notes, inferring, summarizing, deduction/induction, imaging, and transferring linguistic information), and *social/ affective strategies* (cooperation, questioning technique, and self talk).

CALLA Lesson Plan Model

The CALLA lesson plan model incorporates learning strategy instruction, content-area topics, and language development activities. In this plan, learning strategy instruction is embedded into daily lessons so that it becomes an integral part of the regular class routine, rather than a supplementary activity. There are five phases of CALLA lesson planning which aims to integrate language development, content learning, and enhance development of effective learning strategies.

- *Preparation* phase helps students to develop awareness that prior knowledge can be applied to the topic of the unit.
- *Presentation* phase provides the new information supported by context clues, such as demonstration and visuals.
- *Practice* is the phase which is learner-centered. It uses scaffolding which is a process that provides more extensive, instructional support teaching in learning and gradually withdrawn as the students gain more skills and independence.
- *Evaluation* phase helps students' metacognitive awareness of which strategies work for them as they check the performance level. Evaluation activities can be individual, cooperative, or teacher directed.
- *Expansion* phase gives the students variety of opportunities to think about new concepts and skills they have learned.

Lesson Plan Sample

Jazz Chants

Class: English Grammar
Year Level: Second Year High School
Class Time: 45 minutes
Lesson: *Possessive Pronouns*
Language Learning Objectives:
- identify pronoun
- use pronouns in the sentence

Learning Strategies:
- classification or grouping of ideas on ownership/possession or demonstratives
- cooperation and team learning

Materials: Handouts on "Selfish" Jazz Chants by Carolyn Graham
Procedures:
1. *Preparation*
   Ask students if they know or have ever heard about jazz songs/ music. If one or two students have background knowledge of jazz music, ask them to describe or even hum it. The teacher can add a little explanation of jazz music.

2. *Presentation*
   - Teacher writes on the board the following:
     this, that, mine, yours, hers, his, theirs, our, ours
   - Distribute copies of the chant to the students.
   - Teacher models the activity by chanting the lesson first.
   - Students are asked to listen carefully to the **th** sounds and final **s** sounds.

3. *Practice*
   - Divide students into four voice chants and chorus.
   - The chorus begins the chant repeating single word "mine" on the handout.
   - Groups continue in the background as each of the four voices enters.

4. *Evaluation*
   Using the classification strategy, students will categorize or group the pronouns according to function and use each in the sentence. Ask students to write their answer in a sheet of paper to be corrected by their seatmate.

5. *Expansion*
   For homework, ask the same group if they can make a jazz chants for lessons on informative questions "wh". Using categorizing strategy, students will group the kind of information one can get from each "wh" question.

Selfish

FOCUS   Listen carefully to the *th* sounds of **this, that** and the final *s* in **yours, hers, ours, theirs.**

STRUCTURE   This chant offers practice in the *possessive pronouns,* **mine,**
NOTES   **yours, his, hers, ours, theirs** and in the *demonstratives,* **this/that.**

Notice the strong feeling of **your own** when compared to **yours**.

Note the use of the *present continuous,* **Hey, what are you doing?** to indicate *immediate action taking place.*

PRESENTATION   *Variation: Four-Voice Chant and Chorus*
NOTES   The chorus begins the chant repeating the single word **Mine** and continues in the background as each of the four voices enter.

	CHORUS
	Mine
	Mine
	Mine
	Mine
This is mine!	Mine
That's yours!	Mine
Don't touch mine!	Mine
Get your own!	Mine

This is mine!
    That's yours!
Don't touch mine!
    Get your own!
This is mine!
    That's yours!
This is mine!
    That's mine!
This is mine!
    That's yours!
    That's yours!
    That's yours!
Hey, what are you doing?
    What are you doing with that?
That's mine!
Hey, what are you doing?
    What are you doing with that?

That's his!
Hey, what are you doing?
         What are you doing with that?
That's hers!
What's mine is mine.
         What's yours is yours.
What's his is his.
         What's hers is hers.
What's ours is ours.
         What's theirs is theirs.

CONCLUSIONS AND RECOMMENDATION

This descriptive study of CALLA provided a better understanding of the foundation for the second language teaching and language learning strategy instruction to theory, research, and practice. The theoretical foundation of CALLA was explained by the description of the interaction between language and cognition. Using cognitive theory as basis for understanding of the processes underlying language comprehension and production, ESL/Bilingual teachers will have insights into the academic language needs of Limited English Proficiency (LEP) students. This is the need of students which CALLA intends to meet. CALLA was developed as an instructional system to teach LEP student how to apply learning strategies to both academic language and tasks and use language functionally as a tool for learning academic subject matter.

Since there is no one best method to make classroom teaching perfectly effective, it is recommended that integration of other techniques in language be explored. As life-long learners, creative teachers are committed to their profession. In this regard, the following are further recommended:

1. effective teacher training to help teachers adapt to the changing needs of language teaching;
2. encouraging teacher research/action research in the classroom;
3. involvement in curriculum development for teachers to better understand the goals, scope, and sequence of language learning in their school; and
4. developing lesson plan and material design to meet specific needs of the students.

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HIGH SCHOOL GRADE AVERAGE, NATIONAL SECONDARY ACHIEVEMENT TEST RATING, AND ENGLISH AND MATH PLACEMENT EXAMINATION SCORES AS PREDICTORS OF ACADEMIC PERFORMANCE AMONG FRESHMAN STUDENTS IN INTRODUCTORY ACCOUNTING AT CENTRAL PHILIPPINE UNIVERSITY FOR SCHOOL YEAR 1997-98

By Mary O' T. Penetrante, MBA

ABTRACT

The study determined the predictive ability of the college admission criteria —High School Grade Average (HSGA), National Secondary Achievement Test (NSAT) rating, English Placement Examination Score (EPES) and Math Placement Examination Score (MPES) on the academic performance of freshman students in Introductory Accounting (IA). Regressions analysis was used to explain variances in students' final grade in IA and a step-wise discriminant analysis was performed to build a predictive model that could predict academic performance in Introductory Accounting. The findings showed that a linear combination of all four independent variables was found to be the best predictor of the academic performance of freshman students in IA course. HSGA was found to be the strongest and EPES was found to be the weakest predictor.

INTRODUCTION

Today many colleges and universities have begun to grapple with the decision to scrap college admission requirements. Colleges have long struggled to find the best way to evaluate students' qualifications.

When determining an applicant's admissibility to college, many undergraduate admission offices select students based on the traditional predictors of academic performance such as standardized test scores and high school grades. Other colleges and universities identify potential college students by using nontraditional predictors such as gender and race. There are still other institutions that use traditional predictors in combination with nontraditional predictors in predicting the potential college performance of applicants.

In the US, polls suggest that most Californians believe university admissions should be based on merit, not on gender or race or grades and test scores. But higher education experts say that merit is more than a simple amalgam of grades and test scores. According to these experts, university admission is a complicated concept that varies depending on an institution's particular mission. Experts claim that if a university seeks merely to teach facts, it will prize students who show aptitude memorization, if it wants to have national reach, it will see merit in applicants from states not yet represented on campus, and if it wants students to learn from one another, it will value a broad mix of talents, experiences, and backgrounds.

In the Philippines, the government is vigilant in its campaign for equal access to education, though many colleges and universities, both state-owned and private, set their own admission criteria to identify the best-qualified college-bound students.

Central Philippine University (CPU) is a private, Christian tertiary school whose mission is to carry out a program of spiritual, intellectual, moral, scientific, technological and cultural training, and allied studies under influences which strengthen Christian faith, build up character and promote scholarship, research and community service (CPU Academic Manual). It aims to enable each student to actualize his/her potential as an individual and as a member of society. To attain this, the university had sought answers to some vital educational issues, particularly in the College of Commerce. It had to cope with the needs of the students, faculty and staff, and the global community. Needless to say, CPU has to maintain its academic status, being an accredited institution. It must conform to the policies created by the Commission on Higher Education (CHED) for private colleges and universities.

One of the policies set by CHED pertains to the passing percentage in board examinations. To attain this, a screening process is required for incoming freshman students, which included the student's high school grade average (HSGA), National Secondary Achievement Test (NSAT) rating and scores in the English and Math placement examinations given by the university for the entire population of freshmen applicants.

Despite the requirements set by each department, it has been observed that these freshmen students enrolled in the course Introductory Accounting (IA) earn low grades. As a result, they are advised to shift to another degree program. There had been a steady increase in student dropouts for the last three years. During school year 1995-96, 99% of students of the 362 freshmen failed, dropped or

left Introductory Accounting, a basic subject required to all freshmen Commerce students. In school year 1996-97, 11% (114 students) of the 1,032 freshmen failed and in school year 1997-98, 14% (157 students) of the 1,122 freshmen did not pass the subject. Most of the shifters enrolled in the Department of Management and Related Disciplines and took up degree courses in Management, Economics, Entrepreneurship, Finance and Marketing.

The researcher saw the necessity to determine whether the admission criteria set by the college such as high school grade average, NSAT rating and English and Math placement examination scores can really predict academic performance of students in business courses and if these admission criteria can predict academic performance in college, how good are their predictive ability? Can certain variables be excluded from such admission equation to provide more accurate and efficient selection criteria for the College of Commerce students?

Objectives

This study determined the high school grade average (HSGA), NSAT rating, and English (EPES) and Math (MPES) placement examination scores as predictors of academic performance among freshman students in Introductory Accounting at Central Philippine University for the school year 1997-1998. Specifically, the study sought answers to the following questions:

1. What is the personal profile of the freshman students enrolled in Introductory Accounting in terms of their sex, type of high school graduated from, high school location, and major field of study?
2. What is their high school grade average, NSAT rating, English and Math placement examinations scores?
3. What is their level of academic performance in Introductory Accounting?
4. Are there significant differences in the students' high school grade average, NSAT rating, and English and Math placement examination scores when they are grouped according to sex, type of school graduated from, high school location, and major field of study?
5. Are there significant differences in the students' performance in Introductory Accounting when they are grouped according to sex, type of high school graduated from, high school location, major field of study, high school grade average, NSAT rating, and English and Math placement examination scores?

6. Are there significant relationships between sex, type of school graduated from, high school location, major field of study, high school grade average, NSAT rating, English and Math placement examination scores, and academic performance among freshmen students in Introductory Accounting?

7. Which of these admission criteria could significantly predict academic performance in Introductory Accounting?

Theoretical Framework

Maier's behavioral theory as cited by Pilar and Rodriguez (1981) explains the causal relationship between the individual and situation, which produces the ensuring behavior and accomplishments. According to this theory, accomplishment is a product of the behavior, which precedes it and that the nature of the accomplishment can play a part in subsequent behavior, provided the person learns. This learning may be profitable or detrimental. Maier argued that since accomplishment is influenced by chance factors, in the sense that the same behavior can have a number of different accomplishments, it is difficult to control accomplishments. For this reason, he suggested that one should clearly distinguish behavior from accomplishment and seek to improve and predict accomplishment by studying the factors influencing the behavior.

This psychological approach to behavior, according to Pilar and Rodriguez (1981) is characterized by acceptance of causation in behavior as a fact and that it demands an analysis of the events that precede behavior, which in turn, leads to analysis of the situation and to the study of the individual and his past experiences. Whether the behavior is absenteeism or delinquency or whether the accomplishment is good or poor, they said that it must be understood in terms of antecedent events if it is to be corrected.

Rogers (1978) supported Maier's environmental theory which states that a human being is unified with individuality and its continued exchange with the environment, consisting of the totality of patterns external to the individual. She said that environment plays a major role in the development of an individual and that what happened in the past life will always affect the future.

Conceptual Framework

The variables of this study are presented in three groups namely, the dependent variable, the independent variables, and the antecedent variables. The

dependent variable is the focus of the study in which behavior or status is influenced by the independent variables.

The assumed flow of relationship among variables is illustrated in Figure 1.
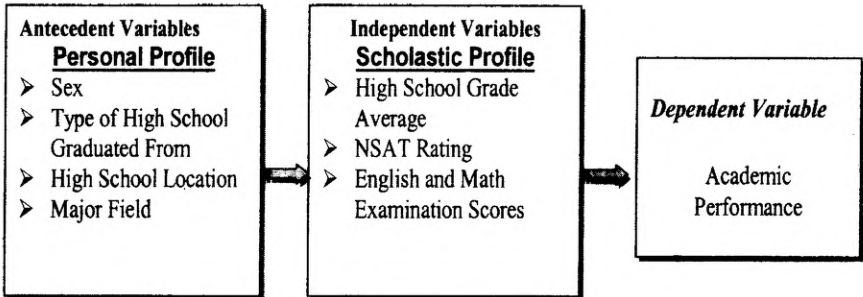
Figure 1. Assumed Flow of Relationship Among Variables

Research Hypotheses

In view of the preceding problems, the following hypotheses are advanced:

1. Male students tend to perform better than female students in high school, NSAT, and in the Math placement examination while female students tend to perform better than male students in the English placement examination.

2. Students who graduated from private high schools tend to perform better in high school, NSAT, and in the English and Math placement examinations compared with those who graduated from public high schools.

3. Students who graduated from secondary schools within the city proper tend to perform better in high school, NSAT, and English and Math placement examinations than those who graduated in secondary schools outside the city proper.

4. Accountancy students performed better when they were in high school, and when they took their NSAT, English and Math placement examinations than the rest of their peers who are not in the Accountancy program.

5. Female students academically perform better than male students in Introductory Accounting.

6. Students who graduated from private high schools tend to perform better in Introductory Accounting than those who graduated from public high school.

7. Students coming from secondary schools located within the city proper perform better in Introductory Accounting than those coming from secondary schools located outside the city proper.

8.   Accountancy students perform academically better in Introductory Accounting than Computer Science or Management students.
9.   The higher the high school grade average, NSAT rating, and English and Math placement examination scores the higher the academic performance in Introductory Accounting.
10. Admission criteria such as high school grade average (HSGA), National Secondary Achievement Test (NSAT) rating, and English and Math placement examination scores are significant predictors of academic performance in Introductory Accounting among freshman students.

RESEARCH METHODOLOGY

The descriptive-relational research design with the aid of documentary analysis technique in data gathering was used. From a total of 1,122 freshmen students enrolled in the College of Commerce Introductory Accounting course at Central Philippine University for school year 1997-98, only 286 were randomly selected as sample respondents. A stratified random sampling was employed in the selection of the sample respondents of this study.

Descriptive statistics were generated to describe the personal and scholastic profiles of the respondents. Means and standard deviations were used to measure central tendencies and dispersions of data. To determine differences between means, z-test and the analysis of variance (ANOVA) were computed. Intercorrelation matrix were calculated using Pearson product-moment correlation coefficients to determine extent of relationship between HSGA, NSAT Rating, EPES, MPES, and final grade in IA variables and were interpreted using Garrett's (1961) interpretation.

Regressions analysis was used to explain variance in students' final grade in IA. Since multicollinearity exists among variables, a step-wise discriminant analysis was performed to build a predictive model of independent variables that could best predict academic performance in Introductory Accounting as reflected in their final grade. An alpha level of 0.05 was established as priori.

DATA ANALYSIS AND INTERPRETATION

HSGA, NSAT Rating, EPES, and MPES of the Respondents Grouped According to Sex.

Data in Table 1 show that the mean HSGA of female freshman students is higher by 1.22 than that of male freshmen students. The difference in means was significant at 5% level. This indicates that the HSGA of freshman students vary significantly when grouped according to sex and that female students performed better in high school compared with male students.

The data also reveal that female students obtained higher (84.98) mean NSAT rating than the rating of the male group (84.61). The difference in group means, however, is not statistically significant (Z=0.660) suggesting that sex has no bearing in the NSAT rating of freshman students enrolled in IA.

The data further reveal that the mean EPES of male freshmen students was 52.75 while that of the female students was 56.67. The mean difference of the two groups is statistically significant at the 5% level which indicates that female students' EPES is significantly higher than that of male students.

As indicated by the mean MPES of male students which is significantly (p=.05) higher (14.83) compared to the mean MPES of female students (13.13), the results show that male students performed better in MPE than female students. A closer look at the data reveals that among the four independent variables used in this study, only the difference in group means of male and female students in NSAT rating is not significant at the 5% level. This indicates that generally, these students differ in terms of sex in HSGA, EPES, and MPES but not in NSAT rating.

Table 1. Difference in the HSGA, NSAT Rating, EPES, and MPES of the Respondents by Sex.

Indicators	Respondents' Sex						Z-value	Sig. level
	Male			Female				
	N	Mean	SD	N	Mean	SD		
HSGA	71	84.66	4.31	215	85.88	3.31	2.47	0.014*
NSAT Rating	71	84.61	4.26	215	84.98	3.88	0.66	0.510
EPES	71	52.75	15.29	215	56.67	13.79	2.02	0.044*
MPES	71	14.83	7.53	215	13.13	4.55	2.29	0.023*

*Statistically significant at the 5% level of probability

HSGA, NSAT Rating, EPES and MPES of the Respondents Grouped According to Type of High School Where They Graduated.

As shown in Table 2, the mean HSGA of students from public high schools is 86.14 while the mean of those from private high schools is 84.99. The difference in means is statistically significant at the 5% level. The data reveal that in general, graduates of public high schools performed better in high school than those graduates from private high schools. The general assumption that students coming from the public high schools perform second to those from private high schools is not true with these students.

The data further reveal that the difference in group means of NSAT rating between graduates of public and private high schools is not statistically significant. It indicates that the type of high school where the students graduated has no bearing in their NSAT rating.

Comparison of the mean EPES of the public and private schools shows that students from private high schools perform better in EPE than their peers from public schools. The result suggests that the type of high school where the students graduated has a bearing in their EPES. Furthermore, the data show that in terms of MPES, the difference in means between public and private high school graduates enrolled in IA is not statistically significant at the 5% level. The result indicates that there is no significant difference in the students' MPES when grouped according to the type of high school where they graduated.

Table 2. Difference in the HSGA, NSAT Rating, EPES and MPES of the Respondents by Type of High School Where They Graduated.

| Indicators | Type of High School | | | | | | Z-value | Sig. level |
| | Public | | | Private | | | | |
	N	Mean	SD	N	Mean	SD		
HSGA	145	86.14	3.19	141	84.99	3.93	2.71	0.007*
NSAT Rating	145	84.58	4.02	141	85.20	3.91	1.13	0.189
EPES	145	53.97	13.56	141	57.48	14.77	2.09	0.037*
MPES	145	13.45	5.64	141	13.66	5.32	0.33	0.745

*Statistically significant at the 5% level of probability

HSGA, NSAT Rating, EPES, and MPES of the Respondents Grouped According to High School Location.

When students were compared as to the location of the high school where they graduated, the mean HSGA of those who graduated from secondary schools located within the city proper is significantly lower (84.18) compared to the mean HSGA of those from secondary schools located outside the city proper. The findings suggest that graduates from secondary schools within the city proper tend to perform better in high school than those who graduated from secondary schools outside the city proper.

The findings also show that NSAT rating of students who graduated from secondary schools located within the city proper is comparatively lower (84.73) than that of the graduates from secondary schools outside the city proper (84.96). The data suggest that NSAT ratings of the students do not vary significantly by high school location. This is also true with their EPES and MPES. All these data are shown in Table 3.

Table 3. Difference in the HSGA, NSAT Rating, EPES, and MPES of the Respondents by High School Location.

| Indicators | High School Location | | | | | | Z-value | Sig. level |
| | Within City Proper | | | Outside City Proper | | | | |
	N	Mean	SD	N	Mean	SD		
HSGA	74	84.18	3.84	212	86.06	3.41	3.74	0.000*
NSAT Rating	74	84.73	4.15	212	84.96	3.92	0.41	0.683
EPES	74	57.72	15.30	212	54.99	13.84	1.42	0.157
MPES	74	14.50	6.24	212	13.22	5.16	1.73	0.084

*Statistically significant at the 5% level of probability

HSGA, NSAT Rating, EPES, and MPES of the Respondents Grouped According to Major Field of Study.

Data in **Table 4** reveal that the Accountancy students obtained higher mean HSGA (87.70) compared to Computer Sciences students (85.91) and Management and Related Disciplines students (83.16). Statistical results show that differences in group means vary significantly at the 5% level indicating that the mean HSGA of Accountancy students highly differ from that of the Computer science students or from that of the Management students.

Comparison of a significance ($p<0.05$) of the performance in NSAT of Accountancy, Computer Science and Management students show that there is a significant difference in their group means as shown in computed F-ratio of 63.79. It is also evident that there is a very high significant difference in means scores of students in EPES as well as in MPES.

Table 4. Difference in the HSGA, NSAT Rating, EPES and MPES of the Respondents by Major Field of Study taken as a whole.

Indicators	Major Field of Study									F-Ratio	Sig.
	Accountancy			Computer Science			Mgt and Related Disciplines				
	N	Mean	SD	N	Mean	SD	N	Mean	SD		
HSGA	114	87.70	2.80	63	85.91	2.92	109	83.16	3.27	63.79	0.000*
NSAT Rating	114	86.91	3.49	63	85.06	3.88	109	82.68	3.31	40.55	0.000*
EPES	114	59.77	14.19	63	56.27	13.84	109	51.10	13.29	11.11	0.000*
MPES	114	16.40	6.18	63	12.84	4.37	109	10.98	5.48	34.56	0.000*

*Statistically significant at the 5% level of probability

Data were analyzed further to test whether or not Accountancy students performed better when they were still in high school, and in their NSAT, English, and Math placement examinations as compared to other groups. Results show that indeed Accountancy students performed better in high school, in NSAT, and in Math placement examination compared to the Computer Science students or the Management students as indicated by the z-test values, which were all significant at the 5% level. Moreover, very high significant differences between EPES of Accountancy and Management students as well as EPES of Computer Science and Management students were found (Table 5). However, there is no significant difference between EPES of Accountancy and Computer Science students.

Table 5. Difference in the HSGA, NSAT Rating, EPES, and MPES of the Respondents by Major Field of Study when Taken Two Groups at a Time.

Indicators	Accountancy vs. Computer Science		Computer Science vs. Mgt and Related Disciplines		Mgt and Related Disciplines vs. Accountancy	
	Z-value	Sig level	Z-value	Sig level	Z-value	Sig level
HSGA	4.00	0.000*	5.70	0.000*	11.11	0.000*
NSAT Rating	3.147	0.002*	4.09	0.000*	9.30	0.000*
EPES	1.60	0.113	2.40	0.018*	4.71	0.000*
MPES	4.05	0.000*	2.87	0.005*	7.98	0.000*

*Statistically significant at the 5% level of probability

Academic Performance in IA of the Respondents Grouped According to Sex, Type of High School Graduated, School Location and Major Field of Study.

The academic performance of the freshmen students in IA did not significantly vary according to sex. This finding did not support the hypothesis that female students perform better academically than male students in IA. However, it supports the findings made by Pison (1998) and Java (1999) that college performance of the graduates did not vary significantly according to sex while it negates the findings made by Owings et al (1995) on college-bound students in the U.S. that female students achieve higher GPA than males.

These contradicting results of the cited studies and of this study concretized the statement made by Java (1999) that sex as a variable may or may not affect performance of the subjects studied. She found out that sex may affect students' academic performance in some years, while in other years, it did not.

Slight difference of academic performance in IA between public and private high school graduates was observed but not significant at the 5% level. This indicates that the type of high school attended by the respondents has no bearing in their academic performance in Introductory Accounting. The same result was found when students were grouped according to high school location. However, their academic performance in Introductory Accounting varies when grouped according to major fields of study.

Table 6. Differences in the Academic Performance in Introductory Accounting of the Respondents by Sex, Type of High School Graduated, School Location, and Major Field of Study.

Indicators	N	Mean	SD	Z-value/ F-ratio	Sig. level
Sex					
Male	71	2.75	0.9491		
Female	215	2.74	0.8833	Z=0.063	0.950
Type of High School Graduated From					
Public	145	2.70	0.8086		
Private	141	2.79	0.9832	Z=0.834	0.404
School Location					
Within City Proper	74	2.75	0.9727		
Outside City Proper	212	2.74	0.8734	Z=0.069	0.945
Major Field of Study					
Accountancy	114	2.32	1.1246		
Computer Science	63	1.63	1.1034		
Management &Related Disciplines	109	1.41	0.9602	F=15.390	0.000*
Entire Group	286	1.82	.0672		

* Statistically significant at the 5% level of probability

Academic Performance of Respondents Classified According To Their HSGA, NSAT Rating, EPES, and MPES.

As shown in Table 7, the academic performance of the students in IA significantly varies according to their HSGA. Those who obtained high high school grade average (91 and above) also obtained high mean grade (3.36) in IA while those who obtained low high school grade average (75-84) were the ones who obtained low mean grade (1.26) in IA. Among the respondents, those who obtained the highest NSAT rating (90-94) were also those who obtained the highest mean grade in IA (3.36), while those who obtained the lowest NSAT rating (75-79) also obtained the lowest mean grade in IA (0.96). Results of the F-test revealed that the variation in the mean scores was significant at the 5% level of probability.

The trend is likewise the same when the respondents' mean grades in IA were analyzed according to their EPES. The results show that generally, the higher the EPES, the higher the mean grade in IA. Again, the variations in mean scores were found to be highly significant at the 5% level (F-ratio = 14.507). This result also supports the hypothesis that those students who obtained high EPES were more likely to perform better in IA than those who obtained low EPES.

The data further reveal that those who obtained high scores in the Math placement examination were also those who obtained high mean grade in IA, while those who obtained low score in the Math placement examination were also those who obtained low mean grade in IA. The F-ratio of 24.101 for the test in difference between means was found to be significant at the 5% level.

Table 7. Differences in the Academic Performance in Introductory
Accounting of the Respondents by HSGA, NSAT Rating, English
and Math Placement Examination Scores.

Indicators	N	Mean	SD	F-ratio	Sig. level
<u>HSGA</u>					
91 and above (high)	22	3.36	0.8477		
85-90 (average)	154	2.00	1.0625		
75-84 (low)	110	1.26	0.9028	46.864	0.000*
<u>NSAT Rating</u>					
90-94	36	3.17	1.0419		
85-89	103	2.02	1.0179		
80-84	119	1.45	0.9247		
75-79	28	0.96	0.7927	38.378	0.000*
<u>EPES</u>					
90-100	2	3.25	.3535		
79-89	18	3.14	1.0683		
68-78	39	2.67	1.2425		
57-67	71	1.85	1.0399		
46-56	94	1.47	0.9527		
35-45	47	1.36	0.8704		
Below 35	15	1.40	0.7368	14.507	0.000*
<u>MPES</u>					
31 and above	4	3.62	1.1089		
21-30	25	3.26	0.8794		
10-20	196	1.72	1.0490		
Below 10	61	1.45	0.9691	24.101	0.000*

* Statistically significant at the 5% level of probability

Relationship between HSGA, NSAT Rating, EPES, MPES, and Academic Performance in IA.

Presented in Table 8 are the correlation coefficients between the admission criteria (HSGA, NSAT Rating, English and Math Placement Examination Scores) and Academic Performance in IA.

Based on the interpretation of Garrett (1961), substantial positive correlations were found between the predictor HSGA and IA final grade (r=.5618), NSAT Rating (r=.5605), English score (r=.4455) and Math score (r=.4732). In addition, substantial positive intercorrelations were found between HSGA and NSAT rating (r=.5979), NSAT Rating and English score (r=.5830), NSAT rating and Math score (r=.5522) and English and Math scores (r=.4439). Meanwhile, low positive association were identified between HSGA and English score (r=.3937) and HSGA and Math score (r=.4052).

The results imply that HSGA, NSAT rating, English and Math placement examination scores have bearing on how the students perform in Introductory Accounting subject. Those who obtain higher HSGA, NSAT rating, English and Math examination scores will also perform better in Introductory Accounting subject. It firmly supports the hypothesis that the higher the HSGA, NSAT rating and English and Math placement examination scores, the better the academic performance in Introductory Accounting.

Table 8. Intercorrelation Matrix of Independent and Dependent Variables in the Study.

Variable	Y	(X_1)	(X_2)	(X_3)	(X_4)
IA Final Grade (Y)	r=1.000	r=0.5618* p=.0000	r- 0.5605* p=0.000	r=0 .4455* p=0.000	r=0.4732* p=0.000
HSGA (X_1)		r=1.000	r=0.5979* P=0.000	r=0.3937 p=0.000	r=0.4052 p=0.000
NSAT Rating (X_2)			r=1.000	r=0.5830* p=0.000	r=0.5522* p=0.000
EPES (X_3)				r=1.000	r=0.4439* p=0.000
MPES (X_4)					r=1.000

*Statistically significant at the 5% level of probability

Multiple Regression Analysis.

The intercorrelations matrix of predictor variables revealed the presence of multicollinearity, as indicated by a substantial correlation between independent variables and the significant probability value of 0.000, which is a potential violation of the assumptions in using multiple linear regressions. Using guidelines offered by Lewis-Beck (1980), each independent variable was regressed on the remaining independent variables as shown in table 8.

The adjusted R-value of model 4 (HSGA, NSAT, EPS, and MPS taken together) is higher (0.424) than the rest of the regression models used in this study. This means that model 4 closely reflect the goodness of fit of the model in the population. The R^2 value of 0.432 indicates that 43% of the variance in academic

performance of freshmen students in IA could be explained by a linear combination of HSGA, NSAT rating, EPS, and MPS. Furthermore, the significance of F (53.376) shows that the independent variables proved to be the factors that explain the variation in the academic performance of freshmen students in IA. These findings support the hypothesis that HSGA, NSAT rating, EPS, and MPS are good predictors of academic performance of freshmen students in IA especially when taken together.

Table 9. Step-wise Regression Model Summary of all the Independent Variables on Academic Performance in IA of Freshman Students.

Model	R	R^2	Adj. R^2	Standard Error of Estimates	Sum of Squares		F	Sig level
					Regression	Residual		
1. HSGA	0.562	0.316	0.313	0.942	116.235	252.098	130.943	0.000*
2. NSAT Rating	0.628	0.394	0.390	0.888	146.172	223.161	92.050	0.000*
3. English Score	0.649	0.422	0.415	0.869	155.275	213.058	68.507	0.000*
4. Math Score	0.657	0.432	0.424	0.863	159.030	.209.303	53.376	0.000*

*Statistically significant at the 5% level of probability

Although a linear combination of all the four independent variables used in this study could best predict the academic performance of freshman students in IA, there is still a need to determine which of these four variables can strongly predict students' academic performance in IA; this was done by computing a regression coefficient of each of the admission criteria. Results are shown in Table 10.

The beta coefficients show that for every unit increase in HSGA, NSAT rating, EPES and MPES, there is a corresponding increase in the academic performance of freshman students in IA by 0.323, 0.195, 0.126 and 0.178, respectively These findings indicate that among these four variables, HSGA is the strongest predictor of the academic performance of freshman students in IA while EPES accounted the least increase in the students' academic performance in IA.

The results further show that each of these independent variables is linearly related to the dependent variable as shown by their significant ($p < 0.05$) computed t-values.

Table 10. Regression Coefficient of all the Independent Variables on Academic Performance in IA of Freshman Students.

Variable	ß	t	Significance level
HSGA	0.323	5.713	0.000*
NSAT Rating	0.195	2.909	0.004*
EPES	0.126	2.245	0.026*
MPES	0.178	3.237	0.001*

*Statistically significant at the 5% level of probability

CONCLUSIONS

Based on the findings of this study, the following conclusions are drawn:

The majority of freshman students obtained average grades in secondary school and in their basic accounting subject. The majority obtained just above the passing score in English and Math placement examinations. These findings led the researcher to question whether or not the education system succeeded in maximizing the full intellectual potential of these students at this level.

HSGA of freshman students vary significantly when they were grouped according to sex, type of high school where they graduated, high school location, and major field of study.

Female students majoring in Accountancy program who graduated from public high school located outside the city proper, exhibit the tendency to perform better in high school than their male peers.

Students' NSAT rating do not differ significantly when they were grouped according to sex, type of high school where they graduated, and high school location but vary significantly when grouped according to their major field of study. Freshmen students majoring in Accountancy tended to perform better in NSAT than the rest of their peers.

Freshman students' EPES vary significantly except when grouped according to high school location. Again, female students majoring in Accountancy and who graduated from private high school tended to perform better in English Placement Examination as compared to their male counterpart.

The MPES of students vary significantly except when grouped by type of high school. Male students majoring in Accountancy program and who graduated from high school outside the city proper performed better in the Math Placement examination as compared to their female counterparts.

Freshman students' academic performance in Introductory Accounting course do not significantly vary by sex, type of high school where they graduated and high school location but significantly vary by major field of study. Students majoring in Accountancy program performed better in this course as compared to those who chose to major in other business courses. This implies that students who are majoring in Accountancy course were "academically superior" even in the tertiary level compared to the rest of their peers. Or perhaps Accountancy students are more academically focused and that they are more motivated by stricter retention requirements, which they seem to believe, preparing them to pass the national

board examination and eventually land a higher paying job at the earliest possible time. On the other hand, students majoring in other business courses seem not to mind receiving just passing marks for they do not have national board examination to pass and seem to contend themselves to land even low-paying jobs.

A linear combination of all the four independent variables was found to be the best predictor of the academic performance of freshman students in Introductory Accounting course. Among the four independent variables however, HSGA was found to be the strongest and EPES was found to be the weakest predictor.

RECOMMENDATIONS

On the basis of the findings and conclusions, the following are recommended:
1.   If the College of Commerce aims for higher academic excellence, it should consider raising the cut-off of the admission criteria such as HSGA, NSAT rating, EPES, and MPES for admission of students to college not only in its Accountancy program but in other business courses as well. By doing so, the college should consider additional variables to its admission equation to determine the best-qualified students in college and at the same time creating a synergistic combination of the contributions to learning from classroom teachers, university administrators and staff and from the students as well.

2.   Secondary school teachers should give the students more intellectual tools to analyze verbally and numerically to improve students' performance in the Basic English and Math subjects.

3.   The college can use the admission criteria to help direct resources, such as after-school tutoring or summer school, for those who lag behind.

4.   Parents and teachers should be aware that students' scholastic achievements in the secondary level and the college admission tests are good predictors of students' college performance. This awareness would help parents know when children are capable of tackling college work and which ones are not yet ready.

5.   The findings of the current study and those of prior researches raise concern on the use of university wide admission criteria as adequate predictors for the success of students enrolled in the College of Commerce. In this context, it is recommended that additional research be made to establish other valid and reliable predictors of academic performance in college and its predictive strength while establishing trends between variables as well as other variables regarding students' performance in college.

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MONITORING THE WATER QUALITY OF DOMESTIC AND DRINKING WATER FROM DIFFERENT WATER SOURCES IN CPU CAMPUS

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ABSTRACT

This study determined the quality of domestic and drinking water from different water sources in CPU. This study described the quality of water from the identified thirteen water sources inside CPU campus, nine of which were deep wells and/or water tanks (storing water from wells and from rain) and the four were drinking fountains connected to MIWD pipelines. Results showed that the obtained values of the parameters measured for domestic and drinking water sources both passed the permissible standard values set forth by DENR guidelines for domestic use, and the Philippine National Standard for drinking purposes, respectively. The comparison between the quality of CPU drinking water after treatment and the quality of bottled water shows that the results for conductivity, calcium, sodium, chlorine, sulfate, and magnesium exceeded the values specified for the same parameters in the bottled water. Using the results as the base line data, a flow process showing the steps to consider in case CPU decides to have its own drinking water facility, was prepared.

INTRODUCTION

Background of the Study

Since flooding became a frequent phenomenon in CPU and the surrounding communities, the demand for water quality tests and water treatment services has tremendously increased. For this reason, the CPU College of Engineering has put up a water quality testing and treatment laboratory as one of its outreach programs to assist the government in its campaign for clean and safe water. Once the quality of water has been established and the problems are identified, different water treatment methods will be tested to solve the problem.

Statements of the Problem/ Objectives

The purpose of this study was to determine the water quality of domestic and drinking water from different water sources inside CPU campus.

The following are the specific objectives:

1. To perform water quality tests on samples from different identified sources using color, temperature, pH, alkalinity, acidity, dissolved oxygen, total dissolved solids, conductivity, and turbidity as parameters;
2. To identify the water source contaminated with chemical and biological pollutants and perform additional tests on parameters like chlorine, magnesium, sulfate, sodium, calcium, and biochemical oxygen demand.
3. To perform the bacteriological analysis to all samples;
4. To perform water treatment if ever water quality problems are identified.
5. To retest the quality of the treated water to check the effectiveness of the method of treatment used, and;
6. To determine the capability of the present water laboratory of the College of Engineering to test water quality.

Significance of the Study

Through this project, the CPU community will be made aware of the quality of their domestic and drinking water supplies and at the same time will be encouraged to make necessary efforts to contribute in the preservation of these water resources.

This project will guide the College of Engineering management to identify the apparatus and reagents that should be made available to put the laboratory fully in operation.

This study will also serve as a source of information for the extension service of the university.

Scope of the Study

This study performed both water quality analysis and bacteriological analysis on the water samples collected from the identified water sources inside the CPU campus.

When the result of the analysis showed some problems, a specific water treatment method was applied. The effectiveness of the method applied was determined by retesting the quality of the treated samples.

The data in this study were the results of the experiments performed on the specified parameters of the water samples coming from eleven different water sources found inside the CPU campus.

METHODOLOGY

Research Design

This study described the quality of water from the identified thirteen water sources inside CPU campus, nine of which were deep wells and/or water tanks (storing water from wells and from rain) and the four were drinking fountains connected to MIWD pipelines. Considering that this study performed actual experiments in the laboratory, it is descriptive in nature.

Identification of Sampling Sites

The different water sources inside CPU campus were identified as shown in Table 1. The data gives the exact location of the water source with its corresponding station number.

Table 1. Location of Water Sources in CPU Campus

Location	Station Number
Deep well near Franklin Hall	Station # 1
Deep well near Roblee Hall	Station # 2
Pump near CPU Dumping Site	Station # 3
Deep well at the back of Agriculture Bldg.	Station # 4
Deep well at the back of Mary Thomas Hall	Station # 5
Deep well near Weston Hall	Station # 6
Deep well near Fine Arts Building	Station # 7
Deep well near University Church Parsonage	Station # 8
Water Tank Engineering Building	Station # 9
Drinking Fountain (Mary Thomas Hall)	Station # 10
Drinking Fountain (New Valentine Hall)	Station # 11
Drinking Fountain (Engineering Study Area)	Station # 12
Drinking Fountain (Basketball Court)	Station # 13

Sampling Procedure

In collecting the samples, the researchers had to take the following into account to ensure accurate results:

The sample bottles were rinsed two to three times with the water being collected. When the water samples were collected from faucets, the faucet was cleaned and opened fully and was allowed to run two to three minutes to permit clearing of service line. The flow was restricted to avoid splashing. The cover was lifted without exposing the inside to dust and wind and the bottle was filled after rinsing slowly to allow air space and was covered immediately.

When the samples were collected from the well, the cover was first removed, then the bottle was held near its base and its neck was plunged downward one foot below surface. The sample was collected by sweeping the mouth of the bottle forward.

In collecting samples from the hand pump, the water was pumped to waste for about 3 minutes before filling the sample bottles. This was to ensure that the sample will represent the ground water which feeds the well.

In collecting water samples for bacteriological analysis, 100-150 ml capacity bottles were used. Bottles were first sterilized by heating in the oven for 2 hours at 170°C to avoid contamination. Before sterilization, the caps of the bottles were covered with paper and tied with a string.

For dissolved oxygen determination, the dissolved oxygen bottle was dipped in water and was slowly filled to ensure that no air bubble was entrapped. The bottle was stoppered while still immersed in water. The bottle was turned upside down and sampling was repeated if a bubble was present.

For all water quality tests performed outside the CPU water laboratory, water was sent at once to reach the laboratory within six hours from time of collection.

During the period of transit of sample, the temperature was kept as close as possible to the temperature of the source by not exposing it to sunlight or anything that is hot.

Water Quality Tests Performed

Water quality tests were performed on three samples to all identified water sources in two seasons, during sunny days (April – May, 2002) and rainy days (July – August, 2002).

Tests for temperature, pH, alkalinity, acidity, dissolved oxygen, total dissolved solids, conductivity, and turbidity were conducted in the College of Engineering water laboratory.

Tests for color and biological oxygen demand were performed for a fee in the DENR water laboratory by the DENR personnel in the presence of the researchers. All samples were tested for color. Only one sample taken from sampling station #2 identified as the most polluted in the campus was tested for BOD. Water samples obtained from other sampling stations have no sewage content so these were not tested for BOD.

Tests for chlorine, magnesium, sulfate, sodium ,and calcium were conducted at the DOST Region 6 water laboratory by the DOST personnel in the presence of the researchers. These tests were conducted for two water samples, one from sampling station # 2 (deep well) identified as the most polluted being adjacent to Roblee Science Hall which housed the Chemistry and Life Science Laboratories, and another from sampling station # 12 (drinking fountain) being near the College of Engineering water laboratory, for the purpose of having a baseline data on these specified parameters from two different water sources, for drinking and for domestic use. Drinking water from MIWD pipeline (sampling station # 12) was also included for the purpose of comparing its quality to the quality of bottled water.

The bacteriological analysis was performed by the WVMC hospital's chemists in the presence of the researchers at the Western Visayas Medical Center.

Data Gathering and Processing

Tests which required the use of chemical reagents already available in the laboratory were performed first. These were the tests on pH, temperature, turbidity, conductivity, and dissolved oxygen.

Tests which can be performed in the CPU water laboratory but needed some chemical reagents and materials not available in the laboratory, were performed as soon as the ordered reagents and materials arrived. These were the tests on total dissolved solids, acidity, and alkalinity.

Other tests needed that cannot be done in the CPU water laboratory because of lack of equipment and apparatus were performed in the water laboratories of DENR, DOST and Western Visayas Medical Center.

After all tests were completed and problems were identified, the most appropriate treatment was applied. The quality of water samples were then retested to know whether the treatment applied was effective or not.

RESULTS AND DISCUSSIONS

Water Quality Tests of Domestic Sources

Data in Table 2 show the results of the different water quality tests for CPU domestic water sources. The tests were conducted during sunny days in April and May, 2002. The results for pH revealed that the water samples were almost neutral. It means that the relative amounts of hydrogen and hydroxide ions present were almost equal. The result falls within the DENR permissible limit of 6.5 – 8.5

Table 3 below presents the results of the different water quality test for CPU domestic water sources during rainy days. This was conducted July and August 2002. the results for pH revealed that they are still within the permissible limits of 6.5 – 8.5.

Comparison of the Quality of Domestic Water During Sunny and Rainy Days

Shown in Tables 2 and 3 are the quality of domestic water during sunny days and rainy days, respectively. Results of pH, conductivity, and turbidity increased while temperature, total dissolved solids, acidity, alkalinity, and dissolved oxygen decreased during rainy days.

Turbidity increased which means that the passage of light was being impeded by disturbed particles as a result of the rain. Dissolved oxygen results decreased during the rainy days due to lower levels of photosynthesis. Color results remained at 3 color units and total and faecal coliform tests both gave negative results for all domestic water sources.

Table 2. Quality of Water from Different Domestic Sources During Sunny Days

Parameters / Indicators	Sampling Stations								
	#1	#2	#3	#4	#5	#6	#7	#8	#9
PH	6.84	7.1	6.95	7.16	6.84	6.99	6.91	6.99	7.2
Temperature, °C	30	30	31	29	29.2	30.6	30	30	29.7
Conductivity (μ S/°C)									
@ T = 20°C	622	654	684	425	628	660	500	650	459
Total Dissolved Solids									
(TDS), mg/L	600	580	740	340	600	600	340	600	320
Acidity (mg/L $CaCO_3$)	470	404	372	220	540	324	384	444	235
Alkalinity (mg/L $CaCO_3$)	431	492	434	310	562	488	370	362	205
Turbidity (NTU)	4.62	4.0	6.0	5.4	10.9	11.5	3.82	5.88	4.359
Dissolved Oxygen, mg/li	7.44	7.44	7.1	7.46	7.37	7.6	6	5.7	6.89
Color (Color Units)	3	3	3	3	3	3	3	3	3
Total Coliform, MPN/100ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Faecal Coliform, MPN/100ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Table 3. Quality of Water from Different Domestic Sources During Rainy Days

Parameters / Indicators	Sampling Stations								
	#1	#2	#3	#4	#5	#6	#7	#8	#9
PH	7.01	7.3	7.02	7.19	6.92	7.07	7.53	7.1	7.4
Temperature, °C	29	29	29.8	28.8	28.2	29.8	29.3	28.7	27.9
Conductivity (μ S/°C)									
@ T = 20°C	830	700	976	787	873	997	1060	886	560
Total Dissolved Solids									
(TDS), mg/L	250	300	260	203.3	88	228	12?	137	302
Acidity (mg/L $CaCO_3$)	200	292	55.5	426	500	144	249	200	135
Alkalinity (mg/L $CaCO_3$)	400	300	400	362	346	430	336	278	105
Turbidity (NTU)	4.7	4.2	6.75	5.88	31.9	11.5	4.82	20.5	4.7
Dissolved Oxygen, mg/li	2.62	4.4	4.1	5.7	3.37	3.6	5.0	4.1	6.5
Color (Color Units)	3	3	3	3	3	3	3	3	3
Total Coliform, MPN/100ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Faecal Coliform, MPN/100ml	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

Water Quality Tests of Drinking Sources

Presented in Table 4 are the results of water quality tests for drinking water sources during sunny days/ Results obtained for pH fall within the MIWD permissible limit (6.5 – 8.5) for drinking water. Conductivity results of both domestic and drinking water showed quite similar results. Engineering drinking fountain (sampling station # 12) got the lowest of 4'.$^{\mu}$. S, followed by Mary Thomas drinking fountain (sampling station # 10) followed by the drinking fountain in New Valentine building (sampling station # 11) got the highest conductivity result.

Comparison of the Quality Drinking Water During Sunny and Rainy Days

Results of pH obtained during sunny and rainy days (Table 6) neither decrease or increase uniformly but they fall within MIWD permissible limit of 6.5 – 8.5 for drinking water. Temperature results during rainy days were less compared during sunny days. Results of tests for conductivity, turbidity, alkalinity, and acidity during sunny days. Color results remained at 3 color units and total and faecal coliform tests both gave negative results for all drinking water sources.

Table 4. Quality of CPU Drinking Water During Sunny Days

	Sampling Stations			
Parameters / Indicators	#10	#11	#12	#13
pH	7.75	7.21	7.63	7.7
Temperature, $^{\circ}$C	29.5	31	29.7	29.6
Conductivity (μ S/$^{\circ}$C) @ T = 20°C	514	640	495	563
Total Dissolved Solids (TDS), mg/L	530	440	230	350
Acidity (mg/L CaCO$_3$)	73	46	23	17
Alkalinity (mg/L CaCO$_3$)	202	274	162	173
Turbidity (NTU)	1.67	0.58	2.95	2.86
Dissolved Oxygen, mg/li	4.03	2.77	3.41	3.5
Color (Color Units)	3	3	3	3
Total Coliform, MPN/100ml	Nil	Nil	Nil	Nil
Faecal Coliform, MPN/100ml	Nil	Nil	Nil	Nil

Table 5. Quality of CPU Drinking Water During Rainy Days

Parameters / Indicators	Sampling Stations			
	#10	#11	#12	#13
pH	7.34	7.53	7.55	7.89
Temperature, $^\circ$C	29.8	27.8	27	28.1
Conductivity (μ S/$^\circ$C) @ T = 20°C	371	620	415	221
Total Dissolved Solids (TDS), mg/L	130	70	34	170
Acidity (mg/L $CaCO_3$)	64.33	31.5	22	5
Alkalinity (mg/L $CaCO_3$)	141	108	136	125
Turbidity (NTU)	1.02	0.16	1.5	1.86
Dissolved Oxygen, mg/li	5.68	2.38	3.35	5.87
Color (Color Units) ·	3	3	3	3
Total Coliform, MPN/100ml	Nil	Nil	Nil	Nil
Faecal Coliform, MPN/100ml	Nil	Nil	Nil	Nil

Quality of Domestic Water After Treatment

Table 6 shows the comparison of the quality of CPU domestic water obtained from sampling station #2 with DENR standard permissible values for domestic water before and after treatment. Sampling Station # 2 was selected because of its vicinity in the laboratories of Chemistry and Life Science Departments. Additional parameters like calcium, sodium, chlorine, ammonia, sulfate, and magnesium were tested. Results showed that the water sample contain salts, namely, calcium, sodium, chlorine, sulfate, and magnesium but the concentrations were below DENR permissible limit for domestic water. The most appropriate method of treatment selected in removing these salts or lessen their concentration was ion-exchange softening.

This process made use of a synthesized insoluble resin made by fusing quartz, kaolin and sodium carbonate with superior exchange property. In this process, sodium resin is represented by Na_2R, the R being the complex resin base, and the ion exchange reactions for water softening are written as

$$Mg^{+2} + Na_2R \qquad MgR + 2Na^+$$

$$Ca^{+2} + Na_2R \qquad CaR + 2Na^+$$
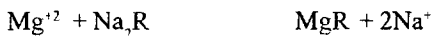
For the softening cycle, the concentration of sodium ions is low and the reaction proceeds from left to right. The magnesium and calcium ions are trapped by the insoluble solids and the sodium ions are released from the solids into the water stream. When all the available exchange sites on the resin have been occupied by calcium and magnesium, no further removal can occur, and the softening cycle then ends. Extra care was taken to avoid aeration or oxidation, which would produce ferric or manganic ions that would precipitate and clog the ion exchange bed.

After treatment, almost all water quality parameters decreased except for conductivity and sulfate ion results. The results showed that the treatment applied was effective.

Table 6. Comparison of the Quality of CPU Domestic Water From Sampling Station #2 with DENR Standard Permissible Values For Domestic Water Before and After Treatment

Parameters / Indicators	DENR Standard for Domestic Water	Sample #2 Before Treatment	Sample #2 After Treatment
PH	6.5 – 8.5	7.1	7.6
Temperature, ^{o}C	30°C	30°C	29.2^{o}C
Conductivity (μ S/^{o}C) @ T = 20°C	None specified	654	928
Total Dissolved Solids (TDS), mg/L	500	580	85
Acidity (mg/L $CaCO_3$)	200 – 400 *	404	233
Alkalinity (mg/L $CaCO_3$)	300 desirable limit 600 permissible limit **	492	438
Biological Oxygen Demand (BOD)	4.0	2.0	2.0
Turbidity (NTU)	10 NTU **	4.0	1.26
Dissolved Oxygen, mg/li	Not less than 5 mg/li	7.44	4.46
Color (Color Units)	15 color units	3	3
Total Coliform, MPN/100ml	50	Nil	Nil
Faecal Coliform, MPN/100ml	20	Nil	Nil
Calcium (mg/li)	None specified	10	-
Sodium (mg/li)	None specified	30	-
Chlorides (mg/li)	250	12	-
Ammoniacal Nitrogen	1 mg/li	Nil	-
Sulfate, SO_4^{-}	400 mg/li	60	16
Mg	50 mg/li	41	<0.0005

*Philippine National Drinking Water Standard
** INTERNI .

Quality of Drinking Water After Treatment

Table 7 shows the comparison of the quality of CPU drinking water obtained from sampling station # 12 before and after treatment with the quality of MIWD drinking water. Both pH and temperature results before and after treatment fall within the permissible limit of MIWD drinking water standard. Conductivity, alkalinity, and dissolved oxygen content increased while total dissolved solids, acidity, and turbidity decreased. Color results remained at 3 color units and total and faecal coliform tests both gave negative results for all drinking water sources. All results before and after treatment fall within the limit of MIWD drinking water standard.

Table 7. Comparison of the Quality of CPU Drinking Water From Sampling Station # 12 with MIWD Standard Permissible Values For Drinking Water Before and After Treatment

Parameters / Indicators	MIWD Standard for Drinking Water*	Sample #12 Before Treatment	Sample #12 After Treatment
pH	6.5 – 8.5	7.55	7.78
Temperature, °C	30°C	30°C	30°C
Conductivity (μ S/°C) @ T = 20°C	None specified	415	450
Total Dissolved Solids (TDS), mg/L	500	34	1
Acidity (mg/L $CaCO_3$)	200 – 400	22	8
Alkalinity (mg/L $CaCO_3$)	150 – 300	136	152
Turbidity (NTU)	5 NTU	1.5	1.02
Dissolved Oxygen, mg/li	None specified	3.35	4.7
Color (Color Units)	5 color units	3	3
Total Coliform, MPN/100ml	Nil	Nil	Nil
Faecal Coliform, MPN/100ml	Nil	Nil	Nil

* MIWD Quality of Drinking Water is based on the Philippine National Standard For Drinking Water 1993

Table 8 shows a comparison of the quality of CPU drinking water after treatment and the quality of bottled water. It also shows that the results for conductivity, calcium, sodium, chlorine, sulfate, and magnesium exceeded the values specified for the same parameters in the bottled water.

Parameters / Indicators	Bottled Water	Sample # 11 Drinking Fountain (Engineering Study Area)
pH	7.0	4.55
Temperature, °C	-	27°C
Conductivity (μ S/°C) @ T = 20°C	330 mg/li	415
Total Dissolved Solids (TDS), mg/L	500	34
Acidity (mg/L $CaCO_3$)	-	22
Alkalinity (mg/L $CaCO_3$)	-	136
Turbidity (NTU)	-	1.5
Dissolved Oxygen, mg/li	-	3.35
Color (Color Units)	-	3
Total Coliform, MPN/100ml	Nil	Nil
Faecal Coliform, MPN/100ml	Nil	Nil
Calcium (mg/li)	5	75
Sodium (mg/li)	40	200
Chlorides (mg/li)	10	250
Ammoniacal Nitrogen	1	-
Sulfate, SO_4^-	17	200
Mg	14	50

Based from the results, the drinking water sample from sampling station # 12 must undergo certain purification processes to compete with the bottled water quality requirements.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

Based on the results, the CPU's domestic and drinking water sources both met the requirements for domestic and drinking water standards and are safe for their specific uses. However, for drinking purposes, it is better that routine microbiological testing be conducted to make sure of the absence of pathogens.

It is further concluded that the number of samples to be taken and the time and exact place of sampling depends on the importance of the analysis, the accuracy required, and the resources available. The whole sampling technique will depend upon what is being sampled, why it is being analyzed, and what constituents are to be determined.

Recommendation

CPU should allocate considerable resources to monitor water quality so that its beneficial uses can be protected. Effective control over the quality of the raw water and over the quality of the treated water is only possible through continual routine examination. A regular survey of leaking pipelines and their immediate repair is highly needed to avoid contamination of drinking water supply.

It is recommended that CPU authorities should find ways and means to be able to construct the most centralized water treatment facility to treat the water coming from the different sources before allowing them to flow through pipelines.

Further research is recommended on the design of a water treatment facility system in CPU that will ensure the safety of water in all drinking faucets inside CPU campus.

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PASTORAL ORDINATION AND THE PURSUIT OF HIGHER EDUCATION AMONG WOMEN GRADUATES OF THE COLLEGE OF THEOLOGY, CENTRAL PHILIPPINE UNIVERSITY

By Grace C. Reyes and
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ABSTRACT

This research study was conducted to determine the status of pastoral ordination and the pursuit for higher education among women graduates of the College of Theology at Central Philippine University. The used the descriptive research design taking all the 198 graduates from 1950 to 2000. Interview guide and self administered questionnaires were developed by the researchers and sent to the target respondents, however, only 136 women graduates were able to respond. Results of this study revealed that the women graduates of the College of Theology from the school years 1950 to 2000 were in their late forties, mostly single, in active service for 10 years or less and with monthly income of P5, 000 or less. Nine in ten women graduates are not yet ordained. Their major reasons for not applying for ordination were: they feel they need not be recognized through ordination, they are not yet ready for it nor do they have the time or the opportunity to apply. Those who are currently applying for ordination gave the following major reasons: personal advancement, felt need and self - fulfillment, which are also the same motivations cited by those who are currently pursuing higher education. While those who are not pursuing higher education cited financial limitations, some felt they have no need for it now and still others felt they were currently satisfied with their present status. A little more than half of the women graduates perceived that the Ordination Council is male dominated and few perceived that it is gender fair.

INTRODUCTION

Background and Rationale

Two great women missionaries, Miss Anna B. Johnson and Miss Celia Sainz were instrumental in founding the then Baptist Missionary Training School which started as a simple Bible study group in the home of the Rev. and Mrs. William O. Valentine. Twelve boys attended that bible study but a few women were there as auditors. That paved the way for women to be admitted later to the Jaro Industrial School. The Baptist Missionary Training School first turn out of graduates was in 1921.

A Junior College was opened in 1923 when the two schools merged and became Central Philippine College. In 1936, a Senior College was established and in 1940 five degrees were offered, namely: Bachelor of Arts, Bachelor of Science, Bachelor of Education, Bachelor of Theology and Bachelor of Religious Education, a program offered to women.

In 1958, the last batch of students of the Bachelor of Science in Religious Education graduated. Since female students were already admitted to the Bachelor program in the College of Theology and Bachelor of Arts major in Religion, in 1982, the Master of Divinity program was opened to both male and female students.

The purpose of the college is to provide quality theological education to those who have deep conviction of being called by God to serve Him in the Christian Ministry. Students are expected to develop pastoral identity that reflects the dignity of their calling and their strong commitment to God in Jesus Christ. As a Christian Minister, they are required to submit to pastoral ordination in order to perform pastoral functions.

Records show that from school year 1950-2000, 198 women theologians were honed and molded by the college. However, there is a need to conduct a research study to find out how many of these women had been ordained and had not yet been ordained, what were the reasons for pursuing and not pursuing pastoral ordination, and whether or not they are pursuing higher education. The results of the study will be useful to other women graduates who draw inspiration from it and make sound career decisions later.

Objectives of the Study

This study was conducted to determine the status of pastoral ordination and the pursuit for higher education among women graduates of the College of Theology at Central Philippine University. Specifically, the study aimed to:

1. to draw the profile of the women graduates of the CPU College of Theology in terms of age, civil status, length of service, and monthly income;
2. to determine the pastoral ordination status of women graduates of the CPU College of Theology and know their reasons for applying or not applying for pastoral ordination;
3. to determine the percentage of women graduates of the CPU College of Theology pursuing higher education and know their reasons for pursuing or not pursuing higher education; and,
4. to determine their perception on the composition of the pastoral ordination council and their perception on the chances of women theologians to be ordained.

METHODOLOGY

Research Design

The study used the descriptive research design with the aid of a one-shot population survey.

The Study Respondents

Of the total 198 women graduates of the College of Theology at CPU for school year 1950-2000 only 136 responded to this study.

Data Gathering Instrument

A self-administered questionnaire and guide questions were developed and submitted for validation to the research director of the University Research and Outreach Center (UROC) and after some necessary modification, a final copy was reproduced and utilized.

Data Processing and Analysis

The data gathered were coded, encoded and analyzed using the Statistical Package for Social Sciences. Frequency tables together with measures of central tendency were generated to describe the profile of respondents.

MAJOR FINDINGS

The mean age of women theologians is 48.22 where the highest proportion of them is in the age of 40-49 and 60 years old and above (both at 27.2 percent). This means that only 30.2 percent of women theologians fall in the age of 30 years old and below (Table 1). The majority (64.0 percent) of women theologians are single; a little more than one-fourth (27.2 percent) are married while a few (8.8 percent) are widowed or separated from their spouse.

In terms of length of service with the institution where they are currently connected, the highest proportion of women theologians (58.8 percent) had rendered service for 5 years or less; a little more than one-tenth (13.2 percent) had already served from 6-10 years; and some others had been in the service for more than 10 years. Two thirds (66.8 percent) of women theologians receive a monthly income of P5,000 or less while about one fourth (24.3 percent) receive a monthly income from P5,001.00 to P10,000.00. A smaller percentage (8.9 percent) receive a monthly income that is more that P10,000.00.

Data in Table 2 shows that only 9.5 percent of the 136 respondents are already ordained or presently applying for ordination, and 90.5 percent are not ordained or not applying for ordination. This means that there are only ten in a hundred women theologians who are ordained or wanted to be ordained while a very large number are not interested to be ordained. This finding is not congruent with the findings in other countries like Sweden where a relatively large number of women are ordained church ministers.

When 13 respondents who were already ordained or presently applying for ordination were asked about their major reasons for ordination or applying for ordination, results in Table 3 shows that most of them (38.5 percent) did it for personal advancement and felt need, and for self-fulfillment (30.8 percent). This means that these women were motivated to be ordained because they feel they need to and for self-advancement and fulfillment.

Table 1. Distribution of Women Theologians When Grouped According to their Personal Profile such as Age, Civil Status, Length of Service, and Monthly Income (N=136).

Indicators	f	%
Age		
29 and below	19	14.0
30-39	22	16.2
40-49	37	27.2
50-59	19	14.0
60 and above	37	27.2
no answer	2	1.5
Total	**136**	**100.0**
Mean Age		
48.22		
Civil Status		
Single	87	64.0
Married	37	27.2
Widow / Separated	12	8.8
Total	**136**	**100.0**
Length of Service		
5 years or less	80	58.8
6-10	18	13.2
11-15	12	8.8
16-20	8	5.9
21-25	8	5.9
Above 25 years	10	7.4
Total	**136**	**100.0**
Monthly Income (in PhP)		
5000 or below	91	66.8
5001-10,000	33	24.3
10,001-15,000	8	5.9
15,001-20,000	2	1.5
Above 20,000	2	1.5
Total	**136**	**100.0**

Table 2. Distribution of Women Theologians When Grouped According to Pastoral Ordination Status (N=136).

Pastoral Ordination Status	f	%	Ordained /
Applying for Ordination	13	9.5	Not
Ordained / Not Applying for Ordination	123	90.5	
Total	**136**	**100.0**	

Table 3. Distribution of Women Theologians When Grouped According to Their Reasons for Ordination or Applying for Ordination. (Multiple Response, N=13).

Reasons for Ordination / Applying for Ordination	f	%
Personal Advancement	5	38.5
Pressure of Work	1	7.7
Felt Need	5	38.5
Self-fulfillment	4	30.8

For those who were not ordained or not applying for ordination, all of them (100.0 percent) feel they need not be recognized through ordination. About two fifths (39.8 percent) also feel they are not yet ready for it, while about one-fifth (19.5 percent) have no time or opportunity to apply for ordination (Table 4). It seems that, for these women, ordination is a way of recognizing one's achievement and they do not need to be recognized through ordination.

Table 4. Distribution of Women Theologians When Grouped According to Their Reasons for Not Applying for Ordination (Multiple Response, n=123).

Reasons for Not Applying for Ordination	f	%
Need not recognized	123	100.0
No time or opportunity	24	19.5
No support from church	11	8.9
Not ready yet	49	39.8
Other reasons	37	30.1

As shown in Table 5, a little more than half of the respondents (54.4 percent) are not pursuing advance education while the rest (45.6 percent) indicated that they have pursued or are still pursuing advance education.

When those who are pursuing advance education were asked of their reasons for doing so, the majority (64.5 percent) did it for personal advancement. About half of them (46.8 percent) also cited self-fulfillment and more than one-third

(37.1 percent) claimed that it is a felt need (Table 6). It could be noted that these are also the three major reasons of those who were ordained or are currently applying for ordination. This means that these women are mostly motivated, either for ordination or advance education, by personal advancement, self-fulfillment and felt need.

Table 5. Distribution of Women Theologians When Grouped According to Whether or Not They Have Pursued or Currently Pursuing Advance Education (N=136).

Pursued / Pursuing Advance Education	f	%
Yes	62	45.6
No	74	54.4
Total	**136**	**100.0**

Table 6. Distribution of Women Theologians When Grouped According to Their Reasons for Pursuing Advance Education (Multiple Response, n=62).

Reasons for Pursuing Advance Education	f	%
DECS / CHED Requirement	12	19.4
Personal Achievement	40	64.5
Felt Need	23	37.1
Self-fulfillment	29	46.8
Other Reasons	16	25.8

Of the 74 women theologians who are not currently pursuing advance education (Table 7), the highest proportion (45.9 percent) indicated that they are financially limited; a little more than one fourth (25.7 percent) said that they have no felt need at the moment and a considerable percentage (16.2 percent) indicated that they are satisfied with their present status. A few (9.5 percent) declared that long years of service maybe considered by DECS/CHED for higher or teaching positions.

Table 7. Distribution of Women Theologians When Grouped According to Their Reasons of Not Pursuing Advance Education (Multiple Response, n=74).

Reasons for Not Pursuing Advance Education	f	%
Satisfied with Present Status	12	16.2
No felt need at the moment	19	25.7
Long years of Service maybe considered by DECS / CHED	7	9.5
Financially limited	34	45.9
Other Reasons	8	10.8

The perception of women theologians in terms of the composition of the ordination council is shown in Table 8. A little more than half of these women theologians (53.7 percent) believed that the ordination council is male dominated, whereas a little less than one fifth (19.1 percent) perceived that the council is gender fair. There are more than one-fourth (27.2 percent) however, who did not give any answer. The data imply that the majority perceived that the composition of the ordination council is male dominated.

Table 8. Distribution of Women Theologians According to Their Perception on The Composition of the Ordination Council Among Women Theologians (N-136).

Perceptions	f	%
Male dominated council	73	53.7
Gender fair council	26	19.1
No answer	37	27.2
Total	136	100.0

Eight in ten respondents (78.7 percent) perceived that women theologians have equal chances of getting ordained as men theologians. Only two in ten (20.6 percent) perceived that women has no equal chance of getting ordained as compared to men. The result shows that majority of these women perceived that the ordination council gives equal chances to both men and women.

Table 9. Distribution of Women Theologians According to Their Perception on The Chances of Women to be Ordained (N=136).

Perceptions	f	%
Equal chances	107	78.7
No equal chances	28	20.6
No answer	1	0.7
Total	136	100.0

CONCLUSIONS AND RECOMMENDATIONS

Based from the results and findings of the study the following conclusions were generated:

1. Women graduates of the College of Theology at CPU for school year 1950-2000 were in their late forties, mostly single, some were married and very few were widowed and separated. Majority of them were in active service for ten years or less with monthly income of P5000 or less.

2. Nine in ten women graduates are not yet ordained or did not apply for ordination and only one in ten was ordained. This figure is quite alarming since they are expected to be serving as full pledge church ministers.

3. Their major reasons for not applying for ordination were: they feel they do not need to be recognized through ordination, they are not yet ready for it, and have no time or opportunity to apply for ordination. For ordained women or those who are currently applying for ordination, their major reasons were: for personal advancement, felt need and self-fulfillment.

4. A little more than half of the women are currently not pursuing higher education because they are financially limited, some feel no need for it at the moment, and others were currently satisfied with their present status. For those who are pursuing higher education, they were motivated for personal advancement; self-fulfillment and they feel they need it.

5. A little more than half of them perceived that the composition of the ordination council is male dominated and few perceived that it is gender fair. However, majority of them perceived that the ordination council gives equal chances to both men and women to be ordained.

On the basis of the results and conclusions, the following recommendations are given:

1. The CPBC should convene all women graduates of the College of Theology of CPU and dialogue with them and present the results of this research.

2. The College of Theology of CPU must examine the CPBC ecclesiology and other pertinent documents, policies and polities that inhibit women theology graduates from ordination into the Christian Ministry.

3. There should be more women ordained ministers in the Ordination Council.
4. Empowerment of women theology graduates through various educational exposures either formal education or through seminars.
5. A further study should be conducted to know other factors that hinder women theology graduates from ordination.

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POLITICAL PARTICIPATION IN ILOILO CITY:
AN EXPLORATORY STUDY

By Lea S. Zapanta, DPA and Irving Domingo L. Rio, MPA

ABSTRACT

Citizen inputs are greatly needed by officials of our local government units for the formulation and implementation of significantly relevant and responsive development programs and projects. Thus, the participation of citizens in the political process should be of paramount importance to these public officials. The findings of this study may help fill up the need for the citizens' perspective in governance, specifically, in the Iloilo City government. The study examined the nature and extent of political participation of the residents of present day Iloilo City. Using the factors of political values, political attitudes and political behavior as components of political participation, efforts were made to relate these three factors to the socio-economic characteristics of the sample Ilonggo respondents in order to determine whether any significant relationship existed. Overall, the findings of the study revealed the following: The factor of number of family members was significantly related to either political values, attitudes, or behaviors, particularly in voicing issues that affected the respondents' families. The factor of age was as significantly related to their political behavior while education factor appeared to be the most dominant factor motivating the respondents' political participation. Relatedly, the higher the educational level of the respondents, the stronger was their declaration of concern on the political processes and their participation. What is very significant was their declaration of cynicism or their doubts about the relevance of the political process in meeting their articulated needs. Likewise, the integrity of some politicians and/or public officials was held suspect by respondents across all levels of the economic and educational classes, as well as, by age and sex. As their forbears have done, present-day Ilonggos are bound by the tradition of kabalaslan; their votes reflect gratitude for past favors given by politicians/candidates; this subjective political morality of the voter denied the public "good".

INTRODUCTION

Rationale and Design of the Study

Development theorists have observed that most citizens in developing societies of the Third World are politically inept and immature in the context of the democratic perspective. Hence, political modernization is one prerequisite for the development of these societies. Accordingly, they must be enabled to engage in interest articulation, interest aggregation, political communication, political socialization and political recruitment (Muhi et al, 1993; Pye, 1965).

All these means that people must be able to communicate and express their felt needs and interests to government. They must be able to reconcile or unite their need-differences to facilitate prioritization by government decision-makers. Further still, they must be able to interact and participate in the political processes, principally, in voting, in consultative assemblies and by membership in political parties of their choice, among others. All these are relatively, sadly lacking in Philippine society, today. This lack of adequate and responsive political participation has led to a kind of governance that is relatively ineffectual in promoting the general welfare.

True, many Filipinos in this decade have engaged in protests rallies and demonstrations and in the ousters of their erring and corrupt presidents. Equally true is the fact that present day Filipinos have become more vigilant in protecting their "consumer interests" related to food and water supply, housing, drugs and medical supplies, energy rates and garbage disposal, among others. But these present-day socio-political and economic behaviors are inadequate to restore their right to self-governance nor ensure their physical survival. Over time, they have fully abdicated this right to their officials, unknowingly or knowingly. But the citizens alone, and only they, alone, fully know their needs *well* and thus can govern themselves *well.* For in our representative government, citizens have merely *entrusted* to their public officials their right and obligation to self-determination. Public officials, elective and appointive, have been chosen by the people *only* to assist the latter in managing their lives and solving their problems.

The running of government intends to solve social problems, solvable *only* and *provisionally,* by citizens and the public at-large, *along with* and *assisted* by their public officials (Wilson, 1984). Self-governance, implies that citizens must never allow others to take away this right and obligation except with their consent. And if individuals are to preserve this right, then they must be allowed to *substantively* participate in the running of the affairs of the state. They must participate in the making of policy and programs, and in the running of these programs projects But the highly appreciated political consensus among citizens

is misleading since it presupposes the existence of sensible public policies. But the problem is the making of rational and practicable public policy Although government has the relevant expertise for rational decisions, citizens and publics are as necessary in policy formulation and implementation, the peoples' needs and interests are the reasons for the making of public policy (Wilson, 1984).

The Problem

Policy planners and implementors have great need for citizen inputs to enable them to formulate and implement sound and responsive development programs / projects. Thus, values, attitudes and behaviors of citizens in a political process become of paramount importance to public officials and those others concerned with the understanding and consequent use of socio-political phenomena. What abounds in the literature is Western-oriented.

This study on political participation may be useful in the decision-making of public officials and citizen alike. Also, this work might shed light on the motives citizens hold while engaged in any political process. Earnestly, it is hoped that citizens and public officials, alike, might turn out to be better motivated in the discharge of their political rights and obligations in the light of the findings of this work

Objectives of the Study

This study attempts to examine the nature of citizen participation in certain political processes in Iloilo City. It focused on Ilonggo values, attitudes and behaviors in relation to their participation in the political process. What must be underscored is the fact that previous and future events have and will have impact on their political behaviors during elections and beyond elections. The study examined citizens' thinking, feelings and doings related to political processes, during the last May 14, 2001 elections for the national and local officials, namely senators, congressmen and provincial, as well as municipal and city officials. Specifically, the study aims:

1) to describe the socio-economic characteristics of the respondents and the *Ilongo* underlying personal traits;
2) to determine whether the socio-economic characteristics of the respondents are associated with their political values, attitudes and behaviors; and
2) to examine the nature of political participation manifested by Iloilo City residents.

Hypothesis

There is no significant relationship between the socio-economic characteristics of the *Ilongo* voters and their political values, attitudes and behaviors.

Theoretical Framework

The study categorized Political Participation into three dimensions, namely: political values, political attitudes and political behavior. Then using several modified scales adapted from the work, " Measures of Political Attitudes", the three variables were examined as to whether each singly or inter-actively were working on the respondents, especially, as they voted during the last 14 May 2001 elections. Independent variables include respondents' characteristics such as their being Household head, age, sex, education, profession, livelihood, type of employment and ownership of communication facilities. Intervening variables are respondents' political values such as adherence to the democratic tenet, sense of civic competency and sense of citizen duty; and political attitudes such as political efficacy, political involvement, among others.

Dependent variables are respondents' political behavior such as voting, political discussions, political rallies / demonstrations, political partisanship, political communication, opinion leadership, among others. The diagram below illustrates the perspective of the study that presupposes the impact of the socio-economic characteristics on the three variables.
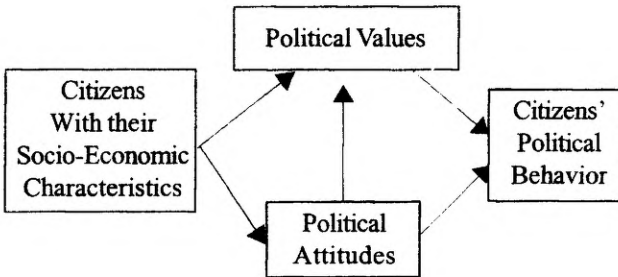

Figure 1. Political Participation Framework

Definition of Terms Used

Context of the Definitions. People have been said to be political animals. In civilized societies, individual citizens and their public officials constantly engage in a struggle for power to force or influence others so that their needs can be met and satisfied. This is more so among public officials, who struggle for that power in order to gain positions in government so that they can dictate or formulate public policy. The term "political" always holds the connotation of "struggle for power".

Political Values - are norms of conduct in thinking, feeling and acting, held in high regard by individuals in the belief that these norms can help them realize their individual needs as citizens; and both the individual and community needs as officials. Because of individual differences, citizens and officials may hold different and even opposing political values and cause them to interact with one another motivated by their desire to make their individual political values prevail.

Political Attitudes -are pre-dispositions or tendencies to think, feel, and act in the field of policy making and implementing of government programs and projects regarding individual and community needs held by citizens and officials alike. Again these pre-dispositions and tendencies may vary. Hence, these diverging attitudes may cause disharmony in the political process.

Political Behavior - are activities, overt or covert, undertaken by citizens and officials alike, as they are motivated by their differing political values and attitudes. These activities are responses to their values and attitudes triggered by environmental and individual factors. The end-activities are intended to change or maintain the individuals' environment or their individual selves. Again, activities may vary and hence cause the struggle among political actors in making their wills and behavior dominate a political situation.

METHODOLOGY

Respondents

Political participation in this study has been made actor, location, and time specific, focusing on citizens and their availability. Respondents chosen were city residents who voted during the last 14 May 2001 elections, residing in the barangays of the seven (7) districts of Iloilo City, namely, Iloilo City Proper, La Paz, Lapuz, Jaro, Mandurriao, Molo, and Arevalo. The number of respondents were randomly chosen on the basis of their availability and guided by the Iloilo City COMELEC VI List of Voters. The respondents were further categorized by sex, age, family size, Household

Head role, educational attainment, livelihood, profession, type of employment, distance of residence to the respective polling place and ownership of communication / entertainment facilities. The sample size of 259 was determined by the figures given in the *Table on Sample Sizes for Random Selection of Infinite and Finite Population,* (de Jesus, Philippine Association of Graduate Education, 1984) with their respective Confidence Levels and Standard Deviations.

Data Collection

Though random quota sampling, data were collected by face-to-face interviews using structured interview schedules. This activity was closely supervised by the Assistant Study Leader.

Data Processing and Analysis

Data collected were processed using the SPSS PC + Version 10 software. The data were assessed by means of cumulative frequency and percentage distributions. Certain variables were treated by means of cross tabulations and their chi-square (X^2) values were derived to determine the relationships, if any existed.

MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

To understand political participation in Iloilo City, one has to consider Ilonggo as an individual interacting with other Ilonggos in the political process. As stated, political participation is the sum total of all political behaviors manifested by citizens and officials alike as they are motivated by their political values and attitudes. More basic is the fact that the respondents' socio-economic characteristics affect their political behaviors.

The Socio-Economic Characteristics of the Respondents and the Ilonggo Underlying Personal Traits

Shown in Table 1 are the socio-economic characteristics of the survey respondents. Result of the study shows that majority of the respondents are female (51.7 percent) and are between 15 to 25 years old (58.7 percent). When it comes to highest educational attainment, almost half (49.0 percent) of the respondents are

college level and one-fifth (20.5 percent) are bachelor's degree holders. There are four respondents (1.5 percent) with doctorate degree. Six in every ten respondents (63.3 percent) indicated that there are 3 to 6 members in their family and almost one-fourth have more than six family members. The highest proportion of the respondents (18.9 percent) is not gainfully employed but there are 40 (15.4 percent) who are government employees.

The Ilonggo characteristics of *mabu-ot, mabinuligon, matinahuron, maluy-lu-on, matinu-manon sang iya kabangda-nan* and other traits for which they are well known can explain the respondents' political involvement as they are causally related to their values, attitudes and behavior.

His basic traits as an individual Ilonggo underlie his nature as a socio-political actor. His easy-going nature and softness of speech makes him sound less of a belligerent political actor but one who is convivial and willing to listen to others' views on political issues that concern him. Both citizens and officials, because of these traits and the belief in *gaba'* tend to make them socially bound to one another in the Ilonggo sense of mutual reciprocation. But the study findings show that the Ilonggos perceive that most of their officials do not really care about their opinions. The Ilongos are convinced that their officials should really care and solicit public opinion in their decision-making or any deliberation they make on public issues. Being household heads of their respective families, the opinions of the Ilongos mattered much and should be solicited by public officials.

Table 1. The Socio-Economic Characteristics of the Survey Respondents

Categories	f	%
Sex		
Male	125	48.3
Female	134	51.7
Total	259	100.0
Age		
15-25	152	58.7
26-36	23	8.9
37-47	35	13.5
48-58	40	15.4
59 and above	9	3.5
Total	259	100.0
Highest Educational Attainment		
Elementary	8	3.1
Intermediate	13	5.0
High School	37	14.3
College Level	127	49.0
Bachelor's Degree	53	20.5
Master's Degree	16	6.2
Doctorate Degree	4	1.5
Others	1	0.4
Total	259	100.0
No. of Family Members		
1-2 members	31	12.0
3-6 members	164	63.3
more than 6 members	64	24.7
Total	259	100.0
Source of Livelihood		
farming	22	8.5
fishing	9	3.5
business	21	8.1
laborer	24	9.3
practice of profession	23	8.9
private organization employee	18	6.9
government employee	40	15.4
not gainfully employed	49	18.9
others	20	7.7
student	18	6.9
self employed	15	5.8
Total	259	100.0

The Ilonggo Underlying Socio-Economic Characteristics and its
Relationship to Political Values, Attitude and Behavior

The relationship between the *Ilongo's* socio-economic characteristics and political values is shown in Table 2. Among the different socio-economic characteristics considered, number of family members ($p=0.050$), age ($p=0.015$), sex ($p=0.027$), and educational attainment ($p=0.016$) were found to be significantly related to the democratic belief that "every citizen should have equal chance to influence political policy." Number of family members was also found to be significantly related to values on nationalist political adherence ($p=0.032$), political processes ($p=0.004$), and sense of civic competence ($p=0.006$). Moreover, educational attainment ($p>0.012$) and source of livelihood ($p>0.015$) were also found to be significantly related to values on political functions.

Table 2. The Relationship of *Ilongo's* Socio-Economic Characteristics and Political Values.

Political Values	Socio-Economic Characteristics	Chi-Square Value	df	Sig. Level
Democratic Belief	No. of Family Members	15.527	8	0.050*
	Age	30.534	16	0.015*
	Sex	10.986	4	0.027*
	Educational Attainment	46.395	28	0.016*
Nationalist Political Adherence	No. of Family Members	16.829	8	0.032*
Political Processes	No. of Family Members	22.298	8	0.004*
Political Functions	Educational Attainment	47.537	28	0.012*
	Source of Livelihood	61.783	40	0.015*
Sense of Civic Competence	No. of Family Members	21.448	8	0.006*

* significant at the 0.05 level

Shown in Table 3 is the relationship between the *Ilongo's* socio-economic characteristics and political attitude. Age and educational attainment are significantly related to sense of political effectiveness ($p=0.030$ and $p=0.010$, respectively), readiness for voting participation ($p=0.029$ and $p=0.003$, respectively) and political cynicism ($p=0.017$ and $p=0.048$, respectively). Source of livelihood was also found to be significantly related to readiness for voting participation ($p=0.050$) while number of family members is related to political cynicism ($p=0.003$). When it comes to issue orientation that "the majority party will do more than the opposition," only age was found to have significant relationship ($p=0.000$). Educational attainment and number of family members were both found to have significant relationship with issue familiarity ($p=0.007$ and $p=0.042$, respectively).

Table 3. The Relationship of *Ilongo's* Socio-Economic Characteristics and Political Attitude.

Political Attitude	Socio-Economic Characteristics	Chi-Square Value	df	Sig. Level
Political Effectiveness	Age	28.181	16	0.030*
	Educational Attainment	48.216	28	0.010*
Political Involvement	Educational Attainment	54.711	28	0.002*
Issue Orientation	Age	49.795	16	0.000*
Voting Participation	Age	28.333	16	0.029*
	Educational Attainment	53.115	28	0.003*
	Source of Livelihood	55.611	40	0.050*
Political Cynicism	Age	30.216	16	0.017*
	Educational Attainment	41.544	28	0.048*
	No. of Family Members	23.677	8	0.003*
Issue Familiarity	Educational Attainment	49.856	28	0.007*
	No. of Family Members	15.992	8	0.042*

* significant at the 0.05 level

As to the relationship between political behavior and the different socio-economic characteristics of *Ilongos*, sex *(p=0.049)*, age *(p=0.019)*, educational attainment *(p=0.000)* and source of livelihood *(p=0.008)* were all significantly related to behavior towards political discussion. Except for sex, these socio-economic characteristics were also found to have significant relationship to frequency of voting (Table 3). Political campaign participation is also related to age *(p=0.008)* and educational attainment *(p=0.007)* while only educational attainment was found to have significant relationship to political party membership *(p=0.000)* and opinion leadership *(p=0.040)*. Furthermore, age, educational attainment and source of livelihood were all significantly related to frequency of joining political rallies/demonstration and awareness on political information (see Table 4).

Table 4. The Relationship of *Ilongo's* Socio-Economic Characteristics and Political Behavior

Political Behavior	Socio-Economic Characteristics	Chi-Square Value	df	Sig. Level
Political Discussion	Sex	9.533	4	0.049*
	Age	29.846	16	0.019*
	Educational Attainment	59.527	28	0.000*
	Source of Livelihood	64.807	40	0.008*
Frequency of Voting	Age	52.432	16	0.000*
	Educational Attainment	63.599	28	0.000*
	Source of Livelihood	62.048	40	0.014*
Political Campaign Participation	Age	32.541	16	0.008*
	Educational Attainment	49.870	28	0.007*
Political Party Membership	Educational Attainment	40.910	14	0.000*
Joining Political Rallies and Demonstrations	Age	66.719	16	0.000*
	Educational Attainment	53.842	28	0.002*
	Source of Livelihood	61.858	40	0.015*
Opinion Leadership	Educational Attainment	42.368	28	0.040*
Political Information	Age	41.426	12	0.000*
	Educational Attainment	62.599	21	0.000*
	Source of Livelihood	59.010	30	0.001*

* significant at the 0.05 level

The Ilonggo Political Participation

The *Ilongo* political participation is affected by the following factors:

Political Values

The Ilonggo's socio-cultural values of *kabalaslan, gaba', gahum, kag iban pa,* underlie their political participation and interactions. The Ilonggo is strongly nationalistic and is aware that American democratic institutions are not the best in the world. The awareness of American economic interests in the Philippines makes him prefer the country's relating more with Southeast Asian countries. He is a firm believer of the democratic tenet of every individual having a right to decide on policy. But he is realistic enough to accept the fact that his views are not always listened to by government officials.

On the other hand, the Ilonggos with their general passivity and their non-belligerence have not really caused officials much anxiety on the possible consequences that their decisions might engender. This has given way to the people's cynicism about officials' motives. The Ilonggo has a high sense of citizen duty believing that one should vote, even if his party candidates do not win in the elections. The Ilonggo's pragmatic sense of civic competence makes him help others as the situation dictates. But when it came to problems concerning his family members, he is decidedly for resolving these problems, motivated by his high sense of familism.

The Ilonggo does not fully understand the nature of the political process when he denies that government cannot operate without politicians, for public policy is formulated by politicians, whether non-partisan or partisan. nor does he fully understand that political functions is a means toward temporary conflict-resolution by settling social disagreements based on agreed-upon rules.

Political Attitudes

Many Ilonggos do not know and understand the local issues affecting the City and much more so were the national issues affecting every Filipino. Many Ilonggos perceive that some public officials tended to protect criminal interests and that people were often manipulated by politicians, This perception was bolstered by their awareness that many political candidates made many promises and commitments that were not fulfilled if only to get elected .

Although the Ilonggo does not believe strongly that his vote would really count, yet he voted for it was the only way he could have a say on how the

government runs things. This feeling of being politically ineffective is demonstrated by his perception that even if he approached political leaders or public officials on issues or regulations needing their attention, he would not succeed. Neither would he succeed in attempting to change City rules/regulations perceived to be unfavorable to the people's interests.

Paradoxically, despite the above-stated apprehensions, the Ilonggo derives feelings of satisfaction when he votes. This is an indication of his psychological predisposition to participate in the political process. Problems which are national in scope- social, economic, welfare and politico-administrative in nature, were perceived to be the sole responsibility of the national government and while local government officials contributed to the problems' solution, most Ilonggos feel impotent to be involved, being inexperienced in citizen participation.

Although not many Ilonggos perceived much difference on the stands of the political parties, still there were some who believed that the Majority Party in power will do more for government than the Opposition Party.

The Ilonggo perceives that the national government has not done much regarding problems of unemployment, health, education, housing and other concerns, whether it was the present Majority party in power or when other political parties came into power, since there was no difference in their political platforms.

The imperatives of providing affordable health / hospital services and medical supplies as well as more school houses were the demands of Ilonggo citizens. Surprisingly, the issue that the national government should help find jobs for people who want to work was lower in priority than the first given two. This is a a realistic demand of the Ilonggos, knowing that the social overhead costs of health and education infrastructures cannot be possibly be borne by individuals and communities while the task of finding employment can be done by individuals but with the assistance of government,

Political Behavior

The Ilonggo voters claim they always voted but they had the perception that although their candidates possessed competence, integrity and performance, these candidates did not always win. The reason given was that these candidates' party voted for did not have any money to be doled out. In support of this statement, many claimed they had supported candidates. although it was not monetary. Thus, the Ilonggo voters closely followed election outcomes.

As their forbears have done, present-day Ilonggos are bound by the tradition of *kabalaslan;* their votes reflect gratitude for past favors given by politicians/ candidates; this subjective political morality of the voter denied the public "good",

The Ilonggo is a militant voter, claiming that he cared whether he voted or not, knowing that his vote is only one of the countless others especially in the national elections. This is corroborated by the fairly high rate of voter turnout during the last 14 May 2001 election, which was about 76.12 per cent of the City's registered voters. [This may be explained by the fact that Ilonggos, like other Filipinos had turned out to vote to register their reactions to the involved Senators' behaviors during the Estrada Senate impeachment proceedings]

The Ilonggos are pragmatic voters, as shown by their voting priorities in selecting their Senator, Mayor and Sanggunian officials and followed by their voting less for the Provincial officials and their congressman. They are aware of the powers of the higher national officials and functional proximity of their local officials and their consequences.

Relatedly, the lack of communication/entertainment facilities which keep him posted on national or local events nor the distance from his polling place did not deter the Ilonggo from voting,

The Ilonggo electorate relatively tend to engage less in discussions about political issues affecting them and would rather listen. Likewise, there was less concern for political rallies and demonstrations on significant issues. But they were keen in attending political campaigns of candidates as well as campaign for his personal candidates.

Although majority of the respondents did not belong to. Nor was an official of any political party nor held any government job, many identified themselves with their chosen political candidates' party.

Not many Ilonggos, especially those in the lower socio-economic levels, belong to any civic organization that sometimes took a stand on local issues like garbage disposal, housing, school problems, better governance or any other problems that concerned them. For one, the Ilonggos are not "joiners", and would rather be one with their family clans.

Not many Ilonggos are politically well-informed having not much information on the functions of public office and functionaries at the local or national levels. Those with higher education as well as those with their elementary primary and intermediate schooling were not very knowledgeable about their national and local

officials and their functions. Across, livelihood sectors, this condition holds at the higher and lower economic levels.

Overall, the finding is that the strength of the Ilonggo political participation is in his upholding of the democratic tenet and political equality and his sense of citizen duty as a voter with the regularity and endurance of voting behavior on elections time, regardless of the motivation on his choice of candidates.

The Ilonggo, generally, feels politically ineffective and not so competent when it comes to influencing the making of or changing public policy. This has been brought about by his perception that public officials' indifference to their opinions and his skepticism of the motives of public officials as well as the complexity of the political structures and processes which many do not really understand. There appears to be no strong political party involvement, nor a strong issue orientation, and a lack of political information. All these limit the quality and extent of his political participation. For the act of voting alone is not the end-all and be-all of political participation. And when faced with adverse political situations, the Ilonggo will tend generally, tend to make pragmatic decisions, which will benefit him and his family.

Observations

The assessment of the nature of political participation manifested by the Iloilo City residents revealed that their socio-economic characteristics are associated with their political values, attitudes and behaviors. Despite many positive findings, these were studied with caution realizing that the respondents' perceptions may differ from the reality about themselves and their political environment. However, some of the findings are confirmations of the findings of other writers on Philippine politics and government.

The complexity of the political structures and processes, the nature of political functions and processes prevented the Ilonggos from being involved in areas which needed their inputs. This practice of relatively being uninvolved in public affairs / issues has become an accepted attitude and behavior. This has consequently created a climate and feelings of political ineffectiveness and competence among citizens. Consequently, although militant about their political rights, their behaviors do not reflect this and has generally resulted in a quality of political participation that did not always promote their best interests.

Political Values

Limitations of City Governance. There appears to be so much lacking in the practice of our present so-called "representative" government in the City. Firstly, although, the citizens believed in the democratic practice of giving the citizens an equal chance of influencing government policy, yet this is perceived as being denied by officials' not caring much about their opinions. Secondly, the individual's participation is denied when the type of political participation stresses the technical aspects of the practice of governance and neglects what is "fair and just" in the planning and implementing of public policies and programs. This is supported by the study findings that the respondents considered politics so complicated that they could not discern what was going on and that because of the complexity of political issues and organizations, there was little that could be done by them to effectively change the system. However, our respondents were uncertain whether the major function of politics is to settle disputes and other social disagreements (?) They affirmed that in the making of policy, their opinions did not matter much since they perceived that their political leaders first made the political decisions and afterwards sought the majority's agreement to their opinions. There is a possible implication here, that citizens desire to be a part of the policy process from the inception of the process up to the implementation.

A further implication is on the Sanggunian's obligation for holding regular consultations with their constituents, for they only "represent" and must therefore, continually seek confirmation and approval of their interpretations of the wishes of their constituents.

Individual Participation. The urgent need for public participation of individuals and the full use of established government and political mechanisms and processes should not be mere gestures of and commitments of officials when it can be generally, actually done. But the importance of individual participation and contribution is not given much attention when collective action is stressed because of the "need" for consensus. It has been observed that the individual's experience can teach the process of governance to citizens when its nature is understood and applied. This experience of the practice of governance must be one with ethical considerations ingrained in political activity. But the warning has been made that *individuation* only has meaning in a collective setting, not only because experience is collectively produced and sustained but because it requires the impact of others through their occupations, careers and livelihood activities to make itself known. (cf. Wilson, 1984). This observation is supported by the perception of the respondents that differences of race, social class, and income are important factors in the political process.

Political Morality. Another observation is that for both public officials and citizens alike, there is a conflict between the modern and the traditional view of political morality. The voters' unwillingness to condone anomalies not only conflicts with the familial obligations of citizens and officials but also the latter's obligations to repay debts of gratitude to their political allies and their supporters/voters- two obligations arising out of the traditional values. Yet the study findings reveal that for the voters, the majority of them avowed that the bases of their choice of candidates are merit, integrity, performance, personal traits, among others. (cf. David, N.D.; Lande, 1968)

Political Attitudes

Identity of Political Parties' Programs. The political party system of Iloilo City is reflective of our own country's shortcoming which is the lack of a competitive party system which offers voters a choice between two or more "distinct and doctrinal" set of policies which imposes one of these as a provisional solution to the country's major conflicts and problems. This is corroborated by the study findings that the majority of the respondents perceived no real difference on certain issues between the two parties. Furthermore, conflicts over substantive matters are fought out within the party in power rather than between major parties. The resolution usually takes the form of compromises designed to appease the various contending groups. This has been perceived by the majority of the respondents when they agreed strongly that political decisions are made by some political leaders who try to secure the agreement of the majority to the decision. The political factions are multiple but the majority party and the various opposition parties do not differ in ideology. (cf. Lande, 1968)

Political Behavior

Voting. The Ilonggos' relatively high literacy rate is not a sufficient and logical guarantee that his choice for selection of a candidate for public office would be one that is rational. His economic needs, his value of *"kabalas-lan"* or *"utang na loob"* coupled with his lack of sufficient political information are countervailing forces that tend to offset the workings of reason in the making political decisions, voting among many others.

Party Membership. Study findings reveal that the respondents did not consider themselves as members of a political party nor held any position in any political party. This can be explained by the fact that in the Philippines, it is difficult to identify membership in a political party', if that term is taken to mean persons who

have assumed strong and exclusive commitments to a party or another including clear cut rights and obligations. Those who can be said to be members in this sense are mostly full or part-time politicians, and more specifically, past, present, and prospective job seekers. An ordinary voter may have a continuing preference for one or another national party or more, for one or another local leader and thus for the party that the local leader happens to support. No one will seek to enroll him formally as a party member, nor will he be asked to declare publicly his party preference. For the Filipino politician, one is a "Lakas", for instance, by simply declaring himself as such and who has not been expelled from the party. Most politicians who regard themselves as members of a particular party never went through any formal procedure of affiliation. One of the reasons for this lack of lay party membership is the ideological similarity of Philippine parties which gives citizens little reason to develop a strong political attachment. (cf. Lande, 1968)

RECOMMENDATIONS

The study findings, especially, on the quality of citizen political behavior in voting, political discus-sions, consultative assemblies, political rallies / demonstrations, issue orientation, and political information reflect a kind of political involvement and advocacy that leave so much room for strengthening. The alternative which can be offered must be one which is more realistic and which may contribute meaning-fully to Iloilo City's governance. The quality of political participation that should be manifested by all sectors of Iloilo City must be of a kind reflecting civic values and attitudes prevailing over self-interest.

An imperative should be the creation of new or strengthening of existing mechanisms for articulation and communication between citizens and political leaders on the running of public affairs, This means truly attending to citizens' needs in the making of relevant public policies. Because of their expert technical knowledge and skills, public officials are still needed by citizens. Once these citizens are harnessed into full political participation, these "representatives" can collectively carry out full time work in governance. But citizens are no less necessary as an ongoing part of policy formulation, implementation and evaluation than their public officials and political leaders to ensure that all the efforts and resources expended will be successful. In the absence of this component, public policies will be less sensitive and relevant. Citizens have not been included traditionally for the sake of speedy and good consensus. But official decision making requires continuing citizen inputs. And no public policy can be rational, from the standpoint of democratic values, if there is a gap between government decisions and citizen support. (cf. Wilson, 1984) Thus, it is only by heeding citizen articulation and allowing their inputs for the

genuine participation can there be political leadership which is responsible and sensible in the City. In this regard, mechanisms and structures that have to be considered are:

Strengthening of the Office of the City Administrator

This existing office should be strengthened to initiate this political innovation and implement a professionalized City Administration with ample powers and authority to perform the required activities. Tasked with conducting a "continuing " organizational development to bring about effective administrative reform of the LGUs (RA 7160, Art.10, Sec. 480, 2 iii), the City Administrator, should effectively liaison with city residents on their immediate concerns and mediate among different city political parties and other pressure groups. For effective citizens' needs-aggregation and communicating these needs to the City Executive and Legislative bodies, his office should issue a regular newsletter for Ilonggos to keep them posted on critical political and administrative matters and goings-on in City Hall that affect them.

Citizen Empowerment (CE)

This refers to the enabling of citizens to develop their capacity to participate in the decision-making / implementing of public policy that affects them. This should help eliminate the Ilonggos' opinion that only the government can solve their problems, as well as eliminate their attitude of dependency even as it enhances their creativity and ingenuity in resolving community problems. This can be achieved by a program that will improve the extent and quality of political participation. Following the Sosmena model, Citizen Empo-werment may be achieved by means of a two-pronged integrated program comprised of educational and economic measures:

Educational Adequacy

The citizens' level of learning ensures their economic survival as it helps to strengthen their political culture. Our study reveals that 14.3 per cent of the respondents reached the educational level of high school and a combined 8.31per cent reached the elementary level and intermediate grades. Also, their political information level was low. This may explain why they are not very knowledgeable about the political process in which they should actively participate, With the presence of many educational institutions in the City, vocational-technical education along entrepreneurial knowledge that guarantees employment and' or self-employment, strengthened with civic consciousness and political know-how might

be considered with the subsidy of the City and the national government. This may help enhance the attainment of the second component of the proposed program.

Economic Security

This may be engendered by promoting the selected barangay entrepreneurial activities partly subsidized by city and national funding assistance. This is in line with the present national administration's project of economic uplift for communities that are persistently materially inadequate and where people can barely eke out a living. These cannot be expected to empower themselves and their own communities without initial assistance. In addition to the implementation of economic projects, some basic courses in public management should be introduced through *barangay* teach-ins with volunteer lecturers, to instill in them the needed civic know-how needed for a militant involvement in the running of the city's affairs.

Implementation and Management of Citizen Empowerment (CE)

A general approach to the strategy will involve the following components:

There should be guarantee of funding support for this project for a pre-determined period, for a medium term one, from three to five (3-5) years to allow for the fruition of project efforts.

An information base on the skills and capabilities of the poor and unempowered, as well as the physical and natural resources in the environs of the City as materials for this sector's possible crafts and projects. This is a critical requirement, hence the data should be reliable and adequate.

There should be involvement and the participation of the poor themselves in the planning and decision - making on programs and projects based on the information source acquired. The sectoral representatives in the *Sanggunian*, the youth, women, workers, the urban poor, and other groups should be involved by making them responsible for the planning and implementing of this CE Program in their respective sectors.

The City's Executive and Legislative body are needed as the enabling and authoritative structures of Citizen Empowerment. The operations of these two bodies must be more transparent to the public in reflecting the efficiency and relevance of their performance. Although the sessions of the *Sanggunian* are open to the public, the probable alternative to extend this to a wider audience is to have their more important sessions televised..

A multi-sectoral Committee created by the Office of the City Mayor, composed of church, civic clubs, education, business groups and the urban poor to support this Project and made responsible to this Office, with members nominated by the respective sectors, to come up with a plan of action on Citizen Empowerment. The Committee' work shall be supervised by the Office of the City Administrator.

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